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Integration of Community Health Workers
into Hypertension Self-Management and Medication Adherence

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Integration of Community Health Workers into Hypertension Self-Management and Medication Adherence

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May 2012

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An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Behavioral Sciences and Health Education
2015

Abstract

Integration of Community Health Workers
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By Caitlin G. Allen

Background: Rates of hypertension control remain particularly low among underserved populations; consequently the disparities in cardiovascular disease mortality in underrepresented groups are increasing. While evidence exists to support community health workers (CHWs) as effective interventionists for hypertension self-management among underserved groups, the level of integration and coordination with health teams is unknown. This study aims to understand the roles CHWs have in hypertension self-management, ways that CHWs promote and support medication adherence, and factors that support CHWs in their roles.

Methods: CHWs were recruited through an American Public Health Association sponsored listserv of 30 CHW networks and associations from 19 states. The first phase of the study included an online survey open for eight weeks. The survey included items about CHWs work in hypertension self-management and integration into health are teams. We also conducted 23 semi-structured interviews with CHWs from 17 states and the District of Columbia. Quantitative data were imported from Survey Monkey into SPSS Statistics version 22 and analysis included descriptive statistics and bivariate statistics. Interviews were compiled into MAXQDA version 11 and analyzed by two coders using inductive thematic analysis.

Results: Findings revealed that CHWs' roles in hypertension self-management include: education (84%), removing knowledge barriers about medicines (74%), increasing access to providers (73%), and improving patient-provider relationships (70%). Over half of CHWs considered themselves an important part of the care team for patients with hypertension and 75% reported feeling well supported in their work. CHWs feel most supported when they have strong relationships with their team, are well trained, and make connections with CHWs outside of their organization.

Conclusions: By understanding CHWs' roles in hypertension self-management, healthcare professionals can better prepare to integrate CHWs into healthcare teams. This research is unique because of its focus on gaining CHWs' perspective about their work. Results from this study will help healthcare professionals, policy makers, and academics better understand CHWs and how they can best be integrated into care teams to address barriers for patients prevent and manage hypertension.

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Acknowledgements

To be of use
by Marge Piercy

The people I love the best
jump into work head first
without dallying in the shallows
and swim off with sure strokes almost out of sight.
They seem to become natives of that element,
the black sleek heads of seals
bouncing like half submerged balls.
I love people who harness themselves, an ox to a heavy cart,
who pull like water buffalo, with massive patience,
who strain in the mud and the muck to move things forward,
who do what has to be done, again and again.
I want to be with people who submerge
in the task, who go into the fields to harvest
and work in a row and pass the bags along,
who stand in the line and haul in their places,
who are not parlor generals and field deserters
but move in a common rhythm
when the food must come in or the fire be put out.
The work of the world is common as mud.
Botched, it smears the hands, crumbles to dust.
But the thing worth doing well done
has a shape that satisfies, clean and evident.
Greek amphoras for wine or oil,
Hopi vases that held corn, are put in museums
but you know they were made to be used.
The pitcher cries for water to carry
and a person for work that is real.

Thank you to my thesis committee: Cam Escoffery, Nell Brownstein, and David Callahan, who have read hundreds of pages and guided me through this process. A special thank you a special friend: Anamaika Satsangi, for your time and talent in coding. And to community health workers, thank you for all you do everyday to advance health equity. Dedicated to David Callahan.

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Chapter 1. Introduction and Theoretical Framework

Problem Definition

Nearly one in three adults in the United States have hypertension (high blood pressure), placing them at a greater risk for heart disease and stroke, the first and third leading causes of death (Centers for Disease Control and Prevention, 2014a; Yoon, Burt, Louis, & Carroll, 2012). Of the 67 million adults treated for hypertension in 2011, fewer than half have their high blood pressure under control (Roger, Go, & Lloyd-Jones, 2012). In addition to negative health outcomes, high blood pressure also has a substantial economic impact. In 2012, the United States spent $43 billion in direct care associated with high blood pressure and the country spends an additional $90 billion annually due to missed days of work, medication costs, and healthcare services (Heidenreich et al., 2011).

While hypertension can be prevented and well managed through appropriate diet, exercise, and lifestyle modifications, it is still poorly controlled. Further, lack of medication compliance prevents appropriate hypertension control among adults (Centers for Disease Control and Prevention, 2013a, 2013c). It is estimated that up to half of patients with high blood pressure discontinue the use of their anti-hypertensive medications within the first year of treatment, and between 85-90% of patients drop out of their appropriate drug dosing regimen within five years of beginning treatment (Burnier, Wuerzner, Struijker-Boudier, & Urquhart, 2013; Centers for Disease Control and Prevention, 2013a; Flack, Novikov, & Ferrario, 1996).

Rate of hypertension control are especially low among underserved and underrepresented populations and consequently hypertension disparities continue to increase (Egan, Zhao, & Axon, 2010; Gu, Brurt, Paulose-Ram, Yoon, & Gillum, 2008). Underserved populations may need to overcome barriers such as: lack of health beliefs and values, insufficient access to culturally sensitive care, lack of knowledge about hypertension, lack of understanding about treatment and screening, absence of disease self-management skills, access to resources such as healthy foods, and lack of physical activity (Bassett, Fitzhugh, Crespo, King, & McLaughlin, 2002; Brownstein et al., 2005; Brownstein et al., 2007; Egan et al., 2010; Franco, Diez Roux, Glass, Caballero, & Brancati, 2008; Norris et al., 2006). Community Health Workers (CHWs), frontline public health workers who are trusted members of the community and facilitate access to services and improve quality and cultural competence of service delivered, are well equipped to address challenges and barriers among underserved and underrepresented populations (American Public Health Association, 2014). Specifically, CHWs can provide wrap around services and assist with

hypertension management and treatment among high-risk and minority populations (Brownstein et al., 2005). Because of their ability to relate to patients, CHWs are able to gain a high level of trust and can help improve health outcomes for these vulnerable populations (Gilkey, Garcia, & Rush, 2011).

Study Purpose and Justification

The purpose of this study is to enhance the field's knowledge of the roles CHWs play in chronic disease self-management using hypertension self-management as an example, with a specific emphasis on medication adherence. While much research has pointed to the effectiveness of CHWs in helping patients with hypertension self-management, fewer studies have investigated these roles from the CHWs' perspectives. Additionally, this study focuses on understanding how CHWs are integrated into the care team for patients with high blood pressure and emphasizes understanding what helps or hinders a CHW from completing their role in hypertension self-management and medication adherence. Overall, the purpose of this study is to understand the ways CHWs assist patients in hypertension medication management to improve hypertension outcomes and how they are supported in carrying out these functions within their health system. These results contribute to a broad understanding of how CHWs assist patients with hypertension/chronic disease management and what factors support their integration and roles in healthcare agencies.

Theoretical Framework

This study uses multiple theories to answer the proposed research questions. Specifically, it employs the Medication Adherence Model (MAM) to address the roles CHWs play in medication adherence and the Consolidated Framework for Implementation Research (CFIR) to describe the organizational and external context in support of CHW integration.

The Medication Adherence Model

This study uses the World Health Organization's (WHO) multidimensional adherence model to describe CHWs' role in hypertension medication management. The WHO defines adherence as, "the patient's conformance with provider's recommendation with respect to timing, dosage, and frequency of medication-taking during the prescribed length of time" (p. 1) (RTI International, 2012). The WHO model describes the interacting dimensions that affect non-adherence (World Health Organization, 2003). These dimensions include social and economic factors (e.g. health insurance, medication cost, health literacy, unstable living conditions, lack of family support), therapy-related factors (e.g. complexity of medication regimen, side effects, lack

of immediate benefit of therapy, changes in regimen), patient-related factors (e.g., physical and psychological), condition-related factors (e.g., symptom severity, comorbidities), and healthcare team and system-related factors (e.g. access to care, continuity of care, stress of healthcare visits, lack of provider empathy, lack of positive reinforcement) (World Health Organization, 2003). This model is useful for describing CHWs role in hypertension medication management, as it allows researchers to operationalize the constructs in a variety of ways with different populations.

Consolidated Framework for Implementation Research

Appropriate organizational and system-level support is necessary for CHWs to carry out their full range of functions and be effective in assisting patients with hypertension self-management and hypertensive medication management. While CHWs are becoming better respected members of the patient care team, this new occupation still raises uncertainty for many clinicians, supervisors, and healthcare leaders. The public health field acknowledges CHWs as a promising approach; however, there is less agreement on responsibilities, scope, or work, and reimbursement (Cherrington et al., 2012). Anecdotal evidence suggests that clinicians and other clinician-trained team members struggle to understand CHWs and their roles, limiting their full integration into the healthcare system. Yet, studies have not addressed CHW implementation specific to its impact on medication adherence.

CFIR provides a comprehensive theory of constructs consolidated from multiple disciplines (e.g., psychology, sociology, organizational change) that are likely to influence implementation of complex programs. This model operationalizes five major domains: characteristics of interventions (i.e., key attributes that influence the success of implementation), outer setting (e.g., patients needs and resources, peer pressure from other organizations, external policies and incentives), inner setting (e.g., structural characteristics, culture), characteristics of individuals (i.e., individuals identification with an organization, personal attributes), and the process (e.g., engaging, executing, planning, reflecting and evaluating) used to implement the intervention (Appendix A) (Damschroder et al., 2009).

Research Questions

The goal of this research is to conduct an organizational analysis, guided by MAM and CFIR, of CHWs and their support in hypertension medication adherence and disease management. To address this goal, researchers conducted a simultaneous, mixed methods study focused on gaining CHWs perceptions about their role in the organization and in hypertension self-management and medication adherence.

Specific research questions include:

1) What are community health workers' (CHWs') roles in hypertension self-management?
2) What are ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?
3) How are CHWs integrated into their healthcare organization?
4) What organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?

Chapter 2. Literature Review

This literature review was conducted between February 2014 and October 2014. The review provides a general overview of hypertension and the disproportionate burden of hypertension on minorities and underrepresented populations, an overview of community health workers (CHWs), previous literature focusing on roles CHWs have in hypertension self-management and medication adherence. The literature review demonstrates a lack of understanding about the roles CHWs specifically play in hypertension medication adherence.

Additionally, this section describes care teams for people with high blood pressure and how CHWs work within these care teams to provide support for individuals with hypertension. Literature reveals that CHW integration into care teams is important but understudied, as appropriate supervision and fostering work environment are essential to CHWs carrying out their roles.

The Burden of Hypertension in the United States

Hypertension (high blood pressure) affects approximately 30% of adults in the United States, placing them at a greater risk for heart disease and stroke, the first and third leading causes of death (Centers for Disease Control and Prevention, 2014a; Yoon et al., 2012). High blood pressure places stress on the blood vessels which can damage or weaken them, increasing the likelihood for bursts or clogs leading to stroke or narrowing of blood vessels leading to cardiovascular disease. Although preventable, in 2011 approximately 67 million American adults were treated for hypertension (BP>120 mmHg [systolic] or >90 mmHg [diastolic]), while another 59 million were pre-hypertensive (BP 120 to 139 mmHg [systolic] or 80 to 89 mmHg [diastolic]) (Roger et al., 2012). Of those with high blood pressure, fewer than half (47%) have their high blood pressure under control (Centers for Disease Control and Prevention, 2012b). Besides being an extremely prevalent disease, hypertension is also expensive. High blood pressure is estimated to cost the United States $93.5 billion annually due to missed days of work, medication costs, and healthcare services (Heidenreich et al., 2011). Furthermore, in 2010, hypertension accounted for $42.9 billion in direct medical spending, with almost half ($20.4 billion) in the form of prescription medications (Davis, 2013).

Rates of hypertension control remain particularly low among underserved and underrepresented populations (e.g., low socio-economic status), and consequently the disparity in cardiovascular disease mortality in lower-income groups continues to increase (Egan et al., 2010; Gu et al., 2008). A longitudinal study examined cardiovascular mortality among adults in the United States between 1969-1998. This study used 17 county level census variables to identify

mortality rates for five socio-economic categories. Using these indexes, the study revealed that men and women in the lowest socio-economic category had higher mortality rates due to cardiovascular disease than men and women in the highest socio-economic areas (Singh & Siahpush, 2002). Furthermore, nationwide studies reveal that race is a predictor for high blood pressure with black women having the highest incidence of high blood pressure (45.7%) as compared to all other racial groups (Go et al., 2013).

Major risk factors for high blood pressure include: smoking, obesity (body mass index greater than 30 mg/m^2), physical inactivity, dyslipidemia (abnormal amounts of lipid in blood), diabetes, age (men older than 55 and women over 65), and family history of premature cardiovascular disease (U.S. Department of Health and Human Services, 2003). The Centers for Disease Control and Prevention (CDC) recommends taking basic measures to prevent high blood pressure through healthy living habits such as maintaining a healthy weight, getting the recommended amount of physical activity, not smoking, and limiting alcohol use (Centers for Disease Control and Prevention, 2013a). Additionally, the CDC encourages individuals with prehypertension or other chronic diseases such as diabetes to take appropriate steps to lower the risk for developing high blood pressure. These steps include: regular blood pressure checks, managing diabetes (as 60% of individuals with diabetes also have high blood pressure), taking medications appropriately, and working closely with a healthcare team to monitor medical conditions (Centers for Disease Control and Prevention, 2014b).

Hypertension Self-Management and the Chronic Care Model

Self-management is one popular approach for controlling hypertension (Magid & Farmer, 2014). This approach places the patient at the center of their care and "empowers and prepares patients to manage their health and healthcare" (p.1) (Improving Chronic Illness, 2014). Self-management allows the patient to manage the everyday effects of chronic conditions and is influenced by knowledge and attitudes (e.g., self-efficacy) (Baumann & Dang, 2012). Self-management is a key element of the Chronic Care Model (CCM) (Figure 1) that helps to foster patient's responsibility for their own health and offers guidance through providing basic health information, emotional support, and strategies for living with chronic disease (Von Korff, Gruman, Schaefer, Curry, & Wagner, 1997).

More broadly, the CCM (Figure 1), originally developed in the mid-1990's has constantly been refined to create a comprehensive model for the care of those with chronic diseases (Coleman, Austin, Branch, & Wagner, 2009). This model helps to improve chronic conditions at the individual and population level, emphasizing productive interactions between informed,

active patients and a prepared practice team (Baumann & Dang, 2012). Informed patients must have the appropriate motivation, information, skills, and confidence to make decisions about their health and how to manage it. Similarly, a prepared practice team offers decisions support and resources to deliver high quality care. These two elements produce a productive interaction and are supported by the community and health system. The community may offer resources and policies including self-management support that emphasizes the patient as central to their health outcomes in order to produce an informed active patient. The health system can enhance the prepared, proactive practice team through delivery system design (e.g., through evidence based care, defined roles and tasks among healthcare team members), decision support, and clinical information systems (e.g., patient reminders and care planning).

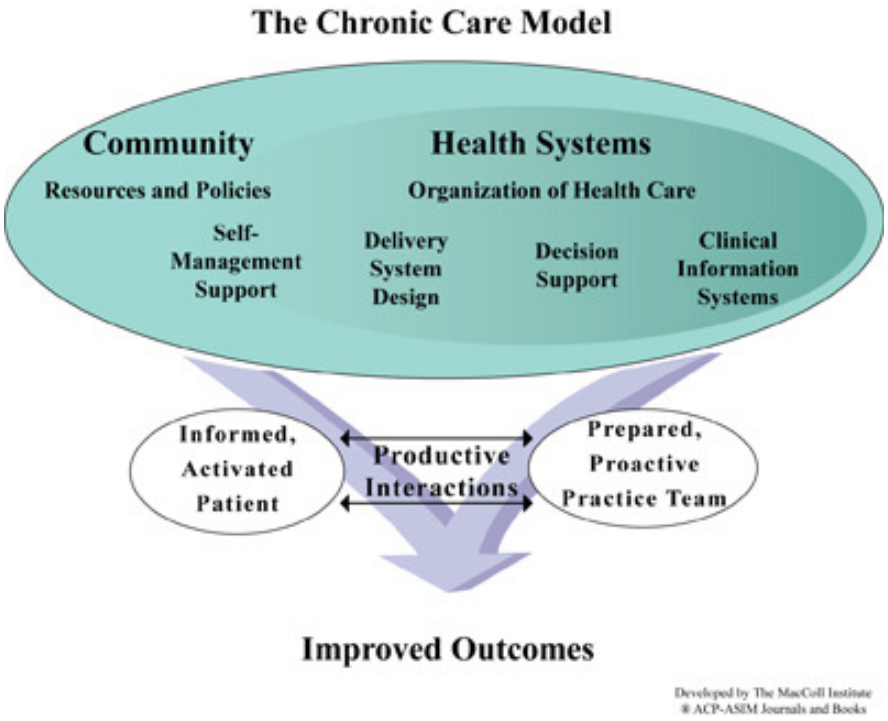


Figure 1. The Chronic Care Model

Although the CCM is a well-cited model for creating better care for individuals with hypertension, patient compliance with doctor's recommendations about managing high blood pressure and other chronic conditions has consistently been poor (Kaplan, Greenfield, & Ware, 1989; Roter, 1977, 2000). The Hill-Bone Compliance to High Blood Pressure Therapy Scale is one of the most well tested compliance measures for patients with hypertension. This scale consists of 14 items and predicts that three behavioral domains: sodium intake, appointment keeping, and medication taking, impact patient compliance to high blood pressure therapy (Kim,

Hill, Bone, & Levine, 2000). Other models suggest that lack of prevention and compliance to self-management is due to poor physician-patient relationship, competing health priorities, knowledge of hypertension, and poor access to community resources (L. Cooper et al., 2011; Flynn et al., 2013). Additional barriers to behavioral change include patient's perception of challenges across social, personal, environmental, and economic levels related to healthcare providers, healthcare system, and socio-cultural issues (Baumann & Dang, 2012). Baumann (2012) characterized these barriers into five dimensions: 1) physical barriers (e.g., disability, reduced strength, sensations or vision), 2) psychological barriers (e.g., depression and emotional stress), 3) cognitive barriers (e.g., patient knowledge about chronic condition, health literacy issues that keep patient from being able to fully engage in care), 4) economic barriers (e.g., lack of resources for optimal care), and 5) social and cultural barriers (e.g., normal cultural traditions) (Baumann & Dang, 2012).

Medication compliance is another specific behavioral challenge, which often prevents appropriate hypertension control (Centers for Disease Control and Prevention, 2013a). One study estimated that between 16-50% of patients with hypertension discontinue use of their anti-hypertensive medications within the first year of treatment (Centers for Disease Control and Prevention, 2013a; Flack et al., 1996). Additionally, adherence rates among individuals with high blood pressure tend to decrease over time with only 10-15% of originally treated patients still engaged in appropriate drug dosing regimens five years after beginning treatment (Burnier et al., 2013). Even patients who are taking medications long term frequently miss doses. Non-adherence of medication regimens can lead to poor blood pressure control and adverse clinical outcomes (Flack et al., 1996).

Hypertension Medication Management

Adherence is one important, but underemphasized facet of hypertension self-management and treatment (Brown & Brussell, 2011). Because of the high prevalence and significant cost associated with lack of hypertension medication adherence, it is particularly important to understand the factors related to non-adherence. A variety of both drug and patient-related issues impacts medication use in adults. Wilson et al. (2005) describes the cost-related barriers to medication adherence among Medicare beneficiaries in 13 states between 1998 and 2000. Medication skipping rates increased by 3.6% over this two-year period. Financial barriers associated with skipping prescription drug doses include: low income, higher out of pocket costs, lack of prescription drug coverage, and poor patient-provider relationship (Wilson, Rogers,

Chang, & Safran, 2005). Further evidence from a 2007 study re-emphasizes the cost-related factors associated with non-adherence to prescriptions (Briesacher, Gurwitz, & Soumerai, 2007).

Similarly, low income adults with multiple chronic disease or lack of prescription drug coverage are more likely to take less of their prescribed medications. Piette (2004) noted the importance of understanding how adherence differs across socio-economic group. This large study represented 16 chronic conditions including high blood pressure and hypertension (70% of sample). The study found that cost-related medication underuse was reported among this group of individuals on a long-term basis (i.e., patients are consistently not taking prescriptions as opposed to infrequent, short-term events). Furthermore, individuals with multiple medications were selective about their treatment regimen based on severity of disease and priority (Piette, Heisler, & Wagner, 2004). Additionally, in 2011, a group of researchers conducted a systematic review of published literature describing nonfinancial barriers to medication adherence among elderly. This literature review revealed that barriers for adherence include: patient representation and understanding of their illness, cognitive functioning, medication side effects, and patient-prescriber relationships (Gellad, Grenard, & Marcum, 2011).

Morisky (2008) offers a well-recognized eight-item Medication Adherence Scale, derived from a previously validated four-item scale (Morisky, Green, & Levine, 1986), to further enhance the understanding of circumstances leading to adherence behavior (Morisky, Ang, Krousel-Wood, & Ward, 2008). Using a multivariate model (adjusted for demographic characteristics), Morisky found that attitude, knowledge, social support, patient satisfaction, coping, and stress were all significantly associated with high blood pressure medication adherence ($p<0.05$). Patients with social support and strong coping behaviors were also more likely to have high levels of adherence, while patients who were experiencing high levels of stress, complex medicine regimens, or poor perceived health status had significantly lower levels of adherence to high blood pressure medications (Morisky et al., 2008).

Krousel-Wood (2005) classified interventions focused on medication adherence and overcoming adherence barriers in the following categories: 1) patient education interventions such as one-on-one teaching, 2) behavioral interventions, 3) provider interventions, and 4) complex or combined patient interventions (Krousel-Wood, Hyre, & Muntner, 2005). Patient behavioral interventions, provider interventions, and combination interventions have demonstrated significant improvement in adherence behaviors and blood pressure control; however, patient education interventions alone have been inconclusive (McDonald, Garg, & Haynes, 2002; Morrison, Wertheimer, & Berger, 2000; Schroeder, Fahey, & Ebrahim, 2004). The lack of gold standard or best practice for improving medication along with the range of barriers

reveals that a tailored, patient-centered approach specific to an individual's specific barriers is the most effective adherence intervention (Schroeder et al., 2004; Takiya, Peterson, & Finley, 2004).

Hypertension Management Strategies and Research

Inadequate treatment and failure of providers to comply with evidence-based guidelines are commonly cited as reasons for low control among underserved populations (Brownstein et al., 2005; R. Cooper, Cutler, & Svigne-Nickens, 2000; Nemck & Sabatier, 2003). Additionally, low-income and minority populations face further barriers to hypertension self-management and hypertension medication adherence including: lack of health beliefs and values, insufficient access to culturally sensitive care, lack of knowledge about hypertension, lack of understanding about treatment and screening, absence of disease self-management skills, access to resources such as healthy foods, and lack of physical activity (Bassett et al., 2002; Brownstein et al., 2005; Brownstein et al., 2007; Egan et al., 2010; Franco et al., 2008; Norris et al., 2006). McWilliams (2009) examined the national trends in cardiovascular disease control from 1999-2006. These data show that blood pressure control has improved significantly over the seven-year period; however, trends are not consistent across racial, ethnic, or socio-economic differences. The study predicts that the worse outcomes may be because minorities and less educated adults are less likely to have insurance coverage. The authors note that after age 65, the differences in blood pressure across racial, ethnic, and socio-economic status reduce substantially (McWilliams, Meara, Zaslavsky, & Ayanian, 2009). The Agency for Healthcare Research and Quality cites that only 82% of uninsured individuals who received blood pressure measurements in the last two years were able to state whether their blood pressure was normal or high as compared to over 94% of publicly or privately insured individuals (U.S. Department of Health and Human Services, 2011).

Flynn (2013) conducted focus groups of African American patients and family member to identify facilitators and barriers to hypertension self-management. Facilitators to appropriate self-management included: family member support and positive relationship with providers. Barriers included competing health priorities, lack of access to community resources, and limited knowledge of hypertension. Family members also identified barriers, which included their personal lack of knowledge about hypertension, as well as lack of patient's motivation to maintain hypertension self-management behaviors (Flynn et al., 2013).

Similarly, Bell (2008) assessed the impact of physician-conducted patient counseling conducted on hypertension and lifestyle modifications. The research team interviewed 30 primary care physicians, 11 cardiologists, and 120 patients with hypertension. Interviewees described a

minimal amount of hypertension and lifestyle modification counseling during doctor's visits. Discussion of adherence occurred in 87% of visits; however, in 30% of visits physicians gave patients no feedback on their blood pressure status at the time of visit and even fewer actually offered goal setting (15.8%). Only 30% of patients were reminded of health implications of hypertension. There was also little lifestyle counseling during the office visit (e.g., dietary habits and physical activity). Previous research demonstrates that physicians made no attempt to address medication adherence in one-third of visits (Bakhour, Berlowitz, Long, & Kressin, 2006). Similarly, physicians tend to provide information about new prescriptions but only provide patients with reason to take medicines during one-fifth of their visits (Scherwitz, Hennrikus, Yusim, Lester, & Valbona, 1985). During healthcare visits, patients are often passive and hypertension is rarely discussed (Kjellgren, Svensson, & Saljo, 2000). Overall, research reveals that the office visit is a key element, but often missed opportunity, for physicians to reinforce hypertension education and lifestyle medication messages (Bell & Kravitz, 2008).

Researchers note the importance of improving access to and quality of care (e.g., better patient-provider communication) to decrease disparities in hypertension outcomes (Berlowitz et al., 1998; L. Cooper et al., 2011). Access and quality issues may be addressed through patient-centered approaches in the healthcare model, access to community resources, and policies and health systems changes such as self-management support, delivery system design, decision support, and clinical information systems (Health Resources and Service Administration). That is, the care team and health system must be able to fully support patient changes to ensure the best outcomes for hypertension control. Infrequent, brief patient education is not sufficient to produce sustained behavioral change required for ongoing self-management. Rather, long-term lifestyle skills and support are required beyond a single diagnosis (Baumann & Dang, 2012). Furthermore, research evidence asserts that non-clinicians such as CHWs may offer a particularly effective and cost-efficient solution to improving self-management and medication management among low-income, underserved, and minority patients with hypertension.

Community Health Workers

CHWs are typically community members who assist in addressing social and health issues by providing cultural mediation between communities and the healthcare system. Because of their ability to relate to patients, CHWs are able to gain a high level of trust from patients and can help improve health outcomes for vulnerable populations (Gilkey et al., 2011). Approximately 100,000 CHWs currently work in the United States and are referred to by a variety of names including outreach workers, promotores(as) de salud, community health

representatives, patient navigators, as well as CHWs (Centers for Disease Control and Prevention, 2011, 2013c; U.S. Department of Health and Human Services, 2007).

The American Public Health Association (APHA) endorses the following definition for CHWs: "A Community Health Worker (CHW) is a frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served. This trusting relationship enables the CHW to serve as a liaison/link/intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competency of service delivery. A CHW also builds individual and community capacity by increasing health knowledge and self-sufficiency through range of activity such s outreach, community education, informal counseling, social support and advocacy" (American Public Health Association, 2014). The CHW model has successfully been used in a variety of settings to promote health and reduce adverse health outcomes in underserved communities (Cherrington et al., 2012). Specific CHW roles include: eligibility and enrollment; educational interventions; follow-up with adherence to medications, treatment regimens, and scheduled appointments; coaching for chronic disease management (including goal setting and behavioral changes); helping patients navigate healthcare systems and hospital discharge planning (patient navigation); and improving patient-provider engagement (Volkman & Castanares, 2011). CHWs are important advocates who can bridge cultural gaps, facilitate access to care, promote continuity of care, help patients appropriately use the healthcare system, encourage self-care skills for disease management, and enhance compliance with treatment regimens (American Public Health Association, 2014; Brownstein et al., 2007).

While CHWs have been active in the United States for over six decades, it is more recently that they are being sought as legitimate partners to providing support to healthcare teams in the prevention, management, and control of chronic disease (Giblin, 1989). Specifically, since the enactment of the Patient Protection and Affordable Care Act (ACA) in 2010, much attention has been placed on this unique group of healthcare provider. CHWs have begun to gain acceptance among the medical community in reducing barriers for vulnerable populations and helping to provide positive health outcomes.

Growing support for CHWs exists throughout the United States. Nationally, the APHA formed a section in 2009 to discuss and advocate for CHWs. According to the APHA website, there are now over 25 state and regional CHW associations (American Public Health Association, 2014). Further, in 2013, the CDC outlined the 15 states and District of Columbia with CHW laws addressing CHW infrastructure, professional identity, workforce development, and financing. Of these 15 states, six had advisory boards working to investigate the impact of CHWs on healthcare

savings and health disparities, eight states had created a CHW scope of practice (with three specifically engaging CHWs in chronic disease prevention), seven states had laws authorizing Medicaid reimbursement for some CHW services, and seven states had created laws that encouraged the integration of CHWs into team based care models for select healthcare organizations and services (Centers for Disease Control and Prevention, 2013d). Alaska, Minnesota, and most recently, New Mexico now provide Medicaid reimbursement for CHW services (Katzen & Morgan, 2014). Additional support has come from the increase in federal opportunity announcements via large agencies like the CDC and Centers for Medicaid and Medicare Innovation (Centers for Medicare and Medicaid Services, 2013).

Bovbjerb (2013) describes that CHWs are "poised to enter the mainstream of health service and public health" (p.20). Although CHWs have historically been more of an invisible part of the health services, this unique workforce has recently gained recognition as a legitimate part of the health and human services and seen as added value to public health (Bovbjerb, Eyster, Ormond, Anderson, & Richardson, 2013). Effective January 2014, the Centers for Medicaid and Medicare created a final rule (CMS-2334-F) titled "Medicaid and Children's Health Insurance Programs: Essential Health Benefits in Alternative Benefit Plans, Eligible Notices, Fair Hearings and Appeal Process, and Premiums and Cost Sharing, Exchange: Eligibility and Enrollment," which opens up payment opportunities for preventive services by non-licensed individuals. This rule changes earlier language to state that "services must be *recommended* by physicians or other licensed practitioners of the healing arts within the scope of their practice under State law." The new ruling helps improve access to preventive services, facilitates partnerships between healthcare providers and promotes the engagement of CHWs, increases access to CHWs, broadens the scope of providers as an approach to reducing program expenditures, and carries the potential for having CHWs be reimbursed under Medicaid (U.S. Department of Health and Human Services, 2013). Such attention has increase opportunities for CHWs to be part of healthcare teams for patients with hypertension.

Hypertension Self-Management and Community Health Workers

Chronic disease self-management has become an inevitable feature of primary care. This style of "collaborative management" focuses on wrap around services to help patients and their families handle basic self-management tasks and integrates self-management with appropriate medical, preventative, and health maintenance interventions (Von Korff et al., 1997). While self-management is a key feature of appropriate care, Bodenheimer (2002) identified three barriers in the spread of self-management education: 1) lack of trained personnel make self-management

courses unavailable, 2) individuals with chronic conditions have been socialized into a medical model that emphasizes dependence on professionals, rather than creating patient-provider partnerships, and 3) insurance companies do not reimburse self-management education (Bodenheimer, Chen, & Bennett, 2009). CHWs are well suited to assist in chronic disease self-management efforts, specifically hypertension self-management.

It is well documented that implementing CHWs into hypertension management and treatment programs is effective in reducing hypertension, particularly among high-risk and minority populations. CHWs have a long history of successful hypertension disease self-management and can specifically address high blood pressure and hypertension through (Brownstein et al., 2005):

- Screening for high blood pressure, high cholesterol, and diabetes as well as behavioral risk factors
- Conducting individual or group education on cardiovascular disease risk factors
- Delivering adherence support for medications and other treatments and self-management support for health behavior change such as quitting smoking and increasing physical activity
- Providing proactive client follow-up and monitoring services such as appointment reminders and home visits
- Helping individuals and their families navigate complex service systems and processes
- Serving as a liaison between the community and the healthcare system
- Participating in the care delivery team with other providers such as physicians and nurses

The following summary of relevant literature further highlights CHWs as critical members of the care team and their roles in addressing hypertension self-management:

Hill has also conducted a RCT involving 204 African American men (age 18-50) with hypertension living in East Baltimore. This study tested the effectiveness of high blood pressure care and treatment (free antihypertensive medications) and CHW home visits (education of patient and family), demonstrating that individuals who were recruited, followed, and evaluated by a nurse-CHW-physician team were more likely to have lower blood pressure and enter into the healthcare system earlier (Hill, Bone, & Kim, 1999).

Hill (2003) further evaluated the effectiveness of an intensive education-behavioral-pharmacologic intervention of a nurse practitioner-CHW-physician team among 309 hypertensive urban African American men. This 36-month study included an intensive intervention of a group care team (nurse practitioner-CHW-physician) and less-intense intervention consisting of education and referrals. Those enrolled in the intensive intervention experienced a lower blood

pressure (-7.5 mmHg) than for the less intensive group (+3.4mmHg). Overall, this study supports the more intensive team-based intervention including CHWs in the prevention and control of hypertension (Hill et al., 2003).

Staten (2005) described a program called *Pasos Adelante* that took place from 2003-2008 in Santa Cruz County, Arizona. In this program, 11 promotoras (CHWs) worked in pairs to lead two-hour sessions in schools, churches, and other public locations. Over 200 participants completed the program and self-reported positive changes in physical activity and nutrition from pre-class to post-class. Specifically, there was a reduction in consumption of sweetened soda and hot drinks and significant increase in servings of salad, vegetables, and fruits (Staten, Scheu, Bronson, Pena, & Elenes, 2005).

Similarly, an RCT was conducted among hypertensive Mexican American adults. The intervention focused on evaluating the effectiveness and sustainability of a CHW pilot program for hypertension control among underserved Mexican Americans, demonstrating improvements in clinical measures (e.g., blood pressure, body mass index, waist circumference), in self-reported behaviors, and in attitudes and beliefs about blood pressure among the intervention group. Fifty-eight participants were enrolled in the nine-week intervention group and 40 individuals were in the control group. This nine-week intervention included hypertension-specific educational modules that were delivered by CHWs in Spanish. The control group received Spanish educational materials related to overall health issues. The CHW intervention group had positive effects on behavioral constructs among participants; however, the intervention group did not show significant changes in blood pressure control, likely because of the short duration of the program (Balcázar, Byrd, Ortiz, Tondapu, & Chaves, 2009).

An intervention in Colorado collaborated with CHWs to assist in identification and treatment of individuals with cardiovascular disease. The research team compared baseline and 12-month clinical outcomes among 640 patients (half enrolled in the intervention and half enrolled in the comparison group). The intervention group received bilingual patient navigation from CHWs. The intervention group experienced a lower Framingham Risk Score (prediction of a person's chance of having a heart attack in the next ten years) than the comparison group, lower total cholesterol, and significant improvements in nutrition-related health behaviors. This intervention demonstrated how CHWs can be effective in providing counseling, goal setting, navigation, and linkages to community resources to help patients achieve positive behavior changes in a clinical setting (Shlay et al., 2011).

The California WISEWOMAN project integrated bilingual CHWs as lifestyle counseling coaches at four community health centers. Individuals in the intervention group experienced

improvements in eating habits, physical activity, and improvement in their Framingham Risk Score (Hayashi, Farrell, Chaput, Rocha, & Hernandez, 2010). Another community health center in Hawaii collaborated with the National Heart, Lung, and Blood Institute to deliver the *Healthy Heart, Healthy Family* curriculum during a 12-month period. CHWs in this program were trained to deliver the evidence based *Healthy Heart, Healthy Family* curricula. This study revealed significant improvements in health behaviors, knowledge, and self-efficacy for managing chronic disease. Clinical difference were also shown: decrease in total cholesterol, decrease in low-density lipoprotein (LDL), and fasting blood glucose (Fernandes et al., 2012).

Adair (2012) described an intervention working with CHWs without previous clinical experience. These CHWs were trained for two weeks and assisted providers in managing 332 patients with chronic conditions. After one year, the study revealed that CHWs were a positive, cost-effective addition to the existing care team for patients with chronic disease (Adair et al., 2012).

The Transformacion Para Salud patient navigation model for CHWs was created to assist with chronic disease management in underserved populations. This two-year program was implemented in Texas by four trained, certified CHWs. CHWs were responsible for using motivational interviewing to guide patients through the realities of living with chronic diseases. After two years, the program showed significant improvements for average blood pressure change. Behavioral improvement were also cited such as self-efficacy for chronic disease self-management, healthy diet plans, increased fruit and vegetable consumption, increase in exercise, and following doctors recommendations (Esperat et al., 2012).

Allen (2013) described the COACH Trial, a RCT that paired nurse practitioners and CHWs together to help manage cardiovascular disease and type 2 diabetes. Over 500 participants were randomized into control or intervention groups. The finding of this study indicated that the nurse practitioner-CHW team was a cost effective way to help manage and reduce high blood pressure. The nurse practitioner worked as a case coordinator for the patients while the CHW met with patients to reinforce the nurse practitioners instructions about lifestyle modifications, drug therapies, and adherence. Overall, the authors found that there was a $157 reduction in cost for every one-percent drop in systolic blood pressure and $190 decrease in cost for every one-percent drop in diastolic blood pressure. Not only were nurse practitioner-CHW teams effective at creating better clinical outcomes, but these teams also validate the cost-effectiveness of including CHWs in care teams for patient with hypertension (Allen, Dennison, Himmelfarb, Szanton, & Frick, 2013).

Kranz (2013) evaluated a coronary heart disease intervention aimed at reducing cardiovascular risk. CHWs in this program provided point-of-service screening, education, and care coordination in 34 rural Colorado counties. CHWs used motivational interviewing and conducted patient navigation. Results revealed statistically significant improvements in diet, weight, blood pressure, and Framingham Risk Score, demonstrating an overall improvement in coronary heart disease (Krantz et al., 2012).

The *Health Coaches for Hypertension Control* is a program aimed at improving hypertension self-management for rural residents over the age of 60 years. The research team for this project developed a self-management education program that included eight core modules and eight supplemental modules based on the CCM. CHWs delivered this program to 146 individuals over eight weeks. This community based project reduced the mean systolic blood pressure by five mmHg, reduced program costs, and demonstrated the advantage of using CHWs as health coaches to deliver hypertension self-management programs (Dye, Williams, & Evatt, 2014).

As demonstrated by the literature, CHWs can assist patients in hypertension self-management on a variety of levels. CHWs may offer motivational interviewing, provide cultural mediation, enhance self-efficacy through collaborative goal setting, and provide peer support through phone calls, text messages, group meetings, and home visits. Through assistance with daily self-management, social and emotional support, linking to care, and ongoing support, CHWs have become an important part of improving self-management (Baumann & Dang, 2012). Further, including CHWs in hypertension-focused interventions demonstrates positive health outcomes and behavioral changes. Hypertension self-management efforts that incorporated CHWs demonstrated significant changes in diastolic blood pressure, health behavior changes (e.g., increased physical activity and nutrition), patients entering the healthcare system earlier, enhanced knowledge and beliefs about hypertension, and increased self-efficacy. While these positive outcomes are striking, it is important to note that these examples are drawn only from peer-reviewed literature and do not include a myriad of other unpublished programs working with CHWs that further strengthen the case for positive health outcomes and behavioral changes associated with CHWs. Overall, CHWs add value to the care team by providing careful, well-tailored, culturally appropriate interventions.

Community Health Workers and Hypertension Medication Management

While strong evidence exists to support CHWs as effective interventionists for hypertension self-management, fewer studies have explored CHWs' role in hypertension

medication management. High blood pressure medication management is an important component of self-management and requires multifaceted approaches to address and increase patient knowledge, provide counseling and accountability, improve self-monitoring, reduce costs, and personalize programming (Zullig, 2013).

Lack of adherence is a serious issue particularly among low-income and underserved populations (Gellad et al., 2011; Wilson et al., 2005). Two RCTs demonstrated significant improvements in medication adherence for the CHW group when compared with the control group. One study in Baltimore assessed the impact of the community-based multiple risk factor intervention on cardiovascular risk in black families. Individuals age 30-59 years old were randomized to either Community-Based Care (CBC) or enhanced primary care (EPC). Those in the CBC group received care from a nurse practitioner and CHW in a community setting. The CBC group was twice as likely to achieve goal levels of blood pressure as compared to the EPC group. The study also showed a significant difference in the percent taking antihypertensive agents and percent taking lipid-lowering agents between intervention and control, with intervention being more compliant (Becker, Yanek, & Johnson, 2005).

Similarly, CHWs were used in a pilot study to improve hypertension management among Filipino Americans. The intervention demonstrated significant change in blood pressure, weight, and body mass index, but did not show significant changes in medication adherence or appointment keeping (Ursua et al., 2014)

Howell (1984) described the effects of lay health counseling on medication adherence and blood pressure. In this RCT study, CHWs provided health counseling specialized monitoring, and adherence counseling to ten noncompliant patients with hypertension. CHWs provided specialize monitoring and adherence counseling. The outcomes of the intervention included a significant reduction of ten mmHg in systolic blood pressure and seven mmHg in diastolic pressure, as well as positive increase in medication adherence (15%) (Howell, Geary, Black, Kamachi, & Kirk, 1984).

Hill (2010) called for more aggressive, evidence based approaches to improve adherence. Specifically, Hill described the necessity of closing the gap between research studies and clinical practice as well as the gap between clinicians practice and patients' in-home activities. This call to action requires coordination through a multifaceted system of providers, patients, and the healthcare system. To fully address medication adherence issues, additional non-clinical factors must be addressed outside of the patient and provider levels (Hill, Miller, & DeGeest, 2010). Similarly, Martin (2011) emphasized the importance of addressing variables outside of the individual-level (e.g., building the participant's confidence to adherence to their medication and

modification belief and behaviors) through the use of community-level targets (Martin, Young-il, et al., 2011). Community-level issues (e.g., clinical issues) should, therefore, be the primary targets for interventions focused on increasing medication adherence, as these factors are primary influences on medication adherence. Hill (2010) further describes four practical considerations and recommendations for adherence: focusing on clinical outcomes (e.g., patient communication, blood pressure self-monitoring), empowering informed activated patients (e.g., use of pill boxes, system for refilling prescriptions), implementing a team approach (e.g., support self-management and problem prevention), and advocating for health policy reform (e.g., elevating medication adherence as a critical healthcare issue) (Hill et al., 2010).

Medication adherence is an important and understudied dimension of hypertension self-management. As previously mentioned, Krousel-Wood (2005) describes opportunities to overcome adherence barriers: 1) patient education, 2) behavioral interventions, 3) provider interventions, and 4) combined interventions. While limited evidence exists to support each of these dimensions, Krousel-Wood declares the evidence is mostly inconclusive (Krousel-Wood et al., 2005). Although limited, both peer-reviewed literature and antidotal evidence provides support for CHWs as being appropriately situated to assist in closing these gaps in understanding and overcoming barriers to adherence. CHWs can be integrated in the fractured healthcare system and assist in logistical challenges and coordination of medication adherence intervention across different healthcare and social service systems, while maintaining connection to and knowledge of the community (Ho, Bryson, & Rumsfield, 2009).

The Multidimensional Adherence Model and Community Health Workers Roles

CHWs are well equipped to address adherence issues among hypertensive patients, as common characteristics and roles of CHWs align well with the dimensions of adherence outlined by the World Health Organization (WHO) (World Health Organization, 2003). Specifically, the WHO defines adherence as, “the patient’s conformance with provider’s recommendation with respect to timing, dosage, and frequency of medication-taking during the prescribed length of time” (p. 1) (RTI International, 2012). The WHO (2003) offers a Multidimensional Adherence Model (MAM) to help understand the interacting dimensions that affect non-adherence (World Health Organization, 2003) (Figure 2). These dimensions include social and economic factors (e.g., health insurance, medication cost, health literacy, unstable living conditions, lack of family support), therapy-related factors (e.g., complexity of medication regimen, side effects, lack of immediate benefit of therapy, changes in regimen), patient-related factors (e.g., physical and

psychological), condition-related factors (e.g., symptom severity, comorbidities), and healthcare team and system-related factors (e.g., access to care, continuity of care, stress of healthcare visits, lack of provider empathy, lack of positive reinforcement) (see Figure 2) (World Health Organization, 2003). The WHO continues to breakdown the MAM by disease, citing specific examples for each adherence construct (see Table 1).

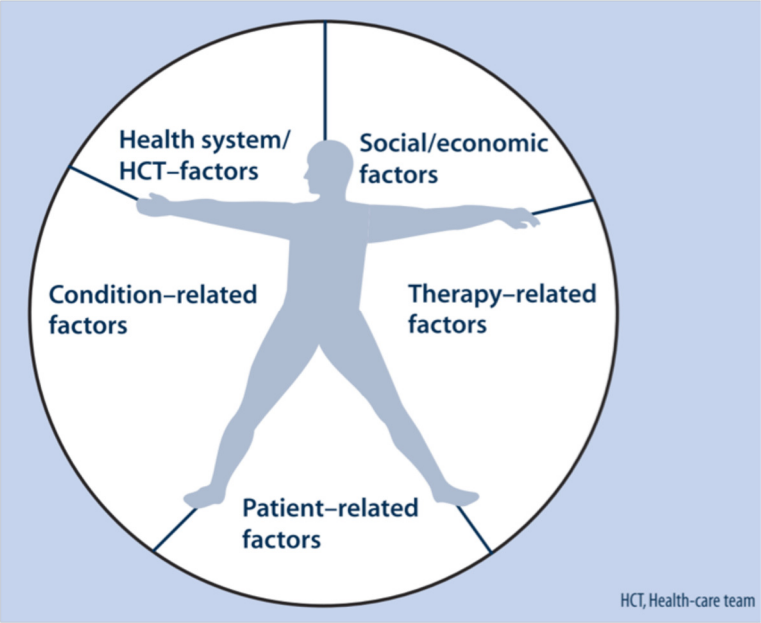


Figure 2. WHO Medication Adherence Model

Table 1. Multidimensional Adherence Model, Specific for Hypertension

Adherence Construct	Definition and Examples
Patient-related	Weight gain, no self-perceived need for treatment, no perceived effect of treatment
Healthcare Team/ Health System-Related Factors	Lack of knowledge and training for healthcare providers on managing chronic disease, inadequate relationships between healthcare providers and patients, lack of knowledge, inadequate time for consultations, lack of incentives and feedback for performance
Social and Economic Factors	Low socioeconomic status, illiteracy, unemployment, limited drug supply, high cost of medication
Conditions-related	Daily cigarette consumption, psychiatric co-morbidities, depression, failure to stop or reduce smoking during treatment
Therapy-related	Adverse events or withdrawal symptoms

Furthermore, CHWs' common characteristics including their "innate helping qualities, cultural characteristics similar to the communities as participants, and building of community capacity" fit appropriately alongside the adherence constructs of the MAM (p. 444) (Brownstein

et al., 2007). More specifically, the field endorses seven core roles of CHWs: 1) bridging and providing cultural mediation between communities and the healthcare system; 2) providing culturally appropriate and accessible health education and information; 3) ensuring that people get the services they need; 4) providing informal counseling and social support; 5) advocating for individuals and communities; 6) providing direct services and administering health screening tests; and 7) building individual and community capacity) (Rosenthal, Wiggins, Brownstein, Johnson, Borbón, et al., 1998). These roles align to the WHO's MAM constructs, further suggesting that CHWs have the appropriate skills to address features of hypertension medication adherence through the components of the MAM by implementing effective strategies for improving hypertension adherence (Table 2) (World Health Organization, 2003).

Table 2. CHW Roles Matched to Adherence Constructs

Adherence Construct	CHW Role
Patient-related	Providing culturally appropriate and accessible health education and information, often by using popular education methods; Providing direct service and administering health screening tests; building individual and community capacity
Healthcare Team/Health System-Related Factors	Bridging cultural mediation between communities and the healthcare team; ensuring that people get the services they need; providing informal counseling and social support; advocating for individuals and communities; building individual and community capacity
Social and Economic Factors	Providing culturally appropriate and accessible health education and information, often by using popular education methods; ensuring that people get the services they need; building individual and community capacity
Conditions-related	Providing direct services and administering health screening tests; building individual and community capacity
Therapy-related	Providing culturally appropriate and accessible health education and information, often by using popular education methods; Building individual and community capacity

While numerous adherence models exist, the WHO's MAM provides robust definitions of each adherence construct, allowing researchers to operationalize the constructs for a wide array of populations nationwide. The MAM also offers examples of specific barriers of adherence and opportunities to overcome these barriers, which is lacking in less comprehensive adherence definitions. Furthermore, the MAM fits well with the conceptual framework for the CCM and is an important and understudied part of the CCM. Other adherence scales such as the Hill-Bone Compliance to High Blood Pressure Therapy Scale offer constructs specific to hypertension treatment including reduced sodium intake, appointment keeping, and medication taking. This scale, however, is specific to young black men with hypertension and is typically used as a tool

for providers to assess barriers to hypertension (Hill, Bone, & Kim, 1999). The MAM offers the opportunity for cross cutting surveillance about CHW's role in assisting with hypertension medication management.

Community Health Workers as Part of the Care Team for Patients with Hypertension

Appropriate organizational and system-level support is necessary for CHWs to carry out their full range of functions and be effective in assisting patients with hypertension self-management and medication management. While CHWs are becoming a better-respected member of the patient care team, the new occupation still raises uncertainty for many clinicians, supervisors, and healthcare leaders. Cherrington (2012) stated that the public health field acknowledges CHWs as a promising approach but there is less agreement on responsibilities, scope, or work, and reimbursement (Cherrington et al., 2012). Brownstein (2011) noted that "including CHWs as members of multidisciplinary care teams has the potential to strengthen both current and emergent models of healthcare delivery" (p. 201) and further evidence suggests that appropriate integration is an effective strategy for improving control of hypertension among high-risk populations and specifically assist with patient compliance with their prescribed regimens (Brownstein, Andrews, Wall, & Mukhtar, 2011; Brownstein et al., 2005; Brownstein et al., 2007). However, there is a lack of data about the perceptions of providers and others who supervise CHWs on their understanding of CHWs roles, integrating CHWs into the system, and job functions (Balcázar et al., 2011; Brownstein, 2008).

Anecdotal evidence suggests that clinicians and other clinician-trained team members still struggle to understand CHWs roles, limiting their full integration into the healthcare system or organization. In 2003 the Institute of Medicine released a book which stated, "inconsistent scope of practice, training and qualifications; lack of sustainable funding, an insufficient recognition by other health professionals are all barriers to the integration of CHWs into the broader system" (Institute of Medicine, 2003). Sabo (2013) supports the positive benefits of integrating CHWs into healthcare teams, but notes that institutionalizing the CHWs role within the healthcare system may result in devaluing other CHW core functions such as building community capacity, advocacy, community organizing, and addressing the social determinates of health. That is, researchers do not yet know of the potential outcomes that CHW integration into the health system may have on the CHWs overall role (Sabo et al., 2013). Furthermore, literature fails to reveal CHW's own perspectives on their role and integration into the care team. One study conducted in 2007, interviewed 12 organizations and their CHWs. These interviews

revealed a paradox emerging between the way CHWs perceive their work and the way the employing organization perceive the CHWs' work. This research found that CHWs perceive their work to be locally focused, whereas the employers were expanding geographic scope outside of the community served due to demand. This paradox undermines the work and working environment of the CHW, and calls for a balance that will help sustain the relationship between the organization and the workers (May & Contreras, 2007).

Keller (2011) described the work of CHWs within the context of the CCM. Keller's organizational analysis revealed that CHWs are largely invisible in the CCM and that the quality of relationships within the Chronic Care team is largely unknown. The three study sites did not have well integrated CHW models (e.g., the CHWs could not describe five of the six components of the CCM during the interviews). In fact, the CHWs identified themselves primarily as community members and resources for the community, different from other team members that had a self-perceived role on the chronic disease care team. Keller emphasizes that the potential synergy between the CHW model and chronic care has yet to be fully explored, highlighting the demand and need for further research (Keller, Borges, Hoke, & Radasa, 2011).

An additional study analyzed the experiences of health coaches into a teamlet model of care revealing that non-licensed allied health workers are an important liaison between patients and physicians, offer advocacy for patients, and help patients maximize healthcare systems. This study suggested that organizations implementing non-licensed health workers such as CHWs should consider the individuals' motivation to take on their new role, provide specific training, and define expectation and provisions of time and space to carry out duties (Saba, Taché, Ward, Chen, & Hammer, 2011).

Further research needs to be conducted on the CHW implementation process in order to address questions surrounding CHWs integration into healthcare teams and thus their abilities to carry out their core roles in hypertension self-management and medication management. Aarons (2010) described implementation science as an important and quickly growing discipline that offers an understanding of the process of implementing innovative practices (Aarons, Hurlburt, & Horwitz, 2010). Specifically, the Consolidated Framework for Implementation Research (CFIR) provides a comprehensive theory of constructs consolidated from multiple disciplines (e.g., psychology, sociology, organizational change) that are likely to influence implementation of complex programs (Figure 3). This model operationalizes five major domains: characteristics of interventions, outer setting, inner setting, characteristics of individuals involved, and the process used to implement the intervention (Appendix A). Each major domain is then broken down to further describe features of implementation. For example, characteristics of intervention includes

evidence strength and quality, complexity of the intervention; outer setting includes patient needs and resources; inner setting includes the compatibility of an intervention with the existing program and leadership engagement; characteristics of individuals involved includes knowledge and attitudes; and the process used to implement the program includes the quality and extent of planning and engagement of key stakeholders (Damschroder et al., 2009).

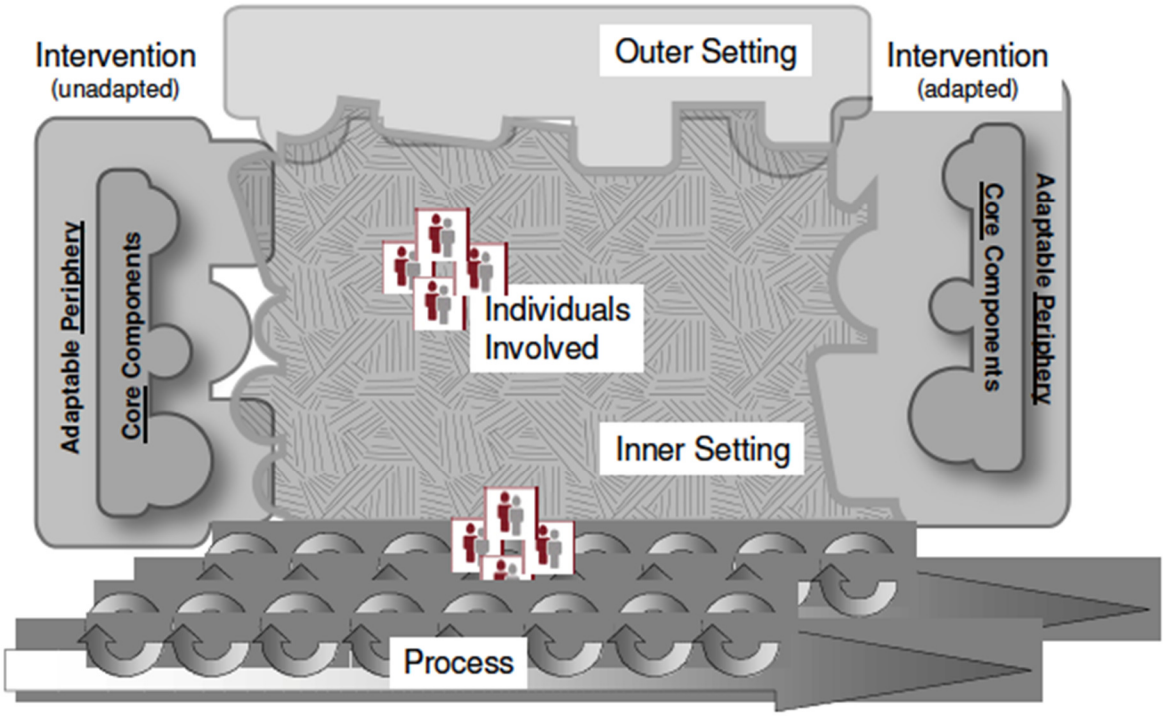


Figure 3. Major Domains of CFIR

CFIR provides an appropriate framework to explore CHW's integration into healthcare teams, as it offers comprehensive understanding of implementation and includes many constructs that may impact CHW integration.

Combined Multidimensional Adherence Model and Consolidated Framework for Implementation Research

The focus of this research is on understanding the inner setting of CFIR from the CHW perspective in hopes of better understanding their role to describe their perceptions and experience as a member of the care team and how this impacts their ability to promote hypertension self-management and medication adherence. The research specifically targets the inner setting constructs of CFIR which include structural characteristics of the organization (e.g., age of organization, size), networks and communication within the organization, the

implementation climate (e.g., how CHWs are supported, tensions for change, compatibility of CHWs with the organization, relative priority of implementing CHWs, incentives and rewards for CHW integration), and readiness for implementation (e.g., leadership engagement in CHW integration, available resources, and access to knowledge). It further addresses the gap in CHW literature about CHWs' role in hypertension medication management, including integration into care teams to support medication management. The goal of this research is thus to conduct an organizational analysis guided by MAM and CFIR of CHWs and their support in hypertension medication adherence and disease management. To address this goal, researchers conducted a simultaneous, mixed methods organizational analysis focused on gaining CHWs perceptions about their role in the organization and in hypertension management and medication adherence. Specific research questions include:

1) What are community health workers' (CHWs') roles in hypertension self-management?
2) What are ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?
3) How are CHWs integrated into their healthcare organization?
4) What organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?

Chapter 3. Methods

This study used a mixed methods approach with quantitative and qualitative methods occurring simultaneously (Palinkas et al., 2011). The mixed methods approached allowed researchers to fully examine community health workers (CHWs) roles in hypertension self-management and medication adherence among individuals with hypertension, as well as the integration of CHWs into patient care teams. Mixed methods offers a more comprehensive account of the CHW experience, provides context and illustration to gain depth in data. This approach and specific details may also provide more utility for practitioners to enhance the case for CHW integration (Bryman, 2006). This nested approach allowed researchers to complete data collection and analysis in the short timeframe while gaining breadth and depth in answering the proposed research questions. Researchers used the rigorous aspects of quantitative data collection methods and also explored the meaning and understanding of answers more thoroughly. That is, qualitative aspects of this study allowed the researcher to understand processes, settings, and context important to understanding the CHWs role in hypertension self-management and how they are supported in their organization, while quantitative aspects allowed researchers to deductively understand phenomena. Combining the two methods in parallel allowed researchers to draw on the strengths of each design (Creswell, Klassen, Clark, & Smith, 2011).

Participants

The study population for this project was CHWs nationwide. Researchers used a sampling frame of CHWs on listservs affiliated with American Public Health Association (APHA) sponsored CHW Networks and Associations. This list included a total of 30 national CHW Associations and State and Regional CHW Associations from 19 states (American Public Health Association, 2014). While the number of CHW members in these associations varies, researchers expected a sampling frame of approximately 4,550 CHWs, or 4.55% of the estimated 100,000 CHWs nationwide (U.S. Department of Health and Human Services, 2007). The sampling unit was individuals who consider themselves CHWs that are over the age of 18 and can speak English. Based on these criteria, researchers estimated that approximately three-quarters of all CHWs in the sampling frame were eligible to participate (n=3,413). Previous national studies focused on surveying CHWs have had response rates of 1,510 (Arizona Prevention Research Center, 2014). However, based on the short nature of our sampling time (two months) and specific topical focus, we anticipated a much smaller overall sample. Additionally, previous national surveys revealed that only 9% of the sample (n=133) worked with cardiovascular

disease. Therefore, based on our sampling frame and eligibility requirements, our goal was to reach at least 150 CHWs through the survey. In total, 434 individuals visited the survey link. Of those, 369 were CHWs (85%), and 265 (61.1%) consented.

Recruitment for the quantitative survey was investigator initiated. Researchers recruited for the survey by sending an email to CHWs through listservs previously described. Interested individuals were prompted with a description of the study, informed consent information, and a link to the survey. This recruitment email included the rationale for the study, time frame, eligibility requirements, contact information where participants should send questions and get additional details, and a request that people receiving the email send it on to others who may be eligible. In total, researchers sent the initial recruitment material to 138 individuals on August 21, 2014. Three additional reminders were sent before the closing date, October 17, 2014. A total of 28 individuals were removed from the initial recruitment list due to invalid email addresses.

At the end of this survey, participants were asked if they were interested in participating in an interview. We anticipated approximately 20% (n=30) of expected survey respondent would self-select to be interviewed. Participants who self-selected to be interviewed (n=64) were placed into a pool of potential interviewees and then purposefully selected for in-depth semi-structured interviews conducted via telephone. We screened survey answers of potential interviewees to assess if they worked with hypertension self-management and/or hypertension medication management. All respondents who worked with hypertension self-management (n=40) were contacted for possible interviews. Researchers contacted interviewees to schedule an interview via email a maximum of three times. A total of 23 interviews were conducted between September 9 and October 20, 2014.

All research was conducted at the Rollins School of Public Health at Emory University. All quantitative data collection procedures, including screening individuals for eligibility to participate in the study, informed consent, and survey completion for the quantitative component of the study was conducted via the online survey tool Survey Monkey. All data collection procedures for qualitative data collection, including screening individuals for eligibility to participate in the study, informed consent, and interview completion, was conducted via telephone.

Measures

Both the quantitative and qualitative measurements aimed to answer the proposed research questions. All questions were asked at less than an eight grade reading level to ensure literacy was not a barrier for participants. The reading level was tested using the Flesh-Kincaid

readability test. Both the survey and interview instruments were designed based on careful literature review and derived from a variety of well-recognized research documents including the CHW National Survey (2007), Brownstein (2005), Hill-Bone Compliance Scale, and National Community Health Advisory Study (NCHAS) of 1998 (Brownstein et al., 2005; Hill, Bone, Hilton, et al., 1999; Rosenthal, Wiggins, Brownstein, Johnson, Borbón, et al., 1998; U.S. Department of Health and Human Services, 2007). Furthermore, both instruments were tested with experts in the field. Specifically, we gained feedback from well-recognized national CHW expert, Nell Brownstein. We also incorporated feedback from Katherine Mitchell, Program Coordinator with the Michigan Community Health Worker Alliance, who has a deep understanding of state-level CHW happenings. Finally, we consulted with four CHWs in Michigan to review the instruments and provide feedback. All feedback was taken into consideration by the study team and incorporated as appropriate.

Procedures

Quantitative Survey

The quantitative study was an online Survey Monkey survey with 56 questions (Appendix B). This survey was open for eight weeks from August 21, 2014 to October 21, 2014. The quantitative survey instrument included open-ended questions, rating question, and multiple-choice items. Each type of question was designed to serve a unique purpose for the assessment. The design of questions satisfied our objective to conduct an organizational analysis focused on gaining CHW perceptions about their role in the organization and in hypertension management and medication adherence. A small portion of the survey was designed to understand the demographic characteristics of CHWs working in hypertension management. These demographic questions allowed the researchers to assess the representativeness of the population to CHWs nationwide. Specific sections of the survey include:

- **Screening Questions:** Two questions to ensure individuals taking the survey met eligibility requirements
- **Informed Consent**: Includes text from Institutional Review Board (IRB) approved informed consent document
- **Opening Questions**: Basic questions about the organization CHWs work in, location, job title, types of services CHWs provide, and health problems patients face
- **High Blood Pressure Questions:** Questions about CHWs' work with patients who have high blood pressure

- **High Blood Pressure and Medicine Adherence:** Asked CHWs specifically about their work with medication adherence for patients with hypertension using constructs from the Medication Adherence Model (MAM)
- **Implementation Questions:** Based on Consolidated Framework for Implementation Research (CFIR) and included questions to help understand how CHWs fit into their organization and what factors within their organization helps them perform their duties as a CHW and in the care of patients with hypertension
- **Final Questions:** Asked whether participants were interested in interview with the study team
- **Demographics:** Included basics of age, sex, race, and education level
- **Thank you:** Thanks participants for their time taking the survey and emphasizes the importance of their participation

The survey team carefully considered quality control procedures during data collection, which included using a single survey for all participants. A standardized survey ensured that reliable and valid data were collected. It eliminated the bias that results from variations in questions, types of responses, formatting and design through uniform survey administration. Standardization was applied through an online platform, Survey Monkey. Word choice and sentence construction of survey questions was also asked at an eighth grade reading level (via Flesh-Kincaid readability test) to ensure that all participants had a clear understanding of what is being said. Furthermore, the survey was designed to take no more than 25 minutes, which created more of an incentive to participate. Finally, the survey was quality controlled and tested by four CHWs prior to distribution.

Qualitative Interviews

The qualitative aspects of this study were designed to understand ways CHWs support patients with hypertension and ways that CHWs are integrated into organizations in more depth. Upon completion of the quantitative survey, participants were prompted with whether they were interested in being part of an interview. Those individuals interested were placed into a pool of potential interviews and then purposefully selected for interviews. Twenty-three interviews were conducted between September 9, 2014 and October 20, 2014. The interviews consist of open-ended questions with probes and lasted an average of 53.5 minutes. The guide contained five sections and with 21 items (Appendix C). The sections of the survey include:

- **Informed Consent:** A shortened version of the informed consent that participants read during their survey and asked if the interviews could be recorded

- **Opening Questions:** Aimed at building rapport and understanding background
- **Hypertension Questions:** Included questions from each MAM construct (healthcare team factors, conditions-related factors, patient-related factors, social and economic factors, and therapy-related factors)
- **Implementation Questions:** Asked about specific CFIR constructs to understand CHW integration into their organization
- **Final questions**: Asked if CHW has other information to share or if they have questions for the interviewer

Each section of the interview included probes focused on answering the research questions. These probes were used at the interviewers discretion. Researchers used the interview to better understand the brief responses from the survey and also to target more detailed information from CHWs to give them a voice in this research.

The study team was careful to ensure quality control throughout the qualitative data collection. Aspects of obtaining cooperation of participants and maintaining participant confidentiality were integrated into the procedures for administration of the interviews. The principal investigator received passive consent prior to the interview and also received permission to tape the interview. The interview was conducted over the phone, recorded, and transcribed verbatim. All participants responses remained anonymous by assigning the interviewee an identification number. The interviewer also noted the start and end time of the interview to ensure that we held to our estimated interview time of between 60 and 90 minutes. Finally, the results were aggregated such that the individual's unique answers were not recognized.

Institutional Review Board Approval

This study was submitted to the Emory IRB on May 23, 2014 and assigned as "Integration of Community Health Workers into Hypertension Medication Management: 00074792." The study team re-submitted an amendment to the IRB including edited versions of the survey and interview guide on July 10, 2014 these amendments were incorporated and approved under expedited review on July 19, 2014.

All personnel involved with the study received CITI certification for human subject protection. The primary investigator completed graduate-level courses in research methods for behavioral science and quantitative and qualitative research methods, and has experience conducting online surveys, telephone interviews, and analyzing both quantitative and qualitative data.

Study Consenting

Researches used an IRB approved informed consent prior to conducting any study procedures. Because the survey was online and researchers did not have any physical contact with the participants, the informed consent process also occurred online. Participants received the invitation email; they clicked on a link to the survey if interested. They then read the informed consent and then clicked on "I agree to take the survey." The informed consent form described the purpose of the study, procedures, risks and benefits to participating, compensation, and how confidentiality will be maintained. Documentation of informed consent occurred by passive consent with participants clicking to agree to participate and starting the online survey. Since contact information for study principal investigator was provided, a hard copy of the consent form was mailed to all participants who requested it (n=0).

Those individuals who chose to be part of the interviews were contacted by the study team to schedule an interview. The participant received an invitation via email and/or telephone. The interviewer reminded the participant of the study purpose and procedures and the consent. Participants were able to ask for a printed copy of the consent. A hard copy of the consent form was mailed to all participants who requested it (n=0). Participants were asked if they were comfortable recording the interview. No incentives were offered to either the survey or interview participants.

Data Collection and Management

Quantitative Data Management

Surveys were conducted through Survey Monkey, a web-based survey tool that uses multiple layers of security, including firewall and intrusion prevention technology, to protect the privacy of data. During the eight week open period of the survey, the principal investigator tracked participation in an excel document and extracted data on a weekly basis. The final data were imported into SPSS for data analysis and these data were stored and backed-up on password-protected network inside Emory University. Only the Emory team had access to the data and the Emory network for analysis and report writing.

Qualitative Data Management

The research team created appropriate storage for data. The interview were scheduled, study identification number assigned, interview recorded, the audio files were be imported in their original format, transcribed verbatim, and then quality controlled in Microsoft Word. The transcript were then coded and analyzed by two independent coders. Data tracking occurred in

excel. The data were stored and backed-up on password protected networks inside Emory University. Only the Emory team had access to the data and the Emory network for analysis and report writing.

Analysis

Quantitative Data Analysis

Results were downloaded from the Survey Monkey anonymous data into SPSS version 22 and Excel for data analysis. The research team ran descriptive statistics to clean the dataset. Decision rules were created and applied to assist with consistency and reporting (for example, collapsing categories, correcting state names). States were collapsed into census regions as follows:

- **Region 1 (Northeast)**: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania
- **Region 2 (Midwest)**: Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
- **Region 3 (South):** Delaware, District of Columbia**,** Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, Texas
- **Region 4 (West)**: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming, Alaska, California, Hawaii, Oregon, Washington

For the close-ended survey items, the team conducted descriptive analysis, including means, percentages, and cross tabulations for CHW's personal and organizational characteristics, roles in chronic disease, hypertension and medication adherence management, and rating of organizational integration. Data were presented for CHWs role in general and for hypertension management for some results. We conducted correlations using Cronbach's alpha for survey questions focused on integration. We also created composite variables (six and eight items) to further understand sense of integration. Using these composite variables, we ran Spearman's correlation procedures. These analyses helped assess differences in implementation of care.

Qualitative Data Analysis

Interviews were recorded transcribed verbatim by Matchless Transcription Company, quality controlled by the interview team, and coded for major themes based on the research questions. Researchers used inductive thematic analysis for qualitative analysis (Guest, Namey, & Mitchel, 2013). Inductive thematic analysis is a common form of data analysis that involves reading transcribed interviews/data, identifying themes, coding, and interpreting the content of

these codes and themes (Guest et al., 2013). A codebook was developed based on MAM and CFIR and included ten sections: overview of organization, overall experience, CHW role in hypertension self-management, CHW role in hypertension medication adherence, patient barriers and facilitators, CHW barriers to integration, CHW facilitators to integration, outer setting, CHW skills, roles and competencies, and good quotes.

Examples of codes definitions include CHW Role in Hypertension Medication Adherence: "This code is used to identify CHW's perceived role in their patient's hypertension medication management through discussion of the five-hypertension adherence strategies (health system/healthcare team; social/economic, condition-related factors; therapy-related factors; patient-related factors). This code will likely overlap with the hypertension self-management code substantially, and also includes information about the CHW's perceived role in hypertension medication management for patients or clients or their lack of role in hypertension medication adherence (e.g., "We don't help with medications")." Another example is CHW Barriers to Integration: "Refers to factors that made it more difficult to implement the CHW (e.g., leadership turnover, difficulty engaging members, lack of resources or support) and how they were addressed. Use this code when the interviewee discusses things that keep them from being a part of the organization or help them do their job well. This code is specific to discussion of the CHWs work within their organization." The full codebook can be found in Appendix D.

This codebook was adapted upon completion of a consensus review between the two primary coders (CGA and AKS). Two coders separately coded the same three interviews and met for consensus and adoption of the codebook. Upon consensus of the codebook and updates, the following 23 transcripts were coded independently and consensus took place for all interviews. The codes were compiled in MaxQDA version 11 and retrieved individually. Various codes were also pulled concurrently. Excerpts were then transferred into Excel, read, and further analyzed. Analysis varied by research question and code but generally included careful reading for themes and further sub-coding or classification. For example, the code focused on CHWs roles in hypertension self-management was broken down to describe aspects of hypertension self-management such as who CHWs are working, what they are doing, when they are performing these tasks, where they are conducting self-management tasks, and why they feel these tasks are important. Results are presented in table form throughout the results section of this report and a full listing of quotes and themes by research question can be found in the Appendices.

Chapter 4. Results

These results integrate both quantitative survey data and qualitative interview data to help describe the work of community health workers (CHWs) work with people who have high blood pressure. Data from qualitative interviews are used to further explain specific survey results. This use of mixed methods allowed for both a broad understanding of CHW activities while also honing in on the nuances and intricacies of CHWs work. Further, integrating the qualitative interview results brings to life this active and vibrant CHW workforce.

Descriptive Statistics

The survey link was sent to a total of 30 national CHW Associations and State and Regional CHW Associations from 19 states that disseminated to their list serves. The survey link was clicked 434 times. Of those clicks, 265 individuals responded that they were CHW and consented to take the survey. Approximately two-thirds (n=177) of those that consented to the survey stated that they work with people who have high blood pressure. Of those that work with patients who have high blood pressure about 58% (n=103) specifically work with medication adherence issues (Figure 4).

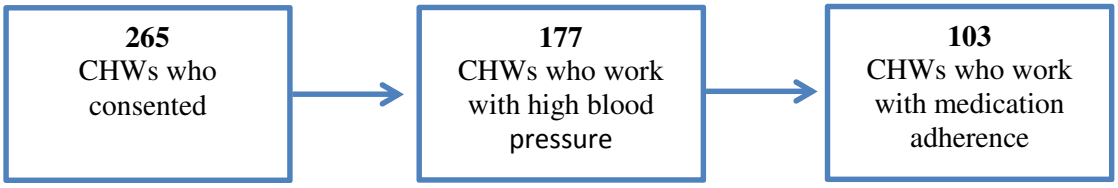


Figure 4. CHWs Working with High Blood Pressure

Survey respondents were asked to report basic demographic information including their age, race, gender, education level, state, and type of organization for which they work (Table 3). The following table includes demographic information for all respondents as well as a distribution break down of demographics by whether they work with individuals on hypertension self-management and hypertension medication management. The average age of all respondents was 43.1 years (SD=12.8). The majority of CHWs were female (88.3%) and Hispanic/Latino(a) (45.4%), Black/African American (25.7%) or non-Hispanic White (25.0%). A large majority (85.7%) of CHWs in the sample have received higher than high school education (some college or technical, college graduate, post-graduate or professional). CHWs represented all four census regions with four out of ten coming from the Midwest (Region 2). Over a quarter of CHWs work at community based organizations (26.0%). Combined, 53.7% of the sample work in a healthcare setting (clinic, FQHC, hospital). Table 3 provide a breakdown of demographic among all

respondents as well as those CHWs who stated that they work with hypertension self-management and hypertension medication management.

Table 3. Basic Demographic Information

	HTN self-management	HTN medication management	All respondents
Age			
Average Age	45.8 (SD=11.3)	41.2 (SD=12.8)	43.1 (SD=12.8)
Race	**n=128**	**n=79**	**n=160**
American Indian/Alaskan Native	8 (6.7%)	6 (7.9%)	8 (5.3%)
Asian/Pacific Islander	2 (1.7%)	1 (1.3%)	2 (1.3%)
Black/African American	31 (25.8%)	22 (28.9%)	39 (25.7%)
Hispanic/Latino(a)	55 (45.8%)	30 (39.5%)	69 (45.4%)
Non-Hispanic White	29 (24.2%)	19 (25.0%)	38 (25.0%)
Other race/ethnicity	3 (2.5%)	1 (1.3%)	4 (2.6%)
Gender	**n=33**	**n=50**	**n=154**
Female	29 (74.4%)	44 (88%)	136 (88.3%)
Highest Grade of School	**n=120**	**n=76**	**n=153**
8th grade or less	0 (0.0%)	0 (0.0%)	0 (0%)
Some high school	0 (0.0%)	0 (0.0%)	0 (0%)
High school of GED	13 (10.8%)	7 (9.2%)	22 (14.4%)
Some college or technical	37 (30.8%)	23 (30.3%)	48 (31.4%)
College graduate	49 (40.8%)	35 (46.1%)	59 (38.6%)
Post-graduate or professional	21 (17.5%)	11 (14.5%)	24 (15.7%)
Census Regions	**n=162**	**n=93**	**n=198**
Region 1 (Northeast)	17 (10.5%)	9 (8.7%)	22 (11.1%)
Region 2 (Midwest)	60 (37.0%)	36 (38.7%)	79 (39.9%)
Region 3 (South)	41 (25.3%)	28 (30.1%)	50 (25.3%)
Region 4 (West)	44 (27.2%)	20 (21.5%)	47 (23.7%)
Organization Type	**n=165**	**n=96**	**n=206**
Clinic (not FQHC)	20 (12.0%)	10 (10.4%)	24 (11.8%)
Community-based organization	49 (29.5%)	28 (29.2%)	53 (26.0%)
FQHC	34 (20.5%)	19 (19.8%)	37 (18.1%)
Health Insurance Company	2 (1.2%)	1 (1.0%)	3 (1.5%)
Hospital	22 (13.3%)	14 (14.6%)	32 (15.7%)
Local Health Department	15 (9.0%)	8 (8.3%)	22 (10.8%)
Indian Health Service	1 (0.6%)	1 (1.0%)	1 (0.5%)
Tribal Health Department	5 (3.0%)	4 (4.2%)	5 (2.5%)
Urban Health Center	1 (0.6%)	1 (1.0%)	1 (0.5%)
University	8 (4.8%)	4 (4.2%)	8 (3.9%)
Nonprofit	1 (1.2%)	1 (1.0%)	4 (2.0%)
Non-university school system	1 (0.6%)	0 (0.0%)	6 (2.9%)
Other*	6 (3.6%)	5 (5.2%)	8 (3.9%)

*Other includes: reproductive health center, homeless shelter, nurse association, self employed CHW, CHW contractor, housing authority

Interviews were also conducted with CHWs who requested to be interviewed by indicating interest at the end of the survey. A total of 65 CHWs requested to be surveyed, of those 43 were contacted based on eligibility (work with individuals who have hypertension) (Figure 5). Twenty-nine interviews were scheduled and 23 were conducted. Four out of twenty three (17.4%) interviewees were male and CHWs represented 18 states: Arizona, California, Florida, Iowa, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Mexico, Oregon, Pennsylvania, Rhode Island, Washington D.C., and Wisconsin.

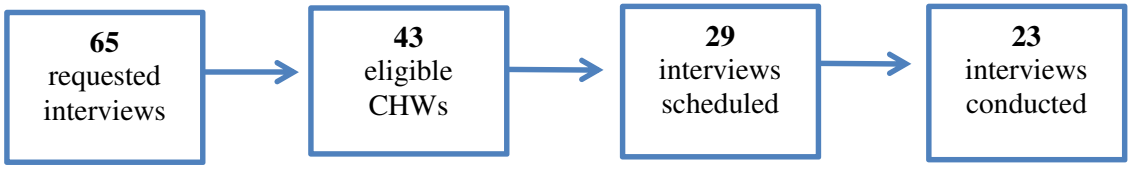


Figure 5. Interview Flow Chart

Survey respondents were asked to describe their job titles, amount of time they have worked as a CHW, amount of time working in their current organization, and basic information about the people they work with. Table 4 provides details about specific job titles and organizational history. Approximately two-thirds (65.2%) of CHWs used "Community Health Worker" as their job title. CHW's reported an average of 7.2 years as CHWs and 6.1 years at their current organization. Furthermore, CHWs work with a variety of people, most commonly Hispanic/Latino(a) population (85.9%), Black/African American (74.1%), Non-Hispanic White (68.3%), American Indian/Alaskan Native (41.0%). The client demographics closely mirrored CHW self-reported demographics reported in Table 4, indicating that CHWs are serving communities of which they are part.

Table 4. CHW and Organizational History

	Hypertension	All Respondents
Job Titles^	**n=169**	**n=207**
Case Manager	7 (4.1%)	8 (3.9%)
Community Care Coordinator	11 (6.5%)	12 (5.8%)
Community Health Advisor	2 (1.2%)	2 (1%)
Community Health Aide	1 (0.6%)	5 (2.4%)
Community Health Educator	19 (11.2%)	22 (10.6%)
Community Health Promoter	10 (5.9%)	15 (7.2%)
Community Health Representative	11 (6.5%)	13 (6.3%)
Community Health Worker	109 (64.5%)	135 (65.2%)
Helper/Supporter	2 (1.2%)	3 (1.4%)
Home Visitor/Support Worker	4 (2.4%)	5 (2.4%)
Lactation Consultant/Specialist	1 (0.6%)	1 (0.5%)

Lay Health Advisor	0 (0.0%)	1 (0.5%)
Outreach Specialist	7 (4.1%)	10 (4.8%)
Outreach Worker	12 (7.1%)	21 (10.1%)
Patient Advocate	4 (2.4%)	6 (2.9%)
Patient Navigator	12 (7.1%)	13 (6.3%)
Peer Counselor	2 (1.2%)	3 (1.4%)
Peer/Teen Educator	1 (0.6%)	3 (1.4%)
Promotores(as)	12 (7.1%)	15 (7.2%)
Public Health Aide	0 (0.0%)	1 (0.5%)
Other*	34 (20.1%)	42 (20.3%)
Years as CHW and at Organization		
Total years as CHW	6.9 (SD=7.5)	7.2 (SD=7.5)
Total years at organization	5.8 (SD=6.4)	6.1 (SD=6.4)
Client Details		
Number of CHWs in Organization	9.1 (SD=10.2)	9.6 (SD=10.6) Median: 5.5 Range: 60
Clients organization serves per year	6,978.9 (SD=16,778.9)	Median: 1,000 Range: 139,985
Clients CHW served per year	1,177.1 (SD=6,213.9)	1,103.5 (SD=5,938.8) Median: 190 Range: 59,997 Mode: 50
Clients CHW served per year (removing >1,000)	182.2 (SD=202.3)	188.8 (SD=199.0) Median: 100 Range: 957 Mode: 50
Race of Clients Served^	**n=168**	**n=205**
American Indian/Alaskan Native	69 (41.1%)	84 (41.0%)
Asian/Pacific Islander	60 (35.7%)	78 (38.0%)
Black/African American	112 (72.6%)	152 (74.1%)
Hispanic/Latino(a)	139 (82.7%)	176 (85.9%)
Non-Hispanic White	111 (66.1%)	140 (68.3%)
Other race/ethnicity	19 (11.3%)	25 (12.2%)

*Other includes: Care Guide; Community Outreach Manager; Executive Director; Outreach Director; Health Coach; Community Base Doula; Healthcare Manager; CNA, CMA, Health Information Management Clerk, Breast Health Coordinator; Director of Outreach; Program Assistant; Manager of Promotores de Salud Program; Neighborhood Health Advocate; Outreach Director and Instructor of CHW; Ambassador; Certified CHW Independent Consultant; Health Navigator; Volunteer; Service Coordinator; Community Health Specialist; CHW Trainer; CHW Mentor; Community Navigator; Nurse; Outreach Consultant; Marketing Representative; Patient Engagement/Tobacco Cessation Specialist; Family Resource Specialist; Training Coordinator; Director of Congregational Health Ministry; Transformation Grant Project Assistant; CHR Coordinator; Peer Support Recovery Specialist; African American Health Conductor; Health Center Director; Community Health Education Coordinator; Trainer; Regional Coordinator; Valet Driver; Program Coordinator; School Health Aide; School Health Aide; Community Health Specialist Bilingual

^Respondents could choose multiple. Total does not equal 100%

CHWs reported their general roles from a list created from the literature (Rosenthal, Wiggins, Brownstein, Johnson, Borbón, et al., 1998). Roles and services reported more frequently included: helping patients or clients in gaining access to medical services or programs (86.9%),

advocating for individual needs (86.9%), teaching patients or clients about how to use healthcare and social service systems (79.2%), helping patients or clients in gaining access to non-medical services (78.2%), helping patients or clients manage chronic illness (77.2%), and helping medical and social service providers understand patient or client needs (72.3%) (Table 5).

Table 5. CHW Services and Roles (n=206)

Services and Roles	
Helping patients or clients in gaining access to medical services or programs	**179 (86.9%)**
Advocating for individual needs	**179 (86.9%)**
Teaching patients or clients about how to use healthcare and social service systems	**161 (78.2%)**
Helping patients or clients in gaining access to non-medical services or programs	**161 (78.2%)**
Helping patients or clients manage chronic illness	**159 (77.2%)**
Helping medical and social service providers understand patient or client needs	**149 (72.3%)**
Providing follow ups for patients or clients	143 (69.4%)
Advocating for community needs	141 (68.4%)
Meeting patient or clients basic needs (e.g., food and shelter)	140 (68.0%)
Providing individual support and informal counseling for patients or clients	139 (67.5%)
Building individual capacity	120 (58.3%)
Gathering information for medical providers	119 (57.8%)
Translation	107 (51.9%)
Providing clinical services (e.g., measuring heights and weights, taking vital signs such as pulse and blood pressure measurements, basic first aid)	102 (49.5%)
Building community capacity	96 (46.6%)
Leading support groups	71 (34.5%)
Other*	17 (8.3%)

*Other includes: ACA certified account counselor; breastfeeding support; cultural broker; Medicaid and SNAP applications; environmental services; finance coaching, lactation, end of life care; helping integration of people leaving state prison; home visits, promoting social interactions/inclusion activities; medication management; patient transportation to clinics or appointments; provide transportation; screening, health fairs and transportation; time management, role model; transportation; transportation and child safety information, child care seat clinics; wellness coaching
^Respondents could choose multiple. Total does not equal 100%

Survey respondents reported how services are delivered, which included location, group and individual delivery. The top three ways CHWs deliver services include: individual in-person sessions in the organization (74.5%), outreach in community setting (73.0%), and outreach in the organization's setting (71.1%). CHWs also provided home visits, individual phone sessions, individual in person sessions, and group classes in the community and organization (Figure 6).

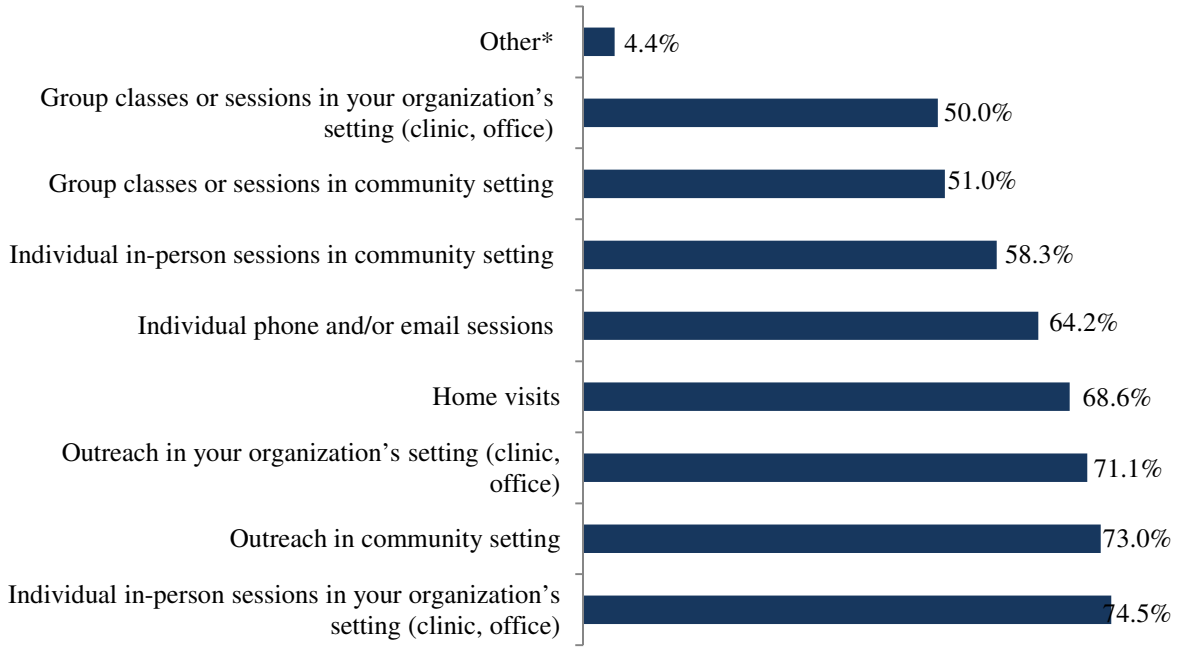


Figure 6. Ways CHWs Deliver Services (n=204)
*Other includes: accompany member to medical appointments to clarify concerns and physician plan of care; accompany to medical appointments, health fair, health fair, awareness days and other events; jails, hospitals; medical mobile unit; school based clinic; school and other surrounding community events
^Respondents could choose multiple. Total does not equal 100%

CHWs addressed a variety of health issues. The top health issues include diabetes (90.1%), high blood pressure or hypertension (84.2%), nutrition (79.7%) (Table 6).

Table 6. Health Issues Addressed (n=202)

Health Issue	
Diabetes	182 (90.1%)
High blood pressure or Hypertension	170 (84.2%)
Nutrition	161 (79.7%)
Heart disease	133 (65.8%)
Obesity	133 (65.8%)
Physical activity	133 (65.8%)
Asthma	130 (64.4%)
Women's health	130 (64.4%)
Depression or anxiety	129 (63.9%)
Mental health	114 (56.4%)
Tobacco control	103 (51.0%)
Cancer	99 (49.0%)
Substance abuse	91 (45.0%)
Immunizations	91 (45.0%)
Child health	88 (43.6%)
Violence	87 (43.1%)
Stroke	86 (42.6%)
Pregnancy/ prenatal care	80 (39.6%)
Men's health	80 (39.6%)

Arthritis	78 (38.6%)
Family planning	77 (38.1%)
HIV/AIDS	76 (37.6%)
Sexual behavior	70 (34.7%)
Infant Health	66 (32.7%)
Breastfeeding	66 (32.7%)
Injuries	63 (31.2%)
Alzheimer's disease or dementia	51 (25.2%)
Gay/Lesbian/Bisexual/Transgender issues	39 (19.3%)
Tuberculosis	38 (18.8%)
Other*	14 (6.9%)

*Other includes: clinical trials and CBPR; adult immunizations, COPD, Bipolar, chronic pain; amputations, COPD, hyperlipidemia; prevention of chronic disease; emergency preparedness; any condition a member would have; anything that community members need; all conditions presented to us; all things under the purview of primary care; children and infant safety, child safety seats; communicable diseases, chronic diseases, circulatory disease, digestive problems, hearing aids, school health, dialysis transport, vision care, traditional healing; financial sufficiency, emotional intelligence; medication; passing medication to students needing to take at school

^Respondents could check multiple, total does not equal 100%

Key Findings

The average age of all respondents was 43.1 years (SD=12.8). The majority of CHWs were female (88.3%) and Hispanic/Latino(a) (45.4%), Black/African American (25.7%) or non-Hispanic White (25.0%). A large majority (85.7%) of CHWs in the sample have received higher than high school education (some college or technical, college graduate, post-graduate or professional). CHWs represented all four census regions with four out of ten coming from the Midwest (Region 2). Over a quarter of CHWs work at community based organizations (26.0%). Over half of the present sample works in some type of health care setting.

Research Question 1: What are CHWs' roles in hypertension self-management?

A large majority of CHW's reported working with hypertension (84.2%), the second most frequent health issue addressed. The following section describes who CHWs work with, how CHWs deliver programs and what their roles they play in assisting people with hypertension self-management.

Who CHWs Work With

CHWs reported working with numerous individuals to help people manage their high blood pressure. Besides the patient themselves, nearly half of CHWs reported working with nurses (49.7%) and medical doctors (46.2%) (Figure 7). During interviews, CHWs described how they coordinated with these medical staff through referral systems, collaborated to generate health education materials, and educated the provider about culturally competent care. One CHW described the partnership that CHWs have with medical providers and their ability to connect with patients:

> *"I actually have nurses who actually can talk to people – one of the things that we discovered – one of the things that we knew was* ***that nurses were the most trusted messengers around health****. They're even better than doctors, in terms of getting people to do things, and so our whole strategy has been around putting nurses out front."*

Similarly,

> *"We work a lot – some of the larger groups have nurse managers and sometimes they will get back with us and sometimes we'll call the nurse manager, or the nurse manager will call us.* ***A lot of the nurse managers have made the referrals to us. The community health workers will communicate with the nurse manager and let them know we're seeing this client, this is what we're seeing. We coordinate back and forth and again****, if we go to an appointment, we do follow back up."*

> *"We do a lot of nutrition, like nutrition guidance. So that's something that the – we have a registered dietician that also sits on the team. She's also a nurse practitioner, so she kind of has a dual role. So we consult her a lot and then* ***she'll provide me with handouts and I'll give them to clients. And then she'll go out with me to home visits if I need her to or she'll call me in the office and say hey, you know, can you help us set up an appointment for so-and-so on this day because their English isn't as strong and my Spanish isn't as good, so we need you for that.****"*

In addition to provider staff, nearly half of CHWs (43.4%) reported working with other CHWs and four out of ten CHWs work with a CHW supervisor or head CHW. Other individuals included the family (34.5%), educator or health coach (31.7%), social workers (30.3%), and

community members (29.0%). One CHW described her work with health educator (specifically a nutritionist):

> *"I work closely with the nutritionist. So her and I will like – you know,* ***I'll bounce a lot of ideas off of her, if the patient has a question about their diet, you know, either I try to get them to meet with the nutritionist or I'll bring a question back to her and she'll help me solve it****."*

One example of collaboration of community members takes place in a barbershop:

> *"We were actually given a medical mobile unit where* ***we actually go into barber shops and beauty shops and provide blood pressure screenings*** *for people in those – in those facilities* ***because that's generally where people are – you know, where people congregate and they're willing to listen****."*

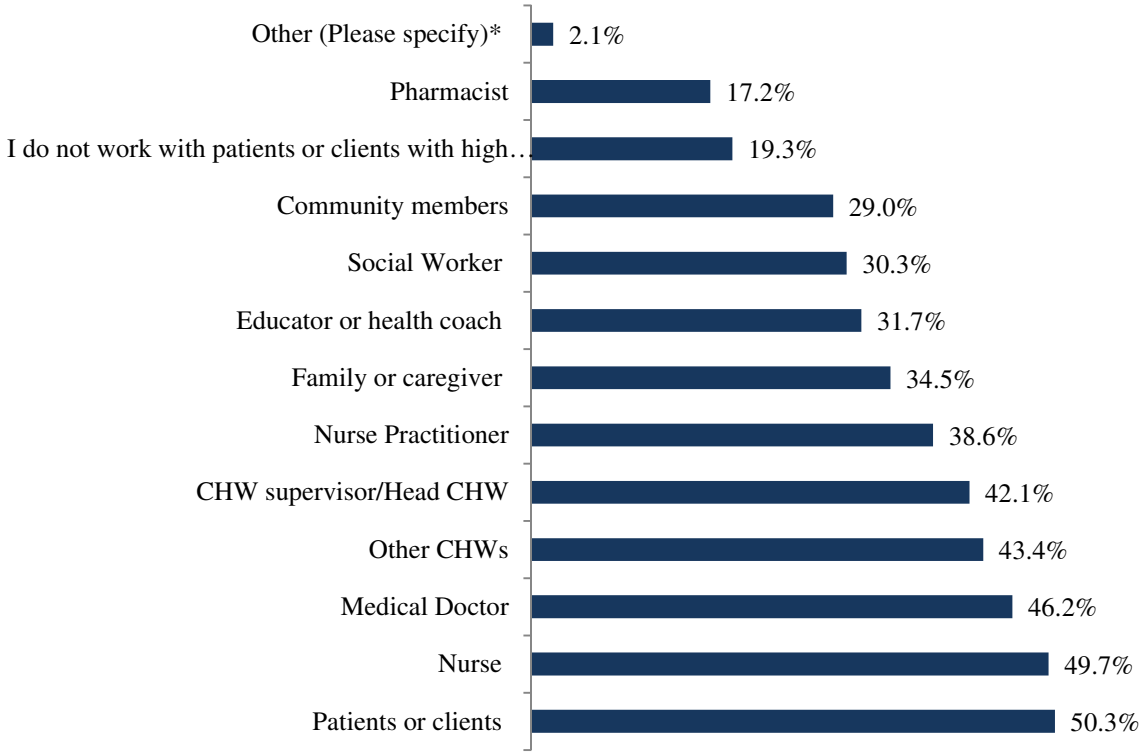


Figure 7. Who CHW Works with for Hypertension Self-Management (n=145)
*Other include: registered dietician, the local FQHC, we do not work one on one with high blood pressure patients
^ Respondents could check multiple, total does not equal 100%

Service Delivery

CHWs deliver hypertension self-management services through in-person sessions in the organization setting (61.6%), home visits (54.3%), and outreach in the community setting (47.8%). Service delivery for hypertension self-management differs from service delivery generally. For example, home visits were the fourth most common location for service delivery among CHWs who did not specify working with hypertension, whereas it was the second most

frequently cited place among those CHWs working with patients who have hypertension. On average, CHWs worked with 228.8 (Median: 45, Mode: 100) patient or clients with hypertension. CHWs reported interacting with people for an average of seven months at a rate of 7.8 times per month (about twice per week). The average length of visit was 39.7 minutes (SD=25.7 minutes) (Table 7).

CHWs service delivery is flexible and focuses on meeting the patient where they are. Because CHWs work is tailored to individual needs, the "style" of delivery may change. For example, individual in-person sessions within the organization may take place before, during, or after the patient visits the doctor. During meetings in the organization's setting, CHWs may explain their role with the patient, go over and reinforce the providers message, and address questions patients have.

Over half of CHWs provide in-home visits for patients or clients with high blood pressure. Interviewees provided insight to the importance of home visits:

> *"I think in the clinical setting, it's much – obviously it's more – it's more – I don't want to say strict, that's not the right word.* ***But it's more like – much more professional, patients appear to be less comfortable, even – even if I'll go with them.*** *Even if we tell them, hey, I'm going to be at the clinic. You can come to – to your appointment, I'll be there. I'll go and we'll talk to you and we'll do the same thing, but it's not the same things. They act different, the patients do.* ***They feel a lot more relaxed at home, they're in their own environment****, they're not coming in to somewhere that's new to them, even for the frequent flier that has been there a million times and know what to say. They're just more comfortable, which* ***I think makes them more open to suggestion or if I do suggest something that's like totally out of this world****, then they would never think about it, they'll tell me hey, no, that's not going to work for me because this is what I've done for years and I'm not going to change it for you. I don't care if I die doing it, I'm not going to change it. And then we'll work around it."*

Another CHW shared,

> *"Well, you know, I think that as a part of a medical continuum, it's quite understandable that the emergency room or a doctor's office doesn't have time to sit and listen to someone or necessarily understand where someone's coming from with their stress and medical situation. Then that's a lot to deal with – the fact that this person's really stressed because they're being evicted tomorrow,* ***but if you go to their home and you're sitting down with them and you're listening and you are taking that time, it builds a lot of credibility with the person, and a lot of our clients are people that have been victimized a lot and have – don't have a lot of trust and because we are a pretty diverse population of staff – also we have people who are familiar with the neighborhoods and do know the resources – so I think we do build credibility hopefully with people. We don't win them all but, you know, we are trying to sit and listen with people and see if we can't attend to some of those human service needs first and then you can deal with the medical stuff.*** *So it's just a different perspective that makes a difference, so – "*

Overall, CHWs were flexible in the ways they delivered services and the location of where they need to assist community members. While some variation exists across *where* interviewees provide hypertension self-management services (e.g., in the clinic or in the home), the location of services always focuses on the most convenient place for the patient and what makes sense within the context of the program. For example, one CHW worked primarily with patients coming to the hospital for emergency services and thus does all of his hypertension self-management work within the emergency department. Other CHWs were less bound to their organization and work within the community. Regardless of where services take place, CHWs describe their role in hypertension-self management similarly. For example:

> *"Most of the time, we ask if we can meet with them at their home and I think that's one of the major differences, is that people are really impressed that we do come and sit down with them at their home, and making home visits is a whole different world. So going to people's houses is sometimes quite interesting and you get a whole different perspective on the person and the challenges that they're dealing with.* ***I've interviewed people sitting on a box of kitty litter. I've interviewed people sitting in my car in the driveway because their house was too bad to go in and they didn't want to let me come in because they were renting a room from an alcoholic hoarder. I've met people at McDonald's. Just a wide range,*** *because sometimes people are homeless. We have staff that regularly go to the shelters.* ***We meet people wherever they agree to meet us****. Sometimes getting them housed is where we start, and we do have a couple staff that work with the housing program, so – we go –* ***we go wherever they are****."*

Table 7. CHW Hypertension Service Delivery

Style of Hypertension Service Delivery	
Individual in-person sessions in your organization's setting (clinic, office)	85 (61.6%)
Home visits	75 (54.3%)
Outreach in community setting	66 (47.8%)
Individual in-person sessions in community setting	62 (44.9%)
Outreach in your organization's setting (clinic, office)	58 (42.0%)
Individual phone and/or email sessions	56 (40.6%)
Group classes or sessions in community setting	47 (34.1%)
Group classes or sessions in your organization's setting (clinic, office)	39 (28.3%)
Other	1 (0.7%)
Patients or Clients with Hypertension	
Number of Patients or Clients	Mean: 228.8 (SD=715.5) Median: 45 Range 6,500 Mode: 100
Interaction with Patients or Clients with Hypertension	
Months of Interaction	Mean: 7.0 (SD=5.1) Median: 6.0 Range: 30 Mode: 6.0

Frequency of Interactions	
Times per Month	Mean: 7.8 (SD=12.6) Median: 3.0 Range: 100 Mode: 2.0
Length of Interactions	
Minutes per Visit	Mean: 39.7 (SD=25.7) Median: 30.0 Range: 120 Mode: 30.0

CHW Roles in Hypertension Self-Management

CHWs described their myriad of roles in hypertension self-management. These roles fell broadly into two categories of health education and behavioral management (e.g., educating about diet, medications, goal setting) and connecting people (e.g., providing referrals, transportation, helping people access resources). While we are working to define and categorize these roles, it is important to emphasize the holistic nature of CHWs roles and the specificity of the CHW role based on the needs of the person they are working with (e.g., getting to a doctor, finding discounted prescriptions). Similarly, when discussing roles, CHWs did not distinguish their work into separate aspects; rather, they described them as concurrent aspects of their job. One CHW stated, "*Our goal has really been around hypertension – to make it as – when you discover an issue, you provide people with information, you provide people with access and then, you help them if they choose to be helped. You know, because you can't make people do anything.*" In this instance, the CHW describes his role in health education (providing people with information) and connecting patients (provide people with access) simultaneously.

Health Education

Health education, specifically, is an important property of hypertension self-management. CHWs use prepared material to assist with health education (e.g., American Heart Association brochures). CHWs describe their health education work in "sessions" rather than as ongoing efforts. For example, CHWs may visit their patient's in their homes once a week for eight weeks and provide health education, which is just one aspect of their entire visit. CHWs also use motivational interviewing techniques to provide health education.

CHWs meet patients where they are in their understanding of hypertension and give their patients credit for what they already know. A CHW's role in health education, according to interviewees, is not to provide basic information; rather it is helping to support patients in deepening their understanding of healthy lifestyles, reinforcing the doctor's instructions, and providing support. For example, one CHW stated, "*most of these people know that they shouldn't*

be pouring salt on their canned beans already, but they still end up doing it because it's there and it's just like, reinforcing and really talking about the future and what's going to happen. You know, say they can't continue this if they want to live a healthy life."

Further, when discussing health education, CHWs emphasizd the importance of meeting location, whether it is in the home or in the community. The CHWs realize that the most effective way to provide health education is by meeting patients in a comfortable space where they are ready and willing to listen. Overall, CHWs are invested in providing necessary health education material to their patients but view their role as intermediaries or partners in the patient's health education. They recognize what the patient already knows and then fills gaps in patient's understanding, as needed. Additional examples include incorporating creativity and talents of skills into health education.

> *"**We do a lot of one to one education in the home. I have little visual aids that I use. I've noticed that a lot of our people are more visual learners, rather than handing them a pamphlet to read.** They, again, it may because the lack of education they might have had or that they feel more interested when you show them stuff you know, that they can see, touch and feel. So I usually **– I have an old expired solution bag of normal saline – the IV bag, and I put red food coloring in it and I tell them, this is how much blood your heart has to pump and I show them a large orange and I show, this is about the size – or a grapefruit – this is almost about the size of our hearts** and I said, that little muscle has to pump all this blood that's in this bag and then they kind of have a visual. Then I say but, if it gets clotted – so I have my little tube and I show my – like, I put in, you know, the butter and I show them that and they go, oh, okay, you know, then they get a better understanding. Yeah, and because again, then I go into diabetes and other stuff, too, so it makes it that much easier to explain. Yeah**, I just – because I was – I also was a Head Start teacher or an assistant teacher, so I guess I just learned to be creative like that and – and I love to draw, so I'll draw pictures of things that captivate their eyes. You know, I use bold colors and stuff like that, yeah**."*

> *"A barrier also is because a lot of them, once they hear that they have high blood pressure, they don't follow up with their doctor visits to get it controlled or they just overlook it and they're not educated on the effects of not controlling their high blood pressure or their diabetes, heart disease, high cholesterol. So we really try to educate them on the benefit of getting it controlled and letting them know, if you don't control it, these are the risk factors. This can happen, and that is a downward effect, if it's not controlled."*

Connecting People

Another property of the CHW's role in hypertension self-management is connecting people and helping them receive necessary services. CHWs' define their role in helping patients receive necessary services primarily through their ability to get them connected to primary care (i.e., connecting patients to care). Furthermore, CHWs describe their role of connecting patients to primary care as patient advocacy. For example, "*I've noticed that when I call as an employee of*

the hospital, I have better luck with getting a patient a sooner appointment then if that patient called the place him or herself." In one instance, the CHW was able to get patients into their primary care providers the same day through "instant" appointments. Not only are CHWs helping their patients get appointments but they assist with them getting services by calling to remind them of appointments and providing transportation assistance (e.g., bus tokens, printing directions, taking them to appointments). Links to outside organizations and good relationships with primary care physician offices assist the CHWs in their role of providing necessary services. The CHW also educates patients about the "goods" they have received (e.g., how to use blood pressure monitor).

Overlaps between Health Education and Connecting People

Similarly, the roles of health education and connecting patients overlap through the CHWs ability to coordinate with the doctor. Some CHWs, for example, work in a clinical setting and have direct contact with the doctor, even sitting in on patient appointments to offer supplemental health education. CHWs also coordinate with doctors by connecting patients through referral programs. For example, one CHW described their health education program as a, "*Presentations that teach people about better behaviors, teach risks of hypertension and healthcare – what's accessible and then we have community members and community partnerships that come and they talk about the services that are available if they were to have that issue.*" Finally, connecting patients and medication adherence overlap through the CHWs' description of advocacy. The CHWs describe their role in connecting patients and assisting with medication adherence as patient advocacy. Advocacy includes providing doctors with information about issues and barriers the patient is having with their medication regimen (Table 8, Table 9).

The following tables offer a general overview of CHW roles as well as CHW roles reported based on health education and connecting people. Please note the examples provided are not exhaustive.

Table 8. CHW Roles in Hypertension Self-Management (n=141)

Role^	
Educate on healthy diet (rich in fruits and vegetables)	**118 (83.7%)**
Educate on low-sodium diet	**112 (79.4%)**
Help patients or clients understand that they should not stop taking their blood pressure medicine without talking to their doctors	**104 (73.8%)**
Help patients or clients with keeping doctor's appointments	**103 (73.1%)**
Provide referrals to other social services	**94 (66.7%)**
Educate about shopping for and preparing healthy foods	**93 (66.0%)**

Help patients or clients understand they should talk to their doctors about any side effects they think their blood pressure medicines may have	**93 (66.0%)**
Assist with goal setting	88 (62.4%)
Offer or refer patients or clients to quit smoking programs (smoking cessation)	80 (56.7%)
Help patients or clients with insurance issues (e.g., getting insurance, keeping insurance)	79 (56.0%)
Help patients or clients with remembering to take medication by using pill boxes or other reminders	79 (56.0%)
Help with transportation	76 (53.9%)
Provide social support to patients or clients and family members	75 (53.2%)
Provide blood pressure measurements	74 (52.5%)
Counsel on filling and taking prescribed medicines as advised by doctors	73 (51.8%)
Help people get free or low-cost blood pressure medicines	68 (48.2%)
Provide in-home visits	66 (46.8%)
Provide telephone/text appointment reminders	64 (45.4%)
Assist with accessing exercise facility	59 (41.8%)
Offer translation services	54 (38.3%)
Help people get free or low-cost home blood pressure monitors	52 (36.9%)
Help with access to child care	29 (20.6%)
Other*	6 (4.3%)

*Other includes: give out BP reading cards, to bring into their next doctor appointment, also I check to see if they how to use blood pressure monitors correctly, and check if they have the right size cuff; how to manage the daily stress situations; educate on how to track each measurement on electronic device; how to use medical tracking device; tell them to stop by if in the area to check blood pressure; facilitate access to affordable primary care; offer them self management programs

^Respondents could check multiple, total does not equal 100%

Table 9. CHW Roles in Hypertension Self-Management

Health Education and Behavioral Management	
Healthy Diet	
Healthy diet (fruits and vegetables) **83.7%**	• We talk about not smoking, **the intake of sodium, how it affects your heart and your veins to have too much salt**. • Them implementing exercise into their diet, that – into their daily routine, rather. That has been a plus. We've been able to start two exercise classes that the residents have, or clients have continually participated in. So they're pulling fatty foods and fatty meat and just preparing their foods differently. They've come back and talked, oh, I've been doing good at baking my meats or broiling my meats or taking in less sugar and things like that. • I'll give them resources as far as where you can go get food so that you can take your medication or that you can get healthier options, because a lot of places here in Philadelphia give out free food that they can go pick up and it's fruits and vegetables. If they have the food stamp or the EBT, they can go to farmer's markets and stretch their – their benefits, so to speak, and get more out of it. So I educate them on that, if food is an issue.

Low- sodium diet **79.4%**	• We start talking about making healthy food choices. We try to don't speak about diet, about something that can react the participant in the first visit, so we start with the meal planning and the – maybe we use more the – the model of don't use the saltshaker instead of cut down the salt. We help them recognize lots of food and meals that have low sodium and each one – lots of vegetables and fruit and in the Hispanic community, we – **we try to keep the culture**. So that means that because they are hard worker so they use a lot – the fast food restaurants, even because it's fast but also because it's – it's more economic, so we try to keep cooking at home and use correctly the amount of salt. • At the end of a doctor's visit, the patient comes and sits with the healthcare manager and **we go over you know, different ways on diet and exercise and really – you know, all those different aspects of how they – what they can do to help control their blood pressure and we use a main technique of like, motivational interviewing, you know, what do you think is causing your high blood pressure** versus, you know, your salt intake – you need to stop taking so much salt. You know, it's really trying to get them to come up with the answers on their own and maybe if they don't, you know, suggesting things, but I've done quite a few different conferences and trainings on – on techniques to make that work better as well. • We want to encourage them to implement this healthy lifestyle by changing the way they eat and changing the way they live, by **implementing exercises because we know that there are a lot of risk factors that come into play when we don't eat healthy, when we don't exercise, when we disregard the warning signs of high blood pressure, cholesterol, diabetes, stroke, heart attack, so with our education, we educate on looking at the risk factors and what we can do to lower our chances of having these illnesses.**
Medications	

Talk to doctor before stopping medicines **(73.8%)** Talk to doctor about side effects **(66.0%)** Remembering to take medicine **(56.0%)** Counsel of filling and taking prescribed medicines as advised by doctors **(51.8%)**	• Yeah, well, like, information – if they need information on whatever illness they have, I'll help them out with that – what it is and you know, how important it is for them to stick with their medications and with what the doctor tells them to do. • We also certainly encourage people **– we do a medication assessment and a private medication assessment is asking them if they know what their medication is for and do they take it as prescribed,** do they also take any over the counter medications, and then we fill out the form of what they're reporting to us. We send that to the doctor and then we're asking the doctor, is this what you believe the person should be taking. If they have any questions or problems – we sometimes run in to discrepancies, what the doctor's office thinks they're doing is different than what they're actually doing. So we try to clear up any misunderstandings or problems. Like, maybe a medication was supposed to be discontinued but the person's still taking it or maybe – like, we went to a home one time where a guy admitted that he totally didn't understand how to use an insulin pen and he wasn't using it correctly at all. So trying to make sure people understand their medications. • You know, it's – it's really about **talking to a patient, about feeling comfortable with – with their healthcare and you know, making sure that they're talking to their provider, that they're remembering to write things down to bring in to talk to the provider when they have concerns.** It's being there, too, if they get home and they have questions and you know, they – they forgot to ask the provider something or if they're struggling with you know. • But if they're already having these illnesses, **we talk to them about getting them under control by taking our prescribed medicines, by getting in touch with your healthcare physician if you're experiencing numbness or uncontrolled appetite, headache and things like that.** So we try to encourage a healthy rapport with them so that they can have a healthy rapport with their physician when they experience things that are abnormal, if they're not taking their medicines consistently and as prescribed. • Also, we work coaching and we go – go in with them to the PCP appointment, that way they can get the prescriptions and we coach them to measure their blood pressure. Sometimes the PCP says well, you know, your blood pressure is controlled, you don't need the prescription, **so we encourage people to go at least every two weeks or once a week to go to the pharmacy or the center and measure their blood pressure. That way they can track everything.** • We had one {person] who actually couldn't read or write and so when he first got out [of prison], I think he did like 12 years. So when he got out, we made this chart. He had a lot of chronic disease and the high blood pressure was one of them**. And so we made a chart for each day, you know, then we put – then we put AM, PM, whatever, how to take it, when to take it, you know, and we just made little diagrams of pills, you know, the shapes of the pills and we had it all on a chart for him.**

Food Preparation	
Educate about shopping for and preparing healthy foods **(66.0%)**	• **[Provide] easy recipes on – on what you can do. You know, instead of buying white tortillas, try and buy you know, whole grain tortillas and like, it's simple things really when – when it comes down to it. It's just like, trying to get it – them to make those decisions to do it.** Like, **most of these people know that they shouldn't be pouring salt on their canned beans already, but they still end up doing it** because it's there and it's just like, reinforcing kind of sometimes and – and really talking about the future and what's going to happen. You know, like, say they can't continue this if they want to live a healthy life. • **[Asking] what do you normally eat for breakfast or what is your typical diet for the day, and as they – they share and talk about it – they're not going to be open to write it down**, and that's – you know, a lot of times they want you to write down and record – they don't do that. They're not going to do that. So I just tell them, well a typical day, what do you normally eat? Tell me what you eat and there's no judgment on it, it's just us talking and I'm able to write it down. **So then, you know, we may talk about maybe instead of you know, having salt pork a lot and when you're cooking grains, maybe you can try some smoked turkey, you know, and sometimes they're open to different suggestions** and I've – give like, meals – so we – oh, we have a community garden here at our clinic, and it's really a nice garden and so we get a lot of vegetables – fruits and vegetables out of it and so I do sometimes take them some vegetables along with recipes that we have tried and they're very tasty that they could try. • Some barriers is one, they don't know how to cook foods that are healthy for them. They don't know the benefits of using less salt, the benefits of baking, the benefits of taking fat out of their diet, the benefit of taking their medicines consistently. So we try to really educate them on the benefits of doing these things.
Goal Setting and Social Support	

Assist with goal setting **(62.4%)** Provide social support to patient or family members **(53.2%)**	• So we had it here in the community and they – you know, the doctor sat there – and we do it like, in a talking circle, **like a sharing circle and they shared maybe things that may have stressed them for the week or – you know, how emotions can play on your blood pressure, stresses – and all that, and so we just kind of gave them a chance to voice what may have been sitting heavy on them, like, maybe a family member, or finances or things like that, where the group kind of them provides that support back to them.** You know, don't worry, I'm going through the same thing, you know, things like that is what makes them realize that these are you know, are being faced by everyone beside them. Yeah. So – and so that kind of helped them with – we noticed it really helped them bring their blood pressure down. • From what I've learned about human behavior, you don't get anywhere like that and especially if you want to change patient's behavior and if you want to motivational interviewing with patients. **You need to build trust with them and you need to communicate with them in a language they understand in a culture, in a sense – you know, a sense – cultural sensitivity,** etc., etc., and you've got to like – **you've got to meet the patient where they're at, you've got to see them as a human being or else what you're trying to do is not going to work. You know, if they don't believe in what you're saying, it's not going to work**. So for – **when I first start working with a patient, I just relinquish a lot of control and I say, what do you want to work about, you know, and what do you want to work on and stuff, and then over time, you know, I'll slowly just start to slip in, oh, hey, do you remember you have an appointment tomorrow, or hey, how are you going to get to that appointment or how are you doing with your medication, you know, and you start to slowly slip it into the conversation.** It's a natural flow and they start to respect you because you're – you know, you're – you're prioritizing what they want to work on and they're starting to trust you and they're liking you and – I don't know, I find that that – that works. That's kind of how our practice operates. It's completely patient centered. You know, we would never – if the patient's like, I don't want to quit smoking, we're not going to say, you have to quit smoking, you know, we're going to say, you know, okay, well, maybe we can come back to it in a month, at your next appointment or maybe – maybe I can give you this resource and you can think about it and let me know if you want to change your mind? • **I try to help with some of those avenues so that they can be more compliant with the plan in place that the doctor provides**. I don't specifically speak about high blood pressure. If they need advice, I don't want them to take any advice that I say and go against what they're doctor is saying. • Right now, what we do is again, **reinforce things that the primary care provider has talked to them about, or if there are things that they're – let's say they've met with the dietician and talked about dietary changes**, have been given handouts, things like that – we use the information that they have received from – I'd say – I'd say the professionals, but it's not that we're not professionals – but from a provider and

	we just help to reinforce those things and go over that information again. Sometimes the patients lose that information and sometimes they forget about it and so we just use things like that. • I think, as a community health worker, **we really work with the – the provider, to – to help support whatever kind of plan they have up with the patient.** You know, they work with the patient to try and figure out a plan to help them, whether it be you know, self-monitoring their blood pressure at home, whether it be you know, medication management, diet changes. We really try and help the provider and the patient meet goals together. So we might talk to the patient about exercising and maybe set goals for how much exercise they start off doing and where they'd like to be, eventually. We might help them coordinate with a DSME company to get a home monitoring blood – blood pressure cuff. We might call an insurance company to see if that's covered. We might help them schedule an appointment with a dietician to see about dietary changes. • It's kind of like a support and a learning in a community capacity type of environment where **we're trying to empower women to become informed members of the community where they can share that information and also have lots of opportunity to volunteer in promotion,** too. So we're kind of teaching to them to be promotoras and so it's a voluntary. • **Having patients get their support system – if they don't have one, or strengthening their support system is vital in regards to their health.** So yeah, I like, since day one – since the time I start working with them, I always try to you know, encourage them to build a support system and them, coach them about if – you know, say they have a fight with their brother, how do you get over that? You know, how do you build communication skills and you know, prevent things maybe from boiling up, you know, how to use coping skills and healthy communication. Yeah. Very important.
Connecting People to Goods and Services	
Connecting to Primary Care Provider	

Keeping doctor's appointments **(73.1%)** Provide telephone/text appointment reminders **(45.4%)**	• **A majority of what I do is ensure that patients are connected with their own primary care physician**. • Whenever we go into a different community, we can make a phone call to the clinic and get them an appointment right away. So – so our goal has really been around hypertension – is to – to make it as – you know, when you – when you discover an issue you know, you – **you provide people with information, you provide people with access and then, you know, you help them if they choose to be helped.** You know, because you can't make people do anything. • I am calling those patients to tell them, **make sure you come to this clinic when we're there that day and hopefully they do show up** and I may even – when I get to that clinic – call, you know, in the middle of nowhere, hopefully I have cell phone service there – to say can you – can you stop by? You know, I know that we need to check your blood pressure today" • What we do within our session – **we do have a partnership with a clinic and they'll (providers} come in and they will get all of those who are our participants, their vitals and educate them on you know, body mass, take their height and their weight and then we will try to – once we get those results, we try to connect them with different healthcare physicians or organizations that could help them.** So once you see a need, it says high blood pressure or diabetes or cholesterol that's not controlled, that we find out here, **we try to connect them with a clinic or a physician where they could do follow up care.** • And also, **we communicate with the specialist with the PCP and vice versa.** We cannot – even though we sign consent with the participant, we cannot have all the information, but at least we can confirm with the PCP – that the client went to the specialist appointment and encourage the PCP to get the information as soon as possible. Sometimes the PCP, because of working hard they don't ask for the note. Sometimes if the specialist that takes a long time to respond to that specialist referral and so we are linking the specialist to the PCP.
External Partnerships and Connections	

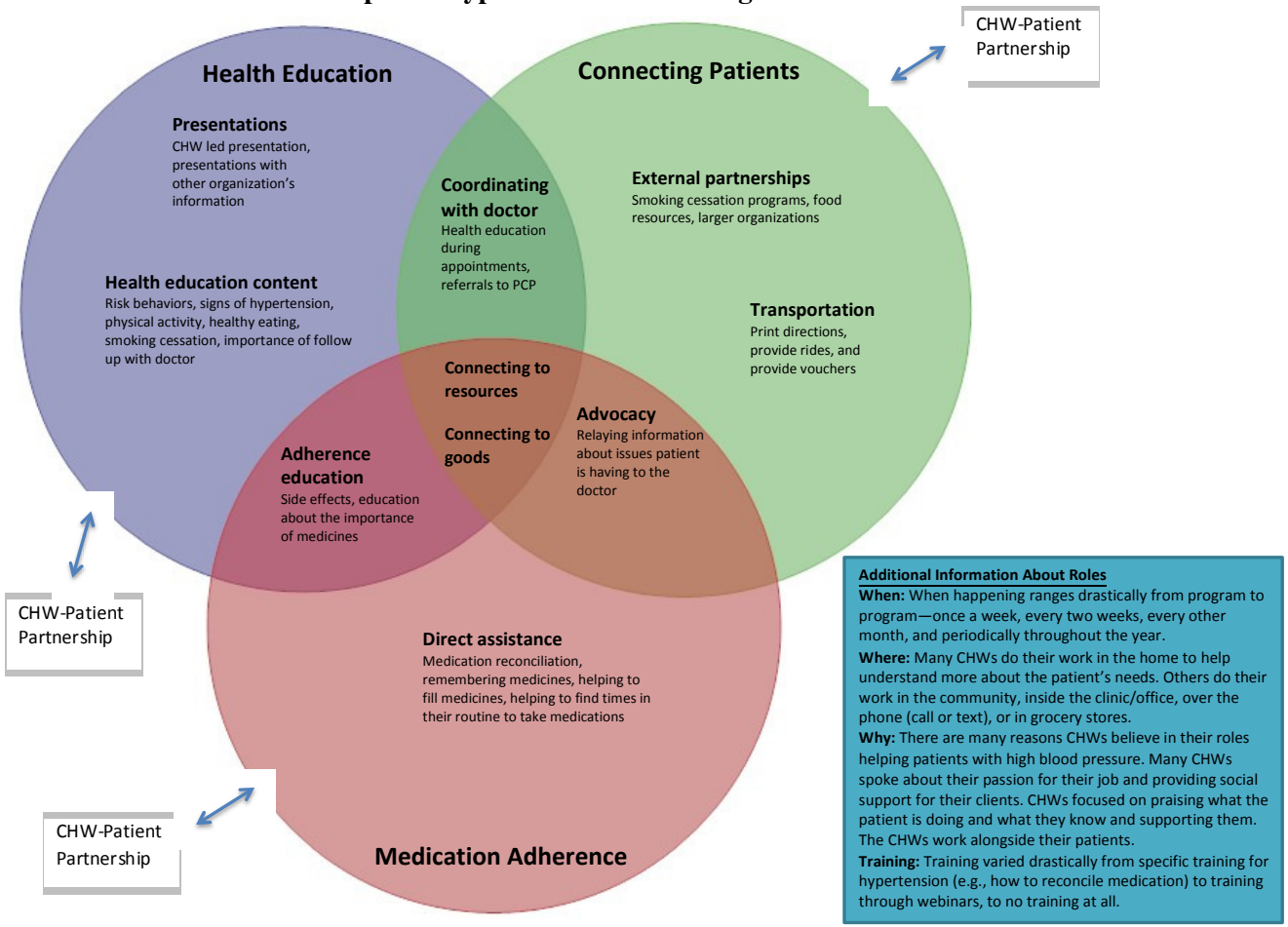
Providing referrals to other services **(66.7%)** Help with getting insurance, keeping insurance **(56.0%)** Referrals to quit smoking programs **(56.7%)** Assist with accessing exercise facility **(41.8%)** Translation services **(38.3%)** Accessing childcare **(20.6%)**	• **I also like to go out and get to know the community resources and actually see if they're good or if they're not that good and just connect with people at the different agencies, get familiar** with like, the – the neighborhoods that the families live in, that I work with – so getting to know like, is there a grocery store around, where is their closest transportation stop, like, things like that. Just like, kind of being aware of the community itself. • Since it's a quick visit **I'll basically get them a packet and let them know that this packet has resources inside where you can get food, where you can apply for further assistance** such as – such as Welfare and exercise and stay on the line if you're older where you can go, job information – so I'll provide that and I'll let them know that I'll be calling tomorrow to do a follow up call. • **I help connect them to support groups**. I know at our practice, we, you know, do a lot of like, prescribing for like, smoking cessation medicine if the patient wants. We have a program we work with called [name] that will like, proactively like, outreach to the patient and like, you know, see how they're doing with their quitting smoking thing and things like that. • We noticed that most of the problems is **when the participant is referred to a specialist outside of any clinic or the hospital, that being a different environment and sometimes people feel that they can reach the place but maybe don't know what – what they need to go or even they'll go there, they are scared of the process** as I said, new environment, so we are always – as a participatory way, go with them. But the – the person that sometimes don't want – too comfortable to go by him or herself, we coach the client to call to one and that way they can go together and know more about what's happened with his or her health. • So we really try to get out to those areas more often, to make sure that those patients can come to clinic when they do. So that's like, A, right there and B is really – **we have clinics at odd hours.** So we will do a clinic from six to ten PM on a Wednesday night so those people can come to clinic. You don't see that happening, you know, very much in other community health centers and really it's because they operate more in one place and so these mobile clinics are really apt to – to be able to do that. • We have what is called a [name of program], which is where **we actually take doctors and nurses into a barber shop on the day and then we provide free blood pressure, free screenings, HIV maybe, cholesterol, glucose for the – for the customers on that day.** We also have – we also do a lot of community outreach programs. We actually have probably done over seven – we do over 70 events a year. Now, what's interesting about our work is that there's only about – we only have three – three full time employees in our department, okay, but last year we did over 7,000 free screening.
Transportation	

Help with transportation **(53.9%)**	• I'll let them know that I'll be calling tomorrow to do a follow up call, and the follow up call after the doctor is basically did you understand your – the doctor's orders, did you need help with filling out your medication, do you need help with transportation to get to the office, anything that was unclear that I can relay for you. • So the hospital does have a transportation service, where they can – transportations to and from appointments at – only for appointments here at the hospital. So on site, we have both a primary care clinic and a specialty clinic and so we – as often as possible – try to refer patients to – to those clinics for the follow up care that they may need, and if they need transportation assistance, you know, we can set them up with that service. Another way that we help out is through bus tokens. So, you know, through our grant, **we've purchased bus tokens for public transportation and oftentimes, what I will do is I will print out directions for a patient who may not know which bus lines they need to take, and I'll use Google Maps or whatever and just print out you know, a list of you know, which buses they need to take to get to their appointment and making sure that they have the necessary fairs to – to take those buses to their appointments.** So I guess those are the two main ways that we help out with transportation for our patients. • We do a lot of providing transportation. **We have money through our [name of bus] system. We try to make sure that people are getting to their doctor's appointment either through their Medicaid transportation or requesting [name of bus]**. So we're just going to try to make sure they do get to their doctor's appointments to get checked, but we're not doing it ourselves.
Medications and Monitors	
Help people get free or low-cost blood pressure medicines **(48.2%)** Help people get free or low cost home blood pressure monitors **(36.9%)**	• Because of our FQHC status, the clinic dose **carry a pharmacy along with us. So we provide quite a bit of different blood pressure medications on site and so it's giving them access to those medications without having to go to a pharmacy for refills** and things like that. You know, we can provide up to three months, sometimes a little more as well, if needed.
Advocacy	

	• I try to make a follow up appointment for that patient, and – because a lot of times, I'll find that patients haven't been to their primary care doctor in a couple months and have run out of you know, their prescribed daily medications and **I've noticed that when I call, you know, as an employee of the hospital, I have better luck with getting a patient a sooner appointment then if that patient called him or her – called the place him or herself, and so that – so yeah, so then – you know, I make that appointment and I make contact with the patient, both before and after their scheduled appointment.** You know, before as a reminder and then after to see if the patient attended the appointment, if everything went well and if there's anything more that we can do for that – for that patient. • We sometimes accompany people to their doctor's appointments **and advocate, listen to what the doctor's instructions are, again trying to make sure people understand what they're supposed to be doing.** So just a wide variety of things. • But going [to the primary care provider] with the participant is more because they feel – they feel better and they feel that they can take time to ask the CHW what's going on and the CHW in that way, became as a advocate – advocate for them. • **I'm really like, the main contact for the patient, and a patient advocate is what it comes down to.** You know, making sure that they do follow up and you know, **I'm really trying to get their voice out there and make sure that they're getting that care that they need**. • Yeah, **it's just really working with them and making them feel comfortable here.** You know, it might be just like, joking around with them a little bit and hanging out while they're waiting and really making them feel comfortable, I think is a big part of it. **Obviously a huge part of it is – is the ability to communicate with them in their own language**. That's something here we really do. **The only person in our clinic here that doesn't speak Spanish is the actual program director who, you know, actually rarely talks to a patient anyway, so being able for all of us to communicate with them I think makes them feel a lot better.**
Other Roles: Direct Service	
Provide blood pressure measurements **(52.5%)**	• "We actually go into barber shops and beauty shops **and provide blood pressure screenings for people** in those – in those facilities because that's generally where people are – you know, where people congregate and they – you know, they – they're willing to listen."

CHWs' roles in self-management can further be represented by the following diagram. Please note that this figure includes medication adherence, which is explained in detail in the following section.

Figure 8. CHWs Roles and Partnerships for Hypertension Self-management



CHWs as Partners in Hypertension Self-Management

Regardless of role, CHWs described working in partnership to assist people in hypertension self-management. Specifically, when describing the partnership between CHW and providers, CHWs indicated the important of providing accurate information and supporting what the provider stated. CHWs were sometimes hesitant to assist with hypertension specific roles because they were viewed as more clinical; however, CHWs focused on supporting hypertension self-management through the less clinical roles they were more familiar with (e.g., health education). For example:

> *"**It's a grey area with what I can say as far as clinically about hypertension, but I can address things about what you're eating, making sure that things higher in sodium (are eaten less) and things along those lines** – but usually with that, I'll make sure that they speak with their doctor or the RN that's participating in their care."*

Additionally, CHWs work in partnership with individuals who have hypertension. The work CHWs do is viewed as complementary to the patient's efforts. This patient-centered approach allows the CHW to recognize the importance of the patient taking responsibility for controlling their high blood pressure. The CHW's role is then to support them in self-management efforts. For example, "*You help them if they choose the help. You know, because you can't make people do anything*." Furthermore, the CHWs praise and support their patient's efforts and give their patients full credit for their positive health outcomes. For example:

> *"So **we don't make any decisions for the patient, but rather help them with goals and with just helping them stay focused on what they have decided with the primary care physician**."*

Getting to the Root of the Problem: CHWs Addressing More than Hypertension

While the focus of interviews and survey questions was about hypertension self-management, CHWs frequently described stories pointing to success beyond controlling hypertension. For CHWs, reducing hypertension was just one part of a success story. The true successes came from empowering individuals beyond the disease. For example:

> *"So what we find is that when you – with utilizing community health workers who can alleviate some of the fears of people – when you do that, then you're able to address sometimes a lot of issues in communities. **You start off with blood pressure, but then you wind up you know, doing some other kinds of things and addressing other kinds of issues**."*

Blood pressure may also be a way into the deeper issues an individual or community faces. For example:

> *"**We had one [person] who actually couldn't read or write and so when he first got out [of prison], I think he did like 12 years**. So when he got out, we made this chart. He had*

a lot of chronic disease and the high blood pressure was one of them. And ***so we made a chart for each day, you know, then we put – then we put AM, PM, whatever, how to take it, when to take it and we just made little diagrams of pills the shapes of the pills and we had it all on a chart for him. And then he kind of like decided he wanted to go back and you know, go somewhere to learn how to read and write****. So we set all that up, helped him get there?* ***I even went with him a couple of times****, you know, so he wouldn't feel so ashamed.* ***So and he went, actually learned how to read and write, he enrolled and got his GED****. Then after he got his GED, he enrolled in the junior* ***college and right now, he's working on his AA degree****."*

CHWs address issues and shared success stories that included much more than hypertension control. They address socio-contextual issues in unique and empowering ways:

"I help them, I give them a different task. A lot of the Hispanic women that I work with, all their lives since – probably since they began to walk were – or taught, you know, they needed to cook and clean the house regardless of how they felt that day and they still do it to this day. And a lot of them can't because their hypertension is so bad that they can't even stand up. And then they refuse to take their medicine, so ***I try and work with them and figure out something to make them feel like they're contributing to their household.*** *One lady, I set up like a little station for her because she's been married for about 26 years and for the last 26 years, she would wash her husband's clothes by hand still, hang them up outside, bring them back in, iron them and then hang them up for him to go to work. And she can't do any of that stuff anymore because of everything going on and then she also, you know, sporadically takes her medicine, only when she feels really bad. So* ***I set up like a little station for her where she can sit down and iron and I'll come in once a week and help her do laundry****."*

"I had a lady last week who ***when I went to her house and saw her, she wasn't feeling good, she didn't want to get out of bed. She said she was having, you know, maybe chest – like pressure on her chest****. It was like a stabbing pain going down her left arm, so I called the nurse. The nurse said, you know, she comes into the ER or the ED, I mean, and she didn't – she didn't want to.* ***She refused, she refused and I can't make her. I told her, I said do you want me to call the ambulance? She said no****. I said let me take your blood pressure. Her blood pressure was a little bit higher than it should have been. And then what we did* ***was I got her in the car and I drove her car and we went to the park****. Gave her some water, we sat down and it was like immediately after I took her out of the car – or* ***after she got out of the car and we sat on the benches at the park, her blood pressure went down to normal because when I took it again, it was really, really good. It was just getting her out of her house****. She had a lot of people in her house, it was grandkids, her kids, kids' spouses. She was in like a junior one bedroom."*

*"****His blood pressure is doing good, he's been taking his medicine. He's feeling a lot better, so that makes me happ****y. Even though – and* ***he was actually one of the more difficult patients. He was quite stubborn****. But yeah, so I mean, so even if it's just one, I think when you go into this line of work, like community health workers, social workers, case workers, whatever you want to call them, you have to go in – you can't go in with the mindset of oh, I'm going to fix everybody I'm working with. If you have that one out of 30, that's okay. And a lot of people that go into this field don't realize that. They feel like they've failed because they only have that one. But I've been in it long enough to know that that one is okay and everyone, you know, will have their days to be successful*

in something, like every patient. So sometimes they're just not ready. ***So it was like four months of very consistent – consistent work with him. And like he was one of the patients who wouldn't call me back. I could leave him tons and tons of messages. I would go to his house unannounced, knock on the door. I knew he was in there, I could hear him. He didn't have a car, he doesn't have legs, he doesn't have a wheelchair. He transfers himself just by either dragging himself or you know, or putting himself on the chair to toilet, whatever. So he didn't have anyone there but home health that would go twice a week and he would deny their visits too.***"

"When they ask me. When they say you know, I'm doing good, I haven't been back to the emergency department in a long time, I feel good. You don't need to come anymore. I mean, I have the one in September was a hard month for her, she has not been to the emergency department, emergency room since July and I've asked her, I asked her yesterday when we had a team meeting at her house, it was myself, one of the residents, like a junior resident and then one of the – the NPs, I asked her, I said you know, do you still want us to come back, do you still want me to come back? ***And she said yeah, she said you guys are helping me, you're helping me a lot, you're helping me keep my mind clear****."*

"Like, one of our policies is we're not supposed to transport patients in our car, but I did have a patient who – I was at her home, and I did her blood pressure and it was really high. It was like, stroke level high and I called to the clinic to talk to our medical director and she said yes, she needs to come in. Well, I wasn't going to put her on the bus and I didn't have the means to pay for her cab, so we just got in our car – my car and I drove her to the clinic. I was you know, violating, you know, transporting patients and I had to do what I thought I should do and I didn't get in trouble, but I did get talked to about it and then I felt like I was really trying to advocate for myself in this matter, that hey, ***sometimes being a community health worker is going to mean doing something different than – or breaking some of the rules sometimes, if this is what you're asking me to do, to really be there for the patient.***"

Key Findings

CHW's roles are flexible and multifaceted but are patient driven. CHWs work in partnership with numerous individuals to help manage high blood pressure and conduct their hypertension self-management roles in the organization and through home visits with an average visit time of 39.7 minutes 7.8 times per month over a seven month period. Broadly, CHWs work on health education through behavioral management (e.g., educating people about diet, medications, and goal setting) and connecting people (e.g., referrals, transportation, helping people access resources). Hypertension is just one example of CHWs working with chronic disease; similar roles and skills apply for CHWs working with other chronic conditions.

Research Question 2: What are ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?

CHWs were asked to describe the ways they promote and support individuals with hypertension in medication adherence. They answered questions related to the World Health Organization's (WHO's) Medication Adherence Model (MAM), which describes the five dimensions of adherence (health systems, condition-related barriers, patient-related barriers, social and economic barriers, therapy-related barriers). CHW's described the barriers their patients or clients have and ways that they assist them with overcoming the challenges. Over one-third (n=103, 38.7%) of the total sample of CHWs answered questions about hypertension medication adherence.

Fewer than half of CHWs reported agree or strongly agree (47.8%) in response to the question "I feel my patients or clients are able to follow their high blood pressure medicine instructions" indicating that patient or clients struggle with medicines (Figure 9).

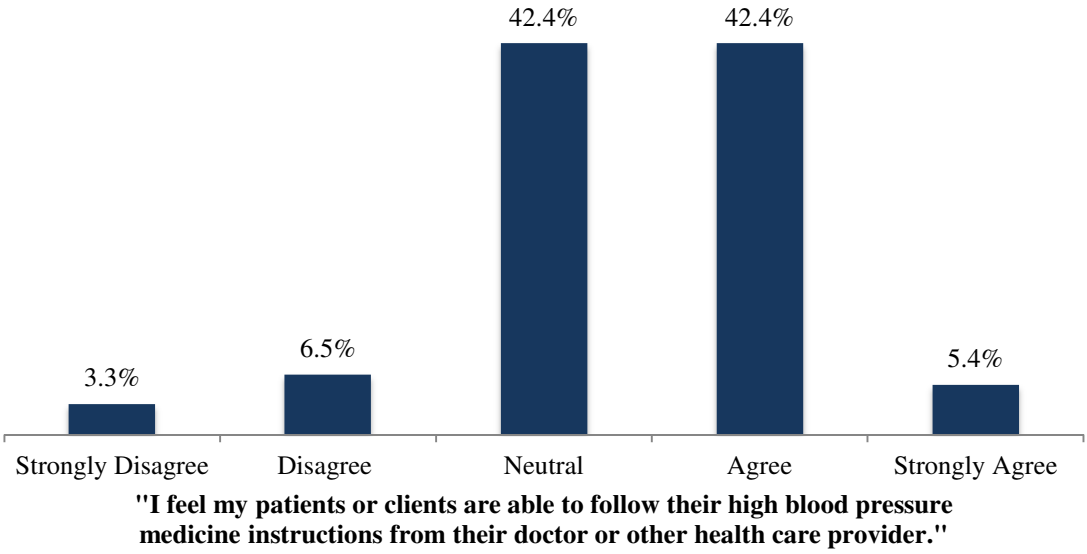


Figure 9. Patient or Client Ability to Follow Medicine Instructions (n=92)

We asked CHWs about perceived barriers their patients or clients face in taking their medications in reference to the five dimensions of adherence. Additionally, we asked CHWs about the support they offer with regards to each dimension of adherence. The following data are broken down by adherence construct and integrate survey and interview information. A full list of adherence related quotes are included in Appendix E.

Patient-Related Barriers and Roles

Patient-related factors affecting adherence to hypertension treatment, as defined by the WHO, include inadequate knowledge and skills in managing the condition, lack of awareness about the cost and benefits of treatment. These barriers can be overcome through behavioral and motivational interventions, good patient-provider relationships, self-management, memory aids and reminders (World Health Organization, 2003).

Three out of four CHWs reported people's forgetfulness of taking medicine as a barrier to medication adherence. Additional patient-related barriers include attitudes toward medications (71.1%), perceived need for treatment (65.1%), and forgetfulness about getting medicines refilled (61.4%). Over half of CHWs noted barrier about attitudes about the perceived effectiveness of treatment (Figure 10).

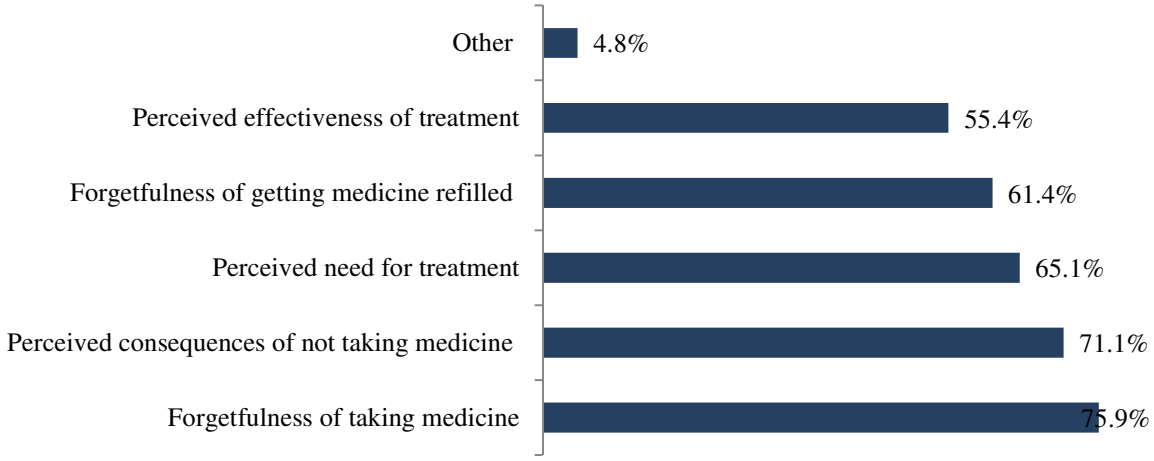


Figure 10. Patient-Related Barriers to Medication Adherence (n=82)
Other includes: "Do not like chemical because of their culture," "attitudes about death and dying," "culture, prefer natural medicines," "language or cultural beliefs"

Qualitative examples of each type of patient-related barrier follow:

Forgetfulness of Taking Medicines

> *"Yeah. I think that one of the biggest problems is just, you know, just taking the medicine. I mean, just realizing how important it is.* ***Because it's not a nagging you know, heart attack and those kinds of things don't necessarily have continuous warning signs for a lot of folks, there is a tendency to forget and so that's one of the issues."***

Attitudes about Consequences of Not Taking Medicines

> *"The third issue I think is a* ***lack of education on the importance of taking blood pressure medication and how vital that is to control their blood pressure and you know, what might happen if you know, continuous high blood pressure isn't controlled.*** *I think a lot of people see that if they miss one day of their blood pressure medication, they*

might not notice the effects of that, but trying to help them understand that continuing to miss your blood pressure medication can have serious, long term effects. And it's kind of getting that message across to patients to help them understand the importance of taking that medication and taking them on a regular basis and also making sure that medications are refilled before they run out."

Attitudes about Need for Treatment

"Barriers are side effects. They see that as – they – you know, in some cultures, they are not comfortable with the chronic conditions. So they think if they have something or maybe a sign or symptom of something, they can take the medication one time or maybe one week and they are going to be better and then discontinue the medication. So the knowledge of chronic condition that don't get cured and always is going to be part of their lifetime – and some people think culture is not present. ***So we are working on teaching that, even though it's going to take the medication for your lifetime, a chronic condition could be controlled and if they become more controlled, they even can reduce the amount of medication."***

Forgetfulness of Getting Medicines Refilled

"Sometimes there's confusion. If we need to see about visiting nurse to be in the home and monitor a little, sometimes that's challenging to try to coordinate that. Just trying to monitor them ourselves – with older people, sometimes we refer them to [organization] to see if they can monitor them. You know, ***we're starting to see more older people that live independently and may be concerned about beginning stages of Alzheimer's or other things that you worry about – them remembering to take meds****. So some of those kinds of things."*

Attitudes about Perceived Effectiveness of Treatment

"And then we'll try and do our best to find like a common ground, like okay well, you can do – right now, ***we have one patient in particular that he drinks a gallon of passionflower tea a week and he feels very strongly that it helps with his hypertension, his diabetes, his sleep."***

CHWs described ways they assisted people with patient-related barriers. The majority of CHWs do some educational counseling (about health behaviors, about consequences of not taking medicines, and about effectiveness of treatment). CHWs also encouraged adherence through memory aids for taking medicines and getting medicines refilled (Figure 11).

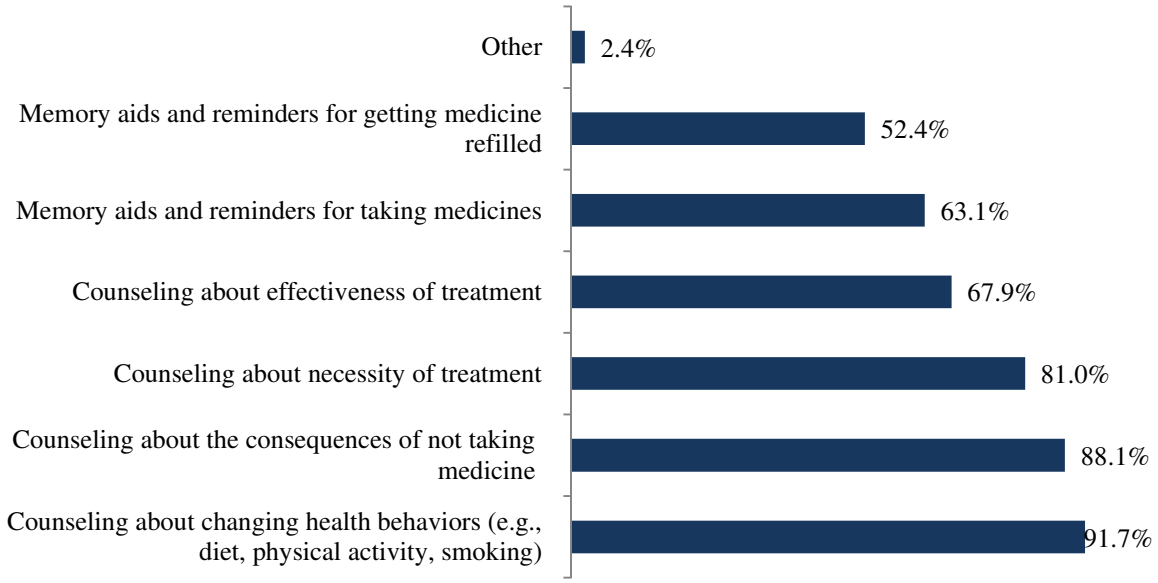


Figure 11. CHW Support for Patient-related Barriers (n=84)
Other includes: "exercises on helping them increase their self-esteem for self care," "providing them pill boxes and assist in filling them"

Qualitative examples about counseling and memory aids include:

Counseling

> *"The community health worker just sat with the patient* ***and just kind of hears their story, kind of gets a sense of where that person of coming from*** *[…] and kind of* ***getting a sense of what medications they take, when they take them and why they take them and making sure they understand why they're taking them****."*

> *"****I kind of promote self-sufficiency, so what I do is I help them again with reminding them and telling them why it's important****, but over time it's usually up to them for them to keep up with that or the doctor."*

> *"Trying to help them understand that* ***continuing to miss your blood pressure medication can have serious, long term effects****. And it's kind of getting that message across to patients to help them understand the* ***importance of taking that medication and taking them on a regular basis and also making sure that medications are refilled before they run out."***

> *"Because of the people and the population that I work with, the ones that are kind of older really don't care. They don't care if they're going to die. They've lived long enough, according to them, you know, they've done their deed, their children are grown, they are out of the house, they're not in prison or dead and they don't care if they die. And* ***then there's the other ones that, you know, there's still like a little bit of hope where I can let them know, hey, you know, if you don't want to do A, B and C or take A, B and C medicine, this is what potentially could happen****. Your body could shut down and* ***you could have a heart attack and basically what would happen – what would***

happen to your grandkids, what would happen to your kids, what would happen to your dog?"

"Another thing that we learned from the years I've been working as a community health worker is motivation interviewing. So make sure the client knows – understands – I don't like to tell them anymore, like I used to in my old days. I used to tell them everything but more now, ***let them acknowledge their sickness or illness or disease and then talk about it and basically, once they realize how serious and they know they need to take care – see where they're at.*** *You know, meet them where they're at and then start from there and that can consist of again, the materials or just talking with them. They need – sometimes – a lot of times they're not – they're just not well educated with what they have. So just giving them the materials and – make them – make them understand how serious what they're doing – that's basically what I do a lot. A lot of* ***talking and then build a relationship to make them understand this is give them the materials they need to help them."***

"A lot of times, ***we didn't have words to translate from English to our native language, so we had to be descriptive in what we were trying to ask the patients,*** *such as their medication, you know, if they were on high blood pressure medication and there is really no word for high blood pressure in our language, so we just kind of told anything that dealt with their heart and their blood. So they would tell us yes and they would show us that medication and you know, sure enough it is, you know, a hypertensive medication that they were on.* ***So just having that knowledge and sharing it back with them, you know, exactly what the medication does for them, also got them more – how would you say – compliant with their medication regime,*** *because* ***they weren't clear as to why they were taking the medication,*** *which was one of the questions and so a lot of times we had people who are very hypertensive you know, and it was like, you check their pill bottle and it's still full, so that tells you, you know,* ***they weren't compliant in taking their medication until we explained to them why it was to be taken or why they were put on the medication."***

"I think that ***what we try to do is to find a reason for them to take****. For example, you know, for me, it's important – I always talk about – I* ***tell men that you know, if you can't take care of yourself, you can't take care of your family*** *and for a lot of people it's those kinds of things that they're kind of like, oh, okay this is why I should do this.* ***So one of the biggest things is to probe enough to figure out what are the – what are the factors that would cause this person to be more conscientious about taking their medicine."***

"For a lot of folks, it's just like, you know, what do I do now and so we feel like, you know, giving them good information, giving them resources, you know, making things available for them – you know, ***making sure that they can ask the questions they need to ask****."*

Memory Aids

"Yes, some of – the [organization name] provide some medicine boxes that are divided to AM and PM, so what I'll do is like, a resource packet or introductory – ***when I'm first meeting with the patient is I provide them with the medicine box and sometimes the doctors can provide a printout calendar for them."***

"I'll give them a call or a reminder call that they need to take their medications, if they forget – because that's a big thing, is that they forget. I know for some that have come into the office, ***I'll set up the alarm on their phone at a specific time that reminds them of their medication so that way they'll remember.*** *"*

"I think being in their home and kind of ask – you know, just finding out what they do on a regular day basis, like, one gentleman taking his meds, ***we just decided to move his med bottle where he brushes his teeth so that he could remember to take it, because that's what he does every day.*** *He brushes his teeth every day. Let's put the pill bottle here and see, is it going to increase you taking your pills every day.* ***So that's one strategy, is finding out something that they do every day faithfully and trying to incorporate their high blood pressure medicine with that****. So like, this gentleman, you know, he still misses but his blood pressure's coming down. It's not controllable, but it's coming down from what it used to be, so that's how I know that he's taking his medications a lot more frequently than he used to. So we praise those moments and you know, hopefully I'm believing soon he'll you know, be control."*

"Honestly, we haven't really been too successful because we'll provide them with pill boxes and I will go in and set everything up for like the week and then I'll – whenever I go, ***I'll check their pill boxes and like one patient told me, she said you don't know if I'm taking them out and throwing them in the trash and telling you I'm just taking it. And it's true, I don't. I have no way of testing her.*** *And all of our patients are on a like automatic refill and they get it delivered directly to their home, so whether they take their medicine or not, they're still going to get a new batch at the end of the month. "*

Condition-Related Barriers and Roles

Condition-related barriers primarily include lack of understanding about hypertension and poor perceptions about the disease. To address this, WHO recommends education on the use of medications (World Health Organization, 2003). CHWs were asked to indicate people's most common condition-related barrier, which include having multiple health issues (84.8%), confusion if they are taking several medicines for different medical conditions (82.6%) (Figure 11). The most common health issues for this sample include diabetes (96.7%), obesity (88.9%), and depression or anxiety (87.8%) (Table 10). Over half of CHWs reported smoking as a condition-related barrier but only 35.5% of CHWs agreed or strongly agreed that their patients or clients were trying to stop their smoking. Of those working with smoking cessation, eight out of ten are actively encouraging smoking reduction or cessation (Figure 12).

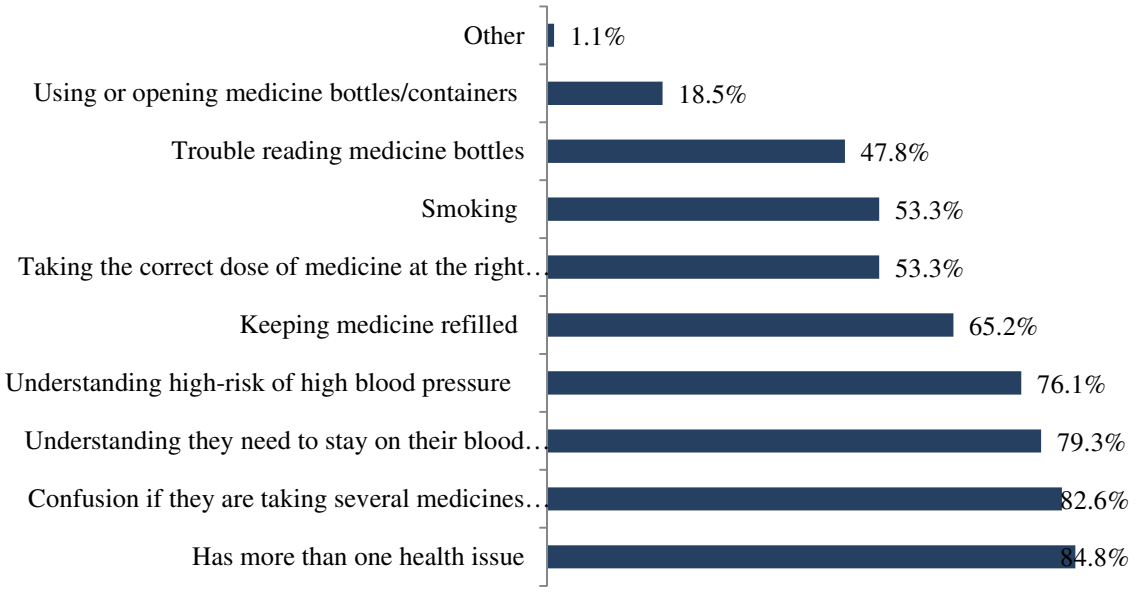


Figure 12. Condition-related Barriers (n=92)
Others include: "Limited understanding of synergistic of multiple medications"

Table 10. Health Issues for Condition-related Barriers
(n=90)

Health Issue^	
Diabetes	**87 (96.7%)**
Obesity	**80 (88.9%)**
Depression or anxiety	**79 (87.8%)**
Heart disease	**75 (83.3%)**
Tobacco control	**66 (73.3%)**
Asthma	**66 (73.3%)**
Mental health	**66 (73.3%)**
Arthritis	60 (66.7%)
Cancer	48 (53.3%)
Stroke	46 (51.1%)
Stroke	46 (51.1%)
Injuries	42 (46.7%)
Violence	41 (45.6%)
Gout	37 (41.1%)
Alzheimer's disease or dementia	31 (34.4%)
HIV/AIDS	25 (27.8%)
Tuberculosis	13 (14.4%)
Other*	5 (5.6%)

*Other includes: CVD, renal/kidney disease, effects of radiation from uranium mining, liver disease; Hepatitis, MS; loneliness; residual damage from other disease in refugee population; stress
^Respondents could check multiple, total does not equal 100%

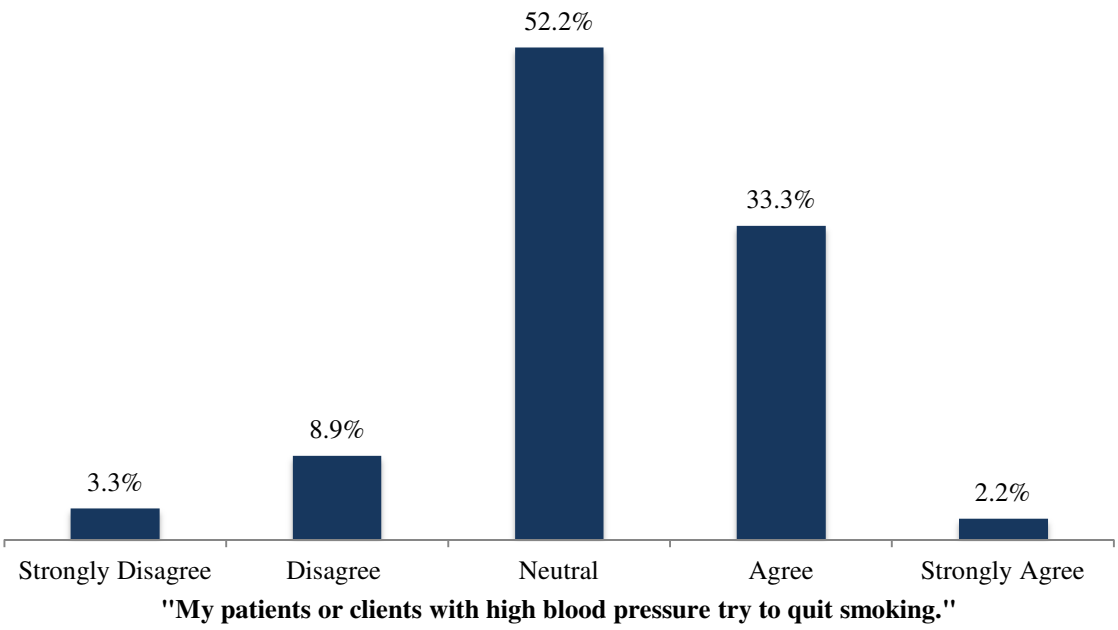


Figure 13. CHW Agreement with Patient's Trying to Quit Smoking (n=90)

Qualitative data supports the conditions related barriers reported in the survey.

> *"So a lot of the people that are on my case load, not only do they have hypertension, but a few of them have diabetes or high cholesterol, so some of them are taking, you know, more than – have more than one chronic issue that they're dealing with."*

Interestingly, mental health, the seventh most common co-morbidity was highlighted as a major issue among patients or clients.

> *"**Mental health is a major one, because it's a bit difficult to talk to a bipolar, schizophrenic patient. Depending on if they're on their meds or not, if they're being compliant**, you don't know which mood you're catching them in, and then they go home, who's to say who's following up with them. If they have a lack of a support system – and substance abuse is an issue, they won't – they're typically not compliant with their medications."*

> *"**They may not take it because a major issue here again, is mental health**. So that may interfere. Also, substance abuse is a big issue here. So that – those are things that may – **those are like, the major roadblocks that I'm seeing as far as client**."*

> *"There can be mental health issues, depression and you know, other mental health diagnoses, too. That, **if their mental health isn't controlled, they might not think about their other chronic conditions**, and they could have multiple chronic conditions, too, and feel very overwhelmed by things."*

CHWs support condition-related barriers by encouraging healthy lifestyles (95.2%), increasing knowledge about the seriousness of high blood pressure (90.4%), supporting people with multiple conditions (85.5%), and encouraging smoking reduction (83.1%) (Figure 14)

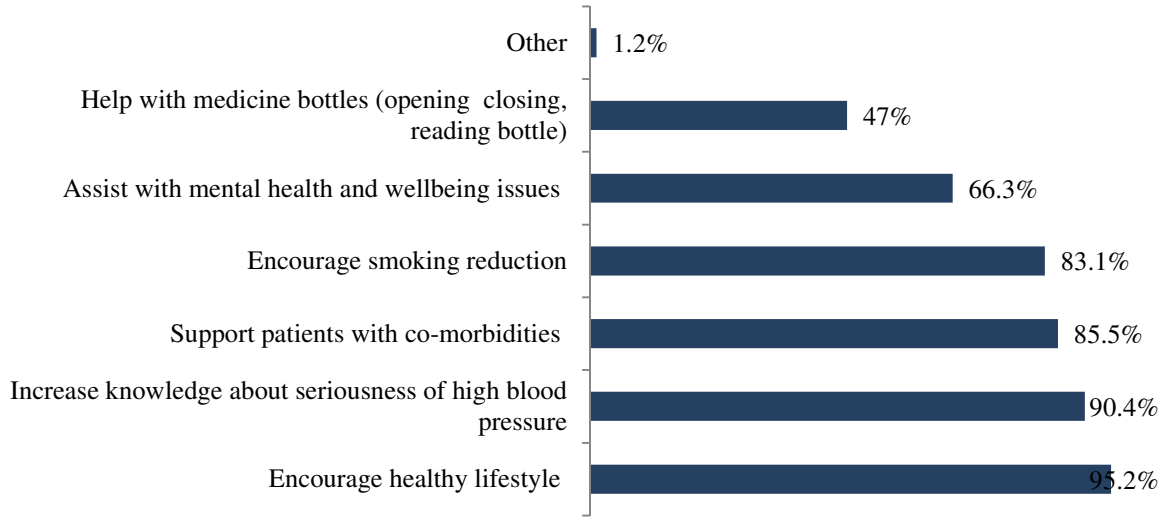


Figure 14. CHW Support for Condition-Related Barriers (n=84)
Others include: Talking circles

Qualitative data from the interviews with CHWs further emphasizes CHWs roles in addressing condition-related barriers, specifically assisting with medicine bottles.

> *"Well,* ***I provide the follow up call to see if they're having difficulties with their medication*** *and they'll say either yay or nay with it, but I don't get too in depth."*

> *"****We try and make it very clear on our labels that we put on our medication*** *when to take this,* ***when not to take it, take it with food or not with food*** *and maybe if they can't read what's on the bottle like,* ***explaining it to a kid that's with them or you know, some relative that's there to – to be able to help and explain it, as well****. I: And are those labels in English and Spanish. P: Yeah, we just – it's really English or Spanish. So if the person speaks Spanish, we put it in Spanish. If it's English, then English."*

Therapy-Related Barriers and Roles

Therapy-related barriers primarily include complex treatment regimens and adverse effects of treatment. To reduce these barriers, WHO recommends simplification of treatment regimens (World Health Organization, 2003). Eight out of ten CHWs reported complex treatments as the most common therapy-related barrier. Other therapy-related barriers include failure to take medicines in the past (67.9%) and side effects (63.0%) (Figure 15).

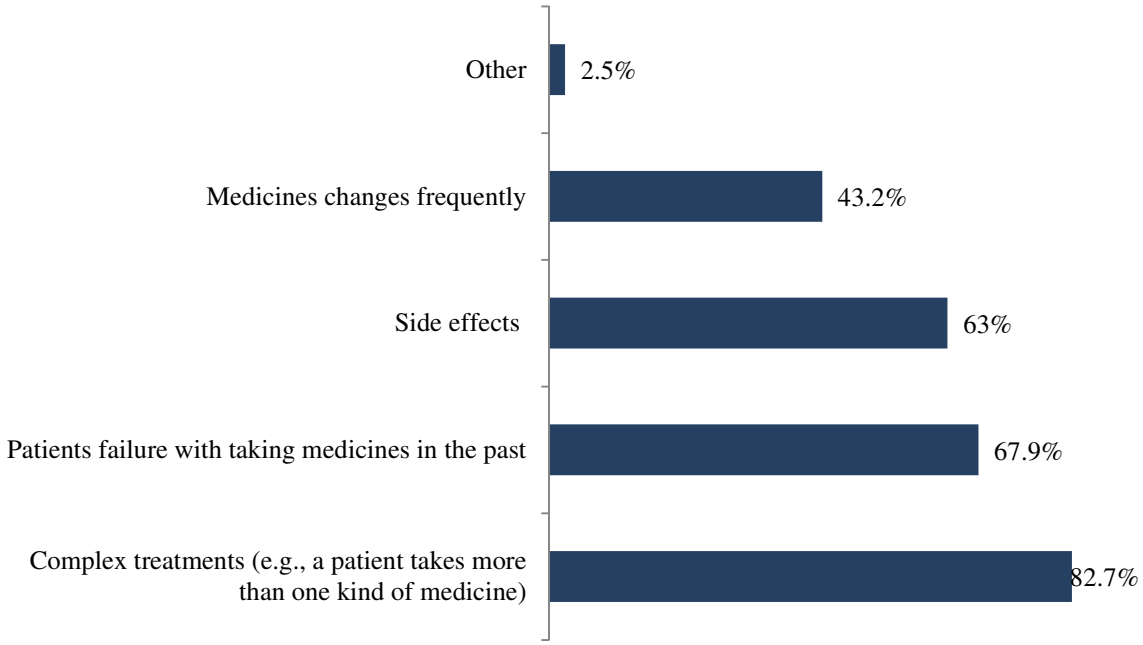


Figure 15. Therapy-Related Barriers (n=81)
Others include: "asking about write labels in Spanish," "encourage patients to share real issues and concerns and asking questions for clarification," "faith and finance classes for literacy," "help patients get other non medical services," "labels in Spanish," " provide shelter for family"

Specifically, over sixty percent of CHWs reported side effects as a therapy-related barrier for people. The most common side effects were nausea (14.7%), dizziness (13.8%) and fatigue (10.1%) (Table 11).

Table 11. Most Common Side Effects for People with Hypertension as Told by CHWs (n=53)

	N (%)
Nausea	16 (14.7%)
Dizziness	15 (13.8%)
Fatigue	11 (10.1%)
Frequent urination	7 (6.4%)
Headache	7 (6.4%)
Lowered sexual desire/sexual dysfunction	7 (6.4%)
Weigh gain	5 (4.6%)
Swelling	4 (3.7%)
Depression	4 (3.7%)
Cough	3 (2.8%)
Confusion	2 (1.8%)
Dry mouth	2 (1.8%)
Fainting	2 (1.8%)
Light-headed	2 (1.8%)
Memory loss	2 (1.8%)
Sleepy	2 (1.8%)

Responses with less than one response: Arthritis, Blurred vision, Body aches, Discomfort, Drowsiness, Eye damage, Forgetfulness, Hair loss, Itching, Literacy, Lazy feeling, Loss of appetite, Low energy, Jittery, Muscle cramps, Numbness, Pain, Weakness

Two CHWs expand on their perception of therapy-related barriers, citing fear of medication and cultural barriers.

> *"The biggest ones is that sometimes **they have a fear of the medication**. I'll hear that a lot. That they won't take it because of the side effects."*

> *"Well, another thing that is very hard, because sometimes they don't like chemicals. Sometimes they go through some natural medication and will only do it is these and who is feeling – they about the disease and they benefits of that medicine. Sometimes they don't want to – to take the medicine because they are side effects, so we ask – we go together and ask the provider if they can change or modify the – the medication to another, that way to reduce their side effects and most people that go to natural medicine, we – we see a lot in diabetes and hypertension."*

In the survey, CHWs were asked to write about how they help with therapy-related barriers, specifically complex treatments. The following table categorizes and offers examples of these roles in reducing therapy-related barriers (Table 12).

Table 12. How CHWs Help People Who Have Complex Treatments

Theme	Examples
Education	Following Physician Advice • Helping to understand the importance of following doctor's directions. • Stay in close contact with doctor and client to coordinate facilitate communication support. • We try to help the client understand why the doctor prescribed the medicine, encourage the client to read and make sure they recognize what medication the are taking and when they should take each medication. Medication Education • Education, home visit to set up reminder post cards in the home, picture charts and additional simple labeling of meds. • Explaining in simple terms the purpose of each medication and consequences of not taking them. • Help dispose of medications properly that are no longer used and educate on current medications. • Help them understand how medication works and the benefit of taking the medication. • We make sure they understand the medicine. • We educate the community members of the importance of knowing their medicines well. We teach on how important they are to take as ordered by doctor. We work with pharmacies to do brown bag days where client's bring their meds so the client can talk to the pharmacist to find out if their meds are expired or they are getting too much medicine etc. We help them get cards to help get them discounts on

	their prescription bills. We help support social support groups so they can discuss how they feel on their medical condition. • We give them a pillbox. We help set them up to meet with a pharmacist to get med teaching. Also help them schedule at home nursing for med teaching and pill boxing. • With helping the patients understand the different medicines and what they each are for. • During our Salud visits, that can last up to an hour, CHW meets with patient and reviews meds, how and when they are taken, as well as discussing disease, nutrition, exercise, and stress. Other/General Education Support • Education support. • Frequent communication between, client/patient, CHW, nurse, and provider. Along with frequent visits with education if necessary. • Go through the medicine list to compare medications. • Pill boxes and education to patient as well as to family members who manage the patients care on a daily basis. • Review medications with member. • Support and education. • Talk to them about it.
Follow-up and monitoring	• Additional follow up. • Close monitoring. • Follow up with client to make sure they are taking medications daily or get them connected with a nursing service who provides medication management. And lastly, staying in contact with the family doctor.
Home visits	• Education, home visit to set up reminder post cards in the home, picture charts and additional simple labeling of meds. • Initially, we conduct a medication assessment that is reviewed by a Clinical Supervisor. Once med assessment is reviewed, it is then sent to patient's PCP to address any issues. At each monthly home visit, we check to see if there are any changes in meds/doses. If so, we conduct another med assessment. • Provide a detailed list of medications and when to take them; conduct home visits; set patient up with a home health nurse.
Communicate with provider	• Communication among providers to clarify with patients, ask patients to provide correct verbal understanding. • Conversations with the providers. • Encourage the client to contact doctors and discuss issues with them • Explain the need to talk with primary care provider about all medicines and any side effects they feel they might be having. • Follow up with client to make sure they are taking medications daily or get them connected with a nursing service who provides medication management. And lastly, staying in contact with the family doctor. • Frequent communication between, client/patient, CHW, nurse, and provider. Along with frequent visits with education if necessary. • Initially, we conduct a medication assessment that is reviewed by a Clinical Supervisor. Once med assessment is reviewed, it is then sent to patient's PCP to address any issues. At each monthly home visit, we

	check to see if there are any changes in meds/doses. If so, we conduct another med assessment. • Try to get the client to discuss with their provider alternative to taking less meds and better diet. • We ask at every visit if their med have changed. We also do medication assessments and fax to the doctors.
Communicate with pharmacist	• We have a pharmacist that works at our primary care practice who meets with patients and also advises docs/PA's on medications. • We set them up with a pharmacist, we have medicine reconciliation • Work directly with pharmacy to assure proper dosage received. Assist patient in meeting with Pharmacy for medication setup and consult. Medication review at each appointment. Reminder phone calls and/or follow up calls to see if any side effects. • Get with pharmacist to help get color-coded tops or bottles for the medications to help identify the medication for the client. Separate the 1 daily, 2 daily, 3 daily. • Contact with multiple providers to determine accuracy of prescribed medications. Refer to the local pharmacist for assistance and co-host brown bag activities that encourage patients to bring all medicines for pharmacy review.
Go over change in medicines	• Advise them to take medicines with food and go over with them when they have a change of medication. • Explain each time they change.
Reminders, alerts, alarms	• Align them with health aides that remind them when to take medicines. • We set a clock alarm and make reminders calls and keep track with a graphic. • Work directly with pharmacy to assure proper dosage received. Assist patient in meeting with Pharmacy for medication setup and consult. Medication review at each appointment. Reminder phone calls and/or follow up calls to see if any side effects.
Pill Boxes and Labels	• Encourage medication boxes to ensure all meds are taken properly. • Encourage them to maintain a list of meds, use a pill box and speak with their healthcare providers. • Get with pharmacist to help get color-coded tops or bottles for the medications to help identify the medication for the client. Separate the 1 daily, 2 daily, 3 daily. • Giving pillboxes reminders. • Label and explain medicines as best as possible. • Pill boxes written schedules alerts and alarms. • Pill boxes and education to patient as well as to family members who manage the patients care on a daily basis. • Pill boxes, follow up, medicine card that list all their medicines. • Supply pill box, Help Manage medications during office visits (communicate to client which medications are no longer needed). • Understanding importance of being organized with pill boxes; effects and side effects. • Use multi-tiered (morning/evening) pill dispensers; eat with/before/after meals or bedtime, etc.

	• We give them a pillbox. We help set them up to meet with a pharmacist to get med teaching. Also help them schedule at home nursing for med teaching and pill boxing. • We have created a color-coding system to remind patients of when to take which med. This system also works well with patients to have trouble reading. • We try to work with the patients, by getting them to use a medication box set or them weekly or teach them to use a bubble pack to keep track. Medications boxes are better to work with since all medications are set per day at timed intervals. • Write on bottle 1 or 2 words brand name or time to take them or what used for example: allergy.
Other	• Help the keep record of medicine. • I fully believe as a Community Health Worker, that we could set up a MAR (medication administration record). Having gone through nursing school, when my parents were sick and came home from the hospital setting this up for each of them was a godsend. I don't know why we couldn't do this as part of our duty, as long as the patient brought in the bottles of their meds, and the CHW knew how to read a properly label the MAR. • It's a frustrating process.... right now, I'm not sure that there really is a specific plan in place you just manage it as it comes up. • Providers try to regulate dosage amounts to limit complications and side effects. • We do not have any clients with those criteria. • We have patient with hypertension come to the clinic every two weeks for BP checks and Every month for a visit until hypertension is controlled. • We offer a support group in order to move from the stage-to-stage regardless where the patients is.

Interviews further support CHWs role in reducing therapy-related barriers.

> *"They're constantly changing either the medications and sometimes even the color, because a lot of the people will come back, you know, I used to take a yellow pill and now it's a like, a peach colored pill, you know, and then again – then I'll go to pharmacy and ask them, okay this is what one of the elderly has expressed why you're changing the color of their pill and they say, oh no, it's the same kind of you know, just a different manufacturer, and I say, okay I'll let them know that.* ***So you know, just that communication is important because you know, again, our people recognize that you know, the color of their pills and if they see that change, then that tells me as well that okay they're conscious of what they're putting in their mouth, they're being aware you know, that okay, this changed, why is it changed****? And sometimes you know, by the end of their doctor's visit, you know, being there almost all day and finally getting your medication, you know, you hear the pharmacy talking but you're not taking in what's all being said because they're hungry by then or they're in a rush because their grandkids are going to be home or you know, their transportation issue, you know, so a lot of times they'll kind of overlook that, but you know, then when you go back to explain to them then they'll say, oh, yeah, okay, now I remember, that's what they said."*

> *"I tell them, you know, if you start this these medicines, don't get up too fast, because that's what's going to cause you to feel dizzy or lightheaded, and they go oh, okay, you know, now I know. Yeah. So you know, even something as simple as that,* ***because then if they feel that way and they know that's not normal to them, then they quit their medicines. Yeah. But if you explain to them it's going to happen and gradually, you know, over time it may go away but you know, it's just your body having to get used to that medication.****"*

> *"With men they'll tell them, you know, that's going – that's going to mess with your stuff, don't you know that – so – and for a man to know that something's going to mess with his stuff, quote unquote, he's like, oh, really? What are you talking about? You know, they find different ways of talking to people about engaging them in the things that are – that's of importance to them and then you find out that people are like, oh, okay this – this person really cares about me. They know what's important for me."*

Health System Barriers and Roles

Next, we asked CHWs about health system barriers to medication adherence. Health system barriers are defined by WHO as a lack of knowledge and training for healthcare providers on managing chronic diseases, poor patient-provider relationships, and lack of time by the provider. Training and education about medicines, positive patient-provider relationships, and continuous monitoring of self-management are interventions that improve the healthcare barriers (Figure 16). The most common barrier identified by CHWs was a lack of knowledge about high blood pressure medicines (81.5%), followed by three-quarters of CHWs reported health system barriers of inability to get medicines refilled. About half of CHWs reported a poor relationship between patient or client and the provider.

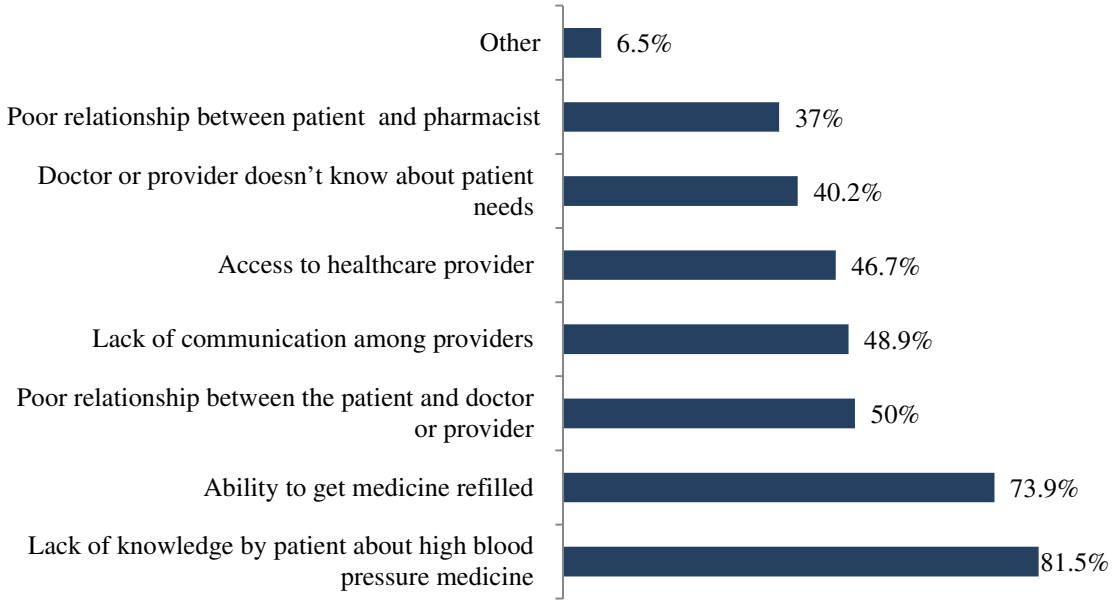


Figure 16. Health System Barriers to Medication Adherence (n=92)
Other includes: cultural barriers, "difficulty with language and culture barrier, difficulty to fit in everything that needs to be discussed in provider meeting," "feeling like the doctor is experimenting," "lack of medical providers," language, "multiple providers are not communicating about medication prescribed to patients"

Some illustrations of health system barriers are described below:

Lack of Knowledge (Education)

Lack of knowledge is a health system barrier to educate patients, especially those with no health literacy. For example:

> *"They may receive the education from the doctor, but they may not understand it. Like, a lot of times* ***they don't have the time to sit and really discuss it with them, so they'll say take this medication for your blood pressure and it'll bring your blood pressure down, but they don't know what blood pressure is****. So it's the education piece."*

Poor Access to Healthcare Provider

CHWs assist directly with accessing healthcare providers by scheduling appointments. For example:

> *"And so another issue we face is actually the* ***lack of primary care access in general****, is another issue.* ***When I call the doctor's office and hear that they're scheduling appointments two months from now, that's very difficult for that patient to control their blood pressure*** *from – between now and that appointment in two months without having to continually come back to the emergency department."*

Poor Relationship between Patient and Provider

> *"I think in the clinical setting, it's much – obviously it's more –I don't want to say strict, that's not the right word. But it's more like –* ***much more professional, patients appear to be less comfortable****, even if I'll go with them."*

Lack of Trust in Healthcare System

One CHW working with American Indians describes historical trauma that individuals in her community face.

> *"Some of them are denial. They don't feel anyway, and it's like, well, I don't know why the doctor tells me that – and then* ***a lot of that is still the issue of the government is still out to kills us, you know, that – the historical trauma is still there****, and again, it just depends on you know, how they were raised in the home."*

Another CHW describes the lack of trust in healthcare.

> *"Part of it has been the fact that, you know,* ***people don't trust the medical system****. Part of it is that they don't know what it's going to cost them in the medical system, you know what I mean, and so to get – to get them to move to this different place,* ***you have to provide a lot of introductory information to them, so that they can feel more comfortable in terms of being involved with their health****."*

Lack of Knowledge or Misunderstanding of Health System Procedures

> *"Definitely renewals of a prescription, you know, versus refills.* ***Them not understanding the difference between like, okay, well if it's a refill I you know, got to call the pharmacy versus if it's a renewal then I got to call the doctor's office, they have trouble understanding the medication system as well as like, the overall, healthcare system****. For example, oh, I got to see my primary care doctor to follow up on my blood – on my you know, blood pressure or I got to schedule an appointment with you know, an nurse because you know, they do blood pressure checks here and stuff and you know, if they don't know how to – they don't know their phone number or if they lost the paperwork that says the phone number on it, it's definitely difficult right, and the patients that I work with might not necessarily like, proactively try to find that number, you know. They might just like, let it slip to the side, because hey, well, I don't have food on the table or I don't have a roof over my head, so obviously that's going to take more priority."*

> *"There is such a* ***miscommunication at times with what the doctor's saying or the nurse or the physician assistant versus what the patient's hearing****. I've been able to get to know the patients who really well and to see like* ***their body language or the look on their face****, you know, or see the doctor or whoever ask them to repeat back what they said, I can have a general sense about whether they really got it or not and then I re-explain it maybe in the words that they can understand."*

To address health system barriers, the majority of CHWs assist with scheduling appointments (84.8%) and accessing healthcare providers (83.7%). Over three quarters of CHWs reported helping patient or clients get the medicines refilled, assisting with communication among providers, and helping patients access providers (Figure 17).

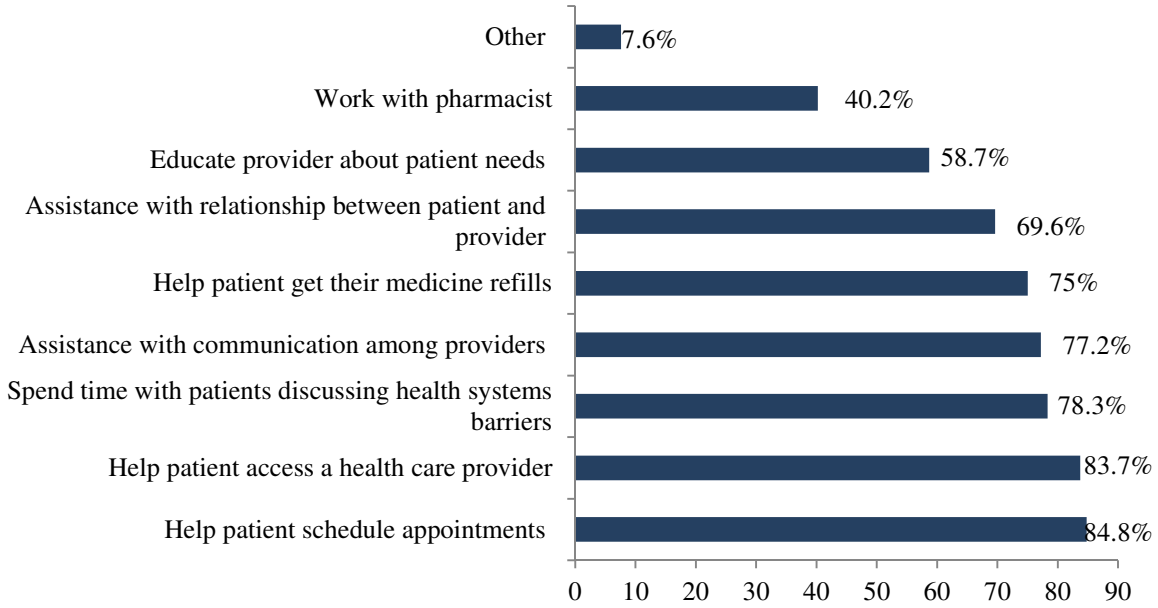


Figure 17. CHW Support for Health System Barriers (n=92)
Others include: "teaching to advocate for selves," "educate them about the risk of not taking meds," "helping clients understand importance of compliance especially following doctors orders," "help develop strategies with providers on how he can improve client's best outcomes," "try to sign patient up for insurance or indigent programs so that they have access to their prescribed meds," "use the different resources that already exist in the community," "work with provider coalitions"

CHWs support people with health system barriers by helping people navigate through the health system, facilitating communication with providers and pharmacists, and connecting people with the healthcare system.

> *"Yes, I do speak – if there are issues – because a lot of times, they'll speak to me more so than they'll speak to the doctor because the doctor won't have as much time to really speak with them, depending on who the doctor is,* ***so they'll speak to me about any issues that they're having with the medication and I may relay that back. I don't give advice on it, I just take the information and document it and give it to the doctor****."*

> *"Well, the medication assessment form,* ***we write down their meds and then we usually fax that to the doctor's office and there's a place on the form for the office to get back with us if they're seeing a discrepancy****. We work a lot – some of the larger groups have nurse managers and sometimes they will get back with us and sometimes we'll call the nurse manager, or the nurse manager will call us. A lot of the nurse managers have made the referrals to us. The community health workers will communicate with the nurse manager and let them know we're seeing this client, this is what we're seeing. We coordinate back and forth and again, if we go to an appointment, we do follow back up."*

> *"****We do a medication assessment and a private medication assessment is asking them if they know what their medication is for and do they take it as prescribed****, do they also take any over the counter medications, and then we fill out the form of what they're reporting to us.* ***We send that to the doctor and then we're asking the doctor, is this***

> ***what you believe the person should be taking***. *If they have any questions or problems – we sometimes run in to discrepancies, what the doctor's office thinks they're doing is different than what they're actually doing. So we try to clear up any misunderstandings or problems. Like, maybe a medication was supposed to be discontinued but the person's still taking it."*
>
> *"So trying to make sure people understand their medications. We sometimes accompany people to their doctor's appointments and advocate, listen to what the doctor's instructions are, again trying to make sure people understand what they're supposed to be doing. So just a wide variety of things."*
>
> *"So* ***we try to encourage a healthy rapport with them so that they can have a healthy rapport with their physician when they experience things that are abnormal****, if they're not taking their medicines consistently and as prescribed."*
>
> *"I would say* ***I help out with helping them get connected to their healthcare team, helping them coordinate their care, remind them of appointments****, if they have any medication questions, you know, I work really closely with the pharmacist – I don't know if you can overhear her, but she's actually in the background in the office with me – what else? Accompany them to appointments to make sure that, you know, their needs are being addressed."*

Social and Economic Barriers and Roles

The WHO describes social and economic barriers as illiteracy, unemployment, high cost of medicines, and overall poor socio-economic status. Interventions to address these barriers and improve adherence include family preparedness, patient health insurance, providing an uninterrupted supply of medicines, and sustainable financing (World Health Organization, 2003). The most common social and economic barrier include cost of medicines (80.0%), transportation (77.5%), and cost of care and/or insurance (75.0%) (Figure 18).

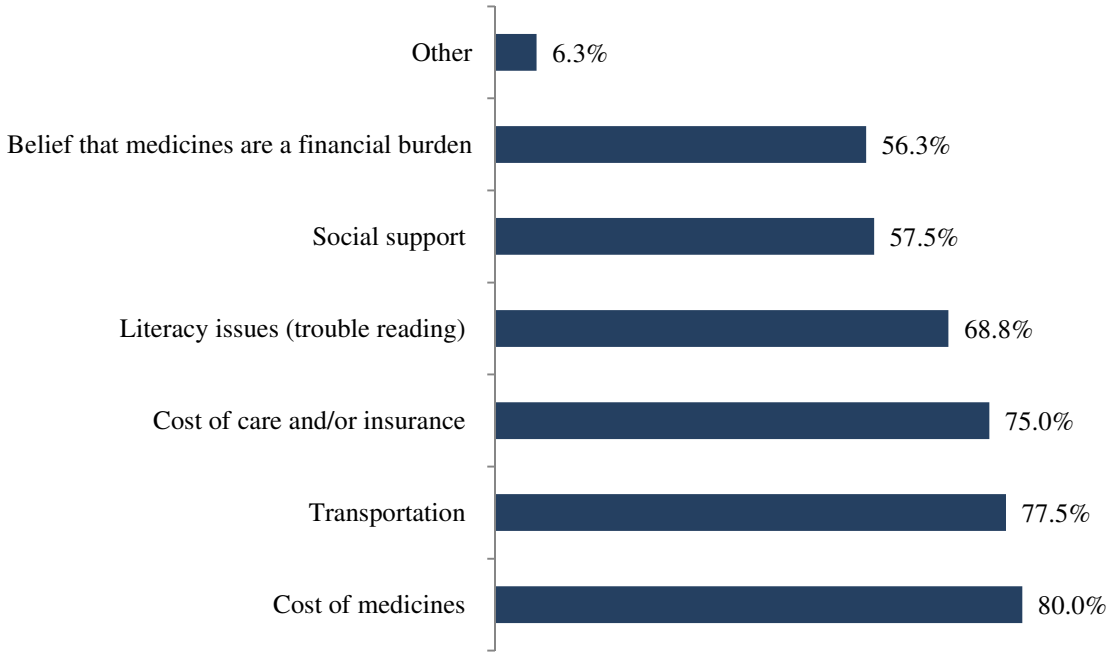


Figure 18. Social and Economic Barriers
Other includes: child care, incarceration, language, "no phone services in home," "poverty they have to choose between meds and food"

CHW interviewees noted similar social and economic barriers.

Social Support

> *"**Don't want to invest the time to take for themselves because they're mothers and there's a lot of – just like, the family pressures**. There's a lot that they need to be responsible for and they don't necessarily want to take the time to themselves – for themselves and that's kind of part of the culture. **There's like, this self-sacrificial element that I'm the caregiver, I care for everyone else, not for myself**."*

Transportation

> *"There might be transportation issues. **We might try and help them figure out how they can get to and from medical appointments or to and from pharmacies**. We might help them find a pharmacy that delivers."*

Financial Burden or Cost

> *"But I think some of the other issues that people don't take in – in consideration is the fact – employment's a big issue. **Not being able to provide for their family is huge or being the sole person that's providing for the family is huge**."*

> *"Unfortunately**, a lot of the things that are available out there, like, for example, texting patients is not available to these patients that I work with, because they're low income and in poverty**. So what I do is I'll – I'll reach by phone a lot of my patients, though, you know, they – they can't pay their bills, it's difficult for them, **so I also outreach to their***

> ***house as well. I try not to send them letters and stuff because if they're usually chronically disorganized and it just gets lost in the shuffle, but I you know, go out to their house, if I see them in the community****, I'll say hi, you know, just really community kind of based, you know, get to know their family, their friends, so – I would say like, phone and home based stuff with outreach."*

> *"Culturally, I don't really think that it's an issue on taking meds.* ***People are pretty open to you know, if we say this is going to help them, then they most likely will listen to us****. They seem to respect the doctor's or nurse practitioner's views on that.* ***Probably costs relates back to it a lot, which is – I think the best part about that is we do have meds, you know, so maybe when they do go to try to refill and now it is 20 dollars*** *– well, that may not sound like a ton of money to us, it might be to them and they can't afford that.* ***It would be better to have food or rent than take their medications. So that's probably a big part of it."***

Literacy

> *"Yeah, you know, because some of our clients have like literacy levels, yeah, I mean, you know, a lot of them don't read and write, kind of a lot of them were like maybe 6th grade education. So you know, we – kind of using – we'll make charts, you know, you could do medi-sets for them, you know, sit down and kind of educate them."*

> *"A lot of times,* ***we didn't have words to translate from English to our native language, so we had to be descriptive in what we were trying to ask the patients****, such as their medication, you know, if they were on high blood pressure medication and there is really no word for high blood pressure in our language, so we just kind of told anything that dealt with their heart and their blood."*

Other Access Issues

> *"It would be the common issues* ***exacerbated a bit by the fact that we are a rural frontier area and so there's a certain limitation of services*** *and then the additional piece of just the geography and climate."*

To address social and economic barriers, eight out of ten CHWs reported helping people get medicines. Over 75% of CHWs help people understand their disease and help with health insurance issues (Figure 19).

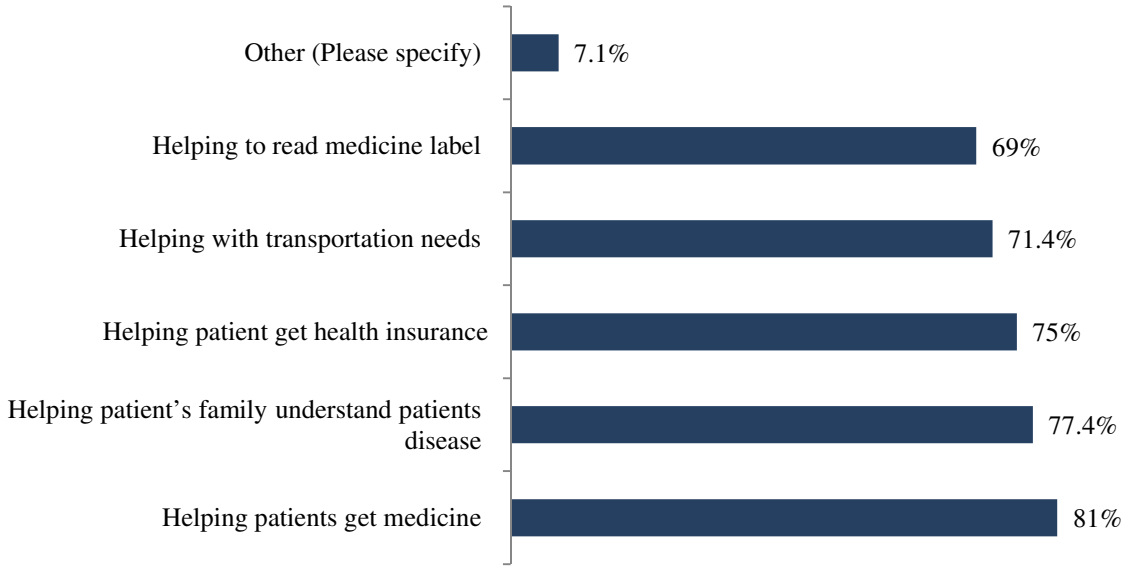


Figure 19. CHW Roles in Reducing Social and Economic Barriers (n=80)

Qualitative data from the CHW interviews provides further insight to the socio-economic barriers.

> *"Listening to them. You know,* ***if their life's chaotic and they're homeless, dealing with their blood pressure sometimes falls down on the list, but you got to figure out the priorities****, I guess. Just sometimes gets complicated."*

> *"****One of our focuses as community health workers is empowerment. So we will help somebody when they're – say if they're involved in a manufacturer's program, we'll help them find a program****, we'll sit down with them and fill out the paperwork and let them know how they have to renew their program, because some are every three months, some are six months, some are once a year, you know, but we will then teach them how to do that for themselves.* ***We don't do direct education around how to take the medication****. We are not nurses."*

> *"Not being able to obtain refills from a primary care physician, but then going ahead and getting those refills actually paid for – you know,* ***we do have a system in place here at the hospital where once a year, we can help fill a patient's medication, in case for whatever they might be in between insurance plans or they might be – that might have been a tough month where they had like, an unexpected out of pocket expense and unfortunately their medications had to take a backseat to this other expense and so you know, we do try to have systems in place that can address those issues and help patients get those medications filled, those medications that they need****."*

> *"****What we do is make sure they have the resources that they need to go to the doctors and clinics, making sure they have health insurance****. We have several local clinics, one is a Federally Qualified Heath Center that provides services based on ability to pay. And then there are other neighborhood groups, private doctors who come together, put together something called [name of program] that people can get support in the event*

that they don't have any funding at all and they do free care for them. ***And so we make sure that people get care and medication that way.****"*

*"****We provide transportation within the program, as long as it's within our reservation boundaries and the same with their medications****. Pharmacy department knows who we are, so they know when we're picking up patients' medication, because we'll need their date of birth or their chart number and the specific as to what medication the patient's requesting. I: So you actually will go and pick up the medications for them? P: Mhm.* ***And we'll deliver it to their home. Yes, a majority of the patients****, and a lot of times we do have a policy in place that, if the family household has a vehicle and it is at their residence, they're responsible for picking up the medication, however, if the family member is employed out of the area and there's no transportation within the business hours of eight to four thirty, we can provide that and pick their medication up or provide them the transportation."*

Success Stories

It is important to remember that CHWs' specific role in medication adherence is just one component of their overall work. The following quotes further highlight CHWs skills and roles. The following two stories describe CHWs working with individuals struggling to manage their medication. The stories exemplify the CHW's holistic work and underline the importance of knowing specific about individuals' life situations.

"What I do is look in the patient's chart and look at the med list that the doctors have you know, written out for the patient and then I – there's a sheet like, a med reconciling sheet that Dr. [name] put together that we use here in the clinic and ***I just write down what they should be taking, when they should be taking it, how much they should be taking and then I go to their home, where they keep their medications and we pull out their bottles to make sure they're taking the proper dosages and when they're supposed to be taking it****, and then I bring a pill box with me all the time, and some of them, when we meet every two weeks we actually fill up their medi-pill box because they have a hard – you know, sometimes they forget taking it, and like, one – for an example****, this one woman that I'm working with, she had all of her meds in a tool box and not only were her meds in there, but so were her daughter's and her other daughter, so when she got ready to take her medicine, she was actually pulling a bottle out, looking to see if it's hers and then should she be taking it at that time.*** *So of course, her blood pressure's high because she constantly missed dosages every day.* ***So what we did is we separated her meds and then we put them all together to find out what she should be taking and she was telling me that one medication was making her always sleepy in the morning and we realized a couple of the meds that she was taking caused drowsiness****, so we moved those to the afternoon or in the evening so that you know, if she is drowsy, she's home and it's made a big difference in her ability to keep track of making sure she gets her meds in."*

"I would say a big thing is if they aren't on it, to get them into med packaging. We work closely with the pharmacy in the [state] area, that can actually deliver to their home in packages to their house and they can bill them if they want, like, a month – month to month basis, so it's affordable. ***So we do a lot with med packaging for patients that need***

> ***it, as well as you know, I follow up with them. If medication adherence is a problem, I follow up with them like, you know, between appointments to see how they're doing with taking their medication and I also in the home I'll look around and I'll see how are they storing their medication, how are the organizing their medication, is it all over the coffee table or all over the – the apartment where pets are running around and babies, or is it in one place, you know, maybe in the kitchen or in the dining room or something and it's in one place and it's an organized container****. So yeah, I'm observing their behavior a lot, asking questions, following up, things like that. So it's prepackaged medication, like, all their medication that they need. They either get once a day – in a once a day packet. A lot of patients take pills in the morning and in the night, so they'll get like, two packages, one for the morning, one for the night and it'll have all their pills in there that's the pills that they take every day."*

Finally, one CHW highlights the collaborative nature of their work with individuals and importance of encouraging and trusting people to make good decisions.

> *"**We can alleviate a lot of the fears** like, when people say well, why – I have no money and I've got high blood pressure, some people will say something like, well, you know, I just forgot to take my blood pressure today, so what we'll tell them – because sometimes that's not true at all, they just – **they just know that they need it, but they don't have the money for it, so instead of embarrassing them, we say well look, if you ever need something, this is where you can go get it. You know, because our goal is not to shame them. Our goal is to make sure that they have the information that they need to make a good decision**."*

Key Findings

CHWs are aware of barriers and challenges people face with high blood pressure medication adherence; CHWs are contributing to reducing these barriers through a holistic, people-centered approach focused on each aspect of the five dimensions of adherence. CHWs' medication adherence work is not limited to high blood pressure medications but rather navigating the intricacies and complexities of the health system, reducing challenges with complex medication regimens, and alleviating fears through culturally appropriate methods. CHWs are well equipped to address and support hypertension medication adherence according to the five dimensions of adherence.

Research Question 3: How are CHWs integrated into their healthcare organization?

The Consolidated Framework for Implementation Research (CFIR) provides a comprehensive theory of constructs consolidated from multiple disciplines (e.g., psychology, sociology, organizational change) that are likely to influence implementation of complex programs. This model operationalizes five major domains: characteristics of interventions, outer setting, inner setting, characteristics of individuals involved, and the process used to implement the intervention (Appendix A). Each major domain is then broken down to further describe features of implementation. For the purposes of this paper, we focus on the inner settings construct of CFIR from the CHW perspective. This construct includes structural characteristics, networks and communications, culture, implementation climate, goals and feedback, and learning climate (Damschroder et al., 2009). These specific constructs are operationalized to explain research question three and four.

Organizational Support

CHWs were asked to describe the ways they are integrated into their healthcare organization and level of support they receive for their work. The majority of CHWs agreed or strongly agreed to questions related to organizational support (i.e., "I feel well supported by my organization in carrying out my duties as a CHW"). Mean scores of each question reveal that most CHWs feel "neutral" about aspects of organizations support; however, nearly eight in ten (78.8%) of CHWs agreed or strongly agreed to the statement "I am part of my organization's care team for patients or clients," with a mean score of 4.1 (SD=1.0). Furthermore, the majority of CHWs feel that their organization will continue to support their work (84.4%). Finally, four out of ten CHWs stated that it was very easy or easy to integrate into their organization's care team.

It is interesting to note that 41.0% of CHWs strongly agree to feeling well supported in carrying out their duties as a CHW generally; fewer strongly agreed to feeling well supported in carrying out their duties for people who have high blood pressure (34.7%) and even fewer strongly agreed to feeling supported in carrying out their duties for high blood pressure medications (33.0%) (Table 13).

Table 13. Organizational Support for CHWs (n=157)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (SD)
I feel well supported by my organization in carrying out my duties as a CHW	15 (9.6%)	8 (5.1%)	12 (7.7%)	57 (35.5%)	**64 (41.0%)**	3.9 (1.3)
I feel well supported by my organization in carrying out my duties for people who have high blood pressure	10 (7.9%)	4 (3.2%)	18 (14.2%)	**51 (40.2%)**	44 (34.7%)	3.8 (1.3)
I feel well supported by my organization in carrying out my duties for people with high blood pressure medicines	9 (7.8%)	4 (3.5%)	19 (16.5%)	**45 (39.1%)**	38 (33.0%)	3.9 (1.3)
People put a lot of effort into making CHWs a success at my organization	16 (10.4%)	9 (5.8%)	24 (15.5%)	51 (32.9%)	**55 (35.5%)**	3.9 (1.2)
People at my organization believe CHWs are important	14 (9.1%)	9 (5.8%)	20 (13.0%)	50 (32.5%)	**61 (39.6%)**	4.1 (1.0)
Mangers and supervisors at my organization are strongly committed to working with CHWs	15 (9.7%)	5 (3.2%)	22 (14.2%)	**57 (36.8%)**	56 (36.1%)	4.2 (1.0)
I am part of my organization's care team for patients for clients	6 (4.0%)	4 (2.6%)	22 (14.6%)	58 (38.4%)	**61 (40.4%)**	3.9 (1.3)
My organization will continue to support my work and the work of other CHWs in the future	9 (5.8%)	1 (0.6%)	14 (9.1%)	57 (37.0%)	**73 (47.4%)**	3.8 (1.3)

Qualitative data from CHW interviews provide additional insight into feelings of organizational support.

"I feel well supported by my organization in carrying out my duties as a CHW"

Four in ten CHWs surveyed strongly agree to the statement "I feel well supported by my organization in carrying out my duties as a CHW," which is demonstrate qualitatively through examples of support with home visits and general acceptance of the CHW.

> *"[Supervisor name] is very knowledgeable, having been an emergency room social worker for many years and there's just a number of staff that are very knowledgeable with community resources, so – **we also support each other if there's going to be a challenging home visit or a new client. People can always ask someone to go with us**. We don't like people going by themselves, especially if it's not a real safe area."*

> *"The fact that they actually in the meetings, they announce that they're CHWs. They can stand out. We are able – if we want to do more, we can. We can do any – the fact that there – again, you always have pros and cons, but those pros have been helpful to make*

us stand out. So exactly what it is when ***you have a good administration that's willing to accept you for who you are and know that we're here*** *– that helps."*

Conversely, 14.7% of CHWs surveyed indicated that they disagree or strongly disagree in their feelings of being well supported. While this number is small, it is important to understand why these CHWs feel unsupported. One CHW located in an emergency department explains specific challenges.

"Just to be clear, I don't think it's a bad thing, because I think having community health workers based in clinics and ERs and all of that is very handy, but it's partly around some of the limitations they place on the work that community health workers do, because part of it is being – is working over a long term with community members, controlling chronic conditions, providing health education, you know, all those kinds of things, but it also working with the larger community itself to make changes that will help the health of the whole community and ***sometimes when organizations are too focused on you know, what a clinic might do, that might be direct services and you know, they want them to spend 15 minutes per patient that's referred to them kind of thing, and that's the part that loses the core of the model, which is that community health workers are based in the communities, are knowledgeable about their community and they work at multiple levels around multiple issues, and that's the part of the model that makes it so effective. But if you start taking pieces of that out, you're going to lose some of the effectiveness of community health workers****."*

"I feel well supported by my organization in carrying out my duties for people who have high blood pressure"

When surveyed, fewer CHWs selected "strongly agree" to feeling of support for their work with high blood pressure. The most commonly selected answer was agree (40.2%). When describing the specific type of support that they receive for their work with people who have high blood pressure, CHWs typically collaborate with clinical staff (e.g., nurses, doctors, pharmacists).

"I also work with a nurse practitioner and so she does the Thursday morning clinic and you know, I kind of work with her just like I work with the other provider*. Maybe sometimes they forgot to refill client's medication; I'll send the reminder to refill his medication."*

"The doctors are really amazing. Once I see the patient and they're really interested in going, they made the decision, they're really anxious to go – all I have to do is ask them and tell them this is what I feel and you know, and most of the time, they agree with me. ***So they're very supportive. I feel that the medical team is very involved in the process."***

"I feel well supported by my organization in carrying out my duties for people with high blood pressure medicines"

CHWs working with people who have hypertension typically "agreed" to feeling supported in carrying out duties for high blood pressure medicines (39.1%). Two CHWs describe

the way they work with high blood pressure medicines as well as how they are supported in these roles.

> *"Well,* ***the medication assessment form, we write down their meds and then we usually fax that to the doctor's office and there's a place on the form for the office to get back with us if they're seeing a discrepancy****. We work a lot – some of the larger groups have nurse managers and sometimes they will get back with us and sometimes we'll call the nurse manager, or the nurse manager will call us.* ***A lot of the nurse managers have made the referrals to us****.* ***The community health workers will communicate with the nurse manager and let them know we're seeing this client, this is what we're seeing. We coordinate back and forth and again, if we go to an appointment, we do follow back up.*** *The nurse managers have been great to work with, so – and they communicate then with the doctor."*

> *"If it were up to me, I would have a clinical Pharm.D in every single clinic.* ***It's not so much for me, but I think for the patients. It's really great thing when a pharmacist can go in and talk to a patient about all the different medications that they're talking about – or that they're taking****, and then you know, talk with the provider about interactions and different suggestions and the newest latest and greatest and you know, things like that. I think the community health worker ends up talking to the patient a lot more than most people on the team and that's just because we're probably working through goals and we're working through just different issues. So we end up talking to the patient a lot and things come out. You know, just problems or issues come out that they don't think of as maybe issues or they just haven't talked to anyone or they forgot about telling someone about something.* ***So there were times when I would go and you know, talk to the pharmacist and say you know, hey, this patient doesn't have any resource for a pill box, or is there anything you can do to talk to them about how they're taking their medications or at what times they're taking their medications because the patient called and she's confused about this****, or – you know? So there's interaction for sure,* ***but most of the work would be done between the primary physician and the pharmacist and the patient."***

"People put a lot of effort into making CHWs a success at my organization"

Generally, CHWs surveyed and interviewed expressed agreement with the statement "people put a lot of effort into making CHWs a success at my organization." While success was defined by the CHW, mediators for success include providing appropriate resources, having the umbrella term of CHW, and positive communication. One CHW provides further explanation.

> *"The fact that we're able to voice what we want to say.* ***To have the resources we need to make our job easier****. Our job in general is kind of – I want to say like, so being able to establish this resource, everything around us to be able to make it feasible for a client who we work with on a day to day basis. That a CHW has made it easier for us* ***– the fact that we're able to say we're CHWs, even though we have different titles****. That's made a big difference. Again, it's like I said, it's more people need to acknowledge that, but that's okay. You never can get everybody on board, but we're working on that. That's okay.* ***So I think more in the communication. The communication establishes a lot to make our job easier, and having people support us. It makes a big difference****."*

On the other hand, approximately one-third of CHWS strongly disagree, disagree, or felt neutral about people putting effort into CHW success. Specifically, 10.4% strongly disagreed to the statement "People put a lot of effort into making CHWs a success at my organization," which is the highest percentage of "disagreement" among all of the organizational satisfaction indicators. One CHW describe trouble with peripheral staff who are less involved with the regular care team but cause major issues.

> *"**And one of the contractors responded to the email and said well, isn't that something that our glorified social worker could do**? So moments like that, I'm just…there's nothing more I can say. Can't force them to like me, I can't force them to be anything. All I hope is that when we're in person, they can respect me. And if not, then I'm confident that Dr. [name] would probably ask them to leave. And they could meet separately without me there. Because I do know that, that they're unable to run a full clinical meeting without the community health worker because again, I interface with every single patient and I know very intimate details about all these patients that the provider would not know without me or do not know until the Friday meeting. They just kind of question my existence or why do we need this person."*

"People at my organization believe CHWs are important"

Nearly four in ten survey respondent (39.6%) strongly agreed that people at their organization believe CHWs are important. During interviews, CHWs described their teams understanding of the vital and unique perspective CHWs offer, the extra help CHWs bring to work particularly in addressing the socio-contextual determinants of health.

> *"I think they realize how much we help the patients. **I think they appreciate the extra help**. You know, providers many times don't have a lot of time to be with the patient. You know, they will have very full schedules and so sometimes just to have an extra ear, if you will – there's times when we work with patients and then we talk to the provider about what's going on and they say, oh, well, we never knew that you know, they've not had a place to live. They've never said anything like that before; it's a good collaboration, I think."*

> *"I think that here, at least here in the emergency department– **that most of the nurses and doctors realize it's a very vital role**. I think a lot of the nurses and doctors realize that many of the issues that patients face have a very heavy social foundation and a lot of it is stuff like, beyond their realm of care and I think that's where they realize that a community health worker can play a very vital role, just getting patients connected. **So I think that they realize our role is very important and very critical to helping address many of the health needs here in this community."***

Conversely, a small number of CHWs expressed disagreeing or strongly disagreeing with the statement "people at my organization believe CHWs are important." Interestingly, qualitative data reveal that other staff are skeptical more of the CHWs role rather than the CHW themselves.

"But in fact, one our focus has always been that, whenever we go out, we always invite our team – our clinic to go with us, so that way, they can have firsthand knowledge – and some of them do. Some of them have gone out, you know, but you're still in a culture that's very entrenched and sometimes those who are at the top, they don't do it. They don't go out. You know, so they may not see that, ***and I think in order for people to really see the value of a community health worker, you have to go out – you have to be in the community and a lot of administrators have no idea about the community that they're serving****. You know, it's a total detachment for them, so therefore, they can make decisions or they can create situations that are actually detrimental, question to their mission."*

"I've come across as well a lot of people that are really skeptical of me and my job – not me in particular, but just who is this person*. Especially the social workers, because they see me as maybe they think, she's doing a lot of the same things I do, but yet she has a bachelor's degree and I have a master's degree and is she trying to take my job and I'm kind of saying like, no, I'm not trying to take your job and this is what I can do to help you be a social worker so that you can give your resources and time to other patients that don't have a community health worker and like, let me help you coordinate their care, let me help you, you know, maybe get connected to a support system or whatever, you know, different examples. So there's been barriers. I mean, I guess overall, the macro level is I don't feel supported."*

"The other thing too is, through grants, there's this you know, ***stick to the strategic plan, stick to the implementation plan and so sometimes there isn't room for a lot of creativity*** *and when there is, sometimes it's not necessarily valued because like, let's stick to the traditional practices and so sometimes it's kind of insanity, you know, you do something over and over and it doesn't work but you keep doing it. So I think that sometimes our expertise and our advice isn't adhered to as much because it's not community based even though some of us may know like, hey, we've tried it, it's not working and you know – listen to us. So sometimes we're not –* ***sometimes we're not listened to****. Other times, they're like, okay, go ahead and try it you know, and we're given the liberty, but for the most part it's kind of like a little bit of a mistrust, even though we're hired in order to kind of understand and give them our expertise."*

"There is a difference here. I have young people that come out of college that intern with us. They don't want to be called community health workers. They want to be called community health educators. A community health educator has a four year degree. Community health workers has, you know, six months, three months, nine months of training. ***So there is a perceptional difference in some people's minds about the word****. So a lot of times it's word smithing. So I tell people I'm a community health worker. It doesn't bother me. It's not that kind of thing. I mean, I understand the function and the job* ***– but I think that a lot of people, when they hear community health worker, they don't necessarily think professional they just think, okay, what do you do? What is that?*** *A nurse, you kind of got a better idea about what they do. A doctor, yes. You know, pharmacist, yes – but community health worker – so what do you do?* ***So part of our process has really been to really figure out how to promote community health workers in a way, regardless of their educational attainment, but to promote them in a way where their proficiency really becomes the factor for which they're evaluated on****."*

"Managers and supervisors at my organization are strongly committed to working with CHWs"

Managerial support and leadership buy-in is essential for CHWs to feel well integrated in their organization (see research question four). CHWs perceived managerial support as visibility both within the organization and outside of the organization (e.g., attending home visits).

> ***"I really believe upper management truly cares about their employees and their patients**. You would think in the healthcare field, everyone's supposed to care about the patients, right? I mean, that's why we're in this business. But **I think they just do a really good job at educating their employees, supporting them, making sure that the education material's really pertinent to what you do and they really make it so that the patients have resources in the clinics and the hospital**."*

> ***"I think our upper management is very visible around [organization]. They do come out and do clinic visits. They have many different forums where they interact with the employees here**. So I think they hear about it. There's also our direct supervisor who meets with those people often. **So they get stories, they get feedback**."*

> *"All the providers I work with are so awesome. **They just always are so open to hearing what I have to say and they just respect what I have to say**. They tell me all the time, they love how I see the patients as human beings, not just patients and I look at not only their medical piece but also like, all the other things that are going on. Like, the social determinants of health, right, so I look at all those things and I'm able to see them as a whole person and be able to help the patient, help the doctor, prioritize, okay what really needs to be done first and then we go from there."*

Conversely, during interviews CHWs describe lack of support and commitment to working with CHWs. This lack of support may be caused by a larger organizational issue such as poor communication within the team or low team camaraderie, rather than being directed at the CHW specifically. Another CHW expressed lack of access to her direct supervisor.

> *"Each manager has a different style. In the beginning, the first manager that was here, I think she understood my role to a certain degree but didn't know how to implement it. The second manager that we had was more so ready to implement the role but had to get the initial staff on board with – not just with me, but with themselves in general. And here in the office, there's a lot of issues here beforehand that take precedence – that many of them didn't want to cooperate and there was major issues with our communication here, so the manager that came in, she came in to like, a storm, pretty much. Pretty much a storm that was brewing and **it's difficult to try to have my voice heard because now that the team in itself is not working together as a team and I'm trying to hop into a team that's not a team."***

> *"I think because we're in that academic setting, it's a very heavy workload for everyone, but I think for the most part our – **what you would call supervisor – our coordinator has like, a bunch of projects and so I don't see my supervisor – I want to say I probably see her once every two weeks, and so then there isn't a lot of feedback that I get until***

> ***maybe there's a problem and so I think that also hurts my work**, my job and also, as a community health worker, I'm thinking to myself like, I feel like we are people that need that interaction because then we can communicate what it is that we're experiencing on an ongoing basis and also connect, because you know, we're doing that in the community but that's also needed in our professional environment so that we feel like what we're doing is valuable to the people that are setting up the job and you know, that we're going somewhere with our ideas. So I think that that's one of the things that I don't like about my job and I think it's not because I don't like me community health worker job, **it's the environment that's not set up to be as conducive as I would like."***

"I am part of my organization's care team for patients for clients"

One in four CHWs surveyed strongly agree that they are part of their organization's care team. Facilitators to being part of the care team include collaboration with other staff to leverage strengths, the ability to provide input. Three CHWs elaborated on these aspects of their experience on the care team.

> *"Well, because we work together on most of our issues. We collaborate a lot with each other individually and we do things in such a way that we support our staff in building additional skills. We support a lot of training and we also leverage skills that people have. My – working electronic platforms is not even a tertiary skill for me but we do have a woman that works for our organization and she's very, very efficient and very capable with those things. So actually posting things on the platform and managing the platform is what she does. That's why I said it's really hard to say – when I said, I might be primary but I don't do it by myself – and then when we have issues that we're trying to figure out, we always have each other to start with. We get a lot of support from our executive director around – you know, when we're trying to figure out how to make something work or we have a problem around a community members or a community partner, we always have somebody who can help us work through that."*

> *"I think they just come to me a lot to ask me you know, how they would manage, you know, some cases. So that's one good thing. **I think that's important if you have that teamwork within your organization it works better**. Like what I said, **if my other coworker doesn't feel comfortable with doing wound care, she'll come to me and ask me, can you follow up on this patient**? They said that they're concerned about a family member that recently had a surgery and they're not sure if they're cleaning it right and I say, I'll go do that. They trust me, that's why they call me and she goes, yeah and she goes, but it seems like you're a doctor. They're always calling you."*

> *"I feel I am like, **100 percent part of the care team and entitled to have my input and my advocacy as part of the team and having shared decision-making**. The way that our practice is actually set up is we actually sit with the team sits with the doctor, the doctor, the nurse, social worker, the medical assistant, everybody is sitting together and the shared resource like myself, we all sit together. So it's a lot of like, shared decision making. It's a lot of you know, trust building, personality, figuring out people's personalities. But yeah, I think definitely being integrated into the team is, essential."*

One CHW expressed difficulty with her organization "understanding" the CHW perspective and feeling of being and outsider on the care team.

> *"I think,* ***because we come from a public health perspective, our organization doesn't understand us****. The people that are practitioners in our organization, they see people in front of them. One person, one doctor, one nurse. They talk about a team, but they're usually a very, very close team. I'm out in the community and people that I recommend to our doctors don't come in saying hey, [name] sent me in here. You know? They don't say well, I'm here because I talked to your outreach team, and so therefore, sometimes the value of our work is not necessarily appreciated or understood, which is one of the reasons why we went to taking down information, so that we can show the value that we bring to the clinic, but also to the community. So I think as part of our care–* ***they give lip service to us because in some cases it's mandated, but they don't necessarily understand the real value that we bring, which is one of the reasons why we have to – we have to show the value of our CHWs****."*

> *"Sometimes when organizations are too focused on you know, what a clinic might do, that might be direct services and you know, they want them to spend 15 minutes per patient that's referred to them kind of thing, and that's the part that loses the core of the model, which is that community health workers are based in the communities, are knowledgeable about their community and they work at multiple levels around multiple issues, and that's the part of the model that makes it so effective. But if you start taking pieces of that out, you're going to lose some of the effectiveness of community health workers."*

"My organization will continue to support my work and the work of other CHWs in the future"

Nearly fifty percent (47.4%) of CHWs strongly agreed to the statement "my organization will continue to support my work and the work of other CHWs in the future" this was the highest rated organizational support statement.

> *"****They were on the beginning of the planning of community health workers, so they understand the need of them and so they have built a structure within our clinic for that and they are very well in supporting it****. It's been financially supported in writing grants."*

One CHW who felt supported during her time at her organization expressed frustration with the lack of future support due to limited funding.

> ***"I thought I was [supported], but I mean, they're not funding my position, so how could I feel like I'm supported****? It honestly makes me heartbroken, that community health workers are not integrated into what should be the most advanced probably healthcare system. It just makes me really heartbroken that they're not willing to take the leap, you know?"*

"How hard or easy has it been for you to become part of your organization's care team?"

Interestingly, although over one-third of CHWs strongly agreed with feeling like people put a lot of effort into making CHWs a success and nearly one if four (39.6%) strongly agreed that people at their organization believe CHWs are important, most CHWs reported feeling neutral (37.0%) about the level of difficulty to become part of the organization care team (mean=2.6. SD=1.0) (Figure 20).

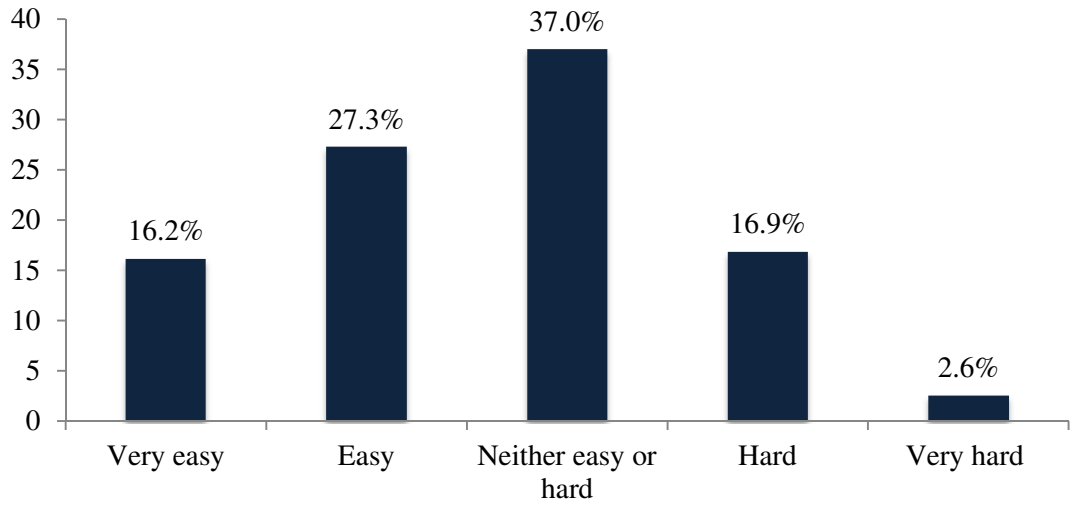


Figure 20. Level of Difficulty for CHWs to Become Part of Organization Care Team (n=154)

Qualitatively, CHWs describe difficulty with becoming a part of the care team. Integration took time and required building trust between the CHW and others. Similar to previous qualitative information, lack of knowledge of and how to work with a CHW was a barrier to becoming integrated.

> *"Definitely from administration and implementing a CHW model here or practice. It's kind of like I'm put here in the office and I'm given a list, but we don't thrive that way because CHWs – a lot of the times, we don't have a clinical background, we don't have degrees or whatever the case may be, we're from the community and this is like, a first step.* ***We're like the last man on the totem pole, so to speak****, in here – in [city], so it takes a lot of support. It takes a lot of backing up, informing the staff – immediate staff that I work with,* ***so they know how to utilize me, making sure that they're on board and being more supportive and including me in the healthcare plan instead of leaving me just as an option in an office****. And like with – in comparison, down at [organization], they have it where it's structured. It's really structured that they have a flow of patients, they have a specific case load and they can collect tangible data. Here, the data that I collect is good data, but since the structure I have is not really structure, it becomes difficult to collect good data that they can use."*

"At first it was like –we was almost just there, you know what I'm saying? We didn't feel like a part of the team, whereas today we feel like a part of a team*. We felt like we was left out on a lot of things like, leading and help with a person that had something that we could work with them, to help them better themselves, they wouldn't - it was like we were just there.* ***But now, if they send us people, they make sure that we're in the meetings and everything that goes on that calls for the whole group, they make sure we're there****."*

"It was pretty difficult to first adapt to, I want to say, because I never was in healthcare before that and I still struggle because there's a lot of medical terminology and stuff, what I try to do is simplify things and have it try to be in layman's terms. So if for example, if a patient ever wanted to get their record, they could easily understand what it was about."

"In the beginning, I really had to have people build trust in me, like I know what I'm doing or I'm trying to know what I'm doing*. I asked a lot of questions and I still ask a lot of questions, but not as much as in the beginning and just sitting in on these appointments, sitting in on what we call huddles, you know, where the teams meet before all the like, patients come in, to show them that I'm interested in learning about the cases. Following up with the doctors, the nurses and whoever, as needed when I see something and it doesn't seem right to me or I think of something maybe a different type of plant that they should be having instead, I try to bring it up to the person – usually the primary care doctor. Yeah, so and always like people I work with are very open to hearing new ideas and stuff."*

*"****We're being more accepted, you know, as time goes on, but at the beginning, no****. I felt people, like the case managers felt they were – felt threatened by the opposition. So, we pretty much does almost the same – the only thing we doesn't do is we don't do referrals and that's what they do, and what we do, we're on foot. We go out into the neighborhoods and we go find these clients, whereas they – they feel like if we go find them, we're going to do what they need, offer to do as much as we can for them, to where they won't need the case managers. But that's not true. We're supposed to work together, you know?"*

"I think that it's also – it would also have to do with an overall perspective of how things are set up in the team. ***It's almost a division between like, ethnic culture.*** *Like, you know, here's the Latino team, here's the African American team and then there's even a satellite office that divides and there is this – and I've even heard the perspective of people who've been here longer than I have where it's like, well, don't tell them everything, you know, because they're not with us, you know, or – so there's that division really speaks volumes when we don't learn about each other's work until we see it happening in the community and it should be the other way around. We should be hearing about it, being part of it before it even gets to the community, and so that's why I give my team a two, because I don't think – I think we're working separately. It's like a cycle."*

Organizational Support Scale

Next, we combined the values of the Likert-scale organizational support questions to create a six item composite score. The composite score range was between six (strongly disagree) to 30 (strongly agree) with a mean score of 23.8 (SD=5.5). The Cronbachs alpha for the six-question scale was 0.87 (Figure 21).

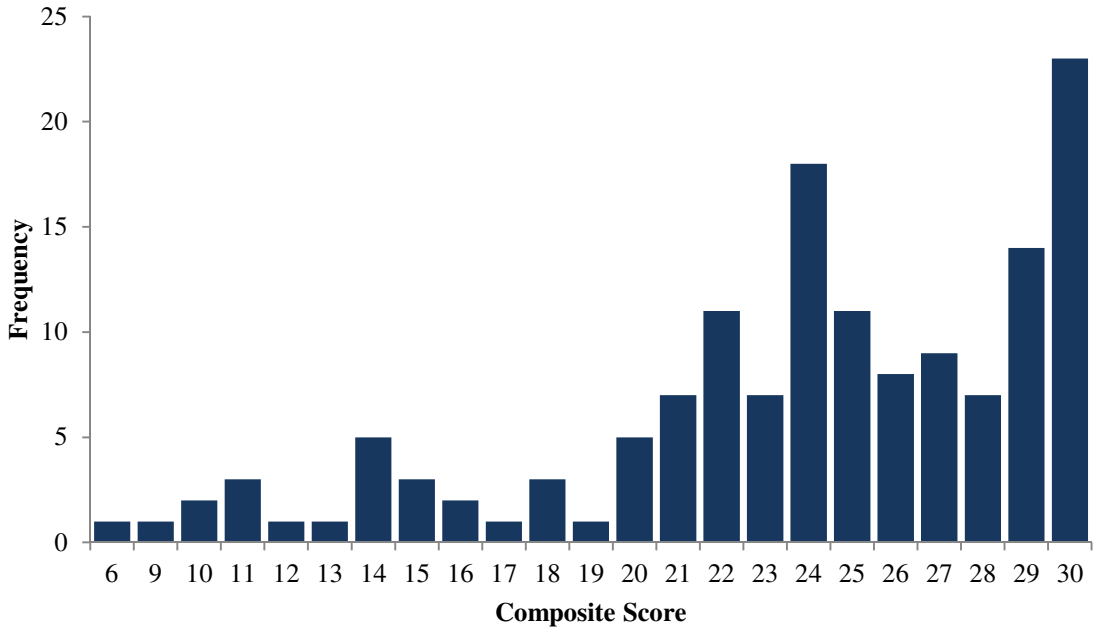


Figure 21. Composite Score Excluding Hypertension Self-Management and Medication Adherence
Combined organizational support scores can range from 6 to 30; mean composite score is 23.8, SD=5.5, n=144

In addition to the six item composite score and scale, we also created a eight item scale including the two hypertension specific questions ("I feel well supported by my organization in carrying out my duties for people who have high blood pressure," and "I feel well supported by my organization in carrying out my duties for people with high blood pressure medicines"). These scores ranged from eight (selected all strongly disagree) to 40 (selected all strongly agree). The mean composite score was 31.5 (SD=7.7). We tested the reliability score of this eight item scale, which revealed that the questions are measuring the same construct (organizational support). The Cronbach's alpha for this eight-item scale is high at 0.92 (Figure 22).

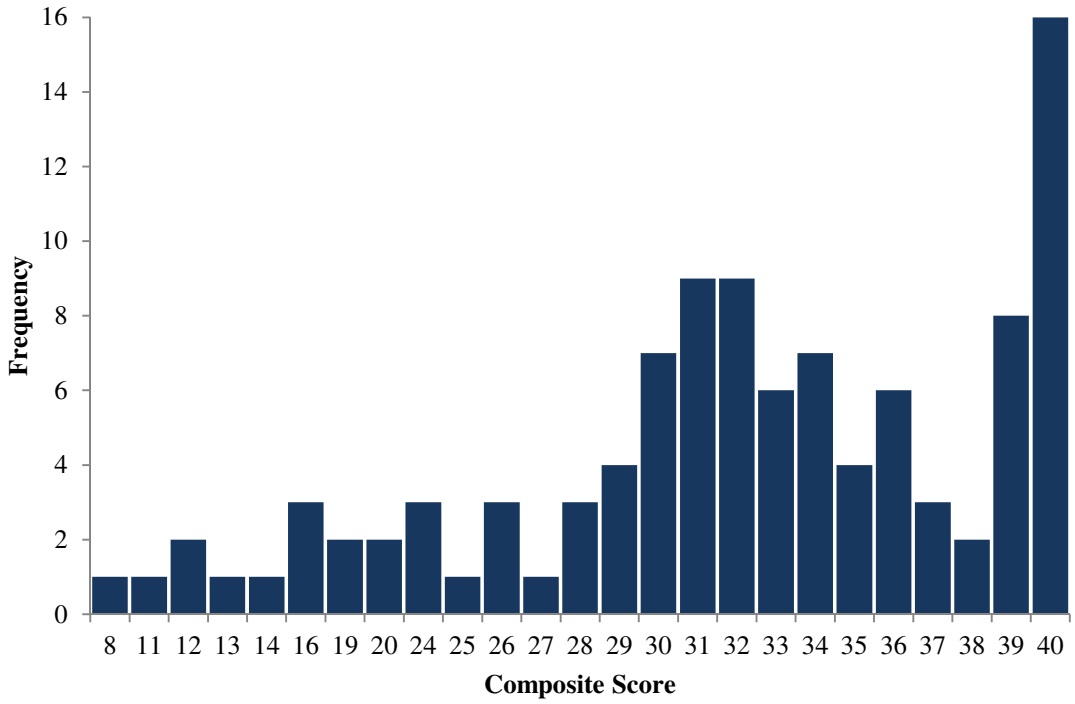


Figure 22. Composite Score Organizational Support (n=105)
Combined organizational support scores can range from 8 to 40; mean composite score is 31.5 (SD=7.7)

Characteristics of Successful CHW Organizations

Next, we ran correlations between satisfaction and various demographic aspects of the organization and CHW. We used the Spearman's Correlation to see whether the composite score for satisfaction correlated with aspects of the organization.

Number of CHWs

The number of CHWs in an organization is not correlated with the eight item organization satisfaction composite score (ρ=0.147, p=0.189, n=81). However, there is a correlation between the six-item organizational satisfaction composite score and the number of CHWs in an organization (ρ =0.236, p=0.015, R^2=0.055, n=105). This indicates that there is a small (0.236) but significant positive correlation between organizational satisfaction and number of CHWs. Organizational satisfaction depends on the number of CHWs in an organization and that 5.5% of the variation in organizational satisfaction depends on the number of CHWs in the organization (Figure 23).

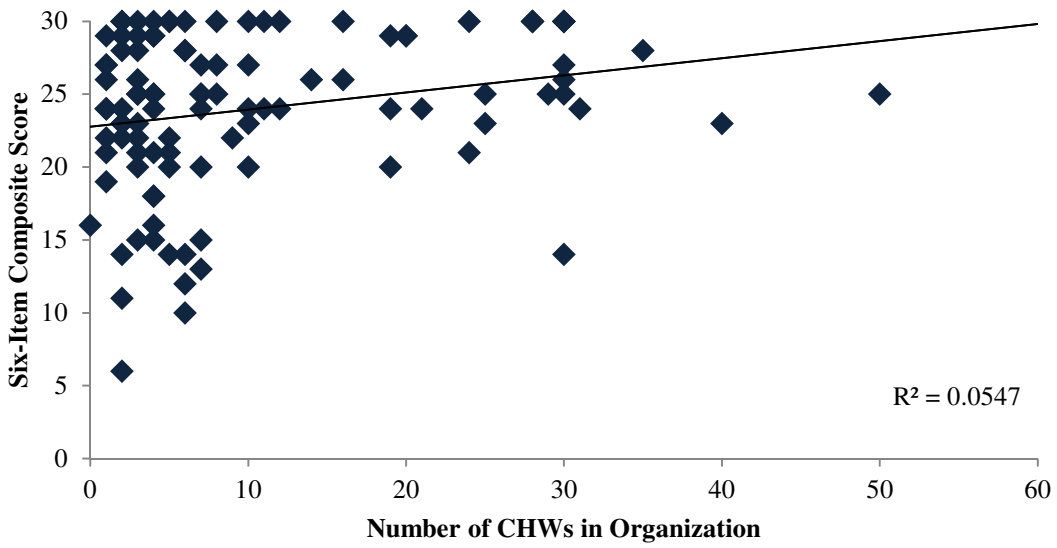


Figure 23. Number of CHWs in Organization Correlated with Organizational Satisfaction
Spearman's ρ =0.236, p=0.015, R^2=0.055, n=105

Further breakdown of the six-item scale reveals that feelings of "people put a lot of effort into making CHWs a success at my organization" is positively correlated with the number of CHWs in the organization (ρ=0.224, p=0.016, R^2=0.02, n=114). Two percent of the variance in "people put a lot of effort into making CHWs a success at my organization" can be attributed to the number of CHWs at the organization. Nearly half of CHWs (43.4%) reported working with other CHWs with an average of 9.6 CHWs per organization (SD=10.6) (Figure 24).

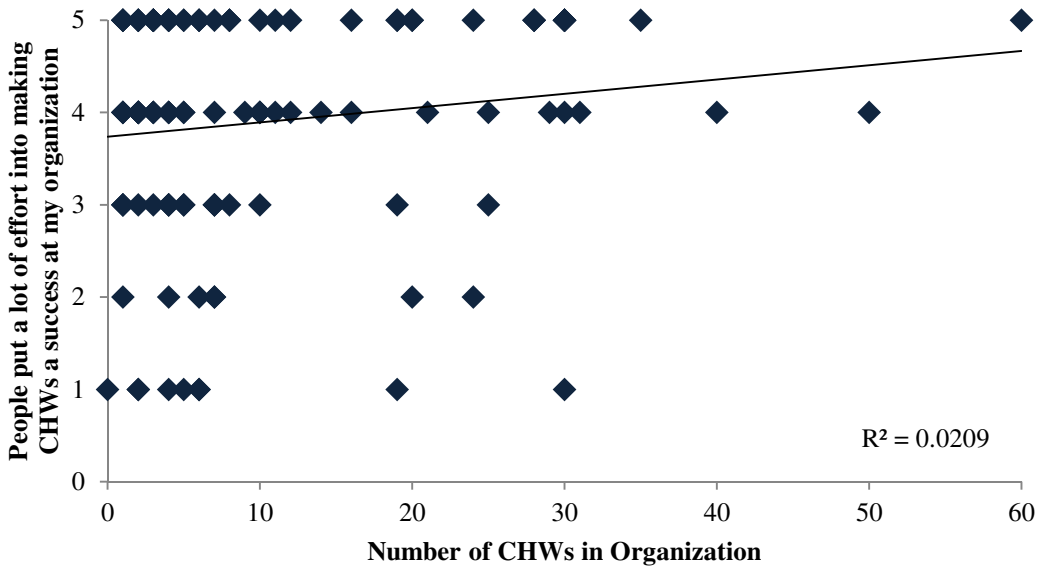


Figure 24. Number of CHWs Correlated with People Putting Effort into Making CHWs a Success
ρ=0.224, p=0.016, R^2=0.02, n=114

Additionally, feelings of being a part of the care team are positively correlated with the number of CHWs in the organization (ρ=0.33 p=0.001, R^2=0.095, n=111). This indicates that the feelings of being part of the organization's care team are correlated with the number of CHWs in the organization (Figure 25).

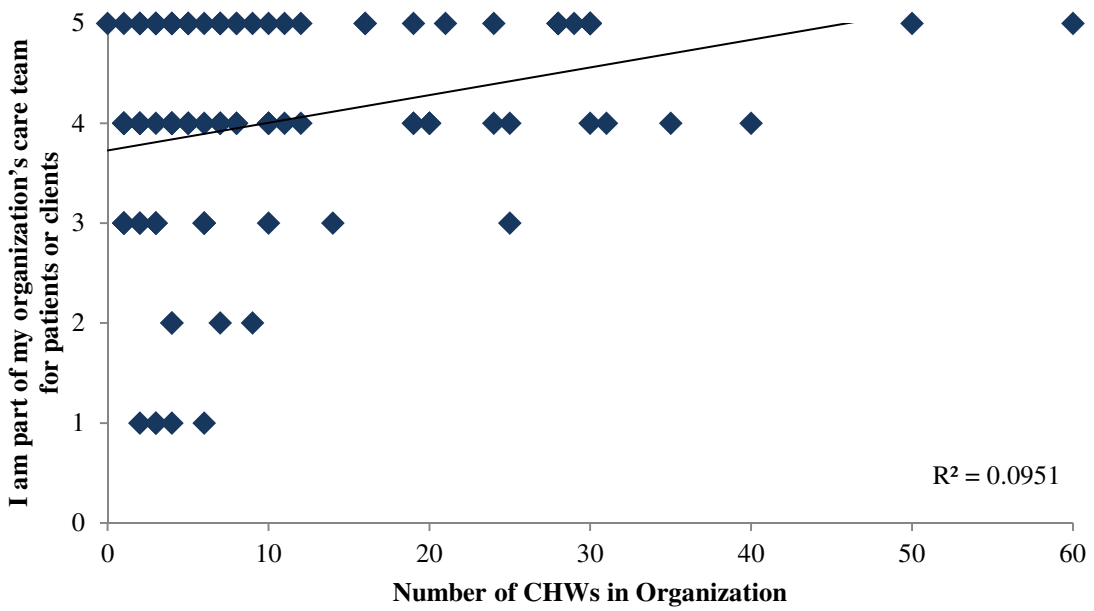


Figure 25. Number of CHW in Organization is Correlated with Being Part of Care Team
ρ=0.33 p=0.001, R^2=0.095, n=111

The number of CHWs in the organization is positively correlated with feelings that the organization will continue to support CHWs (ρ=0.195, p=0.038, R^2=0.338, n=114) (Figure 26).

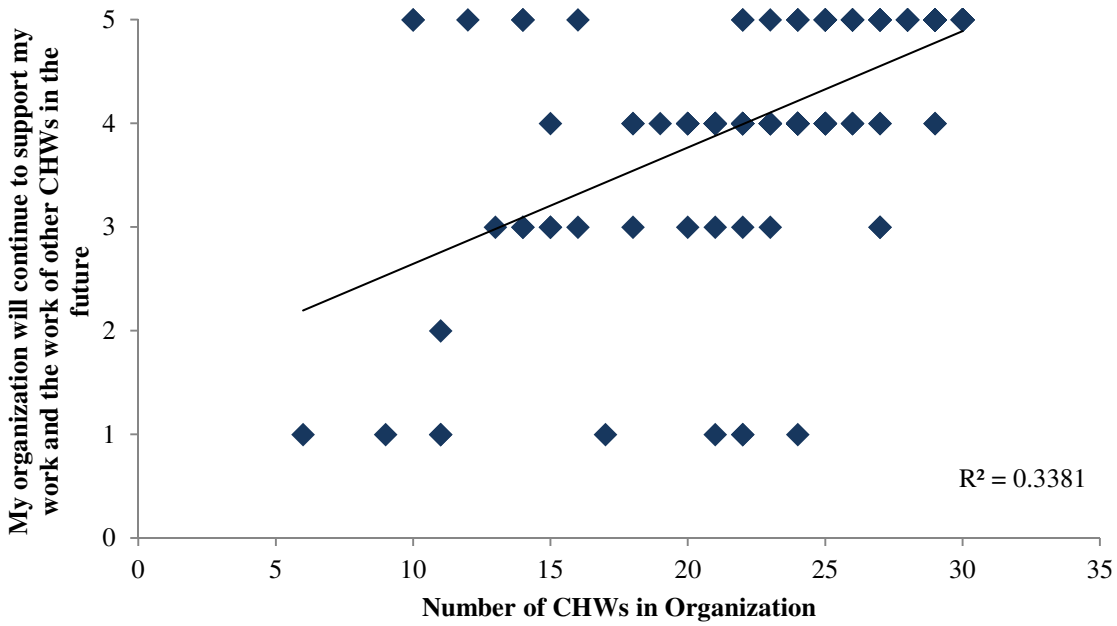


Figure 26. Number of CHWs Correlated with Feeling that Organization Will Continue to Support CHWs
ρ=0.195, p=0.038, R^2=0.338, n=114

Number of Patients Per CHW

The eight-item composite score of organization satisfaction is negatively but not significantly correlated with the number of patients per CHW (ρ=-0.135, p=0.323, n=56). The six-item composite score of organization satisfaction is also negatively but not significantly correlated with the number of patients per CHW (ρ=-0.151, p=0.203, n=73). No individual aspects of the eight-item or six-item scales were statistically significantly correlated with the number of patients per CHW.

Number of Patients per Organization

The eight-item composite score of organizational support is negatively but not significantly correlated with the number of patients or clients per organization (ρ=-0.076, p=0.656, n=37). The six-item composite score of organizational support is also negatively but not significantly correlated with the number of patients or clients per organization (ρ=-0.190, p=0.207, n=46).

Years at Organization

The number of years a CHW has been at an organization was positively (but not significantly) correlated with the eight-item composite score of organization satisfaction (ρ=0.075, p=0.452, n=99). This is also true for the six-item composite score (ρ=0.119, p=0.175, n=132). No individual aspects of the scale were significantly correlated.

Years as a CHW

The eight-item composite score of organization satisfaction and years as a CHW was positively (but not significantly) correlated (ρ=0.075, p=0.462, n=99). The six-item composite score was also positively (but not significantly) correlated with the years as a CHW (ρ=0.053, p=0.554, n=126). No individual aspects of the scale were significantly correlated with years as a CHW.

Supervisors

CHWs reported a variety of supervisors including “CHW supervisor/Head CHW” (38.8%), Nurse (19.7%) and other (19.1%). CHWs work with patients, nurses (49.7%), medical doctors (46.2%), other CHWs (43.4%), and their CHW supervisor/head CHW (42.1%) to help manage hypertension.

The type of CHW Supervisor was not significantly correlated with the eight-item organizational overall satisfaction score (ρ=0.912) or the six-item satisfaction score (ρ=0.578) (Table 14).

Table 14. Supervisors and Management

Who is your primary supervisor in your organization?	N (%)
CHW supervisor/ Head CHW	59 (38.8%)
Nurse	30 (19.7%)
Other (Please specify)*	29 (19.1%)
Social Worker	16 (10.5%)
Medical Doctor	11 (7.2%)
Nurse Practitioner	6 (3.9%)
Pharmacist	1 (0.7%)

^Respondents could check multiple, total does not equal 100%

*Administrator DOH, Arthritis Manager, CEO (3), Chronic Disease Manager, Clinical Administrator, Community Benefit Coordinator, Community/Outreach Supervisor, COO (2), Department Supervisor, Director of Migrant Health Program, Director or Nonprofit, Education Coordinator, Executive Director, Health and Wellness Director, Health Educator, Health Promotion Supervisor, LCSW, Nutritionist, Program Coordinator (2), Program Manger (2), Program Supervisor, Project Manager (2), Shelter Supervisor

Key Findings

Generally CHWs are well integrated into their organization; however, it is important to consider lessons from CHWs who struggle with aspects of integration to help facilitate further collaboration. Integration into health systems should not overshadow CHWs' roles in their community or as a community members. Well-integrated CHWs feel like they are part of the care team and therefore are able to work with other team members to reinforce each other's strengths and skills. Nearly half of CHWs strongly agree to feeling that their organization will continue to support their work; however, regardless of feeling this support, CHWs need continued funding. Integration takes time and mutual trust.

Research Question 4: What organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?

CHWs were asked about the type of support they receive from their organization. CHWs noted that access to health education materials (81.7%), training held outside of their organization (81.6%), attending staff meetings (73.7%), training held at their organization (70.4%), and support from leadership or program champion (67.1%) helped CHWs do their job. Other responses for facilitators for CHWs include: been part of focus groups, flexibility, knowledge of community resources to know how to connect patients, our medical staff available to schedule people soon, recognition, ability to work alone. Similarly, CHW's working with hypertension management reported other responses such as: having the ability to be self-employed, I don't have direct contact with patient with high blood pressure (talk with them on the phone), our work with high blood pressure patients is limited only to dialysis, support from clinical director, taking vitals, use of equipment, we get referrals from clinic (Table 15).

Table 15. What Helps You Do Your Job as a CHW

	CHW General (n=143)	**Hypertension Management** (n=152)
Resources to health education materials	125 (81.7%)	93 (65.0%)
Training held outside of my organization	124 (81.6%)	84 (58.7%)
Attending staff meetings	112 (73.7%)	60 (42.0%)
Training held at my organization	107 (70.4%)	69 (48.3%)
Support from leadership or program champion	102 (67.1%)	57 (39.9%)
Being part of a multidisciplinary care team	84 (55.3%)	55 (38.5%)
Other staff	82 (53.9%)	61 (42.7%)
Policies and procedures in my organization	80 (52.6%)	42 (29.4%)
Being listed on the organization's work plan	69 (45.4%)	35 (24.5%)
Other	8 (5.3%)	8 (5.6%)

Note: 34 (23.8%) of respondents do not work with patients or clients with high blood pressure

Attending Staff Meetings

Staff meetings are an important component of organizations that allow CHWs to feel supported in their role. CHWs' ability to attend and be involved in staff meetings aligns with the CFIR construct of 'implementation climate' and 'relative priority' of including CHWs in the organization. Seven in ten CHWs cited attending staff meetings as a facilitator for their work. CHWs set meeting agendas. For example, one CHW commented:

> *"On the professional side of it,* ***I set the agenda now for our CHW meeting. Here at [organization], I'll relay resources that I have back to administration.*** *Basically what it's about now – we meet monthly, typically, to discuss any barriers that I'm coming up*

against, any problem patients, the data that I've received from [organization]. Anything – pretty much everything that I've been doing through the course of the month, any reports back. My manager here, the site supervisor, the nurse practitioners – two nurse practitioners, and the regional practice manager."

CHWs meet with a variety of individuals including lead staff, doctors, nurses, and other CHWs:

*"I meet with [name] our clinic every two weeks and go over all my cases**. I also have three lead staff and they meet with their teams and then every other week, we have an all staff meeting and that's when we have some of our trainings and just go over things**. Right now, there's some emphasis – they're trying to have a point system for the work we're doing. They're trying to move towards a way of payment in the future, where community health workers would be paid for providing educational pathways and providing services that lead to successful outcomes."*

"All the community health workers have a monthly meeting where we kind of discuss how everyone's work been doing – or been going and that's an opportunity to share any patient information. Like I said, all the community health workers do have access to you know, the notes on the database, so all of our patients, regardless of who sees that patient, where they see them – because we all work in different locations – we are able to see those notes."

"I can go meet with any doctor I want to, you know, it's just if they're available. If there's a particular thing going on about a patient that pertains to a doctor that's been seeing her a lot, I just got to find out what their availability is and just meet with them. So I'm able to do that if I want to, but then there's like, certain things – maybe if they're complaining about a doctor, then I direct that to my supervisor and then they might bring it up at meetings – in their supervision meeting."

Similarly, the frequency of meetings varies depending on the organization needs but generally meetings occurred weekly to monthly. For example:

"We have one on one – we have the staff one on Wednesday and then we have just the CHW meeting on Monday."

*"Yes, I'm part of a lot of staff meetings. We have a **major meeting once a month here at [organization] with everyone in i**t, giving updates of anything that's going on, things like that within the clinic, okay? We also have a **staff meeting within our program by itself**. It's once a month, and then **I have one on one supervision meetings with my boss once a month as well**. So yes, I'm in a lot of meetings."*

*"Yep, **so the huddles we do twice a day on every team**, one for the morning session and one for the afternoon session and then **the population huddles we do once every two weeks**."*

*"We have staff meetings, you know, within here. We do two main trainings a year. One in December and one in May before the real busy season starts, and then we kind of do quarterly follow ups to make sure everything's going okay. We've tried kind of doing like, **at least every other week kind of just phone calls between our project director and the healthcare managers, just to kind of check in. It can be difficult when we're running around so much, but usually we try to make it work**."*

CHWs explained problem with meetings.

> *"I would say just the lack of time that they have. Like, for example**, although I do sit and do the agenda for the meeting, I haven't had a meeting in about three months because everyone's been out, they went on vacations, then there were other meetings that popped up.** The nurse practitioners, besides being here they go and do a fast care clinic – they run a fast care clinic. So that occupies a lot of their time. So I would say definitely the support and communicating about – about the vital – the important things here can be a major roadblock because if I'm not able to communicate what's going on, no one knows."*

> *"This is going to sound so bad. **I'm the only brown face at that table, so like I said earlier, right now, I get really embarrassed very easily**. So **for the most part the providers that I work with on a very regular basis know my work and they don't question it, whereas other providers, like the new psychiatrist and the new pharmacist in the last meeting, which was last week, questioned, what qualifies you**– do you just have a high school diploma, do you even have an education? **And then I had to defend myself.** Or at least that's what I feel, I have to defend myself in front of everybody else and you know, the providers I work with just kind of looked at them like – and they're contractors. They don't work for the university, they don't work for the medical center, they're just contractors. And in a way, I can understand, like you know, they want to know, who is this person sitting at this table that looks completely different from me. […] **And I'll tell them straight up, do not judge my tattooed exterior, consider me ignorant because I'm far from it**. I don't like to sit here and hear you guys talk about me. It gets really, really tense and usually when that happens […] And then usually after that, they shut up. They don't say anything anymore. It's a barrier for my inter-professional team and not for the community."*

Many meetings focus on case management and discussing patient needs. Other content may also be included.

> *"Yeah. Well, I think it's different people in the management team. Whether it be someone coming in – we have clinic meetings once a month, **and our clinic manager may invite us to talk about what we do to the whole clinic**. We might have outside speakers that come in, maybe me community health worker supervisor, she might come in and talk to them about what we do."*

> *"We just pretty much go over the case load of the people that are on my community health worker case load and then other patients that are still needing help. So like, a gentleman has an appointment and he needs medical transportation, so I'm going to be calling the medical transportation to get him registered for pick up. So we just kind of go by cases. **We just flip open the file and we talk about the plan and then I implement the plan by the next week**."*

> *"Once a week, **our medical director and I get together and I go over the cases that I have done that previous week or earlier in the week. So we are really go hand in hand**, and Dr. [Name] is our medical director, so she's also their doctor that sees the patients that I work with."*

> *"Not so much case management meetings.* ***We do have regular staff meetings where we will be working with a number of topics*** *because there's always funding issues, who's doing – writing what part of which grant, who's tracking the grant – all those kinds of things that we coordinate among us.* ***If we have an issue, all we have to do is call and talk to our executive director – either schedule a call or you know, talk to each other around those issues****. We just work very closely together. We're a small organization and even though we're spread out across the area, we still work closely with each other."*

> *"We have staff meetings every week and the whole team is there at the primary care practice, and it's once a week for two hours and I've never had that before in a job****. I think that's great because it gets everybody to sit down and you know, at the beginning of the staff meeting we talk about you know, shout outs and stories and people can go around and they share great experiences they've had****, whether big or small, or maybe patient stories that have been really awesome and then we get into what the staff needs to discuss, maybe on a daily basis or whatever for the rest of the two hours."*

One CHW expressed the value of their regular meetings.

> ***"I sat in the executive meeting and I had told the providers that were there, I educated them on being culturally sensitive*** *and they said, okay and I said, and you guys are welcome to our groups, so I invited them to our group and so I kind of explained to them, and I had asked the CEO at the hospital, you know, has there been any initiative as far as educating our new providers about this and she said, well, we've been so swamped, you know, trying to catch up on patient care, we haven't really done that and I said, well, I think that needs to be looked at before they start going in to see the patients, because this is what my community is already saying again that they don't feel comfortable. I said, we're going to fall into that same problem where they're not coming to appointments. I go, especially if you're going to be pushing all these screenings – because they want to push colorectal screening and the retinal screening and behavior health screening.* ***I said, if you're going to be pushing those screenings on the community, you need to let them know to inform them what it's about and these people need to come out first to say, I'm going to be –you might see me at your next doctor visit. This is who I am, this is what I'm going to do, this is – for this reason is why we're doing this screening.*** *So things like that. So I've been trying to get my foot in the door to the hospital, yeah, to let them know because,* ***I consider myself a voice for the community and so that's what I try to tell them, this is what I'm hearing, this is what needs to be heard, you know, to all providers****."*

Being Part of a Multidisciplinary Care Team

Issues with being on a multidisciplinary care team include internal conflict with the team which necessitates work around/discussion with people on a one-on-one basis and how they handle it. Features of the care team align with the CFIR construct of "implementation climate" which includes the capacity for change and how well supported individuals (e.g., CHWs) during implementation. Specifically, the sub-construct of compatibility (tangible fit for with organization norms, values, and how the intervention fits within the existing workflows and systems and relative priority (perception of importance of implementation within the organization).

> *"I would say the providers do listen. The providers and staff do listen to what I have to say– I know a lot of the backend information so they're able to work off that information that I do provide and tailor their approach. So I can say they listen.* ***I think what happens is there – since it's not a team, there's no real team there, there's so much conflict – that's when things can get lost, but if I speak to everyone individually on an individual basis and let them know this is my problems, here are the concerns, or I speak to the provider they do address it.*** *I can say that."*

> *"I think they've been pretty appreciative that sometimes you know,* ***we go in strong about situations, but I ask their opinions about things, too, so it's an exchange****."*

> *"People are looking at a variety of agencies,* ***is the staff are very, very helpful to each other. If somebody has a question, if you throw it out to the group or send an email out, frequently somebody from one of the agencies or somebody may have experience that's helpful*** *and so trying to figure out community resources or is anybody helping with utility shut off right now or I have a senior that we need an assessment, what's the first step, how do we do that or whatever it's a great support network here. So that collaboration I think is really helpful."*

CHWs have a variety of roles on the multidisciplinary care teams. For example:

> *"Do you know who Radar was from the show M*A*S*H? That's who Dr. [name] who's the clinical director, he calls me Radar in the team meetings. Okay Radar, what do you have for me now? Because I guess Radar was this guy on M*A*S*H who could – you know, the character who you went to Radar* ***in order to get something done or to find out where you could get it done, you went to Radar, because Radar knew everything and everywhere to go. He was a good networker, he had ins and outs everywhere and so I'm the Radar of the team, that's what they say. Yeah, so without Radar, nobody else could effectively do their job****."*

CHWs express positives of being on care team.

> *"Just the support from like my primary team. And then like I said, I'm the only brown face at that table, but even though I am, my core team, like the three nurse practitioners, the registered nurse and even the residents that I work with and the MDs, like the clinical director and the assistant clinical director, those are considered my core team. All the other people that play a role are just contractors. They come in when we need them.* ***They are major, major supports for me because if I can't access something, and it's usually, again, unfortunately within the clinic or within the college of nursing, if I can't access it for whatever reason, they help me get through that****."*

> *"I am like,* ***100 percent part of the care team and entitled to have my input and my advocacy as part of the team and making shared decision making****. I know our really believes a lot in that. The way that our practice is actually set up is we actually sit with – the team sits with the doctor – you know, the doctor, the nurse, social worker, the medical assistant, everybody is sitting together and the shared resource like myself, we all sit together.* ***So it's a lot of shared decision making. It's a lot of trust building, personality, figuring out people's personalities****. But yeah, I think definitely being integrated into the team is essential."*

Other Staff

Other staff members also help CHWs do their job. As previously mentioned, CHWs work with a variety of staff. This section describes what CHWs are doing with other staff and how these individuals help them do their job. Similar to being on multidisciplinary care team, "other staff" describes the implementation climate of the organization implementing CHWs.

> *"Everyone helps me because I talk with them individually, so if I need an appointment scheduled and I can't schedule it because of my access, I can ask someone at the front desk to do it for me and they'll do it. And if I speak with the doctor about certain things that need to be addressed, the doctor will speak about it as well if referrals are needed. So it'll get done.* ***I think everyone here's pretty supportive on an individual basis. Just trying to get me more so in a structured care plan is difficult****."*

> *"But we don't see them every day but it's a lot and for me, I'm the only one who does the community health work and our medical director is you know, here full time because she's the physician here, so she and* ***I work closely together a lot and that's what I think makes the program really good, having access to her at all times****."*

Support from Leadership or Program Champion

Supportive leadership and program champions are a feature of the CFIR construct "readiness for implementation" which describes the tangible and immediate indicators that indicate the organization is ready to implement CHWs. Specifically, it addresses the sub-construct of "leadership engagement," or the "commitment, involvement, and accountability y of leaders and management within the organization." The following examples provide insight into the type of leadership at various organizations.

> *"I: And what within your organization helps you to do your job as a community health worker? P: A fabulous manager."*

> *"****We have a manager that supervises the community health workers and she's just wonderfully supportive and also, I think is just a huge support in us being part of our communities and so I think that makes a real big difference with the patients****. Also, just education, as far as talking to the different people or the different members of the Healthcare Home team. Like, there's social workers, so communicating with the social workers on what the community health workers are doing and what our role is and how do we work together but that kind of education for the rest of our organization is really important, too. You know, the front desk staff all know what it is we do here at the clinic. So, that's huge."*

> ***"I really believe upper management truly cares about their employees and their patients.*** *But I think they just do a really good job at educating their employees, supporting them, making sure there's – that the education material's really pertinent to what you do and they really make it so that the patients have resources in the clinics and the hospital."*

*"**I think our upper management is very visible around** [organization]. They do come out and do clinic visits. They have many different forums where they interact with the employees here. So I think they hear about it. There's also our direct supervisor who meets with those people often. So they get stories, they get feedback. They see reports of things that are happening, things that are changing with the program now."*

*"There was one time I went to a patient's home, I didn't feel comfortable in their home. They wanted to meet in their home but they had a lot of activity going on in their home and I didn't feel safe and I just told her that I can't meet with her in her home and I think she was a little offended about it. **She called and talk to you know, my supervisor about it and they were very supportive of me, but I had to advocate for myself in why I didn't feel comfortable**."*

*"I think you know, the biggest thing is the **relationship that I have with our clinical director and really like, we've made it such a team effort that that's really what makes it work a lot better** than I think it would otherwise."*

*"Yes, I really do, especially our clinical director. She's great about it. I think she understands how much, you know – again, it goes back to like, me really being part of that patient care team and **she understands how much of a role I do play in it and so really helps out when she needs to and listens to my opinions there.**"*

Lack of Support

Conversely, CHWs also experience a lack of support from management and leadership.

*"I would say a lot of the issues that we face are kind of internal, in terms of in our team – so, you know, issues that I face – what I stated before, which is kind of **struggles with communication and getting a real solid leadership team, and sorting all that sort of stuff out**. So a lot of it is not necessarily the community system or that the hospital that we face issues with, it's specific things within our own team."*

*"I'm always advocating here at the health center. **I'm trying to tell the administration about things that I find on my day to day activities that put the roadblocks in my way, that they need to be worked on and as I said, they are sometimes they are taken well**, many times. **Sometimes it takes a while before anything is implemented**. So it's always a little bit of hesitation – not so much hesitation. What is the word I want to use? It just – what you expect to happen quickly doesn't, so it takes – it may take a year, two years before you can see that going on. **So it's frustrating when you're trying to do a job the best you can and trying to make things better within** – because what if I do something that is good for a patient, the organization is doing something good. So it benefits both, not just the organization as a means of healthcare provider, but also for the patient. **So we need to have a common sense of coming to the middle, sometimes**, because – the other thing is you know, being a community health agency, it's funds are always somewhat limited, so they always put things on a scale or you know, things have to weigh more than others and wait to see if there is money available to do it and sometimes it's pretty hard to navigate that."*

*"I was being supervised by the RN care coordinator, but over time, it just really wasn't working out. Like, she was very busy and I wanted to meet with her a little bit more. **She also, didn't really have any supervisor training and I wanted some more clinical***

> ***supervision, with like, how do you care coordinate and how do you address these like, major life issues going on. So I was able to advocate for myself and was able to then switch over to the social work supervisor who was able to meet with me like, on a regular basis and provided me support, as I needed it and really work case by case on these cases****. So I would say yeah, that's like, one way I've advocated for myself this past year."*

Electronic Health Record Access

The survey did not directly ask about CHW's access to or use of electronic health records (EHR) to assist in their integration. However, during interviews, CHWs offered numerous examples of using EHRs and how EHRs helped them integrate into their care teams. CHWs use EHRs to help them make appointment and communicate directly with the doctors. EHRs also help providers track patients or clients while also acknowledging the value added by CHWs. Additionally, CHWs used other forms of tracking such as excel. EHRs and other tracking is an example of the CFIR inner setting construct of networks and communications, which describes the formal and informal communications that exist within an organization. EHRs facilitate both formal and informal communication.

> *"I get to see the documentation here from the notes, so* ***having access into the medical record****. Having reports that come down from [organization].* ***They provide me with – I have all the tools that I need, pretty much, here in my office****. So that helps. That helps a lot."*

> *"We have our own data system and yes, they can pull out state wide the number one diagnosis across the state is depression and I think diabetes, heart disease – they can pull some data. I don't have those statistics myself, but yeah, all of that is put into a database.* ***I cannot personally [access the database], but [name] can access – so we can – we can find out some information if the person has been treated at the emergency room****, for example."*

> *"We have a wonderful electronic medical record and we have different fields where we put out name on their care team and so we can run reports on whose care team we're on. We document everything. Actually,* ***every time I meet with a patient, I route my encounter to the physician – their primary care doctor****."*

> *"So in my charts,* ***I just pretty much try to take notes.*** *I try to write down what I'm going to be doing or what we're going over that day before I get there, and then just kind of making sure those things get addressed if there's something that does need to be addressed. So I walked in and met with a patient and I have my agenda, but he had something else going on and we ended up spending our time talking about that. So I didn't bring in what I really you know, wanted, but* ***what it does is it gives the opportunity for me to come back and put those things down in chart notes so that the doctor knows what's going on with the patient. So I kind of feel like I'm a bridge between the doctor and the patient in educating the doctor on the type of patient that they're working with. So I do that through the chart notes.****"*

> *"Through the CHR program.* ***We have our own database****. Those are almost like health records of the patients that we see and they go into our own database,* ***but it does go through the [name of system], through the hospital if we make contact with patients, because we have our own health – program code, that's put into the system, to say that, oh this was done by a [tribe] CHR or you know, we have another local tribe, it's called [tribe] – they have their own code****. So then they recognize which community you know, the patient was located at, as well."*

> *"Sure. We use the NextGen health information exchange and the electronic medical record system****. It's pretty amazing. I mean, you can basically do pretty much anything, chart everything about the patient, diabetes, blood pressure, cholesterol and any staff member, at any given point when you're working with a patient, all that information is available to you with just a click****. As long as you're working with that patient, yes, you are allowed to go into that health record."*

Other methods of tracking include:

> *"As of right now,* ***we have a separate application that all the community health workers and the administration can access where we keep our own notes on each patient****, and it's basically just a database where we keep track of patient's contact information and* ***we can take notes on any type of communication that we have with the patient****, so whether that's in the emergency department or out in the community or during a home visit or by phone, take notes on that and when that occurred and kind of what happened****, just to kind of build up a story on a patient and help to make sure that everyone's on the same page****. The hope is that it will be either compatible with our electronic medical system or we'll be able to take notes on patients so that when the doctor opens a patient's chart, they'll be able to see any notes that we may have taken on that patient, as well. But as of right now, it's just internal."*

> *"We have a* ***database that we use through Excel where we chart their progress, their attendance, the sessions that we cover, if they have questions*** *– we put all of that information into an Excel database."*

> *"****I've created my own little form that like a follow up form that I attach to it****. I'll put down a date and I'll just kind of write down kind of a little log, you know, what other things we've done like, on this date they came in and we needed to make an appointment for this and this and this, or and then this date we went to this and this and this. You know, just kind of a log on myself, and I made up my own form to do that."*

> *"****We also have implemented a phone app where the patients themselves can chart their weight, their nutrition, calories, they can also chart their A1C for the ones that are diabetic. If they walk or run or do any kind of exercise, they can do that and then chart it and then that application allows them to send that information to their doctor so it can become part of their chart.*** *When they come to see the doctor, the doctor see how well they have done from the last visit to the present because that is all kept in that phone app."*

CHWs describe how they are using EHR and other electronic records. For example:

> *"So when I go in (homes)**, I don't take a computer unless it's something that we're going to do on the computer, like apply for some kind of health benefits or you know, Medicaid or Medicare, Social Security. Otherwise, my computer stays in my car**. The only thing that comes down with me is my keys and my phone. **So everything that they tell me, I do my best to remember like the most important parts** and if it's something urgent, like they say you know, I don't feel good today, my legs are swollen, they're really swollen. I took my diuretic or my [name of other med] they're not – they're not helping, I'm still very swollen, then I'll ask them, you know, do you mind if I contact [name] and she's the registered nurse. And then she'll call out the provider and say hey, do you want me to go over there, do you want to go over there, do you want [CHW name] to bring them in or to schedule them? And then we go from there. But if it's something that's not as acute as that, then I would just relay it back to the provider. **Every day at the end of the day, I do like a report and I send it out to the providers, to my nursing coordinator and then to the providers themselves of which patients I met with that day and you know, what their concerns were**."*

> *" **I just do it in a progress note for myself.** What I type up in the computer is like a bio-psycho-social assessment like the initial time. And then afternoon that, it's a follow-up, **I kind of adjust it as necessary and that I do have both on – like in a digital copy that is not included in the medical record, because they don't want all the information I get. They want very specific information, mostly having to do with relation to their diagnoses, to their health**. And if it doesn't have to do with that, they really want to know. So like if it has to do with diabetes education, they don't want to know. If it has to do with resources on how they can manage their budget or pay their bills, the providers really don't need to know that stuff. **So like my nursing coordinator has all of that though, I give her that on a weekly basis. Every Friday after the clinical meeting, I'll sit with her and say okay, this is where we started with Patient A and now three weeks later, this is where we are**."*

CHWs who did not have access to EHRs expressed desire to gain access.

> *"So yeah, so that's definitely a part of the issue that I think – one of the issues that we have been chasing, in terms of coordinating care, is that **we don't have any real communication with the providers in the sense that they don't see the notes that we're taking. With those notes being internal, the only people who see them really are the community health workers so that's something that we're still trying to address and figuring out how we can get better information passed along to providers so that if that patient returns to the emergency department, for example, that patient's doctor can then go into our notes and see what has happened since their last visit and what sort of things have been put into place**. So yeah, unfortunately right now there isn't any sort of communication between the community health workers and the providers other than verbal communication that may occur, but no access to the notes that we take."*

Support and Validation from Patients

During interviews, many CHWs described support from their patients and clients as a major factor in their success, especially in motivating them to continue with their work. This support and validation enhances the inner setting for CHWs. That is, positive feedback increases the implementation climate and relative priority to implement CHWs. Examples include:

"I can say this, that working with the patients—that when you do start the work with the patients, they really appreciate it. Before you called, I was on the phone with a patient that frequently utilized the ER because her access to the doctor was very limited and ***she just constantly says, I love you, I appreciate you. So I think that's a beautiful benefit.*** *I know we didn't speak much about it, but* ***that's a beautiful benefit from working here as a community health worker is you're opening doors for the patient that you didn't realize you were opening.*** *They didn't feel that anyone here in the healthcare system cared about them and so we're caring, we're showing that we're there for them. It helps. It does help****, and in return, the patient advocates for the role. The patient will come back and say to the team, oh, without her I wouldn't know what to do and the medical staff are kind of like, oh wow****. So* ***that's a great part about me being effective in that part of it, of being there, being a trustworthy member, someone that they can really rely on to get this job done****. They'll come back and they'll let the office know about that. So that's another way that my role is advocated for, is by the patients that I work closely with."*

"I relate to my clients because I've been [HIV] positive for 13 years and I've been homeless, I've been on drugs, I've been incarcerated all of that, so I ***know where they're coming from and I know what they're going through****.* **I'm no different than they are, you know**?"

"And ***that's what helps too, when you have that trust in your community members****, then that way they're not hesitant about going to see a doctor, because then they know where their – if they have questions or they're not sure, on what was being told to them that we can go back in and explain to them."*

"Just because I think that [organization] has done a really great job of us three, [name] been telling me I've been doing a great job, that ***I've been trying my best to get those numbers up, I'm getting more referrals, getting out there to the community, letting the community know that if they need help because of their disease, they want to control their numbers, for example, their glucose, blood pressure, we can help them and there's no cost to it. A lot of them are really thankful and I like when they actually tell me that. That makes me feel really good that I'm doing something to help them out with their disease or diabetes."***

*"****It's a barrier for my inter-professional team and not for the community****, I'm like – for instance, I'm Hispanic, I'm heavily tattooed. Most of the time, I cover them up, like when I go to clinical meetings every week but I'm covered up but you wouldn't – I clean up well. But providers that know me know my work ethic, you know, know what I'm capable of and they look beyond my exterior****. It's more of like the clinical team that has an issue with how I look versus the patients I work with****. If anything, because of the way I look, they're very welcoming and opening and honest with what they say****. For example like yesterday, I got a new patient that I just met and they had disclosed to me things that when they went and did the medical assessment on them, like when the nurse and the nurse practitioner went to their home and did it, they didn't ever disclose, they weren't planning on, and within like probably about 5, 10 minutes with me sitting in their living room, they kind of laid it all out on the table. But because it has its pros and cons, so* ***because of the way I do look, I feel that I built a very immediate rapport that's necessarily to do it****. So within the first five minutes, if that person doesn't trust you, they're going to have faith in you that you're going to be able to help them with anything,*

> *they're not going to talk to you. They're going to tell you what you want to hear. Because like with our patients, a lot of them are frequent fliers they call them and they've been to the clinic several times, they've been to the emergency room several times. They know doctors by name, they know the residents by name. They know what they want to hear, like what we want to hear as medical professionals or what they want to hear.* ***And I think with me, they're better able to be more genuine****."*

> *"I think it's like, a full circle thing. You know,* ***you work for the community, the community works for you, too****."*

Overall, CHWs feel supported in their work; however, one CHW states the underlying sentiments of many CHWs. Even with support and validation from patients and clients, their work is difficult and they can get lost in the health system.

> *"I feel like my voice is heard, but I think when my immediate manager spoke about it,* ***it's like I'm a little fish in a big pond, so to speak because they're are so many – so many other things that they're focusing on right now, that sometimes my – my role and position gets put on the back burner****. I think that's the biggest issue that I'm having here, now, is that they adopted the concept here – it's a great concept,* ***but my role won't thrive unless I have the support that I need.****"*

Training as Support for CHWs

Training is an important component of CHW's overall experience and sense of support. According to an interviewee, proper training is essential, *"That* ***I just think is really important, because if you provide adequate training for folks, then you facilitate both what they're able to do and what and how useful it is for the community****, and it takes a lot of the problems out of the things. It puts parameters on it."* Eight in ten CHWs either agreed or strongly agreed that they feel well trained to carry out their duties as a CHW. This generalized training may be from an academic setting or outside organization. Training and training support is a component of the implementation climate for CHWs; specifically, the learning climate provided. CFIR describes the learning climate as an organization that supports knowledge and partnerships and where individuals feel safe to try new methods. Ongoing training investment can also be categorized as readiness for implementation, whether the level of resource dedicated for implementation and on-going operations are available. For example:

> *"They offering the training, that this was a pilot training, that this was something new that they were going to do and they were looking for participants in the training. It was a pilot training, so of course it had the bumps in the roads of anything that's just starting out. We had two big binders that we learned from and actually the concept was really good.* ***We had some people that came out and was able to talk with us and speak with us about community health workers, what you do, cultural competency, mapping out your resources, talking with all doctors and medical terminology and stuff like that. So the training was actually good and it was six weeks – four weeks, I believe****. Four weeks. But we had additional training afterwards. It was from nine to three. I think 120 hours was the requirement. We had to take two workshops, resume writing, how to dress for the*

> *interview. We met with [university] they have an impact project and they taught us how they collected data and what process they used as far as meeting with patients and the guidelines that they had."*

CHWs were also trained within their organization on a variety of general CHW topics, how to use electronic health records, and general training for the organization (which may include non-CHW staff). For example:

> *"**Yes, they're all [staff] included in there. Anybody that actually has to deal with the community, this helps us with how to deal with community people, how to actually talk to them, how to record information, and how to always have important resource to help our community** in case, for example, they need food, some electricity bills they can't pay. Just how it's important to actually have this resource."*

> *"Yes. I received extensive training. **When I first started here, everything was normal paper charts and then they started rolling out the electronic medical record here at our practice and they had personnel come out and sit with us and show us how to use the process – use the EMR and then we had to go to the main hospital to sit through two classes**, I believe, depending on where you were in the office. So for me, I specifically received front desk training. So learning how to schedule, reschedule, cancel appointments, documenting in [medical records] and stuff like that."*

Without training, however, CHWs feel less prepared and integrated into their organization. For example:

> ***"So I mean, I received training on – actually, to be honest with you, not a whole lot and I think that's been a part of my struggle in this transition is kind of – is sort of feeling like I was just thrown in and I think that a lot of trust was placed on the fact that I was going to be in the same environment that I had served in** and so I think that you know, my supervisors who hired me saw the benefit of that, of knowing that I was familiar with the staff and enmeshed well with the staff and could kind of create a strong connection and being aware of the environment and the patient population, you know, even certain patients who come in frequently and being able to work with those patients on a closer basis than I was as a volunteer, but in terms of getting patients to outside resources, , I haven't necessarily been given information on what sort of resources we can connect people with. **So that was something that I had trouble with, you know, at the beginning was – was feeling as if I was kind of just pushed in and I guess expected to learn it on the fly."***

Further, CHWs have the opportunity for continual training, while these are sometimes required by the organization, during interviews CHWs described wanting to take part in these trainings to help expand their knowledge and make them the best CHWs possible. The following quotes touch on the importance of training.

> ***"Because we were well trained and also we still continue to receive the training for a community health worker and then also just the experience on the job**. So I've been here a year, I've learned a lot over the year and three months. That's constantly keeping me trained and informed and I also keep myself abreast of certain things that are going on with community health workers, as well."*

> *"I went through* ***it strictly because I wanted some more education and I just felt that it would be beneficial to our patients****."*

> *"We get training, ourselves,* ***so we get training at least once a month, at the end of the month so that we can keep up with new information, so we do an eight hour training on the last Wednesday of each month****. In our training, we learn how to – how to talk to a client, we learn information about heart diseases, high cholesterol, stroke, all different types of other illness – illness that a person may come across, and they give us information so that we can take this information to our members and show them the information that we have and to teach them how to take care of themselves, that'll also prevent these things to happen to them. We have pharmaceutical organizations, they come, as well as other healthcare organizations."*

> ***"We all have opportunities to continue building our skill base."***

> ***"There's constant training, there's constant learning*** *– I mean, when I go to different communities, I'm learning and I think that I have to be hungry like that. I mean, that's what we ask for from our people. We want you to be hungry. We want you to learn. So to feel like I'm completely skilled, no, I'll never be that."*

Further, CHWs provided ideas for further professional development including becoming trainers. One CHW worked in an organization focused on CHW training and another described training other CHWs as an additional skill they would like to learn.

> *"Within the organization?* ***I believe that they believe that they are wonderful****. We have a very small organization, so right now, we have six people and of those six, four are trained as community health workers and our executive director is one of our guest presenters at the community health worker training. So you know, it's a very core function to what we do, being the approved training organization for our region."*

> *"What would make me a better community health worker? I would say more education, more training.* ***As a community health worker and that's the way that I'm going. I'd like to train other community health workers****."*

Interestingly, CHWs described life experience, time on the job, and being engaged with the community as important aspects of their "continual training."

> *"****I've been working with the community for many years, so I feel that I have a good, deep, sound knowledge of how they feel, what they needs of the community are and I know my resources around, in order to help them****. And I'm very a dedicated and empathetic and compassionate person."*

> **"***So I've done a lot of different trainings.* ***I think it's honestly life experience [that] really prepared me for this role more than anything,*** *and then once I got to the job, I really did so much research and so much digging into what is a community health worker, to make sure I'd be the best one ever."*

> ***"I've been doing this for two years and I have the energy and I've gone through some of the trainings but I don't know everything and there's so much room to still learn and***

I'm open to it. *But at the same time, I feel like I can contribute a lot just by having like, a raw perspective of what can work and what can't and what doesn't work for me, because I feel myself very part of the community."*

Hypertension Specific Training

CHWs specifically addressed their training as it relates to hypertension self-management and medication adherence. Over three quarters (75.7%) of CHWs agreed or strongly agreed that they are well trained in hypertension self-management, while approximately two thirds (67.9%) of CHWs agreed or strongly agreed that they are well trained to handle hypertension medication management. Hypertension-specific training included specific modules about hypertension for patient health education, as well as more clinical skills such as how to use a blood pressure machine. Examples include:

"How to reconcile medications, charting – so my case notes – and what else did we learn? Because it was – it's ***a clinical topics for community health workers****, so it* ***gives them a more in depth look at the type of things that they will be facing when they meet with patients*** *– and the other one is communication and nutrition."*

"And so one of the ones that I chose was medical language because that was something new to me, because I speak Spanish, I took it both in English and in Spanish. Things again, I was unfamiliar with a lot of terms. So for like the first week, ***it was like very in-depth learning of medical terminology and then how to kind of network with other people who work with similar individuals or the similar population that I work with, so that we could find out what – like I could find out what terms they use because it's not like I can go into a lot of my patients' houses and say, you know, talk about hypertension.*** *They're going to look at me with a very blank stare, what's hypertension? But I mean, they know it better as like blood pressure. So even something as simple as that. So that was the biggest thing for them and then I did a lot the first two weeks learning medical language like terms that they use and then what's the other one? Like medical pharmacology, stuff that some more like the psychiatric. Cultural barriers, more like a sensitivity training, cultural stuff."*

"Well, ***the training was very formal.*** *Basically, talking about the African American – the urban community and their health and so we talked about a lot of health issues, diabetes, high blood pressure, high cholesterol, we talked about the borderlines, we talked about it being like, just family genetics or it's picked up. We talked about the risk factors.* ***They educated me on how to properly take those tests, you know, where you stick the finger and do those things. We talked about ways to actually educate the community on the risk factors, how to avoid getting these diseases, because they can be prevented and so the education was basically on the information that will be taught in the program****. It was six weeks and it was twice a week. It was three others, but I'm the only one who I guess had completed the program. The other two decided that they didn't want to be a part of it. We did have a test, and I was basically tested over the information."*

"I think we had an on the job – we had a couple sessions. We had an on the job session about it and that was about two hours and then, in the training, I think it came along with

> *the medical terminology piece and that was two days. We learned about the diastolic and systolic pressure and what does it mean.* ***We learned what they mean and what a normal range is, what a high range is, what medicines are used, stuff like that. It's like a general overview, nothing extensive."***

> *"I guess* ***knowing what constitutes high blood pressure and pre-hypertension and that sort of stuff and being able to address numbers and know what different numbers mean*** *and you know, ways to address that."*

CHW training style and content varied across interviewees; however, there was a consistent focus on wanting to improve their skills and training opportunities to become better CHWs and meet patient or client needs. For example, one CHW noted a need for further hypertension training:

> *"I would say more extensive talk about it or discussion about it, since it's more prevalent.* ***I know some community health workers deal with it more than others, but as far as a whole, we could probably be more educated about it and more prepared to deal with it."***

Additionally, CHWs described the need for a comprehensive training and more specific, clear training standards.

> "*I would say very well trained. And the –* ***it's been sort of scattered in a sense though because I've gotten training in different levels, you know, community based participatory research training, community organizing training, citizen's development training, health education training,*** *you know, I've gotten different pieces of that and sat in with the training for the community health workers through several other grants that occurred, so I've gotten that.* ***What I'm still missing though, and I would say this is very good training when you put it all together****, and again, I can make it happen that way, for people who are new in the area, I would say there's a gap there because again, you have to get funding to do these things."*

> *"I'm hoping that it does become a recognized professional with probably even a licensing with competency. The person that wrote our grant promised me she would get the [state] licensing credential stuff for me to take a look at, because I think as we move forward, we probably could tighten up on our competency requirements and our training.* ***Kind of down the road, it would be good to have some standards trainings put together."***

For additional qualitative information about training please see Appendix H.

Quantitative data further echoes CHWs desire for training. Eight in ten CHWs agreed or strongly agreed that they feel well trained to carry out their general duties as CHWs. Similarly, three-quarters of CHWs agreed or strongly agreed that they feel well suited to carry out their duties with patients who have high blood pressure. Fewer CHWs (two-thirds) agreed or strongly agreed that they feel well trained to carry out hypertension medication adherence duties (Table 16).

Table 16. Training for CHWs

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (SD)
I feel well trained to carry out my duties as a CHW	12 (7.8%)	5 (3.3%)	15 (9.7%)	**6 (39.6%)**	**61 (39.6%)**	4.0 (1.4)
I feel well trained to carry out my duties in helping patient or clients who have high blood pressure	7 (5.8%)	6 (5.0%)	15 (12.5%)	**56 (46.7%)**	36 (30.0%)	3.9 (1.1)
I feel well trained to carry out my duties in helping patient or clients with high blood pressure medicine	8 (7.1%)	9 (8.0%)	19 (17.0%)	**43 (38.4%)**	33 (29.5%)	3.8 (1.2)

We created a composite score for the three training questions, which ranged from three (strongly disagree) to 15 (strongly agree) about feeling well trained (mean=11.7, SD=3.9) (Figure 27).

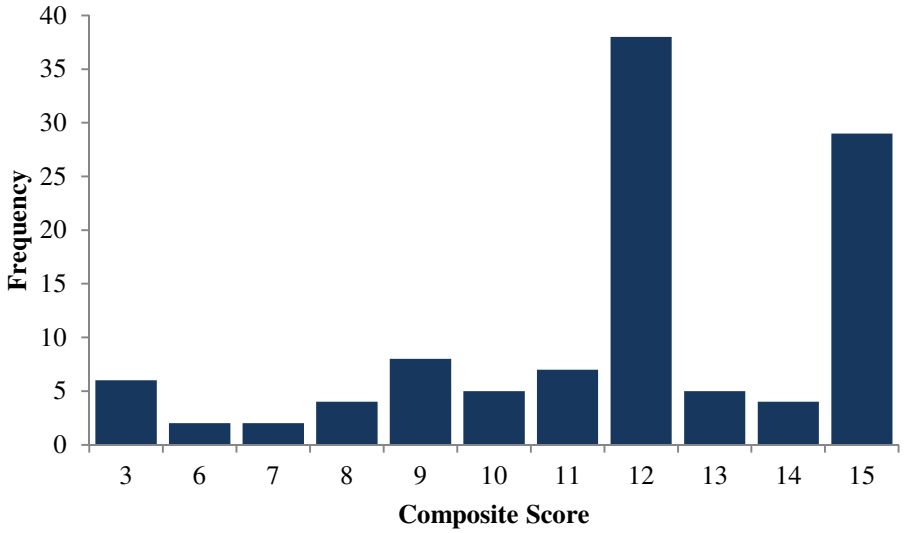


Figure 27. Composite Score for Training (n=110)

We ran correlations of various demographic information for CHWs and the training composite score. No significant correlation exists between the training composite score and number of CHWs in the organization, number of patients CHWs serve, number of patients the organization serves, number of years as a CHW, or number of CHWs in the organization. The number of years at the organization was, however, positively correlated with the statement "I feel well trained to carry out my duties as a CHW" (ρ=0.177, p=0.037, R^2=0.006, n=170). No significant correlation existed for any CHW specific demographic including age, race, or gender (Figure 28).

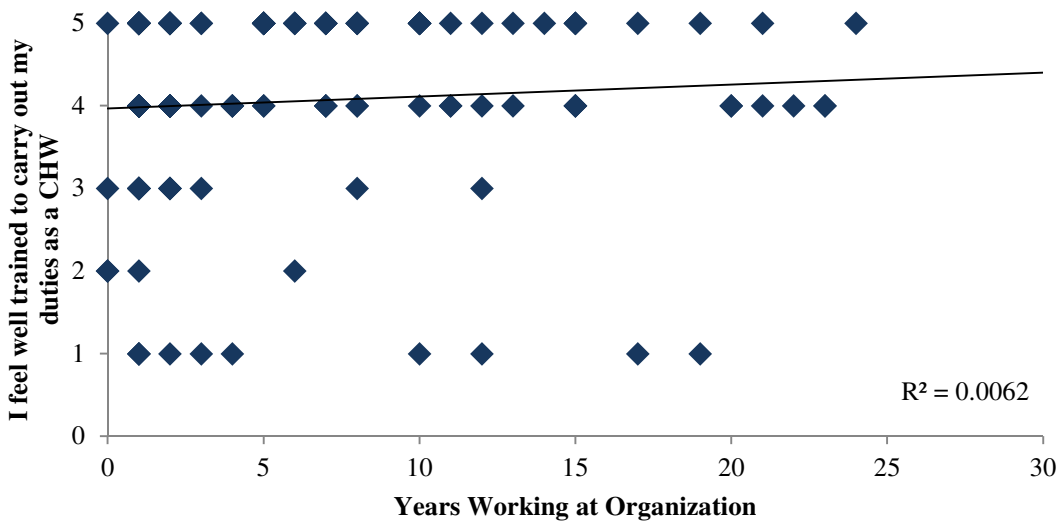


Figure 28. Positive Correlation Between Training and Number of Years Working at Organization
ρ=0.177, p=0.037, R^2=0.006, n=170

Non-organizational Factors that Support Work as CHWs

CHWs were also asked to describe the factors that support their work outside of the organizational setting. Eight out of ten CHWs described networking with other CHWs as a source of support for their work. Nearly sixty percent of CHW stated that support from the state or region in CHW efforts helped with their work. Approximately half of CHWs cited training or other support from the State Health Department or receiving training or networking with non-CHW organizations, or being a member of a CHW alliance or association. These findings call to the importance of social networks, external training, and recognition or validation of CHWs efforts (Table 17).

Table 17. Factors that Support Work as CHW

What outer setting factors help to support your work as a CHW?^	
Networking with other CHWs	116 (77.9%)
Recognition of role of CHWs in my state/region	88 (59.1%)
Receiving training or other support from your State Health Department	81 (54.4%)
Networking with non-CHW organizations	75 (50.3%)
Being a member of a CHW alliance and/or association	74 (49.7%)
Being a member of a professional organization	57 (38.3%)
Other*	5 (3.4%)

*Other includes: Attending conference and forums; client testimonials and health outcomes; training; previous experience as a health education; social support (prayer, husband, neighbors)
^Respondents could check multiple, total does not equal 100%

Further, the CFIR describes outer setting factors as patient needs and resources, CHW cosmopolitan, organization composition, peer pressure, and external policy and incentives. We operationalized these for this specific project in the following way:

- Shifted Patient Needs and Resources to **CHW needs and resources**, which described whether the CHW's needs are known and prioritized by the organization
- Cosmopolitan was shifted to **CHW cosmopolitan** and **organizational cosmopolitan**. CHW cosmopolitan describes how much CHWs are networked with external organization. Quantitatively, CHW cosmopolitan includes networking with other CHWs (77.9%) and being a member of CHW alliances and/or associations (49.7%), being a member of a professional organization (38.3%). Organizational cosmopolitan describes how much an organization itself is networked with non-CHW organizations.
- **Peer pressure** describes information about how competing organizations are doing CHW-related interventions.
- **External policies and incentives** include government mandates, collaborative, public or benchmark performance. This includes the quantitative description of recognition of the CHW roles in state or region (59.1%).

We will provide specific examples of each construct. For further examples please see Appendix G.

CHW Needs and Resources

During interviews, CHWs described whether their needs were met and prioritized by the organization. Organizations prioritized CHW needs. This included direct staff and management as well as other offices within large organization. For example:

> *"I really do have good relationships with management.* ***I also have relationships with different people outside of my immediate office that can help me provide advice.*** *I just recently reached out to patient advocacy at the main hospital. So they do something similar – similar to what I do, but different in a sense because they work with those concerns that patients have inside the hospital, but a lot of the resources that they may use, I use as well. So I have good relationships here.* ***The relationships that I have do help and when I had my previous manager, she was really for my position. She was like, my go to person, so to speak, so she was – she was really for my ideas and implementation and she was letting me know that it's going to take time because there are so many things that need to be addressed first, but she was always putting my position on the forefront and speaking favorably of me and my role."***

> *"I think it's viewed as the – it's a highly respected position. I think that's why they didn't just call me a community health worker, but they called me a community care manager."*

> *"I have a patient who's on my community health work case load who has prostate cancer and just found out that he also has colon cancer and he does not like going to the doctor and so we had a meeting with the doctor that did his colonoscopy and had found, you know, the cancer. So we were meeting with this one day and she says, now – she kept going, what is your role? You know, what are you and he said, this is my community health worker and she said, I've never heard of that, what is that? So I started explaining to her that you know, I was there to support the patient, being an advocate for the doctor and the patient, making sure that the patient understands what the doctor's saying and you know, coming to the appointment – for – you know, explaining what I was doing with him, basically and she goes, I've never heard of that, and then she says,* ***I have so many patients that need someone like you. How do I go about getting them a community health worker and I thought that was just hilarious, because I was like, she's got it and she recognized that there's people who need it and they don't have one. So I think the role of a community health worker, not just within [organization name], but period in the healthcare field is so needed."***

CHW Cosmopolitan

CHW cosmopolitan describes how CHWs are linked into their communities and external organizations. One specific way is through networking with other CHWs. This networking provides social support, "*All the community health workers get together and kind of just discuss, visions, things that we're facing*," and also allows CHWs to continue to be an active and engaged part of their community. Over three-quarters (77.9%) of CHWs indicated that networking with other CHWs was an important factor that supports their work. Further examples include:

> *"That would be through personal –* ***that component is through every CHWs personal experience and personal network and contacts****. Their personal –* ***I have my groups or my boards that I sit on****. My community groups that I'm a partner with and – so it's there's no protocol for who or where these different resources are found, it's just within the community."*

> *"Just knowing the community. Like I said,* ***I was born and raised here*** *and I did not grow up underprivileged but I went to a Catholic school where, you know, philanthropy was like the essence, was the core of our – like of our graduating class. So I knew – I got into network****, like I had the opportunity to network with a lot of people and find resources and like I created like a handbook of resources*** *of – that are not so commonly known for the individuals that I work with."*

Being engaged with other CHWs provides CHWs opportunity to find resources for their patients or clients. For example:

> *"****There is a lot of amazing community health workers here*** *in [state name] and I'm blessed to know many of them. So* ***when I find a particular need that I don't know what to do, I know who to go to so that that person can come in and then help me with that patient to get them where they need to be.*** *So it's like,* ***a good networking system****, even though it hasn't been – it's not a recognized networking system yet here in [state], there is a huge community bonding here. So we kind of know each other by just being in meetings or knowing from one person to another."*

> *"Definitely the resources that I obtain from the community. Workshops that I go to – I've been to* ***collaboration meetings*** *where I found out more about substance abuse programs that are out there, food agencies, food banks.* ***So definitely having the community resource piece under my belt is an excellent*** *help because I'm able to refer to patients – to things they may not know about. They may not know about these resources that help them. They know stuff is out there, but they don't know how to access it or they had trouble accessing these resources before, so that – that's a major piece to – to my job, too."*

Not only were CHWs a part of the organization but they were leading efforts.

> *"So they're one of the organizations out there who have the meetings and have the networking and are out in the community with community health workers and so you're – what they're trying to do is making community – they're a piece, because I know there's a lot of legislation and a lot of government organizations that are really trying to get community health workers a professional term rather than just a job description. [Name of network] is part of that. A small part of it, but you know, part of the collective nationwide."*

> *"You know, I started learning from there and then came I want to say more passion, where I'm involved with the [CHW association], where I'm part of the – being a community health worker leader of the network. So there are more – my passion is through trying to make other community health workers be aware of who they are and hoping that we can accomplish – to make a change in [state]."*

> *"I've kind of set up and it's still really early in the process, but I think that whole networking really plays a really important aspect into – into my job in being able to access more patients that need the care that they do."*

Being a part of these networks is a natural step for many CHWs and plays to their strengths of connecting people:

> *"I mean,* ***I've always kind of formed networks everywhere I went****. You know, formed – helped establish groups.* ***Like, right now there's a group that's called [organization] and you know, I was one of the founders and so like, I just think that there's so much room for improvement in the community****, especially for people who look like me and work like me, work hard like me, you know."*

Finally, CHWs described being members of professional organizations and attending professional conferences as an important aspect of their work.

> *"Well yeah, the conferences help for us as CHWs to be aware of where more community health workers are at, but I also want to say the fact that we – within the [organization], as well, I reach out a lot to the CHWs there to help me to do my job and they, too, have come – I have a lot of them who came to help me with clients that have lots of needs."*

CHW cosmopolitan demonstrates, as one CHW said, "*Everyone's doing their own parts, but as a collective."*

Similarly, organizational cosmopolitan describes how well the organization itself is networked with other organizations. Organizations are networked through grants or large systems. These networks allow the organization to gain visibility within the community and also support CHWs:

> *"**I think the fact that people outside of our organization recognize our value and people outside of our organization are willing to help us.** Right now, I'm getting ready to go to a place where people – an organization has actually given us an office so we can provide free blood pressure for their people on a regular basis. So people have given us – in our work, we actually had – one organization gave us 250,000 square feet of a space to do our work. So what happens is that we just leverage a lot of stuff. **We don't get a lot of money, but people recognize our value and they're willing to support us and we just stretch our resources to make those things happen."***

Additionally, these organizational connections contribute to the overall community and allow CHWs to offer more holistic care:

> *"Well, **we do that because we believe that it's very hard for somebody to be healthy if they don't have the necessary things for a healthy life**. So we connect them to perhaps the food banks. We try to work around housing issues. Respite care, if they're caring for a family member intensely, we have a caregiver support group and we don't – we as [organization] don't run all these things. **But we're able to refer and we know what's available in the community, and that's the case around a lot of the community organizations. So [organization] might sponsor a caregivers class or a class. We know about it, we help recruit participants from the community.** There might be referrals for those types of educational pieces from a variety of organizations. [Organization] might have a parent with a chronic condition and so they'll refer them to classes and workshops. [Organization] also does budgeting classes. There are organizations for aging in the area. Or just try and connect and coordinate among the organizations in the community."*

Further, coordinating with other organizations allows the CHW organization to build report with the community it works in and provides access to the patient population. For example:

> *"Well first of all, I think the **having a system of community, we work a lot around community organizing and getting them aware of where the issues are that we have been exposed to, where the programs are and resources and where the people, if there's a need, you know, and how might we get them aware** that being aware and resourceful are key things that they need to know. Then knowing how to go in and how to enter communities and then you know, one of the things **we've been really talking about is developing the community's trust** and know that you are consistent, you're not going to just be fly by night, you know, come in and be gone and there's no track of – that you've been there and then the other aspect of it is getting them to understand that **our work is really designed to help people build their own capacity to some degree and that so when you are gone, that they do know where they can go and what they can do to continue to – the resources they need as well as to be informed of the various areas and keeping to the trends that are in health**."*

> *"We go to – here in [state], here in [town], we usually go to like, [organization].* ***We go out to meet companies – big [trucking] companies, where they work. These are actually companies that let us in and usually health fairs*** *– and then like I said, our referrals from [organization] that – they give us – refer us people from high blood pressure, cholesterol, diabetes or that they're interested to lose a little – couple pounds.* ***We also go every quarter to go out in the community and give out fliers, post up fliers in stores, schools, elementary. I usually go hand out in the restaurants, the ones that let me.*** *So I'm usually out there every quarter, trying to give out those fliers so I can get some calls, which I do sometimes get random calls. So that's really good."*

> *"****We work through what's called crew leaders, most of the time. So like, a crew leader would be somebody who hired 75 migrants to come up from [state] to work here in [state]. So a lot of times, the easiest way to – to get to this patient population is locating these crew leaders*** *and you know, it might be that the crew leaders aren't interested giving patients time off to come to a clinic, so we really try and work with those crew leaders to talk about you know, wouldn't you rather have healthy workers you know, and things like that, to make them allow access to the patient. I think I have a list of about maybe 20, 25 different crew leaders."*

Additionally, organizations collaborating with other trusted community-based organizations build camaraderie and increases credibility within the community. For example:

> *"****We align with mostly community based organizations that provide services****. For instance, we established several coalitions. One has been the [name] Coalition through some funding we received from the [name] and the [name] was* ***very involved in giving us money to establish a coalition with similar people who were – similar interests and basically what we've done was to bring all those partners-- over 200 partners that we have that has worked with us in various capacities to – including our state officials, our local county governmental officials and our partnerships across the state and six other communities are doing similar work around childhood obesity and the associated perhaps you know, coming from that****."*

> *"I'm part of a lot of different associations and stuff but not to help us with that – but I do think that we have some great partners, like some of the funders who provide us with things – and maybe not necessarily directly, but whenever we go out, they give us incentives, they give us information. So a lot of our work is leveraged,* ***so definitely when we talk about being community oriented, we are definitely community oriented."***

> *"****So whenever we do an event like that, we generally report back to the community what we have done. So that's the other part about creating validity for the community health worker is that when they go out into their communities and they say that we're going to do this kind of work, we give them information so they can go back to their community and tell them, so this is the result of what we have done****. So a lot of our work is done – we do a lot of evaluation, we take a lot of surveys, you know, when people come on we do a questionnaire – so we have demographics – I mean, so when I tell you we have you know, 7,000 screenings we can document everything that we do, and once again, it's because we understood that the community health worker was an important person in terms of making the community better, and we know that in the medical profession and funders and everybody else, they want – they want documentation. So we have trained, we have evaluated our people so that they can provide the funders I mean,*

> *with information that they want and at the same time, go back to the community and tell them, this is what we've done."*

Coordinating together expands organizational capacity and allows CHWs to offer services they would not otherwise be able to offer by connecting with other community sectors.

> *"We work – **our other CHW works very closely with our police department here**. We have a high Latino population here, in our clinic, and so that work with the police department actually helps us a lot because they have an actual outreach person that works with the Spanish community, too. **We partner with all kinds of different organizations around the [city] and there's like, adult day programs that we've gone out to see and we use for referring patients to or talking to providers about. There are organizations that help with getting your education or your GED or learning English as a second language, computer skills, places – organizations that help people find work and different education, help people try and find food – our local food shelf, we work with them a lot, our community center**, as well, here. So we go out to all these different organizations at different times, depending on kind of what's going on. There's a church in our community that's very involved in the community and we've done different events with them, as well."*

> *"It's a collaborative effort. **What we're trying to do is have no wrong door in the region and so if they connect to any of the social service organizations or clinics or anything like that, we have an assessment tool that can be used and then they can be connected to somebody that will help them walk through.** So it's care coordination, connection to services and then depending on which organization, we provide the education on how to use the medical system and how to manage their chronic condition."*

Leveraging the community connections and working with other organizations also allows CHWs to be more focused on the patient needs. For example:

> *"**But we do it through leveraging our relationships with other organizations**, because what we feel like is that, you know, **no one organization can do everything so you have to figure out who's best at what and then develop a relationship with them and then have them come alongside of you in order to provide services to the community**. So any time we go out into a community event, **we have anywhere from probably from six to 20 other organizations that come alongside of us**. That way – and again, this is all utilizing community health workers – that way, when we go into a community – for example, [city] has North Side, South Side and a lot of times there are territorial issues – or we may go into another ethnic community. What we do is we find partners within that community that we work with in order to serve that community. We also provide information for people from that community to go to clinics within that community. **So our whole focus has been – because we have a public health focus – our whole focus has been around finding out who are the people that are the most appropriate to present the message and come alongside of them and then to promote public health**."*

Peer Pressure

Peer pressure was a less common theme among interviewees but describes pressure from other organizations to perform CHW-related interventions. Peer pressure was a positive construct,

as it allowed the specific organization to see what others are doing and they could build from learning opportunities.

> *"I'm actually going to –* ***Dr. [name of doctor] and I are going to go down to [city] and see some community health workers at this one clinic****. So I think seeing other people doing it – because see, here in [city], people weren't – people haven't been doing it, because this is new.* ***So actually going somewhere where it's actually happening and being able to see what they're doing is going to be a plus – I think real helpful.***

External Policies and Initiatives

External policies and Initiatives include government, mandates, collaborative, public or benchmark performance. CHWs describe the Patient Protection and Affordable Care Act (ACA) and state expansion and access to insurance as a facilitator for their work. For example, three CHWs describe their experience with external policies.

> *"I think that [the Affordable Care Act] that has definitely helped me – all of us to – and specifically, yes, as a community health worker, it's helped to do my job better because just you know –* ***helping people obtain coverage that they may not have had before is great because that's obviously helped a lot of people afford medication that they before couldn't afford at all.*** *I think that's helped not just the healthcare industry in general, although I think one of the things that I guess kind of a negative aspect of that is having people get coverage doesn't necessarily help them obtain access to primary care, so you know, we've definitely seen that – an increase in the number of people in the area who are covered but haven't necessarily seen a similar increase in the number of primary care providers. So that means there are a lot more people who have primary care doctors, without increasing that number of primary care doctors. So I think it creates a lot more stress and strain on the current primary care providers. So I guess that's kind of been one negative side of the Affordable Care Act is not really addressing – or not the Act itself, but just in this neighborhood, not really addressing the shortage of primary care physicians to help address all these new people who are covered under the new law. So yeah, I think there's kind of a positive and a negative spin to that, but in terms of* ***helping people get better, but that's helped me helped patients get connected with medications that they might not have been able to afford before."***

> *"So* ***we connect people with existing assistance through [name of health plan], which is the state Medicaid program****, help people with Medicare issues, with obtaining prescription medications if they need help with that and then we also work at the community level on identifying gaps and collaborating with other organizations to fill the gaps.* ***We have a policy of not duplicating services, because in rural frontier areas, there's always an issue with funding. So we try to work with other community partners in making sure that we don't have a duplication of services so that our funding that we do receive is leveraged in."***

> *"****I hope we can keep growing as a movement, because right now the community health worker is a movement in all the country****, but what I want to remark is all of this is possible because of the – the Affordable Care Act. That is, I think, or our hopes to – to get health for everyone – everyone reach – have a home healthcare."*

CHWs also lead policy related initiatives to help advocate for their organization and work.

"Part of the work we did, established in [year] was we called a [name of organization] and that was designed in the initiative from our local governor at the time to revitalize communities, the best way to do that was through partnerships and with these partnerships, ***we were able to align ourselves in the community with the folk at the state levels in each of the departments, you know, so that you've got the governor and then the community based groups were able to get whatever resources we needed to have leveraging done because that was the way he felt that we needed to get more of what we wanted to have in our local communities, having associated partners****. And so* ***over the past years, we've kept those relationships in many ways and now we've been able to sustain a lot of our programs even though we didn't have funding, which has really helped tremendously.*** *But yeah, including our local state officials, we do have health departments and our community based organizations, private and non-profit as well, and for-profit, so public and private partnerships and we have a number of volunteers and students who work with us around some of these initiatives that really work to get young people more engaged in their own learning."*

"That was around the same type of thing. What we did [name of CHW association] and [name of organization] worked together with some legislatures to create and pass some legislation that secured a form of a way for community health workers to have a commission and that it would be community health workers that were on the commission. So it created a state commission in legislation that has a designated number of community health workers on it. The first thing we did was create the commission – well, it was first the steering committee and then it rolled into a commission after the legislation, but what we did was create the standards and also a process for training programs to receive state approval for training community health workers and having them be eligible to be on the registry at the state level. So they're state certified community health workers – and they're putting this in place for a number of reasons, but one of them is that CMS is working on a system to be able to pay for some of the work that community health workers do."

"I would say networking has been huge for me. Networking with state agencies, federal, you know, people, policy makers and things like that, as well as local agencies, policy makers and ***I try to advocate for the community as a whole, as well as patient by patient****."*

Summary of Inner Setting and Outer Setting CFIR Constructs

This research focuses on how the inner setting and outer setting of the organization influences the CHW's integration. Summary of CHW integration into the organization and outside of the organization is below (Table 18 and Table 19).

Table 18. Inner Setting Summary

Construct	Definition	Examples
Structural characteristics	The social architecture, age, maturity, and size of an organization	
Networks and communication	The nature and quality of formal and informal communications within an organization	• Electronic Health Records • Staff-meetings
Culture	Norms, values and basic assumptions	• Ability for CHWs to stay connected to community
Implementation climate	The absorptive capacity for change, shared receptivity of involved individuals to an intervention and the extend to which that intervention will be rewarded, supported, and expected within their organization	• Training (learning climate) • Being part of multidisciplinary care team (compatibility, relative priority) • Support and validation from patients (relative priority) • Resources to health education materials (learning climate)
Readiness for implementation	Tangible and immediate indicators of organizational commitment to its decision to implement an intervention	• Support from leadership or program champion (leadership engagement) • Training (available resources)

Table 19. Outer Setting Summary

Construct	Definition	Examples
CHW needs and resources	The extent to which CHW needs, as well barriers and facilitators meet those needs are accurately know and prioritized by the organization	• How well the organization responds to CHW specific needs
CHW cosmopolitan	The degree to which CHWs are networked with external organizations (e.g., other CHWs, professional networks)	• Networking with other CHWs and organizations; formal or informal
Organizational cosmopolitan	The degree to which an organization itself is networked with non-CHW organizations	• Organization employing CHW is well networked with community based organizations; formal or informal
Peer pressure	Mimetic or competitive pressure to implement an intervention, typically because most or other key peers or competing organizations have already implemented or In a bid for competitive edge	• Attending meetings with other organizations who train CHWs to learn best practices
External policies and initiatives	A broad construct that includes external strategies to spread interventions including policy and regulations (governmental or other central entity), external mandates, recommendation guidelines, pay-for-performance, collaborative, and public or benchmark reporting	• CHWs are aware and connected with larger policies and initiatives that impact their work

Key Findings

The majority of CHWs ranked resources to health education material as an important aspect of support. These materials allow CHWs to provide evidence-based information to people and serve as a central feature of CHWs interactions with patients. Internal to the organization, CHWs also appreciate well-run, consistent, organized meetings. Such meetings can be held in a non-traditional setting (e.g., take supervisors to site visits, health fairs) to help them understand day-to-day functions of CHWs, but generally it is important to dedicate time for CHWs to share their experience. More broadly, communication also helps to support CHW in their roles. Specifically, Electronic Health Records, when used correctly, are excellent tools for tracking CHW-patient interactions and communicating within the team. Training, both in the beginning and throughout the lifespan of the CHWs time at an organization helps to further CHWs knowledge and allows CHWs to feel supported in providing self-management and medication adherence support while also ensuring fidelity of evidence based service delivery. Finally, maintaining connections and external linkages through networks helps CHWs feel supported but also benefits the organization, as CHWs can find new resources, build credibility and trust of the organization within the community.

Other Findings

Finally, we asked CHWs more generally about their roles. The roles provided are based on the 1998 study, which have guided the field. We asked CHWs about their perspective on the role or skills level of difficulty and about the role or skill priority (Rosenthal, Wiggins, Brownstein, Johnson, Borbón, et al., 1998). Communication skills, interpersonal skills, advocating for individual and community needs, organizational skills, assuring that people get services they need, service coordination skills, advocacy, and broad knowledge about community and health issues were ranked advanced by more than 50% of CHWs surveyed. Four out of ten CHWs ranked providing direct services, teaching skills, and providing culturally appropriate health education as advanced. Over forty percent of CHWs ranked capacity building skills, building individual and community capacity, and cultural medication between communities and health and human service systems ranked as intermediate. The tables below indicate these skills and role are critical competencies for CHWs.

Table 20. CHW Roles and Skills Level of Difficulty

Role or Competencies	Beginner	Intermediate	Advanced
Communication skills	8 (5.2%)	47 (30.7%)	**98 (64.1%)**
Interpersonal skills	11 (7.2%)	45 (29.6%)	**96 (62.2%)**
Advocating for individual and community needs	12 (7.9%)	49 (32.2%)	**91 (59.9%)**
Organizational skills	11 (7.2%)	54 (35.5%)	**87 (57.2%)**
Assuring that people get the services they need	13 (8.6%)	54 (35.5%)	**85 (55.9%)**
Service coordination skills	17 (11.2%)	52 (34.2%)	**83 (54.6%)**
Advocacy skills	15 (9.9%)	55 (36.4%)	**81 (53.6%)**
Broad knowledge base about community and health issues	17 (11.0%)	57 (37.0%)	**80 (51.9%)**
Providing direct services	21 (13.7%)	59 (38.6%)	**73 (47.7%)**
Teaching skills	15 (9.8%)	65 (42.5%)	**73 (47.7%)**
Providing culturally appropriate health education	23 (15.1%)	58 (38.2%)	**71 (46.7%)**
Informal counseling and social support	28 (18.3%)	60 (39.2%)	**65 (42.5%)**
Capacity building skills	18 (11.7%)	**71 (46.1%)**	65 (42.2%)
Building individual and community capacity	24 (15.9%)	**66 (43.7%)**	61 (40.4%)
Cultural mediation between communities and health and human service systems	24 (15.9%)	**73 (48.3%)**	54 (35.8%)

CHWs were also asked to describe the level of priority (low, medium, high) for each of the roles and skills. Eight in ten CHWs ranked communication skills, advocating for individuals and community needs, assuring that people get services they need, and providing culturally appropriate health education as high priority. Over seventy percent of CHWs ranked broad knowledge base about community and health issues, advocacy skills, organizational skills, teaching skills, providing direct services, interpersonal skills, and cultural mediation between communities and health and human services as high priority. Interestingly, there is a good match between more advances roles and skills and the CHWs sense of the importance of the skill. For

example, communication skills is ranked as advanced and high priority. These correlations may offer insight into specific training needs of CHWs and priority areas.

Table 21. CHW Roles and Skills Level of Priority

	Low	Medium	High
Communication skills	2 (1.3%)	19 (12.7%)	129 (86.0%)
Advocating for individual and community needs	5 (3.3%)	20 (13.2%)	127 (83.6%)
Assuring that people get the services they need	4 (2.6%)	22 (14.4%)	127 (83.0%)
Providing culturally appropriate health education	4 (2.6%)	26 (17.0%)	123 (80.4%)
Broad knowledge base about community and health issues	4 (2.7%)	27 (18.0%)	119 (79.3%)
Advocacy skills	3 (2.0%)	30 (20.1%)	116 (77.9%)
Organizational skills	2 (1.4%)	37 (25.2%)	108 (73.5%)
Teaching skills	5 (3.4%)	35 (23.5%)	109 (73.2%)
Providing direct services	7 (4.6%)	35 (23.2%)	109 (72.2%)
Interpersonal skills	3 (2.0%)	40 (26.7%)	107 (71.3%)
Cultural mediation between communities and health and human service systems	6 (3.9%)	39 (25.7%)	107 (70.4%)
Service coordination skills	3 (2.0%)	43 (29.1%)	102 (68.9%)
Building individual and community capacity	5 (3.4%)	44 (29.5%)	100 (67.1%)
Capacity building skills	4 (2.7%)	49 (33.1%)	95 (64.2%)
Informal counseling and social support	9 (6.0%)	46 (30.5%)	96 (63.6%)

CHWs and the Chronic Care Model

Appropriate implementation of the chronic care model yields informed; activate patients and a prepared, proactive practice team. These productive interactions improve health outcomes. CHWs do not take the place of clinical care, rather they effectively support it. This chronic care model has been modified to focus on hypertension and the specific issues from thesis survey; however, it can be operationalized for other chronic disease. Additionally, the CCM focuses on self-management but may also serve as a template for prevention efforts (a CHW's strength). The following table links CHW roles to the CCM and provides a summary tool for all research questions.

Table 22. Chronic Care Model and CHWs

CCM Domain	Definition and Examples	CHW Role and Examples
Health System: Organization of Healthcare *Create a culture, organization and mechanisms that promote safe, high quality care*	• Visibly support improvement at all levels of the organization, beginning with the senior leader • Promote effective improvement strategies aimed at comprehensive system change • Encourage open and systematic handling of errors and quality problems to improve care • Provide incentives based on quality of care • Develop agreements that facilitate care coordination within and across organizations	• Involvement in meetings with upper level management • Linkages within community and across organizations • Designated time for CHWs to be part of larger organizational meetings (e.g., executive level meetings)
Delivery System Design *Assure the delivery of effective, efficient clinical care and self-management support*	• Define roles and distribute tasks among team members • Use planned interactions to support evidence-based care • Provide clinical case management services for complex patients • Ensure regular follow-up by the care team	• Health education and prevention focus • Structured, planned, regular interactions with people • Follow-up in culturally appropriate manner • Case management and coordination within the care team for complex patients • Improve health literacy and cultural sensitivity within care team • 1:1 case management and care coordination meetings for CHW and provider •

	• Give care that patients understand and that fits with their cultural background	
Decision Support *Promote clinical care that is consistent with scientific evidence and patient preferences*	• Embed evidence-based guidelines into daily clinical practice • Share evidence-based guidelines and information with patients to encourage their participation • Use proven provider education methods • Integrate specialist expertise and primary care	• Health education
Clinical Information Systems *Organize patient and population data to facilitate efficient and effective care*	• Provide timely reminders for providers and patients • Identify relevant subpopulations for proactive care • Facilitate individual patient care planning • Share information with patients and providers to coordinate care • Monitor performance of practice team and care system	• Contribute to electronic health record and tracking • Enhance opportunities for performance monitoring and quality improvement by offering community perspectives to care team • Electronic Health Records (part of chronic care model and patient centered medical home), when used correctly, are excellent tools for tracking CHW-patient interactions and communicating within the team. CHWs who did not have access to EHRs suggested a need for access or some appropriate tracking methods. CHWs not in heath settings used similar tools (e.g., excel tracking, state level database) to record and communicate patient interactions
The Community *Mobilize community resources to meet needs of patients*	• Encourage patients to participate in effective community programs • Form partnerships with community organizations to support and develop interventions that fill gaps in needed services • Advocate for policies to improve patient care	• Already existing partnership in the community • Avoid duplication of efforts • Advocate for gaps in care and necessary services • Advocate for policies to improve patient care within organization and in community • CHWs are first and foremost part of the community and organizations that support CHWs in maintaining community ties and identity are conducive to CHWs feeling of organizational support • Staying connected to the community allows CHWs to do their job and gain access/connect with the highest needs patients • Networking with other CHWs and other organizations enhances CHW and organizational capacity (the most commonly cited outer setting factor that helps facilitate work) and allows for personal and professional development and growth

		• Working with other CHWs and organizations builds trust and credibility of the organization within the community
Self-Management Support *Empower and prepare patients to manage their health and healthcare*	• Emphasize the patient's central role in managing their health • Use effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up • Organize internal and community resources to provide ongoing self-management support to patients	• Patient centered focus for self-management • Increase patient responsibility in self-management • Provide emotional support for patient and families/networks • Goal setting and treatment plan creation, follow up, and support • Facilitate provider-patient communication

Chapter 5. Discussion

This chapter will describe key findings based on the four proposed research questions, strengths and limitations of the present study, and finally implications and future directions of the field.

Key Findings

Descriptive Information about Sample

The average age of all respondents was 43.1 years (SD=12.8). The majority of community health workers (CHWs) were female (88.3%) and Hispanic/Latino(a) (45.4%), Black/African American (25.7%) or non-Hispanic White (25.0%). A large majority (85.7%) of CHWs in the sample have received higher than high school education (some college or technical, college graduate, post-graduate or professional). CHWs represented all four census regions with four out of ten coming from the Midwest (Region 2). Over a quarter of CHWs work at community-based organizations (26.0%).

CHWs work with people in community settings, through individual phone and/or email sessions, home visits, outreach in the organization set ting, outreach in community setting, and sessions in the organization. The most frequently reported roles include: helping people gain access to medical services, advocating for individual needs, teaching people how to use healthcare and social service, helping people gain access to non-medical services, and helping people manage chronic conditions. Helping people gain and maintain access to the medical system is a particularly important role for CHWs.

What are CHWs' roles in hypertension self-management?

- CHWs roles are flexible and largely dictated by the patient or client's needs
- CHWs work with numerous people to help manage high blood pressure; regardless of who they work with CHWs work in partnership and collaboration
- CHWs conduct hypertension self-management roles in the organization and in people's homes (home visits); the visits average 39.7 minutes 7.8 times per month over a seven month period
- Broadly, CHWs work on health education through behavior management (e.g., educating people about diet, medications, and goal setting) and connecting people (e.g., referrals, transportation, helping people access resources)

- The roles CHWs have in hypertension self-management are multifaceted and center around patient needs
- Hypertension is one example of CHW working with chronic disease; similar roles and skills apply for CHWs working with other chronic diseases

What are ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?

CHWs are aware of barriers and challenges people face with high blood pressure medication adherence. They are contributing to reducing these barriers through a holistic, people-centered approach focused on each aspect of the five dimensions of adherence. The role of CHWs in medication adherence is not limited to high blood pressure medications but rather navigating the intricacies and complexities of the health system, reducing challenges with complex medication regimens, and alleviating fears through culturally appropriate methods. CHWs are well equipped to address and support hypertension medication adherence according to the five dimensions of adherence.

Patient-Related Factors

Patient-related factors affecting adherence to hypertension treatment, as defined by the World Health Organization (WHO), include inadequate knowledge and skills in managing the condition, lack of awareness about the cost and benefits of treatment. These barriers can be overcome through behavioral and motivational interventions, good patient-provider relationships, self-management, memory aids and reminders. Perceived patient-related barriers include forgetfulness of taking medications, lack of consequences for not taking medicines (increased by lack of warning signs), and perception of treatment effectiveness (slow to help them feel better), and lack of urgency about treatment of hypertension overall (and lack of symptoms associated with high blood pressure).

CHW roles in overcoming patient-related barriers include: counseling to understand and address fears, perception, and knowledge about taking medicines; addressing the serious long-term consequences of high blood pressure and importance of taking medicines to reduce negative long-term consequences; providing memory aids and creating systems and reminder to increase adherence (e.g., alarms, pill boxes).

Condition-Related Factors

Condition-related barriers primarily include lack of understanding about hypertension and poor perceptions about the disease. To address this WHO recommends education on the use

of medications. CHWs *perceived condition-related barriers for their patients such as:* other health conditions such as obesity, depression or anxiety and diseases such as diabetes, and complex and/or multiple health conditions, which create confusion about medications. The CHWs' roles in overcoming these condition-related barriers include: encouraging healthy lifestyle and remind people of the seriousness of high blood pressure and addressing co-morbidities through follow-up and support.

Therapy-Related Factors

Therapy-related barriers primarily include complex treatment regimens and adverse effects of treatment. To combat these, WHO recommends simplification of treatment regimens. Perceived therapy-related barriers include: complex treatment and medication regimens (patients take more than one kind of medicine), people have a history of poor adherence and compliance with medication, and side effects with medications, which include nausea, dizziness, and fatigue. CHWs roles in overcoming therapy-related barriers include: facilitating communication about treatment regimen between CHW and provider care team (pharmacist, provider), education about possible side effects and reduce confusion, bias, and stigma about taking medicines; and encouraging patients to talk with provider about possible side effects.

Health System Factors

Health system barriers are defined by WHO as a lack of knowledge and training for healthcare providers on managing chronic diseases, poor patient-provider relationships, and lack of time by the provider. Perceived health system barriers include: **l**ack of knowledge about the medication because of poor communication between provider and patient or poor health literacy; compounded by poor access to provider and poor relationship**;** overarching lack of trust in healthcare/medical system due to historical trauma; misunderstanding about systems and process of refills. CHW role in overcoming health system barriers include: navigation of health system, enhancing process of medicine refills by assisting with scheduling appointments and accessing healthcare providers**,** facilitating healthy relationship between people and healthcare system and/or individual providers; and improving patient and provider communication.

Social and Economic Barriers

The WHO describes social and economic barriers as illiteracy, unemployment, high cost of medicines, and overall poor socio-economic status. Interventions to address these barriers and improve adherence include family preparedness, patient health insurance, providing an uninterrupted supply of medicines, and sustainable financing. Perceived social and economic

barriers include: cost of medicines, transportation, and lack of insurance were most frequently cited as barriers; other barriers include lack of social support and low health literacy. CHWs roles in overcoming social and economic barriers include: helping people get medicines, assisting with encouraging social support for families and encouraging social support, and helping people prioritize their health.

How are CHWs integrated into their healthcare organization?

Generally CHWs are well integrated into their organization; however, it is important to consider lessons from CHWs who struggle with aspects of integration to help facilitate further collaboration.

- Well-integrated CHWs feel like they are part of the care team and therefore are able to play off of each other's strengths and skills (appropriately use each team members strengths and skills)
- Nearly half of CHWs strongly agree to feeling that their organization will continue to support their work; however, regardless of feeling this support, CHWs need continued funding to pay for their services
- Integration into health systems should not overshadow CHWs' role in their community/as a community member
- CHWs feel less supported in their work for patients with high blood pressure (both self-management and medication adherence) as compared to general support
- People who are unfamiliar with CHWs are skeptical of the role of CHWs and need appropriate training, guidance, and cultural competence for CHWs to feel well integrated
- Integration takes time and mutual trust
- The number of CHWs in an organization is positively correlated with "people put a lot of effort in making CHWs a success at my organization," and "I am part of my organization's care team for patients or clients" and "my organization will continue to support my work and the work of other CHWs in the future"

What organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?

These findings are important and particularly relevant because they have been articulated by CHWs. Overall, it is important to remember that even when CHWs organizations create an conducive environment for CHWs to conduct their work, they are often still just a small part of

the organization (e.g., a little fish in a big pond) and should be carefully and thoughtfully integrated. The following are facilitators identified in organizational support:

- Resources to health education materials
    - Materials come from both internal and external resources
    - Content of materials varies but CHWs appreciate the information and are able to integrate it into their work with patients or clients
- CHWs being involved with well-run, consistent, organized meetings
    - Designated time for CHWs to be part of larger organizational meetings (e.g., executive level meetings)
    - One-on-one case management and care coordination meetings for CHW and provider
    - Opportunities for CHWs to set agenda and run meetings
    - Consistent meetings demonstrate respect and integration of CHW into care team (e.g., do not reschedule or shuffle CHW meetings based on convenience)
    - Meetings run with respect and that prioritize CHW's knowledge of the community and individuals
    - Hold meetings in non-traditional settings (e.g., take supervisors to site visits, health fairs, etc. to help them understand day to day functions of CHWs)
    - Meetings assist with demonstrating CHWs value-added, provide opportunity for CHW recognition, and sharing (e.g., education about cultural sensitivity)
- Communication with staff on a multidisciplinary care team
    - Appropriate communication within the care team and between the CHW and the care team provides a conducive and patient-centered approach
    - Staff meetings allow CHWs to bring patient-issues to the table, reduce and correct errors, and increase fidelity of service delivery
    - Communication can be facilitated by appropriate work-flows and training (staff and CHW)
    - Shared decision making
    - EHRs (part of chronic care model and patient centered medical home), when used correctly, are excellent tools for tracking CHW-patient interactions and communicating within the team. CHWs who did not have access to EHRs suggested a need for access or some appropriate tracking methods. CHWs not in heath settings used similar tools (e.g., excel tracking, state level database) to record and communicate patient interactions.

- Leadership and managerial support
    - Buy-in and investment from leadership is essential and trickles down to other staff members approach to working with CHWs
    - Lack of leadership and managerial support is detrimental to the CHWs feeling of support
- Staying connected to the community
    - CHWs are first and foremost part of the community and organizations that support CHWs in maintaining community ties and identity are conducive to CHWs feeling of organizational support
    - Staying connected to the community allows CHWs to do their job and gain access/connect with the highest needs patients
- Training is an essential organizational factor that demonstrates an organization's commitment to their CHWs
    - Training style, length, and need varies wildly by state, by organization but generally CHWs seek a well-organized, comprehensive, clear training and training standards
    - CHWs actively seek further training and continual education
    - Feeling well trained is positively correlated with number of years at the organization
    - CHWs consider life experience and being part of their community as important features of their training and being appropriately prepared for their role
    - Training was primarily focused on organization-level (as compared to state or national training standards)
    - Some CHWs had experienced disease specific training (e.g., hypertension) and those who did not receive disease specific training described a desire for it
    - Potential training topics include: conflict management, tracking/using electronic health records, chronic disease specific training
    - CHWs should continue to be trained and supervised to ensure fidelity of information delivery and evidence based practice
- External linkages between organizations and between CHWs
    - Networking with other CHWs and other organizations enhances CHW and organizational capacity (the most commonly cited outer setting factor that helps facilitate work) and allows for personal and professional development and growth

- Being part of outside organizations is appropriate for CHWs and is a natural fit with their ability to connect people
- Working with other CHWs and organizations builds trust and credibility of the organization within the community
- External linkages can be formal or informal partnerships; both are advantageous
- CHWs are aware of and connected with larger policies and initiatives that impact their work (e.g., the Patient Protection and Affordable Care Act (PPACA)); CHWs contribute to advocating for and about these issues

CHWs and the Chronic Care Model

Appropriate implementation of the chronic care model yields informed, activated patients and a prepared, proactive practice team. These productive interactions improve health outcomes. CHWs do not take the place of clinical care, rather they effectively support it. This Chronic Care Model has been modified to focus on hypertension and the specific issues from thesis survey; however, it can be operationalized for other chronic disease. Additionally, the Chronic Care Model (CCM) focuses on self-management but may also serve as a template for prevention efforts (a CHW's strength) (Table 22).

Strengths and Limitations

Strengths

The present study used a mixed methods approach, which allowed researchers to fully examine the integration of CHWs into patient care teams. The use of mixed methods offers a more comprehensive account of the CHW experience, provided context and illustration to gain depth of data. This approach and specific details it offers may also provide more utility for practitioners to enhance the case for CHW integration (Bryman, 2006). Combining the two methods in parallel allowed researchers to draw on the strengths of each design (Creswell et al., 2011). In addition, our sample for both the quantitative and qualitative aspects of our study was large and representative.

Another strength is the application of the WHO's Medication Adherence Model (MAM). While numerous adherence models exist, the WHO's MAM provides robust definitions of each adherence construct, allowing researchers to operationalize the constructs for a wide array of populations nationwide. The MAM also offers examples of specific barriers of adherence and opportunities to overcome these barriers, which is lacking in less comprehensive adherence definitions. Furthermore, the MAM fits well with the conceptual framework for the CCM and is an important and understudied part of the CCM. The MAM offers the opportunity for cross

cutting surveillance about CHW's role in assisting with hypertension medication management (World Health Organization, 2003).

Finally, the Consolidated Framework for Implementation Research (CFIR) is a comprehensive theory of integration and implementation that combines process theory and impact theory. Using the CFIR helped promote a synthesis of research findings through clear definitions and consistent language (Damschroder et al., 2009).

Limitations

The present study was limited by time and funding. First, the present study was conducted with no funding, which limited the opportunity to translate the survey and/or interviews. The National Community Health Advisor Study (NCHWAS), funded by the Arizona Prevention Research Center at the University of Arizona, was an online survey of over 1,500 CHWs. This study was available for 11 months and available in English, Spanish, and Korean. The present study was only open for two months and available in English only; however, even with the short duration we were able to collect a representative sample of the CHW workforce. The present study would have benefited from being open for longer and in other language.

Other methodological limitations and considerations include the use of the theories. The MAM does not have specific measures for each construct. The study team attempted to conceptualize the various dimensions of adherence based on the definitions provided. In addition, there are many ways to measure adherence and no standardized definition exists. Additionally, adherence behavior is just one dimension of hypertension control and while important does not necessarily lead to hypertension control.

In addition, we used CFIR to characterize integration of CHWs into health systems. However, we only employed the inner setting and outer setting domain of CFIR. The other three domains: characteristics of intervention, characteristics or intervention, and the process used to implement the intervention are important to consider. When operationalizing the CFIR, we did not define various components of questions. For example, when asking about organizational support, we did not define "support." Rather, we left it open for interpretation by each participant. The present study provides useful pilot information for defining future scales and metrics around CHW integration. Refining and standardizing these scales will allow for more consistent measurements that could be applied across organizations. In addition, expanding these scales to include other aspects of the CFIR would enhance understanding of integration efforts.

Finally, the present study focuses on hypertension specific self-management and medication adherence; however, as reported by CHWs and validated by the literature, it is

important to combine self-management for multiple diseases. Breaking down the specific aspects of hypertension-related roles is useful in this context but we should not overlook CHWs contributions and the application of these roles in the holistic self-management efforts (Powers, Olsen, Oddone, & Bosworth, 2009).

Implications and Recommendations for Further Study

The implications for this research are far-reaching. Findings can be broken down into three categories based on the literature evidence: confirm, build/advance, or contradict. Findings, literature support, and future study opportunities are included in the key findings matrix (Table 23) and described in the following section.

Table 23. Key Findings Matrix

Key Findings	Confirm Build/Advance Contradict	Literature Support	Logical Next Steps
Descriptive Information			
Descriptive characteristics of CHW workforce as self-reported by CHWs.	Confirm	• HRSA Workforce Study (2007) • NCHWAS Survey (2014)	• Build consensus about CHW definition and occupational classification code for ease of tracking workforce • Provide methodological technical assistance (TA) for people interested in surveying CHWs (sample questions, TA guide) • Investigate new sampling channels to target CHWs that were not included/did not respond to the survey
What are CHWs' roles in hypertension self-management?			
Quantitative and qualitative description of how CHWs carry out their roles in hypertension self-management including: • Build rapport (enriching healthcare, care extenders) • Barrier assessment (something providers don't have time to do) • Self-management (daily living)	Build/Advance	• Brownstein (2007) • Hill (2003) • Staten (2005) • Balcazar (2009) • Shalay (2011) • Hayashi (2010) • Frenandes (2012) • Adair (2012) • Esperat (2012) • Allen (2013) • Kranz (2013) • Dye (2014)	• Describe other roles (non-chronic disease focused) from CHW perspective • Create guidelines for appropriate scope of practice and boundaries (clinical/non-clinical) • Create a checklist using Framingham Risk Factors to help CHWs recognize risks/help prevent heart disease • Training on self-management
The socio-contextual determinants of health (SCDH) drive CHWs work. Once they find the need, CHWs work in collaboration toward a solution.	Build/Advance	• Pittman (2015) • Fisher (2014)	• Explore how to scale-up interventions while maintaining SCDH focus • Consider what the appropriate case load is for CHWs?(e.g., fewer that are full time vs. more part time)

			• Explore new models such as CHW + licensed providers; CHW only; CHW + pharmacist
CHWs are critical extenders into the community (beyond walls and between visits)	Validate	• Pittman (2015)	• Determine how to track, measure, and reimburse
The average length of CHW interaction is 39.7 minutes; during interactions CHWs cover wide array of topics/move fluidly among topics and roles, which are often hard to measure and therefore difficult to fund.	Build/Advance	• Tai-Seale (2007) • CHWA (2015) • Cooper (2011)	• Support business case for CHWs • Better describe the intensity and frequency of interventions; how they vary by population working with (e.g., by race, by insurance status) • CHWs are care extenders (other examples include social workers, health educators)
CHWs work on behavioral change through prevention, treatment, and control of chronic disease. They move beyond patient education only and bridge into sustained self-management and behavioral change. Patient education is not sufficient for sustained behavioral change.		• Community Guide (physical activity, nutrition, smoking, medication adherence) • Lippincott (2012) • Baumann (2012)	• Explore other setting sand new opportunities: Rural settings, large scale interventions, different populations (e.g., insurance status), intervention delivery by type of intervention (intensity/frequency) • Define barriers to self-management including five dimensions (physical, psychological, cognitive, economic, social and cultural) create evidence based guide for CHWs to address dimensions of self-management
What are the ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?			
CHWs can identify and create solutions for medication adherence according to the MAM; medication adherence work is not limited to hypertension.	Build/Advance	• Ho (2009) • Martin (2011) • Zuling (2013) • Gellad (2011) • Wilson (2005) • Ursua (2014) • Howell (1984) • Hill (2010)	• Explore CHW pharmacy partnerships at the point of care and beyond • Create and encourage opportunities with EHRs and automatic refills • CHWs can collaborate to build more appropriate and multidimensional adherence questionnaires/instruments • CHWs can help to implement adherence interventions into clinical practice • CHWs must be supervised in their adherence work

			• Map patient perceived barriers with CHW abilities to address these barriers; current study is CHW-identified barriers
Condition-related Factors include mental health needs (depression and anxiety specifically).	Build/Advance	• Cassano and Fava (2002) • Bogner (2008) • DiMatteo (2000) • Hibbard (2007) • Macnaughton (2003)	• Mental health training • New partnerships with mental health providers • Train CHWs to administer basic mental health screenings, monitor mental health
CHWs reduce health system barriers and increase community trust.	Confirm	• Hall (2002)	• Operationalize patient-provider trust scale; communication scale • Encourage partnerships with community resources to reduce health system barriers
Socio-economic factors include cost of medicines, poor transportation, lack of insurance; social support and low health literacy.	Confirm	• AlGhurair (2012) • Ho (2009)	• Insurance is a major component of perceived barriers to medications because it allows for patients to afford their medications • Train CHWs to navigate prescription assistance programs
How are CHWs integrated into their healthcare organization?			
CHWs generally feel like they are part of the care team.	Build/Advance	• Volkmann (2011) • Institute of Medicine (2003) • May and Contreras (2007)	• If become integrated, care team efforts will be enhanced and magnified • Create patient pathway flow charts to help others understand and visualize scope of CHW work; describe percent time doing different activities • Include CHWs as part regular patient meetings and patient care team
People who are unfamiliar with CHWs are skeptical of the role of CHWs and need appropriate training, guidance, and cultural competence for CHWs to feel well integrated. Integration takes time and mutual trust.	Build/Advance	• Cherrington (2012)	• Train healthcare provides, pharmacists, and administrators • Partner CHWs with licensed individuals to help facilitate integration and create opportunities for reimbursement (e.g., Medicaid rule change)

			• Learn more about hiring processes for CHWs at different types of organizations and barriers/opportunities for improvement
Integration into health systems should not overshadow CHWs' roles in their community and as a community member.	Build/Advance	• Sabo (2013) • Matos (2011) • Rosenthal (1998) • Findley (2014)	• Create opportunities for CHWs to stay engaged with their community • Flexibility in work hours • Incorporate the CHW expertise into the healthcare team and praise their work appropriately
The number of CHWs in an organization is positively correlated with feelings of integration.	Build/Advance	• Findley (2014)	• Hire more than one CHW/provide opportunities for CHWs to engage with other CHWs outside of the organization
Study Reveals barriers and facilitators to CHW integration into healthcare systems.	Advance/Build	• Balcazar (2014)	• Evaluate of integration efforts • Employ best practices and models of integration (e.g., nurse + CHW, CHW alone, CHW + pharmacist) • Explore CHW models of expectations • Describe non-CHW perspective (different team members, patients) • Future facilitators may include scripted protocol for CHWs to help them with addressing patient needs. Would help improve patient care and also help with quality improvement over the long run.
What other organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?			
The most commonly cited factor was resources to health education materials.	Advance/Build	• Rosenthal 1998 • Morisky (1983)	• Provide culturally appropriate health education materials helps improve fidelity of information CHWs provide to patients
Regularly scheduled organizational meetings help CHWs feel integrated.	Advance/Build	• Crummer (1993) • Petryshen (1992) • Bokhour (2006) • Duthie (2012)	• Help facilitate and understand critical pathways for patients • Care mapping is a new opportunity (map patient issues and present barriers that CHWs triage).

		• Schulz (1997) • Swider (2010) • Reavey (2012)	Mapping helps with demonstrating issues with patents and delineate roles. • Create outlines/structure for different types of meetings
Electronic Health Records advance CHW work. Analytic capacity dictates organizational capacity and possibly funding mechanisms.	Advance/Build	• Pittman (2015) • Centers for Disease Control and Prevention (2015)	• Use electronic health records to help make business case for CHWs and track work • Build the analytic capacity of safety net providers to document the value realized from CHWs • Incorporate self-efficacy measurements can be incorporated into EHR tracking • EHRs or other tools linked to EHRS can help with integration *and* documentation (e.g., scripted protocols). Allows for long-term tracking and quality improvement.
Buy-in and investment from leadership is essential and trickles down to other staff members approach to working with CHWs. Lack of leadership and managerial support is detrimental to the CHWs feeling of support.	Confirm	• Findley (2014) • Centers for Disease Control and Prevention (2015)	• Build the business case for CHWs • Educate clinical leaders and managers • Obtain testimonials and evidence from successful healthcare organizations
Ongoing training and open communication is essential; improves/ensures fidelity of service delivery.	Advance/Build	• CHWA California Report (2015) • Forsetulund (2009) • Gutierrez (2014)	• Promote training • Extend initial comprehensive training extended over time, as opposed to one-time training paired with ongoing training throughout the life of employment • Employ team-based approaches to training allow for CHWs to be better integrated and get to know and interact with other staff
CHWs like working with other CHWs (inside and outside of organization).	Advance/Build	• Goldman (2013) • Cherrington (2012) • Lippincott (2012) • Baumann (2012)	• Integrate into secondary and tertiary care (e.g., cardiology) • Create opportunities for CHWs to network with others

		• Bodenheimer (2009)	
CFIR Inner Setting and Outer Setting is an appropriate model for exploring aspects of integration	Advance/Build	• Damschroder (2009)	• Limitation is not using the entire model- explore further with entire model • Develop CHW satisfaction scale to understand and standardize integration measures
Other Findings			
CHWs fit into the CCM for patients with hypertension (from CHW perspective).	Advance/Build	• Brownstein (2011) • Keller (2011) • Baumann (2012)	• Scale-up interventions to include CHWs in light of the current healthcare system • Re-define success- less about the medical part and more about social determinants
Other models of care may also be appropriate for CHWs.	Advance/Build	• Fisher (2014) • Heisler (2013) • Goldman (2013) • Cherrington (2012) • Maimaris (2013) • Cosgrove (2014) • Landon (2007) • Sizta (2008)	• Implement statewide infrastructure of CHW scope of practice; certification that covers the roles of CHWs in providing team based primary care • Continue peer support programs; demonstrate cost effectiveness of peer support (if we keep workers happy then will benefit in the long run) • Build CHW social network with other CHWs locally and nationally • Demonstrate how helping others also improves and validates CHW role • Lack of knowledge of best practices and limited resources to track and disseminate information limits future efforts

Descriptive Information about Sample

The descriptive statistics presented in this research validate the already existing workforce information. Specifically, the 2007 Health Resources and Services Administration (HRSA) Workforce Study and the 2014 National Community Health Worker Advocacy Survey (NCHWAS) complement the current findings (Arizona Prevention Research Center, 2014). The HRSA study focused on workforce development and surveyed verified CHW employers in all 50 states, in-depth interview of employers and CHWs in four states, and a comprehensive literature review (Health Resources and Services Administration, 2007). The NCHWAS, funded by the Arizona Prevention Research Center at the University of Arizona, was an online survey of over 1,500 CHWs from 2013-2014 with the primary aims of describing the state of CHWs as a professional field and understanding the impact of CHW community advocacy on community engagement to address health disparities. The following table provides comparison across the HRSA 2007 Survey, NCHWAS, and the current study. The table includes only data that were available from the study; some information is blank or missing. Findings indicate similarities in average age, CHW race, gender, level of education, and average time at the organization (Table 24).

Table 24. Comparison of HRSA, NCHWAS, and Current Study Demographics

	HRSA (2007)	NCHWAS (2014)	Current Survey
Age			
Age	Less than 30: 25.4% 30 to 50: 54.8% Over 50: 19.8%	45 (20-77)	43.1 (SD=12.8)
Race			
American Indian/Alaskan Native	5.0%	116 (10%)	8 (5.3%)
Asian/Pacific Islander	4.6%	25 (2%)	2 (1.3%)
Black/African American	15.5%	235 (20%)	39 (25.7%)
Hispanic/Latino(a)	35.2%	532 (45%)	69 (45.4%)
Non-Hispanic White	38.5%	276 (23%)	38 (25.0%)
Other race/ethnicity	1.2%	47 (4%)	4 (2.6%)
Gender			
Female	81.6%	89%	88.3%
Highest Grade of School			
8th grade or less	N/A	N/A	0 (0%)
Some high school	7.4%	11 (1%)	0 (0%)
High school or GED	34.8%	140 (12%)	22 (14.4%)

Some college or technical	20.3%	390 (33%)	48 (31.4%)
College graduate	Two-year Degree: 6.8% Four-year Degree: 30.7% Total: 37.5%	414 (35%)	59 (38.6%)
Post-graduate or professional	N/A	163 (14%)	24 (15.7%)
Years as CHW and at Organization			
Total Years as CHW	N/A	7 (3months-50 years)	7.2 (SD=7.5)
Total Years at Organization	N/A	N/A	6.1 (SD=6.4)
Organization Type			
Clinic (not FQHC)	N/A	149 (10%)	24 (11.8%)
Community-based organization	N/A	566 (37%)	53 (26.0%)
FQHC	N/A	259 (17%)	37 (18.1%)
Health Insurance Company	N/A	66 (4%)	3 (1.5%)
Hospital	N/A	218 (14%)	32 (15.7%)
Local Health Department	N/A	183 (12%)	22 (10.8%)
Indian Health Service	N/A	21 (1%)	1 (0.5%)
Tribal Health Department	N/A	99 (6%)	5 (2.5%)
Urban Health Center	N/A	9 (1%)	1 (0.5%)
University	N/A	105 (7%)	8 (3.9%)
Nonprofit	N/A	N/A	4 (2.0%)
Non-university school system	N/A	N/A	6 (2.9%)
Other*	N/A	Education Prog: 11 (1%) Other: 304 (20%)	8 (3.9%)
Top Health Issues Addressed			
	• Nutrition (47.6) • Women's health (46.0%) • Pregnancy, prenatal care (41.0%) • Child health (40.6%) • HIV/AIDS (39.2%)	• Prevention (Nutrition and/or Physical Activity) (36%) • Accessing Health Services (36%) • Diabetes (34%) • Chronic Disease Prevention (31%) • Behavioral/Mental Health (24%)	• Diabetes (90%) • High Blood Pressure or Hypertension (84.2%) • Nutrition (79.7%) • Heart Disease (65.8%) • Obesity (65.8%) • Physical Activity (65.8%)

Race of Clients Served*			
American Indian/Alaskan Native	32.4%	245 (16%)	84 (41.0%)
Asian/Pacific Islander	34.1%	173 (12%)	78 (38.0%)
Black/African American	68.1%	614 (41%)	152 (74.1%)
Hispanic/Latino(a)	77.9%	975 (65%)	176 (85.9%)
Non-Hispanic White	64.2%	563 (38%)	140 (68.3%)
Other race/ethnicity	20.0%	88 (6%)	25 (12.2%)
Census Region			
Region 1 (Northeast)	25.0%	Reported by state: Texas: 385 (25%)	22 (11.1%)
Region 2 (Midwest)	22.4%	Arizona: 152 (10%)	79 (39.9%)
Region 3 (South)	23.1%	Michigan: 102 (7%)	50 (25.3%)
Region 4 (West)	32.6%	Oregon: 95 (6%) California: 81 (5%)	47 (23.7%)

*HRSA asked about target population of CHW activities; Arizona asked about primary race of population served

Next steps related to the demographic findings include building consensus about the CHW definition and occupation classification code for easy tracking. Future studies may also with to provide methodological technical assistance for organizations interesting in surveying CHWs and explore new sampling channels to reach CHWs who were not included or did not respond to the current survey.

What are CHWs' roles in hypertension self-management?

The literature reveals that hypertension self-management incorporating CHWs demonstrate significant changes in diastolic blood pressure, health behavior changes (e.g., increased physical activity and nutrition), patients entering the healthcare system earlier, enhanced knowledge and beliefs about hypertension, and increased self-efficacy (Adair et al., 2012; Allen et al., 2013; Balcázar et al., 2009; Dye et al., 2014; Esperat et al., 2012; Fernandes et al., 2012; Hayashi et al., 2010; Hill et al., 2003; Krantz et al., 2012; Shlay et al., 2011; Staten et al., 2005). These findings are only from published literature and do not include programs currently in progress or those that have not published findings.

Findings in the current study demonstrate *how* CHWs assist in hypertension self-management (Figure 28). A systematic literature review conducted by Brownstein in 2007 highlighted the emerging roles for CHWs in hypertension self-management. The study team found that the roles and duties of CHWs primarily included blood pressure control through health

education with patients and families. CHWs not only provide health education but they also deliver it in effective ways over multiple sessions. Another major role was ensuring necessary services for blood pressure control, providing direct services to participants, and fourth was being a mediator between participants and health and social service systems. Outcomes revealed positive behavioral changes and increase in medication adherence (Brownstein et al., 2007). Current findings build on the understanding of CHW roles in hypertension self-management and their work in building patient rapport, barrier assessment, and self-management. Previous literature demonstrated effectiveness when using CHWs. The present study helps understand the process in between the input of working with a CHW and output of positive health outcomes (as seen in Figure 29).

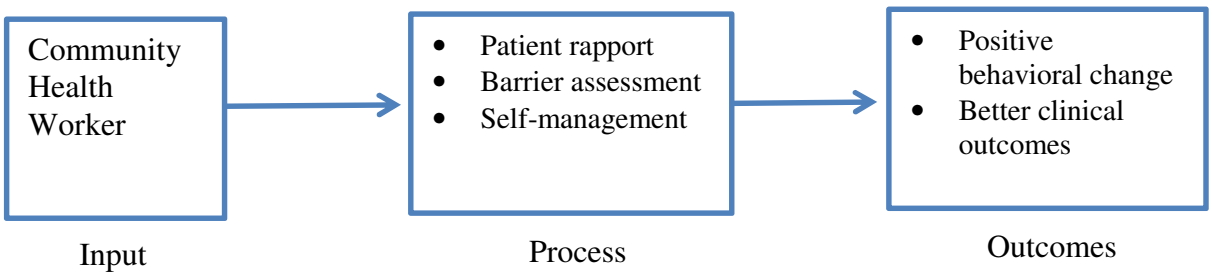


Figure 29. CHW Process of Improving Health Outcomes

While the present study focuses on chronic disease self-management, other literature demonstrates the wide array of health and non-health topics CHWs deal with ranging from patient advocacy to diabetes. CHWs are well positioned, often better positioned, than other care team members to gather data and important information about patient barriers and relay them to the care team and to leverage their understanding of people by coaching on adopting health behaviors or improving adherence. Future work may reveal the link between the CHW roles in chronic disease self-management and their work in policy and advocacy, explicitly linking these features of CHWs roles. Additionally, based on the current understanding of how CHWs carry out their roles, organizations working with CHWs may wish to create guidelines and appropriate scope of practice and boundaries for the CHWs work or work with other partners, including state health departments, to develop state-wide standards. Additional guidelines may include defining barriers to self-management and training CHWs carefully on how to handle them, which would be integrated into regular patient documentation to assist with case management and record keeping (Baumann & Dang, 2012). Another resource may include understanding the various risk factors associated with heart disease (or another chronic disease specifically) and appropriately training

CHWs on evidence-based behavioral interventions and health education techniques to help CHWs tackle these topics (Centers for Disease Control and Prevention, 2015). The most effective model would include initial, team based approaches to comprehensive training that extends the life of employment. These training should be evaluated for effectiveness. A team based approach to training would help the CHW become better integrated and get to know and interact with other staff.

Similarly, health literacy is a major barrier for people in adopting healthy behaviors and self-management. The Patient Activation Measure (PAM) is an assessment tool that gauges the knowledge, skills, and confidence that is essential to managing health and healthcare. Each level requires an increased "level of activation," including disengaged and overwhelmed, becoming aware but still struggling, taking action, and maintaining behaviors and pushing further (Figure 30). The PAM can be measured through a brief, 10 or 13 item survey and may be a useful tool for CHWs to use during assessment to help guide self-management interventions and help CHWs tailor their work to the specific patient needs and/or report the level of activation back to the care team (Insignia Health, 2015).

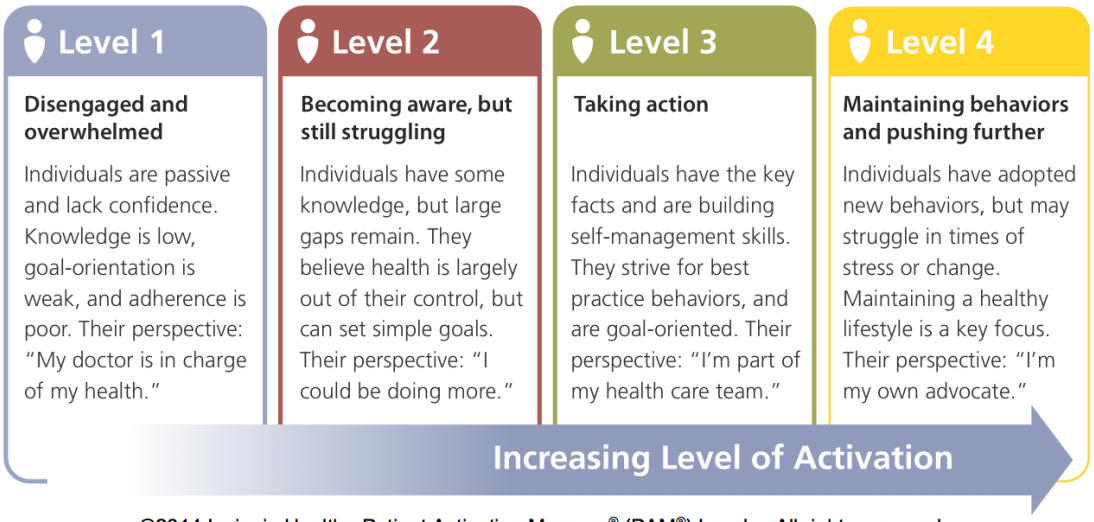


Figure 30. The Patient Activation Measure

Additionally, the study results revealed important quantitative details about CHWs interactions with patients. CHWs spend an average of about forty minutes with their patients during highly engaging interactions. This information, along with positive health outcomes, demonstrates the value added by CHWs, as they spend nearly three times as long with patients as the normal interaction between patient and physician (Tai-Seale, McGuire, & Zhang, 2007). This information calls for further supporting CHWs in their work and articulating the value added/business case for including CHWs on patient care teams. On a population level, CHWs

enhance self-care for chronic conditions for community members and reduce the "global burden of disease" on an individual level. CHWs are assisting with optimizing self-care to enhance quality of life (Baumann & Dang, 2012). Finally, the present study supports Cooper et al's (2011) findings which explain the physician perspective of CHWs work, reporting better patients-centered communication behaviors for those physicians working with CHWs (L. Cooper et al., 2011).

Future areas of study include examining how interactions (intensity and frequency) vary by population (e.g., by race, by geographic areas, by insurance status). As CHWs are further recognized and integrated into health systems, it will be important to think about the best way to "scale-up" their work. That is, high needs population that CHWs typically work with may require frequent contact and home visits from their CHW; however, with additional patient load, CHWs may be stretched thin and unable to provide the necessary personalized attention. Healthcare organizations need to appropriately "scale-up," or support CHWs, in their roles in hypertension self-management. CHWs have an important impact on people working toward self-management, especially among underserved, diverse racial and ethnic populations; future research may explore interactions or specific needs based on population.

What are ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?

The present study provides insight into how CHWs are actually carrying out their work in hypertension medication adherence. Brown (2011) describes the three facets of chronic conditions, which include treatment, adherence, and disease. Adherence, according to Brown, is often left out (Brown & Brussell, 2011). High blood pressure medication management is an important component of self-management and requires multifaceted approaches to address and increase patient knowledge, provide counseling and accountability, improve self-monitoring, reduce costs, and personalize programming (Zullig, 2013). Lack for adherence is particularly prevalent among low-income and underserved populations (Gellad et al., 2011; Wilson et al., 2005). Previous studies have revealed mixed results in medication adherence with CHW interventions (Becker et al., 2005; Howell et al., 1984; Ursua et al., 2014).

Researchers have called for more aggressive, evidence-based approaches to improving adherence (Institute of Medicine, 2010). The results of the present study reveal that CHWs can work can work in improving adherence among their patients. CHWs recognize the adherence barriers individuals' face. This intimate understanding of barriers allows CHWs (via their role of social support) to directly address the problems and come up with viable solutions. Other

literature emphasizes the importance of addressing variables outside of the individual-level (e.g., building the participant's confidence to adherence to their medication and modification belief and behaviors) through the use of community-level targets (Martin, Mosnaim, Rojas, Hernandez, & Sadowski, 2011; Martin, Young-il, et al., 2011). Hill (2010) further describes four practical considerations and recommendations for adherence: focusing on clinical outcomes (e.g., patient communication, blood pressure self-monitoring), empowering informed activated patients (e.g., use of pill boxes, system for refilling prescriptions), implementing a team approach (e.g., support self-management and problem prevention), and advocating for health policy reform (e.g., elevating medication adherence as a critical healthcare issue) (Hill et al., 2010). The present study found that CHWs work often focused on clinical outcomes and empowering patients for self-management.

CHWs are addressing individual and community-level barriers. Individual barriers include patient-related barriers such as forgetfulness, lack of perceived consequences and lack of perception about treatment effectiveness, which CHWs work with by introducing memory aids and creating systems and reminders to increase adherence, counseling to understand fears, perceptions, and knowledge about medicines. Another individual dimension of the MAM is condition-related factors. CHWs worked with a variety of co-morbidities, most notably, mental health issues (e.g., depression and anxiety). Poor mental health is associated with poor overall health and health behaviors, which may lead to development of chronic conditions (Cassano & Fava, 2002). Additionally, depression and mental health often coincide with chronic disease and leads to poor self-management, as seen by the current study, as well.

Bogner (2008) proposes integrating depression treatment into hypertension care. Individuals enrolled in the integrated care intervention had fewer depression symptoms and lower blood pressure as compared with those not in the intervention. Further, these participants also had a significant increase in medication adherence for both antidepressants and anti-hypertension medications (Bogner & deVries, 2008). Generally, depression and anxiety are risk factors for non-compliance with medical treatment. Mood disorders may increase non-compliance or lack of adherence due to lack of focus, poor motivation, and energy to follow through on treatment, adding to the complexity of managing these patients (DiMatteo, Lepper, & Croghan, 2000). CHWs in the present study described mental health as an issue for many people they work with and felt they were limited in opportunities to help their patients with depression or anxiety. Further studies should be considered to understand the emerging opportunities for CHWs to collaborate to support and refer patients with metal health issues to mental health professionals or assist with basic assessments such as the Patient Health Questionnaire (PHQ-9) (Kroenke,

Spitzer, & Williams, 2001). Self-management techniques for depression may overlap with techniques for hypertension self-management (e.g., goal setting, problem definition, monitoring, improving patient activation) (Hibbard, Mahoney, Stock, & Tusler, 2007; Macnaughton, 2003). CHWs could also be trained in basic mental health conditions to help them understand more about peoples' conditions and report them to the medical provider.

Adherence literature generally describes adherence by disease or specific medication (Brown & Brussell, 2011). While complexities exist in defining adherence CHWs demonstrate that adherence can be both disease specific and person specific. Aspects of adherence include (Centers for Disease Control and Prevention, 2013b):

- **Medication Adherence:** The patient's conformance with provider's recommendations with respect to timing, dosage, and frequency of medication-taking during the prescribed length of time
- **Compliance:** Patient's passive following of provider's orders
- **Persistence:** Duration of time patient takes medication, from initiation to discontinuation of therapy

Regardless of the disease, many individuals experience co-morbidities and barriers to adherence cut across diverse types of medications. One example of a barrier is an individual who may have a very specific aversion to a certain type of medicine because of its side effects. Regardless of the type of barrier, CHWs are able to work with patient's long enough to create a trusting relationship; this allows CHWs to understand and challenge these barriers. Ho (2009) describes six general patterns of adherence execution, which can be intentional and or non-intentional, passive or active. The six patterns are: 1) close to perfect adherence, 2) taking nearly all doses with some timing irregularity, 3) missing occasionally single day's dose and some timing instances, 4) taking drug holidays three to four times per year, 5) taking drug holidays monthly or more often (frequent omissions), 6) take few to no doses. Most patterns are due to omission of doses or delays in taking doses. While CHWs frequently described adherence issues according to the MAM, the six general patterns of non-adherence provide important information and clarity on the details of adherence and may offer further information to the CHW and provider. Organizations may wish to train their CHWs on side effects of different drugs and specific adherence issues by disease, as non-adherence can vary across gender, age, and race. Other medication-related training to assess non adherence may include pill counting and refill monitoring.

Health system barriers specifically address issues of trust and patient-physician relationship. The present study reveals health system barriers that CHWs are able to address.

Future studies may explore perspectives of patients' trust in their primary care providers. Hall et al (2002) for example created a scale to measure trust in physicians and health systems. Sample questions include: [Your doctor] will do whatever it takes to get you all the care you need; sometimes [your doctor] cares more about what is convenient for [him or her] than about your medial needs. The study found that provider trust was "one-dimensional" which means that people were unable to distinguish among aspects of trust (e.g., fidelity, competence, and honest). CHWs could work to measure health systems barriers, specifically patient-provider relationships and trust (Hall et al., 2002). One barrier; however, is that people may have multiple doctors with varying levels of trust and relationships.

The MAM also includes community-level barriers specifically socio-economic challenges, most commonly: cost of medicines, poor access to transportation, lack of insurance, poor social support, and low health literacy. Social-economic barriers are often cited as a cause of non-adherence (Ho et al., 2009). AlGhurair (2012) conducted a meta-analysis of antihypertensive medication adherence according to the MAM and found that condition, therapy, and socio-economic barriers were under represented in the literature. The meta-analysis found 51 unique survey instruments to measure medication adherence, only 20 (39%) of which had reliable and valid evidence. No surveys measured all MAM dimensions, five (10%) measured four dimensions, four (7.8%) measured three dimensions, six (11.8%0 measured two, and 36 (70%) measured one dimension. Patient-related barriers were most commonly measured (76% of surveys). As the literature and the present study reveals, the "responsibility for non-adherence should not be solely attributed to the patient." New, combined self-report measures should be developed to help address the multifactorial aspects of adherence. AlGhurair (2012) notes that it is not realistic to have one instrument measure all barriers; however, organizations could consider specific dimensions of the MAM for their patient population. They could also consider specific dimensions for multiple diseases. Having CHWs involved in this process of developing measures, administering surveys, would allow for a decrease in social desirability bias and longitudinal, tailored data collection and could provide insight into treatment for relevant interventions.

Overall, the present study reveals that CHWs recognize and address medication adherence barriers based on the MAM. CHWs work with pharmacists and other providers on adherence; numerous opportunities exist for partnerships and additional system-level changes. These include:

- CHW-pharmacy partnerships at the point of care and beyond. Some CHWs reported working with pharmacists and those that did not express interest in working closely with pharmacists. Opportunities exist for CHWs to work directly with pharmacists to

assist with health education at the point of medication pick up and also assist with self-management efforts outside of these interactions. Depending on the care model and intensity of care required, patients may actually see their community pharmacist more frequently than a doctor, which provides the ideal setting for CHWs to engage patients. Healthcare and community-based organizations should consider training for CHWs in this setting.

- Opportunities with EHRs. With continued implementation of EHRs and electronic prescribing/automated refills, organizations are better able to track refills and identify people at risk of not adhering and targeting them for CHW interventions. CHWs can gain more accurate self-report data/longitudinal information and information outside of regular visits. This information is beneficial to tracking and reporting self-management and adherence.
- CHWs can collaborate to build more appropriate and multidimensional adherence measurements. As cited by AlGhurair (2012), condition, therapy, and socio-economic barriers are not as frequently cited in the adherence literature. The Morsky Scale (MMAS-4) provides patient-related barriers to adherence about forgetfulness, carelessness, feeling better, and feeling worse. CHWs and their organizations may collaborate for other measurement tools that are appropriate to their patient population and focus on other aspects of the MAM. Styles of data collection could include: indirect (e.g., self-report, pill count, rate of prescription refills, clinical response, diaries, rate of adherence at six months).
- CHWs can help to implement adherence interventions into clinical practices. Ho (2009) stated that studies have provided important ways to improve medication adherence but a major roadblock to adherence is actually implementing the interventions into clinical practice (Ho et al., 2009). These challenges include: coordinating clinical personnel, logistical challenges, and lack of financial incentives. CHWs are the missing link to carry out the components of interventions. The final two research questions detail this information.
- CHWs must be supervised in their adherence work. Medications are an important aspect of hypertension self-management and require close medical attention and monitoring. While CHWs can be equipped with tools for understanding adherence issues, their work should be carefully supervised with regular training; complementing and not replacing the work of providers and pharmacists.

Ho (2009) states, “increasing the effectiveness of adherence interventions may have a far greater impact on health of the population than any improvement in specific medical treatment” (Gary, Batts-Turner, & Yeh, 2009). Thus, CHWs are entering mainstream medicine at an important time in history and can offer their expertise in solving adherence-related issues.

How are CHWs integrated into their healthcare organization?

In order to carry out their duties and work in self-management and medication adherence, CHWs must be well integrated into the patient care team. The current healthcare environment and numerous provisions in the PPACA opens up many opportunities for CHWs to be legitimate care team members. CHWs are mentioned throughout the PPACA specifically in the Patient Centered Medical Home (PCMH) and Community Health Team (CHTs) (Section 3502) (Health Resources in Action of Boston, 2013; National Health Care for the Homeless Council, 2011). These new primary care models endorse cultural competence, patient navigation, chronic disease management, and community clinical linkages. Section 3502 also provides Centers for Medicaid and Medicare Innovation funding to partner with health systems on proposals that include CHWs as part of PCMH and CHTs (Centers for Medicare and Medicaid Services, 2015). Many are interested in CHWs as care team members; however, we do not fully know what CHWs need to be integrated. As the previous two research questions reveal, CHWs are already addressing chronic disease and other health issues. The second two research questions describe CHWs’ integration into their healthcare organization through the CHWs perspective. The present study fills a gap and advances the field’s knowledge about CHWs as part of the care team and offer the CHW perspective about facilitators and barriers to integration.

Generally, CHWs reported feeling well integrated into their organization; however, it is important to consider lessons from CHWs who struggle with aspects of integration to help facilitate further collaboration. In 2003 the Institute of Medicine released a book which stated that, “inconsistent scope of practice, training and qualifications; lack of sustainable funding, an insufficient recognition by other health professionals are all barriers to the integration of CHWs into the broader system” (Institute of Medicine, 2003). One important lesson learned from the present study is that integration takes time and mutual trust. While time in an organization was positively correlated with feelings of integration, integration can also be facilitated earlier and often. Building trust can be facilitated by carefully explaining the CHW role to other care team members, incorporating culturally competent training for non-CHW team members, and including non-CHW team members in some CHW-patient interactions. For example, non-CHW team members may attend or observe CHW interactions with patients, invite CHWs to share their

expertise in formal or informal setting such as team meetings or informal conversations. Well-integrated CHWs feel like they are part of the care team and therefore are able to work with other team members to play off each others strengths and skills. The care team working with CHWs need direct interactions with the CHWs so that they can better understand the unique work CHWs perform. Furthermore, CHWs on the care team can also advance other members' understanding of their patients. One integrated and functioning as part of the team, care team efforts will be enhanced and magnified.

Throughout the present study, CHWs described the importance of staying connected to CHWs and their community. CHWs have common experiences with each other both personally and professionally. The most commonly cited CHW quality or attribute is "connection to the community served," which includes being a community member or having a close understanding of the community, shared life experiences, and desire to help the community. Additional attributes include maturity, persistence, empathy, honesty, friendly and sociable, dependable and trustworthy (Matos, Findley, Hicks, Legendre, & Do Canto, 2011; Rosenthal, Wiggins, Brownstein, Johnson, Borbon, et al., 1998). CHWs are particularly social, creative, and well-connected individuals. These qualities and attributes serve CHWs well as members of the care team. Further, Sabo (2013) supports the positive benefits of integrating CHWs into healthcare teams; however, the authors note that institutionalizing the CHWs role within the system may result in devaluing other CHW core functions such as building community capacity, advocacy, community organizing, and addressing the social determinates of health (Sabo et al., 2013). The present study acknowledges the importance of CHWs maintaining their relationships with the community and contributes to the literature by describing CHWs particular such as flexible schedules and being members of professional organizations. CHWs working in healthcare setting may continue to engage in the community through their work in community-clinical linkages as supported in the CCM.

Additionally, the number of CHWs in an organization was positively correlated with numerous aspects of CHWs feelings of integration. Integration into the health system should not overshadow the important qualities CHWs bring and their roles in the community or as community members. Allowing CHWs to maintain their connection to the community my enhance the communities' perception of the organization and help CHWs get referral to community resources and gain access to the most high risk or expensive patients.

May and Contreras (2007) interviewed 12 organizations and their CHWs. These interviews revealed a paradox emerging between the way CHWs perceived their work and the way the employing organization perceives the CHWs' work. This research found that CHWs

perceive their work to be locally focuses, whereas the employers were expanding geographic scope outside of the community served due to demand. This paradox undermines the work and working environment of the CHW, and calls for a balance that will help sustain the relationship between the organization and the workers (May & Contreras, 2007). The present study further validates this concern about understanding the value of CHWs. CHW self-determination or inclusion in decision making about their roles on the care team is important.

Appropriate integration enhances the care team and helps people maximize the healthcare system. Supporting CHWs not only enhances the CHW experience, integration, and work, but it also boosts the care teams' work. CHW-provider partnerships with other licensed individuals are essential to facilitate integration and allow for future reimbursement through opportunities such as Medicaid waivers or the Medicaid rule change.

What other organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?

The previous research question focused on overall integration into care teams. The fourth research question offers information about the specific internal and external organizational factors that allow for integration. These findings are from the CHW perspective and therefore offer an important perspective and voice for the field.

Because one of CHWs primary roles is health education, the majority of CHWs ranked resources to health education material as an important aspect of support. These materials allow CHWs to provide evidence-based information to people and serve as a central feature of CHWs interactions with patients. Internal to the organization, CHWs also appreciate well-run, consistent, organized meetings. Such meetings can be held in a non-traditional setting (e.g., take supervisors to site visits, health fairs) to help them understand day-to-day functions of CHWs), but generally it is important to dedicate time for CHWs to share their experiences. More broadly, improved communication also helps to support CHW in their roles. Specifically, EHRs, when used correctly, are excellent tools for tracking CHW-patient interactions and communicating within the team. Training, both in the beginning and throughout the lifespan of the CHWs time at an organization, helps to further CHWs knowledge and allows CHWs to feel supported in providing self-management and medication adherence support while also ensuring fidelity of evidence-based service delivery. Finally, maintaining connections and external linkages through networks helps CHWs feel supported but also benefits the organization, because it allows CHWs can find and engage new community resources and build credibility and trust of the organization within the community.

Many CHW roles include teaching or educating people about their chronic disease (e.g., healthy diet, low sodium diet, preparing healthy foods) and the healthcare system. To support CHWs in this aspect of their work, organizations should focus on providing plain language health education materials that support the CHWs work. Morisky (1983) found positive outcomes for three types of health education interventions: exit interview to increase understanding of prescriptions, home visits to encourage family and social support, and small group sessions. Significant findings demonstrate the importance of health education programs in managing high blood pressure over the long term (Morisky et al., 1983). CHWs mentioned these materials as being a central feature of their discussions with patients or clients and a springboard from which to discuss tough issues related to self-management. Furthermore, providing appropriate materials helps to ensure that CHWs are providing evidence-based information and assists in reducing the likelihood of CHWs providing the wrong information (increases fidelity of information) (Centers for Disease Control and Prevention, 2015). This information should be tailored to the specific patient population and CHW identified patient needs. More broadly, this finding calls for the need to ensure that CHWs are provided with appropriate equipment, space, and supplies to assist in their work.

CHWs reported being involved with well-run, consistent, organized meeting as a facilitator to integration. Designating time for CHWs to join large organizational meetings (e.g., executive level meetings) helps improve understanding of the CHW role and helps the CHW feel integrated into the care team. CHWs also noted the importance of setting meeting agendas being in charge and running meetings. Other literature supports CHWs roles in assisting in decision making (Duthie, Hahn, Philippi, & Sanchez, 2013; Schultz, Israel, Becker, & Hollis, 1997). Consistent meetings demonstrate respect and integration into the care team; especially those that prioritize CHWs' knowledge of the community and individuals. Meetings can also be held in non-traditional settings such as site visits or health fairs to help other staff understand CHWs functions. Additionally, one-on one management and care coordination meetings are valuable to relay important patient information. Literature supports team meetings to help CHWs define their role and perform daily functions, and give the opportunity for social support, teaching, and continued education (Reavy, Hobbs, Hereford, & Crosby, 2012; Swider, Martin, Lynas, & Rothschild, 2010). Overall, meetings assist with demonstrating CHW value added, provide opportunity for CHW recognition, and sharing.

Case management allows the care team to understand the "critical pathway" which has led a patient or client to the hospital or health center. Crummer (1992) describes these critical pathways as being multidisciplinary and complex, stemming into issues outside of the healthcare

setting (Crummer & Vicki, 1992). CHWs, therefore, can provide details and information about the critical pathways. To facilitate the exchange of this information, CHWs need to meet with the care teams and relay the information to help build a clear case. Understanding these critical pathways also allows the healthcare team to tailor their educational information for high risk or high needs patients. Protocol within the health team (such as frequent case management meetings) should facilitate the creation and understand of these critical pathways. Critical pathways, as defined by Petryshen (1992) include care mapping to analyze and monitor patients' patterns of use and describe opportunities for re-mapping or intervention (Petryshen & Petryshen, 1992). Furthermore, using a case management model helps improve provider engagement with patients and encourages them to take an activate role in care coordination/outlines responsibilities for the members of care teams; recognition may increase the CHWs sense of autonomy. Overall, communication is beneficial to both the well- being of the CHW and the care team as well as the patient themselves. Professional communication and collaboration in problem solving advances organization efforts toward patient-centered care (Figure 30).

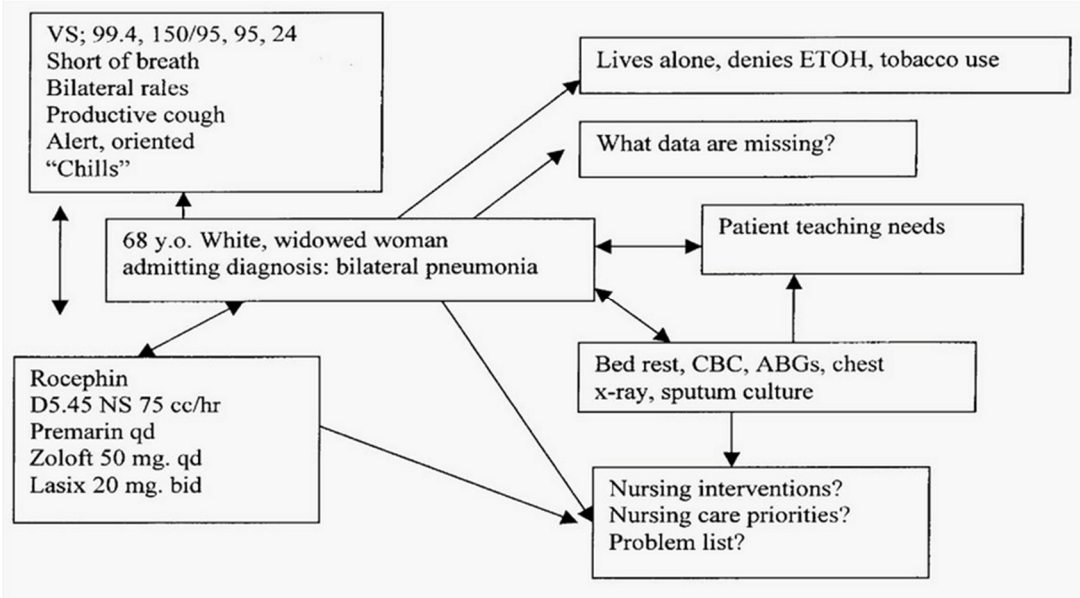


Figure 31. Sample Care Map (Texas Collaborative for Teaching Excellence)

Related to team meetings is communication. Communication can be facilitated by appropriate work-flows and training and encourages shared decision making (Figure 31). EHRs, when used correctly, are cited in the present study as excellent tools for tracking CHW-patient interactions and communicating within the care teams. CHWs who did not have access to EHRs suggested a need for access or some appropriate tracking methods. CHWs not in heath settings used similar tools (e.g., excel tracking, state level database) to record and communicate patient interactions. Pittman (2015) states that EHRs allow us to build systems that integrate social data

with clinical data and have a powerful new tool to move the "comprehensive population health agenda forward" (Pittman, Broderick, Barnett, & Sutherland, 2015). The analytic capacity of an organization often dictates the organization capacity, which influences possible funding streams. Using EHRs helps make the business case for CHWs by tracking their work and outcomes. Building the analytic capacity of safety net providers to document the value realized from CHWs. Numerous articles describe the importance of EHRs in improving patient care (DesRoches et al., 2008; Poissant, Pereira, Tamblyn, & Kawasumi, 2005). The present study describes the emerging opportunity to incorporate non-clinical data into health records to track CHWs work and advance quality of patient care. Simple and accurate record-keeping procedures allow the CHW to remain focused on the patient tor client while also tracking important information. Data tracking and longitudinal information enhances functional capacity of the care team to monitor and track patients. These efforts also allow CHWs some autonomy within the work culture, encourage communication, evaluation, trouble shooting, and provide a non-invasive tracking process for CHWs. While these efforts require training and investment, over the long run establishing the technology and systems that improve analytic capacity will advance opportunities for funding and reimbursement and encourage evidence-based practice (Agency for Healthcare Research and Quality, 2013) .

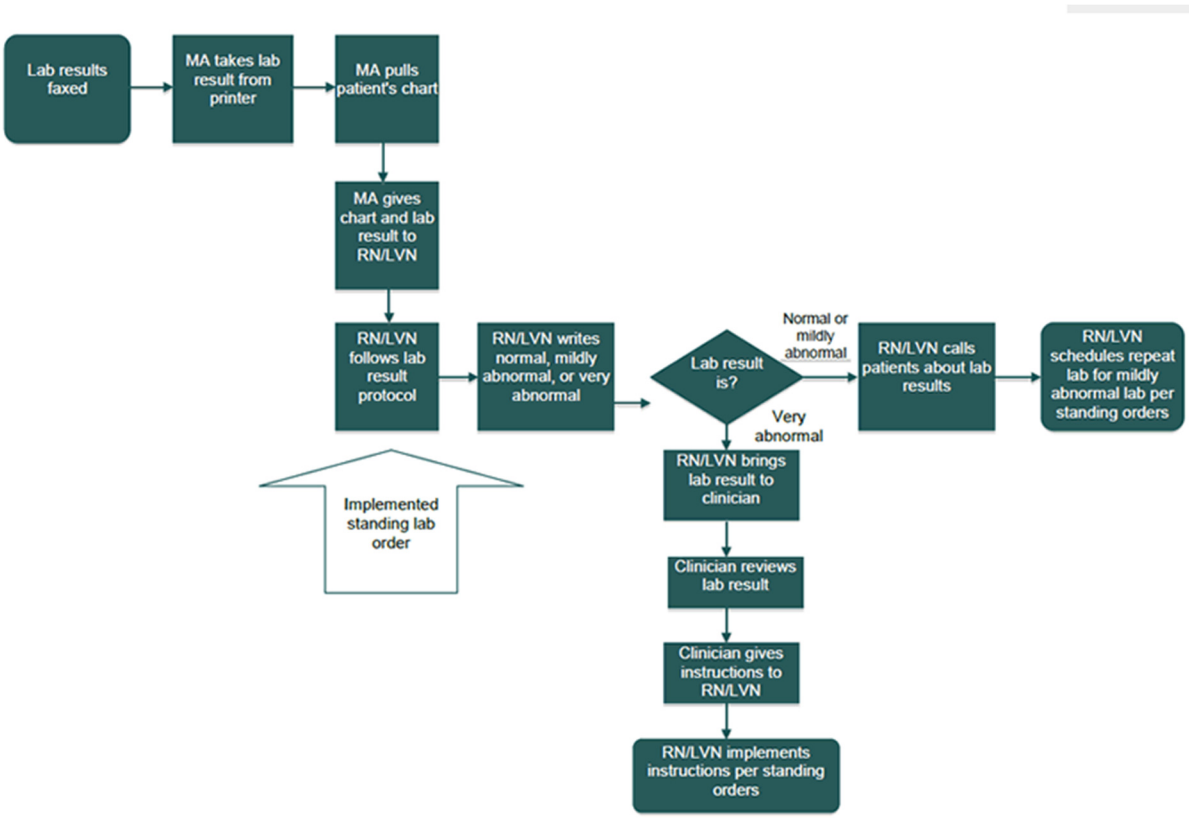


Figure 32. Sample Workflow Design

Training and professional development is an important consideration for any organization working with CHWs. As previously mentioned, training non-CHW members is important; however, CHWs also need trained, as they actively seek additional training and education. In the present study, feeling well trained is positively correlated with the number of years at the organization. Interestingly, CHWs consider their life experience and being part of the community as important training. Ongoing training improves the fidelity of CHW work ad advances the profession (Forsetlund et al., 2009).

Finally, CHWs networking with other CHWs and other organizations enhances CHW and organizational capacity (the most commonly cited outer setting factor that helps facilitate work) and allows for personal and professional development and growth. Working with other CHWs and organizations builds trust and credibility of the organization within the community; these external linkages can be formal or informal partnerships; both are advantageous. CHWs are aware of and connected with larger policies and initiatives that impact their work (e.g., the PPACA); CHWs contribute to advocating for and about these issues, as well. Organizations can encourage and sponsor membership in professional associations, networking with other CHWs, and ongoing training to maintain skills or build new ones.

Overall, the inner and outer setting of CFIR provides an appropriate model for exploring aspects of integration. Inner settings and work structure are particularly important for CHW integration, as they help to set professional boundaries, define the CHW scope of practice, and ensure that CHWs are doing meaningful, evidence-based work. The present study includes just two out of the five dimensions of CFIR. Future studies may explore the other components of CFIR and extend into monitoring and evaluation over time.

Other Findings and New Models

CHW efforts can transcend multiple care models and advance efforts in various settings. There are many models to consider for CHW integration into care teams and a lack of resources to track and disseminate these models. The following section provides opportunities for different models that could be standardized, replicated, and scaled up while also maintain the integrity and unique roles and contributions of the CHW workforce (e.g., agents of social change, being part of the community).

It is important to consider organizational readiness (e.g., office space, equipment, training and supervision resources). Gutierrez (2014) suggests that organizations carefully consider their reason for hiring CHWs and the desired outcomes from hiring. Surveys of CHW employers offer multiple reasons for hiring CHWs: impact on health outcomes, reduced cost, system navigation, and community connection, among others. It is possible for an organization to have multiple reasons for hiring CHWs, but it is important to articulate these carefully, as they will dictate the type of model and integration used, as well as the defining the roles within the specific organization. Well thought out CHW interventions combined with excellent systems and structures (e.g., training and supervision) offer the ideal setting for CHW integration (Gutierrez & Campbell, 2014)

Before moving forward with efforts to integrate CHWs into care teams, organizations must carefully consider their patients and organizational needs, and capacity for integration. Appropriately supporting CHWs can be challenging and must be done with care. In addition, CHW integration is just the first step. Ongoing support and periodic evaluation is an important and necessary component of sustainable models of care for CHWs. The following are other examples of models of care incorporating CHWs. These models incorporate theories, methodologies, and framework to help map care team process.

CHWs and the Chronic Care Model

Appropriate implementation of the CCM yields informed; activate patients and a prepared, proactive practice team. These productive interactions improve health outcomes. CHWs

do not take the place of clinical care, rather they effectively support it. This CCM has been modified to focus on hypertension and the specific issues from this study; however, it can be operationalized for other chronic disease. Additionally, the CCM focuses on self-management but may also serve as a template for prevention efforts (a CHW's strength).

Brownstein (2011) notes that "including CHWs as members of multidisciplinary care teams has the potential to strengthen both current and emergent models of healthcare delivery" and further evidence suggests that appropriate integration is an effective strategy for improving control of hypertension among high-risk populations and specifically assist with patient compliance with their prescribed regimens" (Brownstein et al., 2011; Brownstein et al., 2005; Brownstein et al., 2007). However, there is a lack of data about the perceptions of providers and others who supervise CHWs on their understanding of CHWs roles, integrating CHWs into the system, and job functions (Balcázar et al., 2011; Brownstein, 2008). The Brookings Institute reported that workers with less than a bachelor's degree account for 3.8 million workers, nearly half of the total healthcare workforce and are an important part of the new healthcare system (Ross, Svajlenka, & Williams, 2014).

Baumann (2012) encourages the use of the CCM for improving care at both the individual and population level. The CCM facilities productive interactions between patients and healthcare providers; is does this by focusing on ecological approaches to self-management. Healthcare teams are able to incorporate the patient experience and expertise into self-management efforts (Baumann & Dang, 2012). Keller (2011) also describes the CHWs work within the context of the CCM, revealing that CHWs are largely invisible within the context of the CCM and that the quality of relationships within the CCM is unknown. Following the CCM offers organizations with a guide for managing chronic disease and providing high quality care, which helps care teams identify and target areas for interventions (Landon et al., 2007). The present study advances this understanding of CHWs in the context of the CCM and encourages integration of CHWs into care teams broadly (Keller et al., 2011).

CHW Best Practice Guidelines Seven CHW Models

The Sinai Urban Health Institute describes seven CHW models from the literature, which are defined by the CHW's role in the intervention. CHWs being integrated into hypertension self-management efforts and/or chronic care efforts may fall primarily into the member of care delivery team model, which focuses on targeting specific chronic disease and collaboration with medical staff for an integrated team-based approach.

Table 25. Sinai Urban Health Institute Seven CHW Models

CHW Models	Sample Duties
Navigator/Care Coordinator	Cultural mediation, identifying resources, connecting people with needed health and social services, coordinate care, provide patient follow-up, develop care management plans
Lay Health Educator	Cultural mediation, health education, screenings, providing informal counseling and social support
Community Organizer/Advocate	Connecting people with needed health and social services, helping patients understand and insist on their rights, advocating for community or system change
Member of Care Delivery Team	Cultural mediation, health education, informal counseling, connecting people with needed health and social services, providing limited direct healthcare services
Researcher	Obtaining consent, surveying/interviewing, documentation
Promotor(a) de Salud	Cultural mediation, translation, patient advocacy, health education, mentoring/social support, outreach, connecting people with needed health and social services

Adapted Community-Academic Partnership

Peretz (2012) describes a CHW model that was adapted from community-academic partnerships. CHWs were recruited and employed by four different community-based organizations and anchored in the community, which helped participants better identify with the CHWs and helped the CHWs draw on existing community-based social services (Peretz et al., 2012).

Goldman Peer Educator Model

Goldman (2013) qualitatively derived a model of functions for peer coaches in healthcare practices. The roles include role model, advisor, and supporter. These aspects of the role incorporate personal experience and are interconnected to help empower people to manage their own conditions. The peer educators act as an advisor primarily when working with providers (Goldman, Ghorob, Eyre, & Bodenheimer, 2013) .

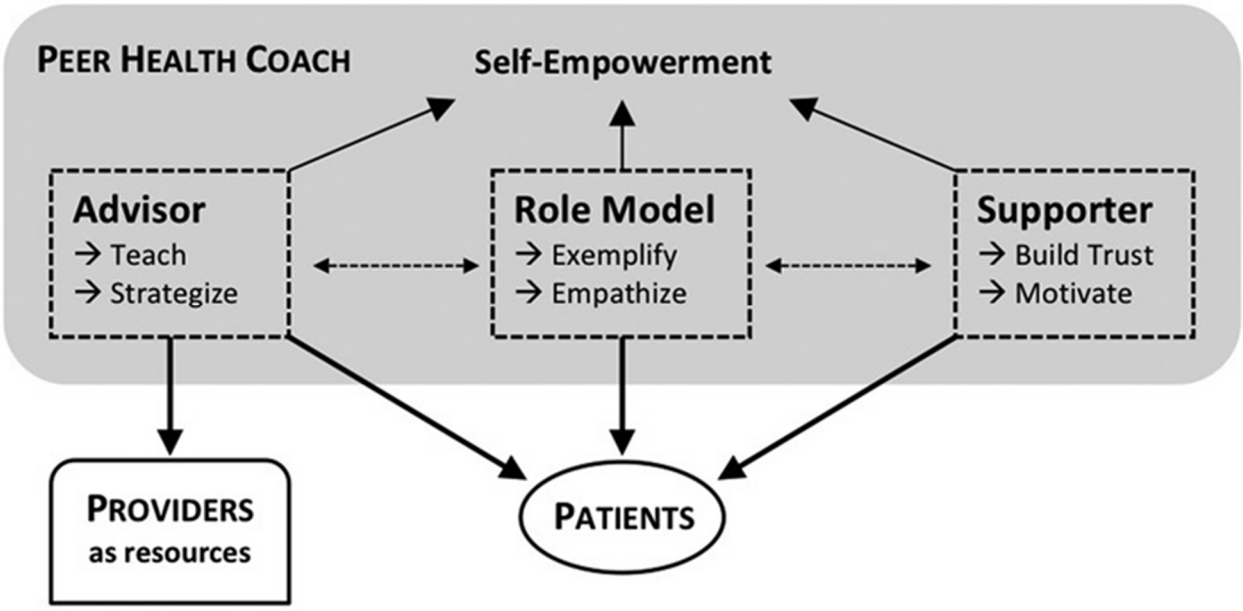


Figure 33. Goldman's Qualitatively Derived Model for Function of Peer Coaches in Practices

Cherrington's Peer Advisor Model for Diabetes Management

Cherrington (2012) cites the roles of peer advisors in diabetes management, which include assisting, supporting, and linking. Authors use the CCM to describe these roles. The team used intervention mapping, a six-stage iterative process to help develop the diabetes intervention. Steps included: 1) needs assessment, 2) identifying outcomes and change objective, 3) selecting theory-based methods and practical strategies, 4) developing the program, 5 and 6) planning for implementation and evaluation.

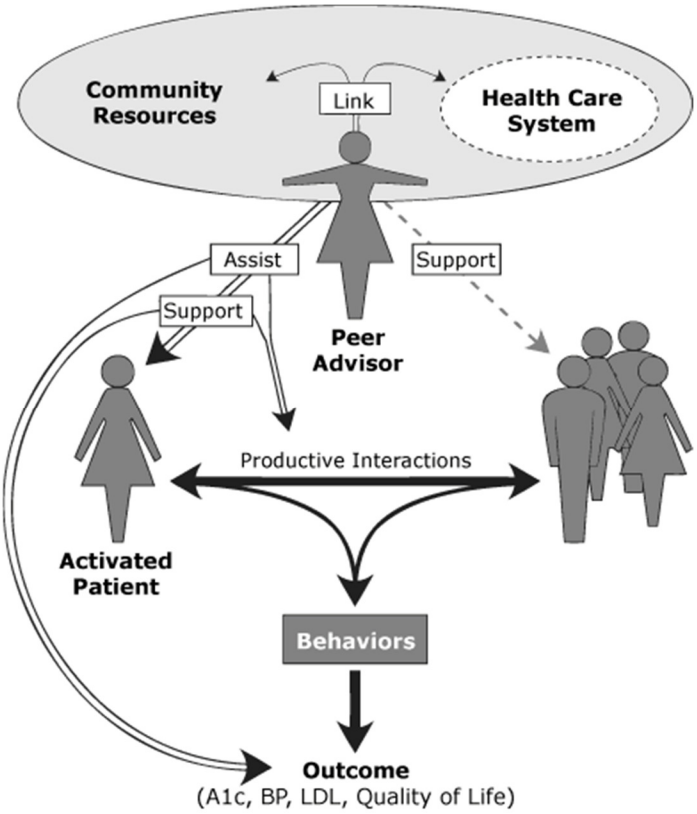


Figure 34. Role of Peer Advisors in Diabetes Management

CHWs Across the Continuum of Care

One future direction or model of care is to consider how CHWs are able to work across the continuum of care. Current research focuses primarily on the roles of CHWs in screening and prevention care and routine primary care. However, we know that secondary care and tertiary care may also be a space for CHW integration.

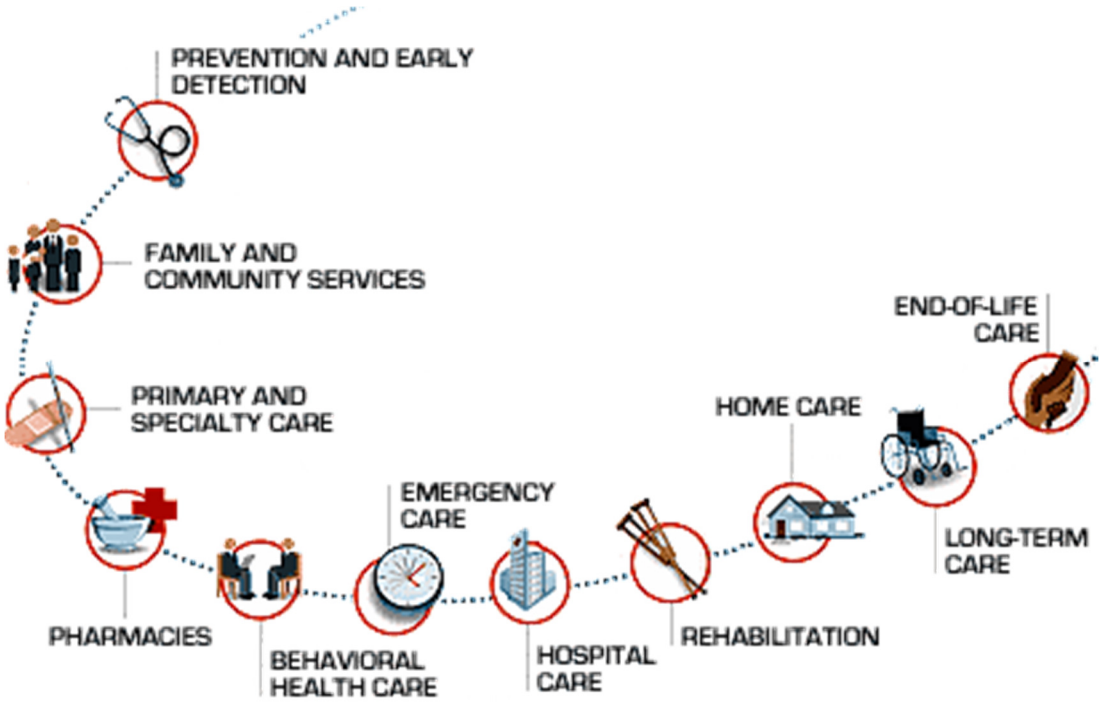
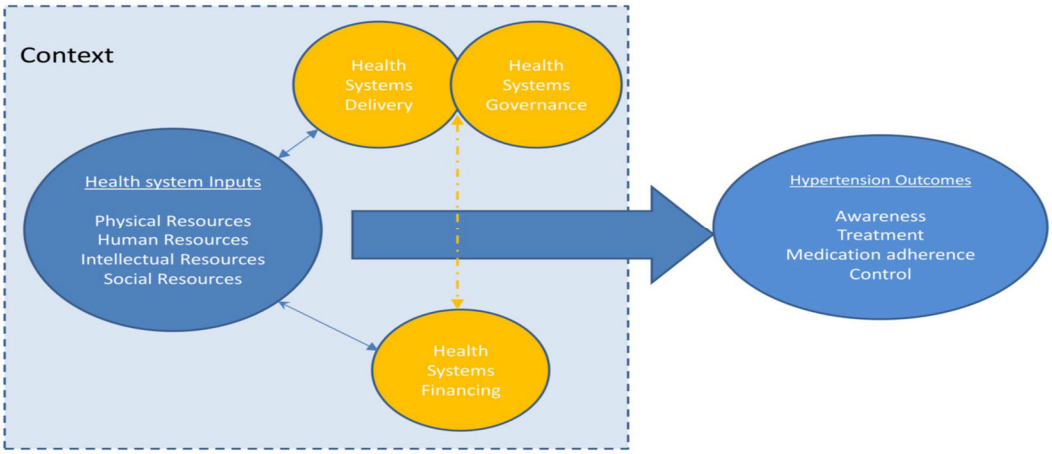


Figure 35. CHWs and the Continuum of Care.

Maimaris Schematic Diagram of Health System Conceptual Framework

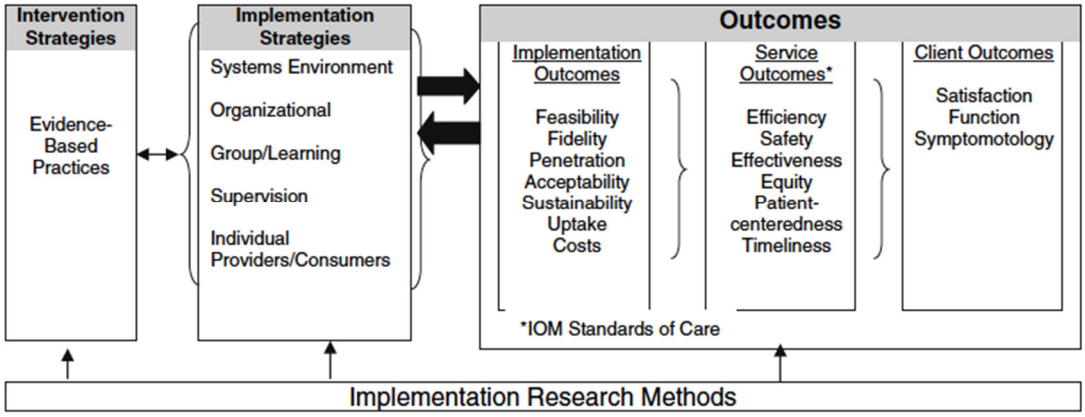
The following diagram is a depiction of Maimaris (2013) framework for guiding a systematic literature review about the influence of health systems on hypertension control and demonstrates that different arrangements of the health system impact hypertension outcomes (Maimaris et al., 2013).



Implementation Models

Proctor's Conceptual Model of Implementation Research

There is a need to evaluate the implementation of CHWs into care teams and also a need to evaluate their outcomes and strive for continual quality improvement. Procter (2009) distinguishes phases of dissemination and implementation, stating that "evidence based practices are first developed and tested though efficacy studies and then refined and adapted through effectiveness studies (which may entail adaption and modification to increase external validity and feasibility" (Procter et al., 2008). Procter (2009) provides a conceptual model of



implementation research, which extends to outcomes.

Figure 36. Conceptual Model of Implementation Research

Facilitating the Adoption of Best Practice Model

The Facilitating the Action of Best Practice (FAB) model is not a model of care but rather is a model of adoption. The FAB model is based on the diffusion of innovation, translation model, and social learning model. This model describes the adoption of best practices as told by the authors of the CFIR. At the center of the model is the social organization, which influences the evidence and leads to the current state and motivation to change. The internal and external facilitation is influenced by communication, training, resources, and networking which also impacts the social organization. In red is the adoption, sustainability, and improved outcomes. If/when applying this model to a CHW/healthcare setting, it is important to distinguish between improved clinical outcomes and improved organizational outcomes (e.g., team integration).

Figure 37. The Facilitating the Adoption of Best Practice Model

Beyond Models: Monitoring and Evaluation

Continual evaluation post implementation is an important feature of success. Procter (2011) describe three types of outcomes in implementation research: (1) Implementation outcomes; acceptability; adoption; appropriateness; cost; feasibility; fidelity; penetration; sustainability; (2) Service outcomes: efficiency, safety, effectiveness, equity, patient centeredness, timeliness; and (3) Client outcomes: satisfaction, function, symptomatology (Procter et al., 2008). The Centers for Disease Control and Prevention (CDC) offers a six-step framework for program evaluation, which could be applied to any program working with CHWs over a length of time (Centers for Disease Control and Prevention, 2012a). Other unique tools for evaluation include Photovoice, which is a tool to help empower and engage vulnerable populations throughout the evaluation process (Better Evaluation, 2014).

In addition to evaluating implementation, it is important to consider that "implementation outcome" are distinct from clinical treatment outcomes and service system outcomes. While evidence indicates that CHWs add value to care teams; careful consideration of public awareness, patient need and utilization of CHWs, providers and other clinical staff, and policy makers are important to consider. Furthermore, implementation science and evaluation are particularly important as CHWs gain momentum and popularity in the healthcare system; that is, how to appropriately scale-up the CHW programs.

Cosgrove (2014) described the larger roles of CHWs in addressing health disparities broadly using the social-ecological model (Cosgrove et al., 2014). Evaluation efforts for CHW programs should be centered around community-based participator approaches. Engaging CHWs throughout the evaluation process helped to build capacity for CHWs to provide services and also offered new perspectives in evaluation. CHWs helped the evaluation team better communicate to diverse stakeholders (e.g., providers, patients, and community), to disseminate the evaluation and aid in data collection efforts. Long-term CHW involvement in evaluation allowed for greater initial buy in and aided in the dissemination process.

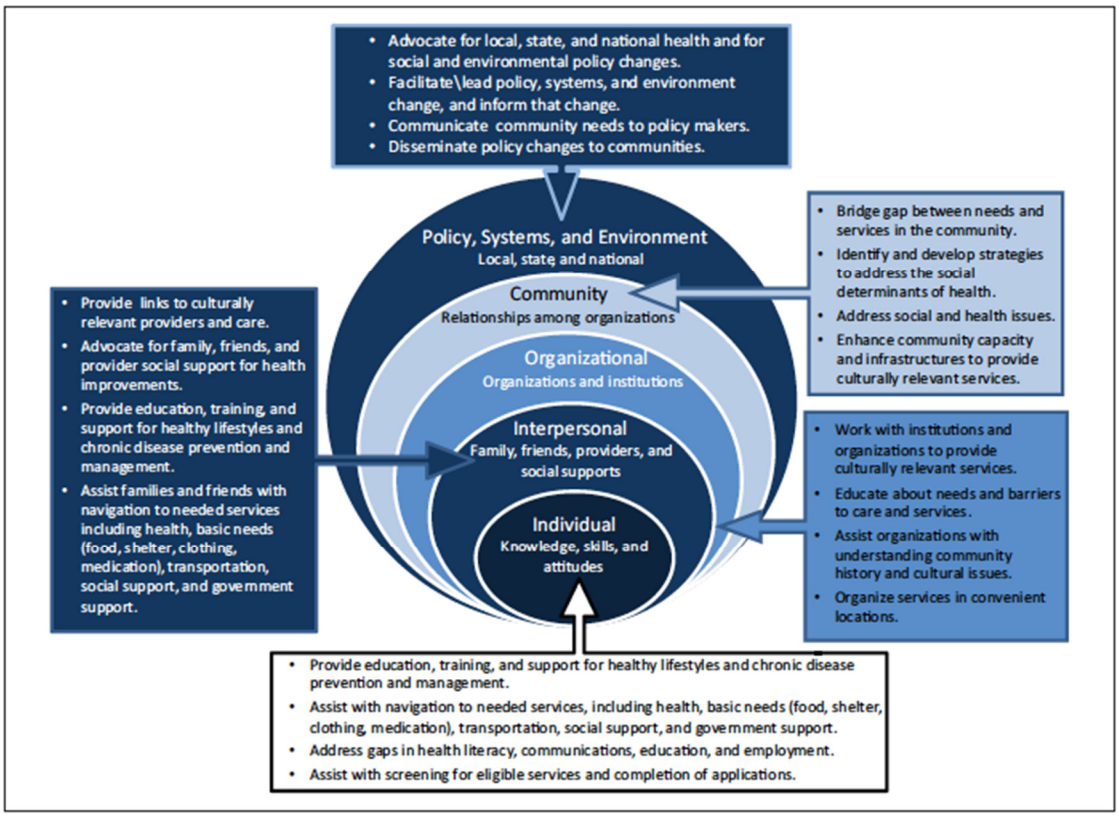


Figure 38. REACH U.S. Major Roles for Community Health Workers

Cherrington (2012) described evaluation measure and process measures for a CHW-led diabetes intervention. Evaluation measures included biometric measures (e.g., hemoglobin A1C, blood pressure, low-density lipoprotein cholesterol, body mass index, and waist circumference) and patient-centered measures, and theory-based behavioral outcomes (e.g., improve self-efficacy, improve patient activation, decrease perceived barriers, increase perceived support). Evaluation measures were collected at baseline, six, and 12 months by CHWs in biometric assessments and face-to-face interviews. Specific process focused measures include contact forms with information about how patients are being contacted (e.g., telephone, in person, etc.). These

contact forms were used to help monitor CHW work and support progress, troubleshoot problems, and reinforce training (Cherrington et al., 2012). Tracking work with each client helps document efforts and can lead to better process evaluation.

Gutierrez (2014) describes three aspects of evaluation for CHWs: process (what activities occurred), impact (were activities taken or was the situation resolved), and outcome (was there any improvement in patient health). These three distinct categories help document intervention outcomes and encourages the care team to attribute improve health to CHWs as appropriate and when possible. Gutierrez also encourages evaluation of trainings through measures of knowledge, skills learned, trainee reaction, and impact of training performance. These measures help to evaluate the success of training programs, whether trainings are effective, and how trainings can be more effective (Gutierrez & Campbell, 2014).

Health outcome evaluation can be measured by disease specific outcomes (e.g., percent change in blood pressure, cholesterol, or triglycerides) and health behavior change (e.g., physical activity, nutrition, and medication adherence). Resource utilization can focus on appropriate resource utilization (e.g., appointments kept, screenings performed), and unscheduled resource utilization (e.g., emergency department visits, hospitalizations)(The Institute for Clinical and Economic Review, 2013). Economic evaluation such as cost effectiveness, may also be used. Regardless of the type of evaluation, it is important to maintain a community-focus when possible. Presently, there are no standard measures for CHW interventions, which emphasize the importance of creating common indicators to measure success.

Finally, other opportunities to measure and sustain programs are created by maintaining a focus on quality improvement. Quality improvement efforts require tracking and careful measurements. Categories for quality improvement may include: delivery system design, self-care support, decision support, information support, community linkages, health system organization (Landon, 2007). Organizations working with CHWs may wish to focus on these or other self-identified quality improvement measures.

Conclusion

The purpose of this study was to enhance the field's knowledge of the roles CHWs play in chronic disease self-management using hypertension self-management as an example, with a specific emphasis on medication adherence. This study focused on understanding how CHWs are integrated into the care team for patients with high blood pressure and what helps or hinders a CHW from completing their role in hypertension self-management and medication adherence. Overall, the purpose of this study is to understand the ways CHWs assist patients in hypertension

medication management to improve hypertension outcomes and how they are supported in carrying out these functions within their health system. These results contribute to a broad understanding of how CHWs assist patients with hypertension/chronic disease management and what factors support their integration and roles in healthcare agencies.

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Appendix A. CFIR Construct with Short Definitions

ADDITIONAL FILE 3: CFIR Constructs with Short Definitions

Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC: **Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science**

	Topic/Description	Short Description
I. INTERVENTION CHARACTERISTICS		
A	Intervention Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B	Evidence Strength & Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C	Relative advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D	Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E	Trialability	The ability to test the intervention on a small scale in the organization [8], and to be able to reverse course (undo implementation) if warranted.
F	Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement
G	Design Quality and Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled
H	Cost	Costs of the intervention and costs associated with implementing that intervention including investment, supply, and opportunity costs.
II. OUTER SETTING		
A	Patient Needs & Resources	The extent to which patient needs, as well as barriers and facilitators to meet those needs are accurately known and prioritized by the organization.
B	Cosmopolitanism	The degree to which an organization is networked with other external organizations.
C	Peer Pressure	Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or in a bid for a competitive edge.
D	External Policy & Incentives	A broad construct that includes external strategies to spread interventions including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting.
III. INNER SETTING		
A	Structural Characteristics	The social architecture, age, maturity, and size of an organization.
B	Networks & Communications	The nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization.
C	Culture	Norms, values, and basic assumptions of a given organization.
D	Implementation Climate	The absorptive capacity for change, shared receptivity of involved individuals to an intervention and the extent to which use of that intervention will be rewarded, supported, and expected within their organization.
1	Tension for Change	The degree to which stakeholders perceive the current situation as intolerable or needing change.
2	Compatibility	The degree of tangible fit between meaning and values attached to the intervention by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the intervention fits with existing workflows and systems.
3	Relative Priority	Individuals' shared perception of the importance of the implementation within the organization.
4	Organizational Incentives & Rewards	Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary and less tangible incentives such as increased stature or respect.

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5	Goals and Feedback	The degree to which goals are clearly communicated, acted upon, and fed back to staff and alignment of that feedback with goals.
6	Learning Climate	A climate in which: a) leaders express their own fallibility and need for team members' assistance and input; b) team members feel that they are essential, valued, and knowledgeable partners in the change process; c) individuals feel psychologically safe to try new methods; and d) there is sufficient time and space for reflective thinking and evaluation.
E	Readiness for Implementation	Tangible and immediate indicators of organizational commitment to its decision to implement an intervention.
1	Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the implementation.
2	Available Resources	The level of resources dedicated for implementation and on-going operations including money, training, education, physical space, and time.
3	Access to knowledge and information	Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.
IV. CHARACTERISTICS OF INDIVIDUALS		
A	Knowledge & Beliefs about the Intervention	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.
B	Self-efficacy	Individual belief in their own capabilities to execute courses of action to achieve implementation goals.
C	Individual Stage of Change	Characterization of the phase an individual is in, as he or she progresses toward skilled, enthusiastic, and sustained use of the intervention.
D	Individual Identification with Organization	A broad construct related to how individuals perceive the organization and their relationship and degree of commitment with that organization.
E	Other Personal Attributes	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.
V. PROCESS		
A	Planning	The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance and the quality of those schemes or methods.
B	Engaging	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modeling, training, and other similar activities.
1	Opinion Leaders	Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing the intervention
2	Formally appointed internal implementation leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.
3	Champions	"Individuals who dedicate themselves to supporting, marketing, and 'driving through' an [implementation]" [101](p. 182), overcoming indifference or resistance that the intervention may provoke in an organization.
4	External Change Agents	Individuals who are affiliated with an outside entity who formally influence or facilitate intervention decisions in a desirable direction.
C	Executing	Carrying out or accomplishing the implementation according to plan.
D	Reflecting & Evaluating	Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.

Appendix B. Quantitative Survey Guide

Section 0. Screening Questions

1. This survey is for Community Health Workers (CHWs) who are known by many titles, including Promotoras(es) de Salud, Community Health Representatives, Community Health Advisors, Patient Navigators and many more. For this survey, we use the term CHW. Are you currently a CHW?
    - *Yes*
    - *No*
        - *Prompted with "Thank you for your time. This survey is only for Community Health Workers."*

2. Have you already completed this survey about CHWs and their role in helping patients or clients with high blood pressure? (If you are not sure you have already completed the survey, please continue. You may stop if you realize you have already taken the survey.)
    - *Yes*
        - *Prompted with "Thank you for your time. This survey is only available for those Community Health Workers who have not taken it in the last 12 months"*
    - *No*

Section 1. Informed Consent

[Include text from the Consent to be a Research Subject document]

3. Do you agree to consent?
    - Yes
    - No

Section 2. Opening Questions

Please note: Your organization includes those individuals that you work with such as supervisors, providers (doctors, nurse practitioners, pharmacists), or other team members.

4. What type of organization do you work for?
    - *Clinic (not FQHC)*
    - *Community-based Organization*
    - *Federally Qualified Health Center (FQCHC)*
    - *Health Insurance Company*
    - *Hospital*
    - *Local Health Department*
    - *Indian Health Service*
    - *Tribal Health Department*
    - *Urban Indian Health Center*
    - *University*
    - *Other (Please specify)*

5. Where do you work?
    - *City or town [free text]*
    - *State [drop down options]*

-

6. What is your job title? (Check all that apply)
    - *Case Manager*
    - *Community Care Coordinator*
    - *Community Health Advisor*
    - *Community Health Aide*
    - *Community Health Educator*
    - *Community Health Promoter*
    - *Community Health Representative*
    - *Community Health Worker*
    - *Helper/Supporter*
    - *Home Visitor/Support Worker*
    - *Lactation Consultant/Specialist*
    - *Lay Health Advisor*
    - *Outreach Specialist*
    - *Outreach Worker*
    - *Patient Advocate*
    - *Patient Navigator*
    - *Peer Counselor*
    - *Peer/Teen Educator*
    - *Promotores(as)*
    - *Public Health Aide*
    - *Other (Please specify)*

7. How many <u>total</u> years have you worked <u>as a CHW</u>?
    - *Survey takers can type responses into blank field.*
    - *Don't know*

8. How many <u>total</u> years have you worked at <u>your current organization</u>?
    - *Survey takers can type responses into blank field.*
    - *Don't know*

9. <u>Including yourself</u>, how many other CHWs work in your organization?
    - *Survey takers can type response into blank field.*
    - *Don't know*

10. About how many patients or clients per year does <u>your organization</u> serve?
    - *Survey takers can type response into blank field.*
    - *Don't know*

11. About how many patients or clients per year do you serve?
    - *Survey takers can type response into blank field.*
    - *Don't know*

12. What population(s) do you serve? (Check all that apply)
    - *American Indian/Alaskan Native*
    - *Asian/Pacific Islander*
    - *Black/African American*

- *Hispanic/Latino(a)*
- *Non-Hispanic White*
- *Other race/ethnicity (Please specify)*

13. What services do you and other CHWs in your organization provide to clients? (Check all that apply)
    - *Advocating for community needs*
    - *Advocating for individual needs*
    - *Building community capacity*
    - *Building individual capacity*
    - *Gathering information for medical providers*
    - *Helping medical and social service providers understand patient or client needs*
    - *Helping patients or clients manage chronic illness*
    - *Helping patients or clients in gaining access to medical services or programs*
    - *Helping patients or clients in gaining access to non-medical services or programs*
    - *Leading support groups*
    - *Meeting patient or clients basic needs (e.g., food and shelter)*
    - *Providing clinical services (e.g., measuring heights and weights, taking vital signs such as pulse and blood pressure measurements)*
    - *Providing follow ups for patients or clients*
    - *Providing individual support and informal counseling for patients or clients*
    - *Teaching concepts of health promotion and disease prevention to patients or clients*
    - *Teaching patients or clients about how to use healthcare and social service systems*
    - *Translation*
    - *Other (Please specify)*

14. How do you and other CHWs in your organization deliver services? (Check all that apply)
    - *Group classes or sessions in your organization's setting (clinic, office)*
    - *Group classes or sessions in community setting*
    - *Home visits*
    - *Individual in-person sessions in your organization's setting (clinic, office)*
    - *Individual in-person sessions in community setting*
    - *Individual phone and/or email sessions*
    - *Outreach in your organization's setting (clinic, office)*
    - *Outreach in community setting*
    - *Other (Please specify)*

15. What health problems and issues do you and other CHWs in your organization address? (Check all that apply)
    - *Alzheimer's disease or dementia*
    - *Arthritis*
    - *Asthma*
    - *Breastfeeding*
    - *Cancer*

- *Child health*
- *Depression or anxiety*
- *Diabetes*
- *Family planning*
- *Gay/Lesbian/Bisexual/Transgender issues*
- *Heart disease*
- *High blood pressure or Hypertension*
- *HIV/AIDS*
- *Immunizations*
- *Infant Health*
- *Injuries*
- *Men's health*
- *Mental health*
- *Nutrition*
- *Obesity*
- *Physical activity*
- *Pregnancy/ prenatal care*
- *Sexual behavior*
- *Stroke*
- *Substance abuse*
- *Tobacco control*
- *Tuberculosis*
- *Violence*
- *Women's health*
- *Other (Please specify)*

Section 3. High Blood Pressure Questions

This section of the survey will ask you about ways that you and other CHWs in your organization work with patients or clients who have high blood pressure.

16. Do you work with patients or clients who have high blood pressure? (BP>120 mmHg [systolic] or >90 mmHg [diastolic])
    - *Yes → question 17*
    - *No → Integration section*

17. How do you deliver services for patients or clients with high blood pressure? (Check all that apply)
    - *Group classes or sessions in your organization's setting (clinic, office)*
    - *Group classes or sessions in community setting*
    - *Home visits*
    - *Individual in-person sessions in your organization's setting (clinic, office)*
    - *Individual in-person sessions in community setting*
    - *Individual phone and/or email sessions*
    - *Outreach in your organization's setting (clinic, office)*
    - *Outreach in community setting*
    - *Other (Please specify)*

18. How many patients or clients do <u>you</u> serve each year <u>with high blood pressure</u>?

- *Survey takers can type response into blank field.*

19. How long do <u>you</u> typically interact with a patient or clients with high blood pressure? (e.g., your program runs 6 months)
    - *Survey takers can type response into blank field. ___ months*

20. On average, how many times per month do you interact with patients or clients who have high blood pressure?
    - *Survey takers can type response into blank field. ___ times per month*
    -
21. During a visit with a patient or client who has high blood pressure, how long do you normally stay? (e.g., 30 minutes per session)
    - *Survey takers can type response into blank field. ____minutes*

22. What do you do to help patient or clients manage their high blood pressure? (Check all that apply)
    - *Assist with accessing exercise facility*
    - *Educate on healthy diet (rich in fruits and vegetables)*
    - *Educate on low-sodium diet*
    - *Educate about shopping for and preparing healthy foods*
    - *Help patients or clients with keeping doctors appointments*
    - *Help patients or clients with insurance issues (e.g., getting insurance, keeping insurance)*
    - *Provide blood pressure measurements*
    - *Counsel on filling and taking prescribed medicines as advised by doctors*
    - *Help patients or clients with remembering to take medication by using pill boxes or other reminders*
    - *Help patients or clients understand that they should not stop taking their blood pressure medicine without talking to their doctors*
    - *Help patients or clients understand they should talk to their doctors about any side effects they think their blood pressure medicines may have*
    - *Help people get free or low-cost blood pressure medicines*
    - *Help people get free or low-cost home blood pressure monitors*
    - *Provide telephone/text appointment reminders*
    - *Help with transportation*
    - *Help with access to child care*
    - *Provide in-home visits*
    - *Offer or refer patients or clients to quit smoking programs (smoking cessation)*
    - *Provide referrals to other social services*
    - *Provide social support to patients or clients and family members*
    - *Assist with goal setting*
    - *Offer translation services*
    - *Other (Please specify)*

23. Do you help patients or clients with high blood pressure medicines (following medicine instructions from a healthcare provider)?
    - *Yes → Section 4, High Blood Pressure Medicine Adherence*
    - *No → Integration Section*

Section 4. High Blood Pressure Medicine Adherence

The next section of the survey will ask you details about how you help patients or clients with their high blood pressure medicines.

24. Please respond to the statement: I feel my patients or clients are able to follow their high blood pressure medicine instructions from their doctor or other healthcare providers.
    - *Strongly agree*
    - *Agree*
    - *Neutral*
    - *Disagree*
    - *Strongly disagree*

25. What health system barriers do your patients or clients face in taking their high blood pressure medicine? (Check all that apply)
    - *Ability to get medicine refilled (e.g., because of lack of insurance, access to drugstore, or inability to pay for prescription)*
    - *Access to healthcare provider*
    - *Doctor or provider doesn't know about patient or client needs*
    - *Lack of communication among providers*
    - *Lack of knowledge by patient or client about high blood pressure medicine*
    - *Poor relationship between the patient or client and doctor or provider*
    - *Poor relationship between patient or client and pharmacist*
    - *Other (Please specify)*

26. How do you and your organization support your patients or clients in health system barriers? (Check all that apply)
    - *Assistance with communication among providers*
    - *Assistance with relationship between patient and doctor or provider*
    - *Educate doctor or provider about patient or client needs*
    - *Help patient or client access a healthcare provider*
    - *Help patient or client get their medicine refills*
    - *Help patient or client schedule appointments*
    - *Spend time with patients or clients discussing health systems barriers*
    - *Work with pharmacist*
    - *Other (Please specify)*

27. What condition-related barriers do your patients or clients face in taking their high blood pressure medicines? (Check all that apply)
    - *Confusion if they are taking several medicines for different medical conditions*
    - *Has more than one health issue*
        - *If select 'has more than one health issue'* →
            - *Select all health issues that apply*
                - *Alzheimer's disease or dementia*
                - *Arthritis*
                - *Asthma*
                - *Cancer*
                - *Depression or anxiety*
                - *Diabetes*
                - *Gout*

- *Heart disease*
- *HIV/AIDS*
- *Injuries*
- *Mental health*
- *Obesity*
- *Stroke*
- *Substance abuse*
- *Tobacco control*
- *Tuberculosis*
- *Violence*
- *Other (Please specify)*

- *Keeping medicine refilled*
- *Taking the correct dose of medicine at the right time*
- *Trouble reading medicine bottles*
- *Smoking*
  - *If select 'smoking' →*
    - *Please indicated how much you agree with this statement: My patients or clients with high blood pressure try to quit smoking:*
      - *Strongly agree*
      - *Agree*
      - *Neutral*
      - *Disagree*
      - *Strongly disagree*
- *Understanding high-risk of high blood pressure*
- *Understanding they need to stay on their blood pressure medicines*
- *Using or opening medicine bottles/containers*
- *Other (Please specify)*

28. How do you and your organization support patients or clients with condition-related barriers? (Check all that apply)
    - *Assist with mental health and wellbeing issues*
    - *Encourage smoking reduction*
    - *Encourage healthy lifestyle (limiting alcohol, increasing exercise)*
    - *Help with medicine bottles (opening bottle, closing bottle, reading bottle)*
    - *Increase knowledge about seriousness of high blood pressure*
    - *Support patients or clients with co-morbidities (multiple health issues)*
    - *Other (Please specify)*

29. What patient-related barriers do your patients or clients face in taking their high blood pressure medicine? (Check all that apply)
    - *Attitudes of patients or clients and perceived consequences of not taking medicine*
    - *Attitudes of patients or clients and perceived effectiveness of treatment*
    - *Forgetfulness of taking medicine*
    - *Forgetfulness of getting medicine refilled*
    - *Patient or client attitudes and perceived need for treatment*
    - *Other (Please specify)*

30. How do you and your organization support patients or clients with patient-related barriers? (Note: counseling includes informal counseling, motivational interviewing, and discussion with patients or clients) (Check all that apply)
    - *Counseling about changing health behaviors (e.g., diet, physical activity, smoking)*
    - *Counseling about the consequences of not taking medicine*
    - *Counseling about effectiveness of treatment*
    - *Counseling about necessity of treatment*
    - *Memory aids and reminders for getting medicine refilled*
    - *Memory aids and reminders for taking medicines*
    - *Other (Please specify)*

31. What social and economic barriers do your patients or clients face in taking their high blood pressure medicine? (Check all that apply)
    - *Belief that medicines are a financial burden*
    - *Cost of care and/or insurance*
    - *Cost of medicines*
    - *Literacy issues (trouble reading)*
    - *Social support*
    - *Transportation*
    - *Other (Please specify)*

32. How do you and your organization support patients or clients with social and economic barriers? (Check all that apply)
    - *Helping patient's or client's family understand patients disease*
    - *Helping patient or client get health insurance*
    - *Helping patient or client get medicine*
    - *Helping patient or client to read medicine label*
    - *Helping patients or clients with transportation needs*
    - *Other (Please specify)*
    -

33. What therapy-related barriers do your patients or clients face in taking their high blood pressure medicine? (Check all that apply)
    - *Complex treatments (e.g., a patient or client takes more than one kind of medicine)*
    - *Medicines changes frequently*
    - *Patients or clients failure with taking medicines in the past*
    - *Side effects, if yes* →
        - *What are the most common side effects your patients or clients face?*
            - *Survey takers can type response into blank field.*
    - *Other (Please specify)*
34. How do you and your organization support patients or clients who have complex treatment (take multiple medicines) or medicines that change frequently?
    - *Survey takers can type response into blank field.*

Section 5. Implementation Questions

The next set of questions will ask about ways that you think CHWs fit into your organization. Your organization includes those individuals that you work with such as supervisors, providers (doctors, nurse practitioners, pharmacists), or other team members.

Inner Setting

35. Who is your primary supervisor in your organization?
    - *CHW supervisor/ Head CHW*
    - *Medical Doctor*
    - *Nurse*
    - *Nurse Practitioner*
    - *Pharmacist*
    - *Social Worker*
    - *Other (Please specify)*

Please indicate how much you agree with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
36. I feel well supported by my organization (e.g., supervisor, providers, other team members) in carrying out my duties as a CHW					
37. I feel well supported by my organization (e.g., supervisor, providers, other team members) in carrying out my duties with patients or clients who have high blood pressure (Please leave blank if you do not work with patients or clients who have high blood pressure)					
38. I feel well supported by my organization (e.g., supervisor, provider, or other team members) in carrying out my duties with helping patients or clients with high blood pressure medicines (Please leave blank if you do not work with patients or clients who have high blood pressure)					
39. I feel well trained to carry out my duties as a CHW					
40. I feel well trained to carry out my duties in helping patients or clients who have high blood pressure (Please leave blank if you do not work with patients or clients who have high blood pressure)					
41. I feel well trained in carrying out my duties in helping patients with high blood pressure medicine (Please leave blank if you do not work with					

patients or clients who have high blood pressure)					
42. People put a lot of effort into making CHWs a success at my organization					
43. People at my organization believe CHWs are important					
44. Managers and supervisors at my organization are strongly committed to working with CHWs					

45. Please rate the following CHW roles and skills on level of **difficulty**. For level of difficulty, please select if this role or competency is beginner, intermediate, or advanced.

Role or Competencies	Beginner	Intermediate	Advanced
Cultural mediation between communities and health and human service systems			
Informal counseling and social support			
Providing culturally appropriate health education			
Advocating for individual and community needs			
Assuring that people get the services they need			
Building individual and community capacity			
Providing direct services			
Communication skills			
Broad knowledge base about community and health issues			
Capacity building skills			
Interpersonal skills			
Service coordination skills			
Teaching skills			
Advocacy skills			
Organizational skills			

46. Please rate the following CHW roles and competencies on level of **priority**. For level of priority please indicate if this role or competency is low, medium, or high importance to you.

Role or Competencies	Low Priority	Medium Priority	High Priority
Cultural mediation between communities and health and human service systems			
Informal counseling and social support			
Providing culturally appropriate health education			
Advocating for individual and community needs			
Assuring that people get the services they need			
Building individual and community capacity			
Providing direct services			
Communication skills			

Broad knowledge base about community and health issues			
Capacity building skills			
Interpersonal skills			
Service coordination skills			
Teaching skills			
Advocacy skills			
Organizational skills			

47. What, if anything, within your organization helps you do your job as a CHW? (Check all that apply)
    - *Attending staff meetings*
    - *Being listed on the organization's work plan*
    - *Being part of a multidisciplinary care team*
    - *Other staff*
    - *Policies and procedures in my organization*
    - *Resources to health education materials*
    - *Support from leadership or program champion*
    - *Training held at my organization*
    - *Training held outside of my organization*
    - *Other (Please specify)*

48. What, if anything, within your organization helps you do your job for patients or clients with high blood pressure? (Check all that apply)
    - *Attending staff meetings*
    - *Being listed on the organization's work plan*
    - *Being part of a multidisciplinary care team*
    - *Other staff*
    - *Policies and procedures in my organization*
    - *Resources to health education materials*
    - *Support from leadership or program champion*
    - *Training held at my organization*
    - *Training held outside of my organization*
    - *I do not work with patients or clients with high blood pressure*
    - *Other (Please specify)*

49. Who do you work with to address high blood pressure self-management for your patients or clients? (Check all that apply)
    - *Community members*
    - *CHW supervisor/Head CHW*
    - *Educator or health coach*
    - *Family or caregiver*
    - *Medical Doctor*
    - *Nurse*
    - *Nurse Practitioner*
    - *Pharmacist*
    - *Social Worker*
    - *Other CHWs*

- *Patients or clients*
- *I do not work with patients or clients with high blood pressure*
- *Other (Please specify)*

Implementation Process

50. Please indicate how much you agree with this statement: I am part of my organization's care team for patients or clients.
    - *Strongly agree*
    - *Agree*
    - *Neutral*
    - *Disagree*
    - *Strongly disagree*
    -
51. How hard or easy has it been for you to become part of you organization's care team?
    - *1-very easy*
    - *2- easy*
    - *3- neither easy or hard*
    - *4- hard*
    - *5- very hard*

Outer Setting

52. What external non-organizational factors, if any, help to support your work as a CHW? (Check all that apply)
    - *Being a member of a CHW alliance and/or association*
    - *Being a member of a professional organization*
    - *Networking with non-CHW organizations*
    - *Networking with other CHWs*
    - *Receiving training or other support from your State Health Department*
    - *Recognition of role of CHWs in my state/region*
    - *Other (Please specify)*

53. Are you a member of a professional group or society?
    - *Yes*
        - *Response option to type in name of societies*
        - *Do you attend professional or work-related conferences?*
            - *Yes*
                a. *During the course of 1 year, how often do you attend professional or work-related conference? [open response]*
            - *No*
    - *No*

54. Please indicate how much you agree with this statement: My organization will continue to support my work and the work of others as a CHW in the future.
    - *Strongly agree*
    - *Agree*
    - *Neutral*

- *Disagree*
- *Strongly disagree*

Section 7. Final Questions

55. Are you interested in continuing the conversation through an interview for us to learn more about your work as a CHW?
    - *Yes*
        - *Please provide contact information for us to reach you*
            - *Name: [open field]*
            - *Phone Number: [open field]*
            - *Email Address: [open field]*
        - *Thank you! Someone will be in touch with you soon about the interview.*
    - *No*

Section 8. Demographics

56. How old are you?
    - *Survey takers can type response into blank field.*

57. What is your sex?
    - *Male*
    - *Female*

58. What is your race?
    - *American Indian/Alaskan Native*
    - *Asian/Pacific Islander*
    - *Black/African American*
    - *Hispanic/Latino(a)*
    - *Non-Hispanic White*
    - *Other race/ethnicity (Please specify)*

59. What is the highest grade of school you completed?
    - *8^{th} grade or less*
    - *Some high school*
    - *High school or GED certificate*
    - *Some college or technical school*
    - *College graduate*
    - *Post-graduate or professional degree*
    - *If college or above, what was your major or concentration?*

Section 9. Thank you!

Thank you for taking the time to complete this survey! We appreciate your responses. Please feel free to share this survey with other CHWs by sending them this link: [insert link to survey]

Appendix C. Interview Guide

Date: **Interviewer:** **Interview ID #:** **Start Time:** **End Time:**

1. Informed Consent
(Read prior to beginning interview)

Thank you for agreeing to this interview. If you remember, you completed the online survey that included questions about your work as a Community Health Worker (CHW), your work with patients or clients who have high blood pressure, and how you fit in to your organization's care team. This interview will help us gain more in depth knowledge about these topics.

As a reminder, your answers are anonymous and will not be shared outside of the study team. Being part of this interview is entirely your choice. You can skip any questions that you do not wish to answer or stop the interview at any time. The interview should take no longer than one hour.

Do you have any questions?

Great. We would like to record this interview to help with data collection. Do I have your permission to begin recording?

Thank you. I will now turn on the recorder and begin your interview.

2. Opening Questions
Thank you for taking the time to help Emory University better understand CHWs. During your interview today I will be asking questions to learn more about you, your work as a CHW, your work with patients or clients who have high blood pressure, and your organization. To begin, I would like to hear more about you.

1. Can you please tell me a little bit about yourself and how you became a CHW?

3. Hypertension Questions
Now that I know a little more about you, I would like to learn more about your work with patients or clients. Specifically, we are interested in learning about ways CHWs promote and support high blood pressure self-management for their patients or clients.

2. Could you please tell me about what activities you and other CHWs in your organization do to help patients or clients with controlling their high blood pressure?
    - Probe: Do you help your patients or clients with health education, getting services for blood pressure control, measuring and monitoring blood pressure, or

by providing social support (which is listening to them and helping them problem solve)?
- Probe: Do you help your patients or clients with reducing sodium intake, stopping smoking, keeping their appointments, or taking medicines? Can you tell me more about that?
- Probe: What do you and other CHWs in your organization do to help patients or clients with taking their high blood pressure medicines? (Specifically healthcare team factors, condition-related barriers, patient-related factors, social and economic factors, and therapy-related factors)
- Probe: What do you do to help your patients or clients stay on their medicines over the long run?
    - Probe: What specific tools do you use to help patients or clients manage their high blood pressure medicines? Where are these tools/materials from?

3. Tell me about the problems that your patients or clients face in controlling their high blood pressure.
    - Probe: How difficult is it for your patients or clients to take their high blood pressure medicine?
    - Probe: What changes have your patients or clients made or have you suggested to help them control their blood pressure?

4. Implementation Questions

*We will switch to question that ask how your organization supports you and other CHWs within the healthcare delivery team **for patients or clients with high blood pressure**. These questions will ask about ways that you think CHWs fit into your organization.*

Inner Setting

4. How long has your organization been working with CHWs?
5. Will you please describe your role within your organization?
    - Probe: What is your role as a CHW?
    - Probe: What is your role in high blood pressure self-management?
    - Probe: Are you part of the patient or client care team? Can you tell me more about that?
        - Probe: Are you allowed to put patient data into the electronic medical records?
        - Probe: Are you included in the staff meetings? Are you included in patient case-management meetings? Do providers review your notes on patients before they next see the patients?
    - Probe: Does provider staff listen and act on your suggestions and recommendations?
    - Probe: Do providers have you review their instructions with the patients to make sure the patients understand what they are supposed to do?
    - Probe: Whom do you report to?
6. How are CHWs treated/viewed in your organization?
    - Probe: Are CHWs seen as part of the care team, separate from the team?
    - Probe: What do you think others believe about CHWs in your organization?
7. What within your organization helps you do your job as a CHW? In helping patients or clients in high blood pressure self-management?

- Probe: For example, relationship with your organization as a whole, relationship with your supervisor, relationship with doctors, relationships with other staff members.

8. What about your organization gets in the way of your doing your job? In helping patients or clients in high blood pressure self-management?
    - Probe: For example, relationship with your organization as a whole, relationship with your supervisor, relationship with doctors, relationships with other staff members.
9. Who are the key staff members that help you in your duties as a CHW?

Implementation Process

10. On a scale of 1-5 with 1 being not very well integrated and 5 being very well integrated, how well do you think your organization has included CHWs into the care team for patients or clients with high blood pressure?
    - Probe: Why did you give your organization this score?

Characteristics of Individuals Involved

11. On a scale of 1-5 with 1 being not skilled and 5 being completely skilled, how would you rate your skills and knowledge that you need to be a CHW?
    - Probe: Why did you give yourself this score?
12. What training have you received as a CHW? On treating patients or clients with high blood pressure?
13. To what extent would you say that you have the knowledge and skills you need to provide high blood pressure self-management services to your patients or clients?
    - Probe: What skills and knowledge do you have about high blood pressure medicines?
    - Probe: Who trained you in these skills and knowledge?
    - Probe: What skills and knowledge do you have about taking the blood pressure measurements of your patients or clients?
    - Probe: What skills or knowledge do you have about teaching your patients or clients about taking their blood pressure measurements on at home blood pressure monitors (e.g., writing down their blood pressure numbers, knowing when to call their doctor about their numbers)?
    - Probe: What additional skills or knowledge would be helpful?
14. How do other team members (clerical staff, doctors, nurses, social workers, medical assistants, etc.) interact with you or other CHWs?
    - Probe: Have you experienced conflicts from staff in regards to your role?
    - Probe: How did you overcome this conflict?
    - Probe: How do you educate providers and other team members about the role of CHWs in high blood pressure self-management?

Outer Setting

15. What factors outside of your healthcare team help you do your job well?
    - Probe: For example, being a member of professional group or society, going to conferences, networking.
16. What external forces outside of your organization keep you from doing your job well?
    - Probe: For example, the Affordable Care Act, lack of Medicaid expansion in your state.
17. How do you advocate for your patients or clients?

- Probe: For example, do you talk with providers, talk with community leaders, talk with legislators.

18. How do you advocate for yourself as a CHW?
    - Probe: For example, do you talking with providers, talk with legislators, talk with community leaders.

5. Final Questions

Our interview is almost complete.

19. Before we end, is there anything else you would like to share about your experience at [organization name], about providing high blood pressure self-management for your patients, or about being a CHW in general?
20. Do you have any questions for me?

6. Thank you

This concludes our interview time. Again, thank you for your time. This discussion has been very informative for me and hopefully it has been a good experience for you as well.

Appendix D. Qualitative Codebook

General Information

This codebook is for use in coding qualitative data from key informant interviews with Community Health Workers for the "Integration of CHWs into Hypertension Medication Management" project.

CHW interviews lasted approximately 60 minutes. These interviews were conducted in order to generate new information about how CHWs assist with hypertension self management, Hypertension medication management, and how organizations assist CHWs in carrying out these duties. These interview were contacted for the completion of Caitlin Allen's thesis in the 2014-2015 academic year.

Research Questions:

5) What are community health workers' (CHWs') **roles** in hypertension self-management?
6) What are ways CHWs **promote and support** hypertension medication adherence according to the five dimensions of adherence?
7) How are CHWs **integrated** into their healthcare organization?
8) What **organizational factors support CHWs** in their roles in hypertension self-management and hypertension medication adherence?

Codebook Organization:

This codebook is organized primarily by two models: the World Health Organization's Medication Adherence Model (MAM) and the Consolidated Framework for Implementation Research (CFIR) codes. Resources to familiarize users include:

1) The Chronic Care Model: http://www.improvingchroniccare.org/index.php?p=The_Chronic_CareModel&s=2
2) CDC's Medication Adherence Education Module: http://www.cdc.gov/primarycare/materials/medication/
3) Adherence to Long-Term Therapies: Evidence for Action. http://www.who.int/chp/knowledge/publications/adherence_full_report.pdf
4) Damschroeder et al., 2013: "Evaluation of a large-scale weight management program using the consolidated framework for implementation research (CFIR)"
5) CFIR wiki available at http://www.wiki.cf-ir.net/index.php?title=Main_Page - or Google "CFIR Wiki" to find it.

Coding Notes:

1) Coders are encouraged to be broad and generous in applying codes to ensure that important content is not lost
2) Users are advised to always include the interviewer question when coding corresponding interviewee text
3) This codebook was based partially on the Emory Prevention Research Center (EPRC) codebook "Prevention Strategies that Work Mini-Grants Program: Process Evaluation Phase 1 Qualitative Interview Codebook (v 4/3/14)"
4) We have operationalized "intervention" as the way that the CHW fits in with their organization in regards to hypertension self-management roles
5) Note that not all of the text needs to be coded. If there are specific aspects of the text that do not match codes or research questions, please leave uncoded.

Codes

1) **Overview of Organization (1_Overview_CA)**
    - Provides details about the organization or program that the CHW works in. This may include information about the number of clients the program serves, client demographics, how clients are recruited to the program, or other general information about the inner setting of the program. This codes includes information about training provided by organization/training related to the inner setting. Training outside of the organization is coded as 9 (CHW Skills, Roles and Competencies). This code may be used in the beginning of the interview when the individual is discussing their general work or during the section discussing implementation.

2) **Overall Experience (2_OverallExperience_CA)**
    - Refers to the interviewees overall experience as a CHW or context that helps us understand their story/journey to becoming a CHW. This code will likely be used in the beginning of the interview when the interviewee talks about how they became a CHW. This also includes discussion of why the CHW believes that CHWs generally are important (e.g., comments like "CHWs are great!"), how they believe their work is important, and other comments related to overall experience (e.g., "I love my job!").

3) **CHW Role in Hypertension Self-Management (3_HTNMgmtRole_CA)**
    - Refers to the perceived role CHWs have in helping patients with their hypertension self-management. This may include providing **health education** and information, **helping patient receive necessary services**, providing **social support**, and **mediating** between participants and the healthcare team. Includes discussion of where resources for self-management come from and training CHW has received specific to hypertension. Also includes information about CHWs perceived role in hypertension self-management for their patients or clients. Includes description of the CHWs specific work in the organization (e.g., contacting patients to help keep appointments, teaching classes, home visits, etc.). May include discussion of **where** the self-management takes place, **frequency of interactions** for self-management. This code also includes a lack of CHWs role in hypertension self-management (e.g., comments like "We don't do that"). This does NOT include patient's perceived barriers to hypertension self-management (that is "patient barriers and facilitators"). This code is used for discussion of **training** CHW has undergone/wants to undergo to support their work in hypertension self-management. NOTE: this code is intended to answer research question, "What are community health workers' (CHWs') roles in hypertension self-management?"

4) **CHW Role in Hypertension Medication Adherence (4_AdherenceRole_CA)**
    - This code is used to identify CHW's perceived role in their patient's hypertension medication management through discussion of the five-hypertension adherence strategies (**health system/healthcare team; social/economic, condition-related factors; therapy-related factors; patient-related factors**). This code will likely overlap with the hypertension self-management code substantially. Also includes information about the CHW's perceived role in hypertension medication management for patients or clients or

their lack of role in hypertension medication adherence (e.g., "We don't help with medications"). This answers research question, "What are ways CHWs promote and support hypertension medication adherence according to the five dimensions of adherence?"

5) **Patient Barriers and Facilitators (5_PatientBF_CA)**
   - Refers to factors that make it more difficult or easier for patients and clients to manage their high blood pressure and/or high blood pressure medicine (e.g., access to providers, community factors, etc.). May also refer to patient identified barriers in hypertension self-management. This includes discussion of facilitators and barriers to medication adherence, health system issues, condition-related barriers, patient factors (e.g., lack of understanding), side effects, and social and economic factors to medication adherence.

6) **CHW Barriers to Integration (6_BarriersCHW_CA)**
   - Refers to factors that made it more difficult to implement the CHW (e.g., leadership turnover, difficulty engaging members, lack of resources or support) and how they were addressed. Use this code when the interviewee discusses things that keep them from being a part of the organization or help them do their job well. This code is specific to discussion of the CHWs work within their organization. NOTE: answers research question "What organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?"

7) **CHW Facilitators to Integration (7_FacilitatorsCHW_CA)**
   - Refers to factors that made it easier to implement the CHW (e.g., support from staff, positive attitudes from providers) and how they were addressed. This section is meant to provide information about how well CHWs are able to carry out their duties and responsibilities in assisting patients or clients with hypertension self management and medication adherence. Use this code when the interviewee discusses things that help them be a part of the organization or help them do their job well (e.g., having an electronic medical records). Use this code when CHW is discussing hypothetical facilitators (e.g., "having access to patient data would be nice") or when CHW is discussing their ideal organizational setting. This code may be used when CHW does not directly state that they are discussing facilitators to their integration (i.e., implied). NOTE: answers research question "What organizational factors support CHWs in their roles in hypertension self-management and hypertension medication adherence?"

8) **Outer Setting Barriers and Facilitators (8_OutterBF_CA)**
   - Refers to economic, political, and social context within which an organization or CHW resides. This will typically be discussed at the end of the interview and include answers to the questions "what outside of your organization helps you do your job well?" and "what outside of your job keeps you from doing your job well?" This may include networking with other external organizations, peer pressure (e.g., competitive pressure to implement), and external policies and incentives. Includes resources gathering activities. NOTE: if CHW discusses internal factors when asked these questions, please place into "CHW barriers to integration" or "CHW facilitators to integration."

9) **CHW Skills, Roles, and Competencies (9_SkillsRolesComp_CA)**
   - Use for discussion of CHWs perception of their skills, roles, and competencies necessary to carry out their job functions. This can include discussion of their training and perceived training needs that occur for other chronic conditions, and trainings outside of the organizational setting. Examples include discussion of cultural mediation between communities and health and human service systems, advocating for an individual and community needs, assuring that people get what services they need. NOTE: These skills, roles, and competencies are those perceive for their work as a CHW in general NOT for their work in hypertension self-management or medication management. Discussion of skills or roles for hypertension self-management and medication management should go under "CHW Role in Hypertension Self-Management" or "CHW Roles in Hypertension Medication Management." May include **professional development** they have received, **associations they belong to that have provided training,** or **future training needs or desires**. NOTE: The following are competencies and skills widely recognized in the field: cultural mediation between communities and health and human service systems, informal counseling and social support, providing culturally appropriate health education, advocating for individual and community needs, assuring that people get the services they need, building individual and community capacity, providing direct services, communication skills, broad knowledge base about community and health issues, capacity building, interpersonal skills, service coordination skills, teaching skill, service coordination skills. Teaching skills, advocacy skills, and organizational skills.

10) **Good Quote (10_GoodQuote_CA)**
   - Use if something interviewee says stands out as a good quote or when an interviewee states something that is a good example or representative of another code. Use often!

edication Adherence Model Quotes

iers	CHW Support for Patient-related Barriers
s confusion, if they need – to help them get a eed to see about visiting nurse to be in the home e, sometimes that's challenging to try to ust trying to monitor them ourselves – with older s we refer them to Senior Resources to see if them. You know, we're starting to see more ive independently and may be concerned about of Alzheimer's or other things that you worry embering to take meds. So some of those kinds have been honest , the men– some of them – es them to be important or have a hard time and But they were not realizing that even having re is – could be a factor in that, you know? So out – really talking to them about it. They don't ve side effects, and they don't like it. Like, the nd instead of them feeling like maybe there's re medicine I can get on, what they'll do is just they won't say nothing. hink is a lack of – of education on the f taking blood pressure medication and how – – to control their blood pressure and you happen if you know, continuous high blood rolled. I think a lot of people see that – you s one day of their blood pressure medication, tice, you know, the effects of that, but they –	• The community health worker just sat with the patient and just kind of hears their story, kind of gets a sense of where that person of coming from, and then you know, the next home visit is kind of going by – going through the list of medications that that patient takes you know, and when they take that medication and are there times when they forget to take their medication, and kind of getting a sense of what medications they take, when they take them and why they take them and making sure they understand why they're taking • I kind of promote self-sufficiency, so what I do is I help them again with reminding them and telling them why it's important, but over time it's usually up to them for them to keep up with that or the doctor. • Yes, some of – the [organization] provide some medicine boxes that are divided to AM and PM, so what I'll do is like, a resource packet or introductory – when I'm first meeting with the patient is I provide them with this – the medicine box and sometimes the doctors can provide a printout calendar for them. • I'll give them a call or a reminder – a reminder call that they need to take their medications, if they forget – because that's a big thing, is that they forget. I know for some that have come into the office, I'll set up the alarm on their phone at a specific time that reminds them of their medication so that way they'll remember. • They're not onsite here, but we might have a patient meet with the pharmacist. We might help them schedule that appointment to go over medications, maybe even get a pill box set up. There are

your blood pressure medication can have serious, long term effects. And it's kind of getting that message across to patients to – to help them understand the importance of taking that medication and taking them on a regular basis and also making sure that medications are refilled before they run out. • And then we'll try and do our best to find like a common ground, like okay well, you can do – right now, we have one patient in particular that he drinks a gallon of passionflower tea a week and he feels very strongly that it helps with his hypertension, his diabetes, his sleep. • Barriers are side effects. They see that as – they – you know, in some cultures, they are not comfortable with the chronic conditions. So they think if they have something or maybe a – a sign or symptom of something, they can take the medication one time or maybe one week and they are going to be better and then discontinue the medication. So they – the knowledge of chronic condition that don't get cured and always is going to be part of their lifetime – and some people think culture is not present. So we are working on teaching that, even though it's going to take the medication for your lifetime, a chronic condition could be controlled and if they become more controlled, they even can reduce the amount of medication. • Yeah. I think that – that one of the biggest problems is just, you know, just taking the medicine. I mean, just – just realizing how important it is. Because it's not a nagging you know, heart – heart attack and those kinds of things don't necessarily have you know, continuous warning signs for a lot of folks, there is a tendency to forget, you know, and so the – that's one of the issues. • Well, I think that a part of it is the – the culture where it's, well, I don't need to go to the doctor unless something happens. It represents the desire to practice like, prevention behaviors and so the doctor is just somewhere you go when you get sick.	bubble packs. They are where the pharmacies – there's certain pharmacies that will actually put like, all the morning pills in a little bubble pack so they just pop them out of that. So we work more with the patient, just letting them know what kind of options there are out there for taking medications. You know, to meet with the pharmacist, maybe get a pill box, encourage them to talk to their pharmacy. You know, of course encourage them about medications – if they're feeling any side effects to call – call into the clinic and talk to a nurse. Just things like that. • Yeah. We show them how to take it and some we do call around the time that it's time for them to take their meds to remind them to take – you know, take their medications because a lot of them have other things that they be doing and they tend to forget. • I just keep talking to them, education, let them know if they – if they don't take their medications, this will happen, if you do take your medication, this will happen. Something to remind you or – and because this – this is what the medication is for. • I think being in their home and kind of ask – you know, just finding out what they do on a regular day basis, like, one gentleman – his – taking his meds, I just put his – we just decided to move his med bottle where he brushes his teeth so that he could remember to take it, because that's what he does every day. He brushes his teeth every day. Let's put the pill bottle here and see, is it going to increase you taking your pills every day. So that's one strategy, is finding out something that they do every day faithfully and trying to incorporate their high blood pressure medicine with that? So like, this gentleman, you know, he still misses but his blood pressure's coming down. It's not controllable, but it's coming down from what it used to be, so that's how I know that he's taking his medications a lot more frequently than he used to. So we praise those moments and you know, hopefully I'm believing soon he'll you know, be control.

	• I go out to their home or wherever we agree to meet, take their blood pressure, help them with reconciling their medications, because sometimes it's just – they're not taking them properly, figuring out ways that we can you know, for them to remember to take their medications and their regular visits to the doctor. • Trying to help them understand that continuing to miss your blood pressure medication can have serious, long term effects. And it's kind of getting that message across to patients to – to help them understand the importance of taking that medication and taking them on a regular basis and also making sure that medications are refilled before they run out. • I give them the pros and cons. I kind of – when it comes to the high blood pressure medicine, Katie, the RN, will tell me, you know, you need to communicate to them that if they don't take this medicine, they can die. And again, because of the – the people and the population that I work with, the – the ones that are kind of older really don't care. They don't care if they're going to die. They've lived long enough, according to them, you know, they've done their deed, their children are grown, they are out of the house, they're not in prison or dead and they don't care if they die. And then there's the other ones that, you know, there's still like a little bit of hope where I can let them know, hey, you know, if you don't want to do A, B and C or take A, B and C medicine, this is what potentially could happen. Your – your body could shut down and you could have a heart attack and basically what would happen – what would happen to your grandkids, what would happen to your kids, what would happen to your dog? So I don't know, I go about it in different ways than like the nurse would. • Honestly, we haven't really been too successful because we'll provide them with pill boxes and I will go in and put everything – set everything up for like the week and then I'll – whenever I go, I'll check their pill boxes and like one patient told me, she said

	you don't know if I'm taking them out and throwing them in the trash and telling you I'm just taking it. And it's true, I don't. I have no way of testing her. And they're on a – all of our patients are on a like automatic refill and they get it delivered directly to their home, so whether they take their medicine or not, they're still going to get a new batch at the end of the month. • And then we'll try and do our best to find like a common ground. • We talk to them about if they're on medicine, the benefits of being on that medicine but we also tell them that they can control you know, the effects of high blood pressure by instituting these things into their daily diet. • I just remind them and tell them how important these are and stuff. Mostly, like I said, they are pretty responsible. • Brown bagging is when the pharmacist at that school of pharmacy, they come out throughout the year and they have everybody bring their particular medications in a brown bag and then they go through those medications to see if there's any duplicative kinds of medicines they're taking and if what they're doing is accordingly for what the doctor asked them to do in terms of how they take the medicines, that kind of thing. So that has been really great because the various organizations hold health fairs or health programming, luncheons, lunch and learns and things of that sort, that really get people, you know, in the swing of – in the habit of coming in, bringing their medication and talking openly about what's going on with them. • Do they know how serious that could be. You want to know – you need to know that, first of all and it's just – having them – another thing that we learned from the years I've been working – community health workers – motivation interviewing. So make sure the client knows – understands – I don't like to tell them anymore, like I used to in my old days. I used to tell them everything but more now, let them acknowledge their sickness or illness or disease and then talk about it and basically, once they

	realize how serious and they know they need to take care – see where they're at. You know, meet them where they're at and then start from there and that can consist of again, the materials or just talking with them. They need – sometimes – a lot of times they're not – they're just not well educated with what they have. So just giving them the materials and – make them – make them understand how serious what they're doing – that's basically what I do a lot. A lot of talking and then build a relationship to make them understand this is – give them the – give them the materials they need to help them • If I know they have high blood pressure because of a conversation we have – because I do home visits as well – I do clinic visits and if I'm aware they have high blood pressure at this point I make sure they take care of themselves. If I know they have high blood – high blood pressure I make sure that they're taking their medication properly. I make sure if they have any questions or if they're not sure or clear, I try to get documentation or forms for them to read to make sure they can know how important they take their medications and take care and be healthy eating. • Just basically that we try to tell them to invest in a weekly pill box and that kind of makes them aware if they're skipping days and again, to make sure that you know, if thy know that they have to take it you know, that day and – and then they know that they skipped it then they say oh man, I skipped. So then they – so where it becomes like, a daily regimen for them that, you know, they – they get used to taking the pill box – and we tell them put it – you know, if the first thing you do in the morning is you sit down to have coffee, have it right there next to your – either your coffee maker or on the table, if you're going to sit at the table – kitchen table, you know, to have your coffee, have it right there where you're – you know your eyes will come in contact with

	that, you know. They go, oh, okay, you know, so a lot of times they do have it right there beside them, you know, at the table. • We also got the chance to explain their medications, because they would bring them in and we would translate into our language or into simple English, where they would understand what we're trying to tell them, how the medication works, because that was one of the other concerns that were voiced by the – by the patients was that, you know, they went to the pharmacy to pick up their medication and there's people in line and they say, okay, this is for your high blood pressure, this is for your diabetes, you know, take it this way, do you have any questions, if not then just sign here and they're sent out the door. • A lot of times, we didn't have words to translate from English to our native language, so we had to be descriptive in what we were trying to ask the patients, such as their medication, you know, if they were on high blood pressure medication and there is really no word for high blood pressure in our language, so we just kind of told anything that dealt with their heart and their blood. So they would tell us yes and they would show us that medication and you know, sure enough it is, you know, a hypertensive medication that they were on. So just that – you know, having that knowledge and sharing it back with them, you know, exactly what the medication does for them, also got them more – how would you say – compliant with their medication regime, because you know, they were – they weren't clear as to why they were taking the medication, which was one of the questions and so a lot of times we had people who are very hypertensive you know, and it was like, you know, you check their pill bottle and it's still full, so that tells you, you know, they weren't compliant in taking their medication until we explained to them why it was to be taken or why they were put on the medication. • Because of our FQHC status, we – we do carry a pharmacy along with us. So we provide quite a bit of different blood pressure

	medications on site and so it's giving them access to those medications without having to go to – to a pharmacy for refills and things like that. You know, we can provide up to three months, sometimes a little more as well, if needed. • Sometimes they don't want to – to take the medicine because they are side effects, so we ask – we go together and ask the provider if they can change or modify the – the medication to another, that way to reduce their side effects and most people that go to natural medicine, we – we see a lot in diabetes and hypertension – we explain to the provider and sometimes they can give us some websites. There is a very good website – website from NIH where the client and – with the help of the CHW can learn about taking their medication that the doctor prescribed. They can also take some natural medication that can help together to reduce the blood pressure or glucose. But that is difficult. It is really difficult. • I think that what we try to do is to – to find a – a reason for them to take. For example, you know, for me, it's important – I always talk about – I tell – I tell men that you know, if you can't take care of yourself, you can't take care of your family and for a lot of people, you know, it's those kinds of things that they're kind of like, oh, okay this is – this is why I should do this. So one of the biggest things is to probe enough to figure out what are the – what are the factors that would cause this person to be more conscientious about taking their medicine. • For a lot of folks, it's just like, you know, what do I do now and so we feel like, you know, giving them good information, giving them resources, you know, making things available for them – you know, making sure that they can ask the questions they need to ask
Health System Barriers	**CHW Support for Health System Barriers**
• I missed one point, the lack of education. They may receive the education from the doctor, but they may not understand it. Like, a	• Yes, I do speak – if there are issues – because a lot of times, they'll speak to me more so than they'll speak to the doctor

lot of times they don't have the time to sit and really discuss it with them, so they'll say take this medication for your blood pressure and it'll bring your blood pressure down, but they don't know what blood pressure is. So it's the education piece. • And so another issue we face is actually the lack of primary care access in general, is another issue. When I call the doctor's office and hear that they're scheduling appointments two months from now, that's very difficult for that patient to control their blood pressure from – between now and that appointment in two months without having to continually come back to the emergency department. • I think in the clinical setting, it's much – obviously it's more –I don't want to say strict, that's not the right word. But it's more like – much more professional, patients appear to be less comfortable, even – even if I'll go with them. • Some of them are denial. They – they don't feel anyway, and it's like, well, I don't know why the doctor tells me that – and then a lot of that is still the issue of the government is still out to kills us, you know, that – the historical trauma is still there, and again, it just depends on you know, how they were raised in the home. • They don't understand when they ask them if – do you have any known allergies, and they are like, what's that, you know, if they're not familiar with that, and then I'll tell them in our language that when they ask you that, this is what they mean, and they go, oh, okay, you know, so that's – those are some of the things that, you know, we try to educate our providers to key in on, to learn those things, because again, you're in a different culture. Our people are very limited in some of the – the words – the wording, I guess you could say. • **Definitely renewals of a prescription, you know, versus refills. Them not understanding the difference between like, okay, well if it's a refill I you know, got to call the pharmacy versus if it's a renewal then I got to call the doctor's office – like, they**	because the doctor won't have as much time to really speak with them, depending on who the doctor is, so they'll speak to me about any issues that they're having with the medication and I may relay that back. I don't give advice on it, I just take the information and document it and give it to the doctor – • Well, the medication assessment form, we write down their meds and then we usually fax that to the doctor's office and there's a place on the form for the office to get back with us if they're seeing a discrepancy. We work a lot – some of the larger groups have nurse managers and sometimes they will get back with us and sometimes we'll call the nurse manager, or the nurse manager will call us. A lot of the nurse managers have made the referrals to us. The community health workers will communicate with the nurse manager and let them know we're seeing this client, this is what we're seeing. We coordinate back and forth and again, if we go to an appointment, we do follow back up. • We also certainly encourage people – we do a medication assessment and a private medication assessment is asking them if they know what their medication is for and do they take it as prescribed, do they also take any over the counter medications, and then we fill out the form of what they're reporting to us. We send that to the doctor and then we're asking the doctor, is this what you believe the person should be taking. If they have any questions or problems – we sometimes run in to discrepancies, what the doctor's office thinks they're doing is different than what they're actually doing. So we try to clear up any misunderstandings or problems. Like, maybe a medication was supposed to be discontinued but the person's still taking it or maybe – like, we went to a home one time where a guy admitted that he totally didn't understand how to use an insulin pen and he wasn't using it correctly at all. So trying to make sure people understand their medications. We sometimes accompany people to their doctor's appointments and advocate, listen to what the

have trouble understanding like, the medication system as well as like, the overall like, healthcare system. Like, for example, oh, I got to see my primary care doctor to follow up on my blood – on my you know, blood pressure or I got to schedule an appointment with you know, an LTN because you know, they do blood pressure checks here and stuff and you know, if they don't know how to – they don't know their phone number or if they lost the paperwork that says the phone number on it, it's definitely difficult right, and the patients that I work with might not necessarily like, proactively try to find that number, you know. They might just like, let it slip to the side, because hey, well, I don't have food on the table or I don't have a roof over my head, so obviously that's going to take more priority. • Part of it has been the fact that, you know, people don't trust the medical system. Part of it is that they don't know what it's going to cost them in the medical system, you know what I mean, and so to get – to get them to move to this different place, you have to provide a lot of – of introductory information to them, so that they can feel more comfortable in terms of – of being involved with their health. • And the other is just the type of – the clinics available for them to go. Sometimes we have a lot of people that are undocumented and so the free clinic – oh, there isn't really like, a free clinic. There's more of like, a payment scale type of clinic. Like, we have [name of clinic], that is nearby and it's kind of overflowing, so sometimes it's hard to get an appointment	doctor's instructions are, again trying to make sure people understand what they're supposed to be doing. So just a wide variety of things. • Usually when a doctor seems them, she usually gives them like three months and – and a lot of times, we do – it coincides the next – the next appointment, depending on – on the client, three months later. Or if they're very sick and they just kind of like want to keep our eye on them every couple of months, we might schedule one every month. But usually, you try to schedule the refills around the next time they come. • So we try to encourage a healthy rapport with them so that they can have a healthy rapport with their physician when they experience things that are abnormal, if they're not taking their medicines consistently and as prescribed. • If the patient has a question and then they'll ask me, you know, can you ask the doctor about this and then I'll say, okay, and so I'll ask the provider, you know, the patient has this question – because sometimes us Native people, they don't know how to word it where the doctor will understand because sometimes they – they – I guess you could say the – the providers interpret it a different way, which can be vice versa, where the provider can be telling a patient something and the patient can interpret it a different way. So – so they would you know, tell me to ask the doctor, you know, about maybe something that they're having this pain or you know, dizziness or how come that's happening to me, you know, and then I'll say, okay. • Some of them are denial. They – they don't feel anyway, and it's like, well, I don't know why the doctor tells me that – and then a lot of that is still the issue of the government is still out to kills us, you know, that – the historical trauma is still there, and again, it just depends on you know, how they were raised in the home. So I think that's why it's good that we have our – our CHR program, because they know we're community members and that we, too,

	you know, we tell them to – I have to take these medicines, you know, because I have the same problem, you know, kind of sharing back with them you know, that you have you know, the same condition and they go, oh, you do? I go, yeah, I do. I say, because mom had it, grandma had it and now I have it. • Then I'll come back and I'll check on you. I say, if it makes you feel funny, I said, call me. I said, this isn't the only medicine. There's all kinds of other different medicines, if this one makes you sick, then we – they can try you on a different medicine. They go, oh, okay, yeah, because this one made me nauseated or, you know, something that you know, that maybe didn't agree with them, or I got itchy when I took that, or my voice got raspy and – and it's, oh, okay, I said, well, let's make a note to your doctor. I said, did you let your doctor know, and they go, no, I forgot to tell him. You know, so just things like that, you know, where they say up to you know, notify the provider, you know, and so I will let them know and then they say, okay we'll go ahead and – when we see them at the next visit, we'll make those changes. • But we always consult with them. I mean, if your doctor told you you need to take this medication, be sure to always take it if your doctor consulted you to take that medication. We do tell them. • I help get them to their doctors appointments, which then they take their blood pressure every time they go to the doctor. So I know it's not like, you know, directly like, maybe intervention, but I would say getting them to their appointments to see how their blood pressure is, I think, matters. • I would say I help out with helping them get connected to their healthcare team, helping them coordinate their care, remind them of appointments, if they have any medication questions, you know, I work really closely with the pharmacist – I don't know if you can overhear her, but she's actually in the background in the office with me – what else? Accompany them to appointments to make sure that, you know, their needs are being addressed. I also

	want to say – because I don't really know too much about blood pressure, but I did attend a training a few weeks back from my medical director and the nurses and stuff – and it seems like stress has a lot to do with it, so I would say that I help significantly to like, decrease their stress by helping them you know – basically I help them support and guide them through you know, navigating and overcoming things like race barriers that are getting in the way of their health, which in turn significantly decreases their stress level, which then in turn decreased there you know, blood pressure and makes them healthier.
Condition-related Barriers	**CHW Support for Condition-related Barriers**
• We have a high number, high number of clients, you know, substance abuse problems. Basically like 90% of them. • Mental health is a major one, because it's a bit difficult to talk to a bipolar, schizophrenic patient. Depending on if they're on their meds or not, if they're being compliant, you don't know which mood you're catching them in, and then they go home, who's to say who's following up with them. If they have a lack of a support system – and substance abuse is an issue, they won't – they're typically not compliant with their medications. • They may not take it because a major issue here again, is mental – mental health. So that may interfere. Also, substance abuse is a big issue here. So that – those are things that may – those are like, the major roadblocks that I'm seeing as far as client. • There can be mental health issues, depression and you know, other – other mental health diagnoses, too. That, if their mental health isn't controlled, they might not think about their other chronic conditions, and the – you know, they could have multiple chronic conditions, too, and feel very overwhelmed by things. • So a lot of the people that are on my case load, they not only do they have hypertension, but a few of them have diabetes or high cholesterol, so some of them are taking, you know, more than – have more than one chronic issue that they're dealing with.	• Well, I provide the follow up call to see if they're having difficulties with their medication and they'll say either yay or nay with it, but I don't get too in depth. • We try and make it very clear on our labels that we put on our medication, you know, when to take this, when not to take it, take it with food or not with food and – and maybe if they can't read what's on the bottle like, explaining it to a kid that's with them or you know, some relative that's there to – to be able to help and explain it, as well, so – I: And are those labels in English and Spanish. P: Yeah, we just – it's really English or Spanish. So if the person speaks Spanish, we put it in Spanish. If it's English, then English, so –

Social and Economic Barriers	CHW Support for Social and Economic Barriers
• Don't want to invest the time to take for themselves because they're mothers and there's a lot of – just like, the family pressures. There's a lot that they need to be responsible for and they don't necessarily want to take the time to themselves – for themselves, so there's like, this – and that's kind of part of the culture. There's like, this self-sacrificial element that I – I'm the caregiver, I care for everyone else, not for myself • The language barrier and also another thing we – is good to – the problems of the – at the pharmacy, we ask the doctor to prescribe – to let the people know at the pharmacy that the label has to be in Spanish and also we teach to read the labels of the medication with our clients. • If they have a lack of a support system – and substance abuse is an issue, they won't – they're typically not compliant with their medications. • Occasionally cost, although usually most of our people have Medicaid, Medicare – Medicaid or Medicare. If cost is an issue, we can refer them to the [name of program]. There's two places in town that can assist with medication costs. • You know, it's transportation to a pharmacy or a doctor's appointment. • There might be transportation issues. We might try and help them figure out how they can get to and from medical appointments or to and from pharmacies. We might help them find a pharmacy that delivers. • People can be homeless, they can be without transportation, they can – you know, those things are – are really difficult for people to manage chronic conditions because you know, many times when they're – don't have shelter, their chronic conditions don't seem that important to them. So it can be things like that, and then trying to connect them to a social worker here in the clinic to help them with some of those issues.	• Since they typically have insurance here because I work with [name of organization], their medications are pretty much covered, but if I find – in the long term they lose their insurance, I do have the pharmacy benefit card that a bunch of different organizations have a card that's good for them if they take it to the pharmacy and they'll get a discount. • You know, listening to them. You know, if their life's chaotic and they're homeless, dealing with their blood pressure sometimes falls down on the list, but you got to figure out the priorities, I guess. Just sometimes gets complicated. • Some of our clients have like literacy – literacy levels, yeah, I mean, you know, a lot of them don't read and write, kind of a lot of them were like maybe 6th grade education. So you know, we – kind of using – we'll make charts, you know, you could do medi-sets for them, you know, sit down and kind of educate them. Medi-sets are like – they're – they're – it's a set where you put your medicine in and it's for seven days. • Not being able to obtain refills from a primary care physician, but then going ahead and getting those refills actually paid for – you know, we do have a system in place here at the hospital where once a year, we can help fill a patient's medication, in case – you know, for whatever – you know, they might be in between insurance plans or – you know, they might be – that might have been a tough month where they had like, an unexpected out of pocket expense and unfortunately their medications had to take a backseat to this other expense and so you know, we do try to have systems in place that can address those issues and help patients get those medications filled, those medications that they need. • The only thing that sometimes gets in the way is their ability to pay for it, because not all of them have Medicare or Medicaid and not all of them do – and that was – that's sometimes – we have to find like, other resources that are available to help them like, their

- The basic challenge is finding them or when they're homeless. It's not that – it'll be hard to find them. If they don't have a phone, or if they have a phone be turned off, so if you call them, if they don't answer, you lose contact with them. That's the main thing. Or if they move, or they're not staying in a shelter, or something like that.
- But I think some of the other issues that people don't take in – in consideration is the fact – employment's a big issue. Not being able to provide for their family is huge or being the sole person that's providing for the family is huge.
- Yeah, you know, because some of our clients have like literacy – literacy levels, yeah, I mean, you know, a lot of them don't read and write, kind of a lot of them were like maybe 6th grade education. So you know, we – kind of using – we'll make charts, you know, you could do medi-sets for them, you know, sit down and kind of educate them.
- So I would say that one of the issues is – is transportation to and from their primary care appointments. So a lot of people – you know, like I said, this is a very low income area, a lot of people are on either state or federal assistance and are – don't exactly have disposable income to get to and from their appointments and so I'd say that's a big issue, is trying to figure out how we can help patients get to and from their appointments.
- The ability to pay, to get their medication that I see. Most of the time, you know, as long as they've got the money to pay for their medication then they've got their medication and they know how important it is.
- The only thing that sometimes gets in the way is their ability to pay for it, because not all of them have Medicare or Medicaid and not all of them do – and that was – that's sometimes – we have to find like, other resources that are available to help them like, their prescription – you know, things that help them pay for their prescriptions, trying to help find different doctors or different you know, places, pharmacies that they can go that are cheaper than other pharmacies, that they can get generic medicine and things like – help them do that, you know, go to you know, this pharmacy instead of this pharmacy because this one you – you pay cheaper than you pay over here. It's a generic brand – and that was – that's one thing that gets in the way, sometimes, is there ability to pay – and then helping them through that – through that Health Link, we were able to get them like, through Medicaid or something like that, a few of them we were able to get Medicaid and that helped get their medication where – they know how important it is to take their medication, but if they don't have the money for it, they don't buy it. So that's one thing we helped them – I helped them – them do.
- What we do is make sure they have the resources that they need to go to the doctors and clinics, making sure they have health insurance. We have several local clinics, one is a Federally Qualified Heath Center that provides services based on ability to pay. And then there are other neighborhood groups, private doctors who come together, put together something called We Care that people can get support in the event that they don't have any funding at all and they do free care for them. And so we make sure that people get care and medication that way.
- We have a program where we – if they're unable to afford their medications, that we work with the manufacturers on – on their programs where people can get medications for free or reduced amount and then our pharmacies also have the four dollar formulary, which is the really common medications, 30 day supply is four dollars. But we do that for blood pressure medications and also a number of other medications. They might get some education like that around the clinics. One of our focuses as community health workers is empowerment. So we

know, places, pharmacies that they can go that are cheaper than other pharmacies, that they can get generic medicine and things like – help them do that, you know, go to you know, this pharmacy instead of this pharmacy because this one you – you pay cheaper than you pay over here.

- It would be the common issues exacerbated a bit by the fact that we are a rural frontier area and so there's a certain limitation of services and then the additional piece of just the geography and climate.
- This is an area that there's high unemployment, low paying jobs, so financially it's a problem. Certain – a certain segment of the population has issues around literacy level.
- It worked out well with the community because I am a Native American and that was one thing that we felt was a barrier, was the language. A lot of times, we didn't have words to translate from English to our native language, so we had to be descriptive in what we were trying to ask the patients, such as their medication, you know, if they were on high blood pressure medication and there is really no word for high blood pressure in our language, so we just kind of told anything that dealt with their heart and their blood.
- We have Hispanics, Portuguese, Brazilian, African Americans, Italians, you find all nationalities in this little state. So the needs of every community are different and within the last 15 year – within the last ten years there's been an influx of more Central American people and their needs are – are deeper and – and more so than the communities – the Latino communities they have migrated in before, like, in the 70s and 80s. They are not so well educated. They need a lot of guidance and teaching about what is good for them and then one of the barriers for them has always been the language barrier, which is always known. So teaching them how to work the system in order for them to – to get the need – to meet their needs and function as – as well as possible

will help somebody when they're – say if they're involved in a manufacturer's program, we'll help them find a program, we'll sit down with them and fill out the paperwork and let them know how they have to renew their program, because some are every three months, some are six months, some are once a year, you know, but we will then teach them how to do that for themselves. We don't do direct education around how to take the medication. We are not nurses.

- We work with a clinic, like, when they have medical appointments and they – because they will call to remind them that they have appointments on this day at this time and if they say oh, well, my daughter has work that day, I'm not going to have transportation and they say well, we're going to call the CHRs and see if they can transport you.
- We provide transportation within the program, as long as it's within our reservation boundaries and the same with their medications. Pharmacy department knows who we are, so they know when we're picking up patients' medication, because we'll need their date of birth or their chart number and the specific as to what medication the patient's requesting. I: So you actually will go and pick up the medications for them? P: Mhm. And we'll deliver it to their home. Yes, a majority of the patients, and a lot of times we do have a policy in place that, if the family household has a vehicle and it is at their residence, they're responsible for picking up the medication, however, if the family member is employed out of the area and there's no transportation within the business hours of eight to four thirty, we can provide that and pick their medication up or provide them the transportation.
- So our pharmacy – we – we carry it with us wherever we go to clinics, so we carry prescription and over the counter drugs. I obviously am not the one prescribing the medication, but I mean, we charge for our services based on a sliding fee scale, similar to – to most community health centers. We find that the majority of

and be part of this community, to grow with the community and – and be an effective member. It's not always easy because sometimes we have a very illiterate people. Some of them don't know how to read or write so it becomes – sometimes it's a little codependency on the patients on the case worker. • Unfortunately, a lot of the things that are available out there, like, for example, texting patients is not available to these patients that I work with, because they're low income and in poverty. So what I do is I'll – I'll reach by phone a lot of my patients, though, you know, they – they can't pay their bills, it's difficult for them, so I also outreach to their house as well. I try not to send them letters and stuff because if they're usually chronically disorganized and it just gets lost in the shuffle, but I you know, go out to their house, if I see them in the community, I'll say hi, you know, just really community kind of based, you know, get to know their family, their friends, so – I would say like, phone and home based stuff with outreach. • There is such a miscommunication at times with what the doctor's saying or the nurse or the physician assistant versus what the patient's hearing. I've been able to get to know the patients who really well and to see like, you know, maybe like, their body language or the look on their face, you know, or see the doctor or whoever ask them to repeat back what they said, I can have a general sense about whether they really got it or not and then I re-explain it maybe in the words that they can understand. • There's a lot of homelessness – all things that get in the way of peoples' health – substance use, you know, unfortunately it seems like, you know, housing is like a silent epidemic. • I would say that money – it's almost like I've – I've seen this past year – and these are all factors that you know, contribute to peoples' health – it's almost like a big circle, and it's like, okay, you have these environmental things growing up that, you know,	our patients fall on the lowest level, which means that they would get charged pretty much five dollars per – per prescription. So even if we have them one for three months, that would still be considered one prescription for five dollars, so – and along with that as well is we cannot deny services or prescriptions based on the inability to pay, so we are still handing those out, even if they don't have the five dollars to give us.

basically predispose you to these chronic health conditions, unfortunately. • Culturally, I don't really think that – that it's an issue on taking meds. People are pretty open to you know, if we say this is going to help them, then they most likely will listen to us. They seem to respect the – the doctor's or nurse practitioner's views on that. Probably costs relates back to it a lot, which is – I think the best part about that is we do have meds, you know, so maybe when they do go to try to refill and now it is 20 dollars – well, that may not sound like a ton of money to us, it might be to them and they can't afford that. It would be better to have food or rent than take their medications. So that's probably a big part of it. • Sometimes it's because economics. They cannot – the out of the pocket, the – the medicine that the doctor prescribed are inside the pharmacy and they say – we heard a lot of complaints about the medication is not ready or – but as a community health worker, we also go with the person to the pharmacy and try to – to help in their relationship with the doctor. • And so insurance is an issue, as well, and let's say they are documented and they have health insurance, well, the deductible's really expensive and so they don't want to go to the doctor unless they really have to go.	
Therapy-related Barriers	**CHW Support for Therapy-related Barriers**
• The biggest ones is that sometimes they have a fear of the medication. I'll hear that a lot. That they won't take it because of the side effects. • Well, another thing that is very hard, because sometimes they don't – don't like chemicals. Sometimes they go through some natural medication and will only do it is these and who is feeling – they about the disease and they benefits of that medicine. Sometimes they don't want to – to take the medicine because they are side effects, so we ask – we go together and ask the provider if they can change or modify the – the medication to another, that	• We are not medical personnel and so we do community education. We help people individually figure out how to deal with their chronic conditions, but we don't directly teach them how to use their medication. Our pharmacists in this area are very good at that, as well as our clinic and healthcare providers. • They're constantly changing either the – the medications and sometimes even the color, because a lot of the people will come back, you know, I used to take a yellow pill and now it's a like, a peach colored pill, you know, and then again – then I'll go to pharmacy and ask them, okay this is what one of the elderly has

way to reduce their side effects and most people that go to natural medicine, we – we see a lot in diabetes and hypertension	expressed why you're changing the color of their pill and they say, oh no, it's the same kind of you know, just a different manufacturer, and I say, okay I'll let them know that. So you know, just that communication is important because you know, again, our people recognize that you know, the color of their pills and if they see that change, then that tells me as well that okay they're – they're conscious of what they're putting in their mouth, they're being aware you know, that okay, this changed, why is it changed? And sometimes you know, by the end of their doctor's visit, you know, being there almost all day and finally getting your medication, you know, you hear the pharmacy talking but you're not taking in what's all being said because they're hungry by then or they're in a rush because their grandkids are going to be home or you know, their transportation issue, you know, so a lot of times they'll – they'll kind of overlook that, but you know, then when you go back to explain to them then they'll say, oh, yeah, okay, now I remember, that's what they said. Yeah. • I tell them, you know, if you start this – you know, these medicines, don't get up too fast, because that's what's going to cause you to feel dizzy or lightheaded, and they go oh, okay, you know, now I know. Yeah. So you know, even something as simple as that, because then if they feel that way and they know that's not normal to them, then they quit their medicines. Yeah. But if you explain to them it's going to happen and gradually, you know, over time it may, you know, go away but you know, it's just your body having to get used to that medication. • With men they'll tell them, you know, that's going – that's going to mess with your stuff, don't you know that – so – and for a man to know that something's going to mess with his stuff, quote unquote, he's like, oh, really? What are you talking about? You know, they find different ways of talking to people about engaging them in the things that are – that's of importance to them and then you find out that people are like, oh, okay this –

	this person really cares about me. They know what's important for me.

Other Quotes, etc.

- What I do is look in the patient's chart and look at the med list that the doctors have you know, written out for the patient and then I – there's a sheet like – like, a med reconciling sheet that Dr. [name] put together that we use here in the clinic and I just write down what they should be taking, when they should be taking it, how much they should be taking and then I go to their home, where they keep their medications and we pull out their bottles to make sure they're taking the proper dosages and when they're supposed to be taking it, and then I bring a pill box with me all the time, and some of them, when we meet every two weeks we actually fill up their med – med – the medi-pill box because they have a hard – you know, sometimes they forget taking it, and like, one – for an example, this one woman that I'm working with, she had all of her meds in a tool box and not only were her meds in there, but so were her daughter's and her other daughter, so when she got ready to take her medicine, she was actually pulling a bottle out, looking to see if it's hers and then should she be taking it at that time. So of course, her blood pressure's high because she constantly missed dosages every day. So what we did is we separated her meds and then we put them all together to find out what she should be taking and she was telling me that one medication was making – or something was – you know, she was always sleepy in the morning and we realized a couple of the meds that she was taking caused drowsiness, so we moved those to the afternoon or in the evening so that you know, if she is drowsy, she's home and it's made a big difference in her ability to keep track of making sure she gets her meds in.
- We can alleviate a lot of the fears like, when people say well, why – I have no money and I've got high blood pressure – you know, some people will say something like, well, you know, I just – I just forgot to take my blood pressure today, so what we'll tell them – because sometimes that's not true at all, they just – they just – they know that they need it, but they don't have the money for it, so instead of embarrassing them, we say well look, if you ever need something, this is where you can go get it. **You know, because our goal is not to shame them. Our goal is to make sure that they have the information that they need to make a good decision**.
- I would say a big thing is if they aren't on it, to get them into med packaging. We work closely with the pharmacy in the Massachusetts area, that can actually deliver to their home in packages to their house and they, you know, can bill them if they want, like, a month – month to month basis, so it's affordable. So we do a lot with med packaging for patients that need it, as well as you know, I follow up with them. If medication adherence is a problem, I follow up with them like, you know, between appointments to see how they're doing with taking their medication and I also in the home, you know, I'll look around and I'll see how are they storing their medication, how are the organizing their medication, is it all over the coffee table or all over the – the apartment where pets are running around and babies, or is it in one place, you know, maybe in the kitchen or in the dining room or something and it's in one place and it's an organized container. So yeah, I'm observing their behavior a lot, asking questions, following up, things like that. Yep. Yep. So it's prepackaged like, medication, like, all their medication that they need. They either get like, you know, once a day – like, a once a day packet. A lot of patients take pills like, in the morning and in the night, so they'll get like, two packages, one for the morning, one for the night and it'll have all their pills in there that's like, on that – like, the pills that they take every day, but then like, say that – like, an antibiotic, that won't be in there because

that's like, an as needed medication or obviously, things like, you know, insulin or supplies. Like, those won't be in there because you know – but everything else is all in the package, yeah.

- Like I think it's just their – they don't want to give up their independence that they have now, but a lot of them live with their children, they're older adults, not – not yet geriatric but like late 40s or you know, they have – they're complex patients, they have lots of issues going on because of previous drug use or alcohol abuse. So – so they have caregivers and the – probably the most difficult thing is that it's just their independence, they're trying to find things to still make them feel independent but like ensure that they take care of themselves.
- Why do I think that is? I think they're – most of the people I see that come here are pretty responsible. They really are. I mean, I'm really amazed. I mean, you know that they care about their – about their health, so this is important to them. So they do keep their appointments and they are on time and – and I've never – I don't know, they've – I think because it's – they do care about their health.
- Access, you know, for a lot of people – where do I get this medicine at, you know, how much is it going to cost? I mean, again, that's information. I think that what we try to do is to – to find a – a reason for them to take. For example, you know, for me, it's important – I always talk about – I tell – I tell men that you know, if you can't take care of yourself, you can't take care of your family and for a lot of people, you know, it's those kinds of things that they're kind of like, oh, okay this is – this is why I should do this. So one of the biggest things is to probe enough to figure out what are the – what are the factors that would cause this person to be more conscientious about taking their medicine.
- I bring a pill box with me all the time, and some of them, when we meet every two weeks we actually fill up their med – med – the medi-pill box because they have a hard – you know, sometimes they forget taking it, and like, one – for an example, this one woman that I'm working with, she had all of her meds in a tool box and not only were her meds in there, but so were her daughter's and her other daughter, so when she got ready to take her medicine, she was actually pulling a bottle out, looking to see if it's hers and then should she be taking it at that time. So of course, her blood pressure's high because she constantly missed dosages every day. So what we did is we separated her meds and then we put them all together to find out what she should be taking and she was telling me that one medication was making – or something was – you know, she was always sleepy in the morning and we realized a couple of the meds that she was taking caused drowsiness, so we moved those to the afternoon or in the evening so that you know, if she is drowsy, she's home and it's made a big difference in her ability to keep track of making sure she gets her meds in.

Appendix F. Organizational Support Quotes

I feel well supported by my organization in carrying out my duties as a CHW	• [Supervisor] is very knowledgeable, having been an emergency room social worker for many years and there's just a number of staff that are very knowledgeable with community resources, so – **we also support each other if there's going to be a challenging home visit or a new client. People can always ask someone to go with us**. We don't like people going by themselves, especially if it's not a real safe area. • Well, **we both are working for the good of the patient**. There may be things that she wants to see happen and hasn't happened, and then I'll kind of advocate on the patient's behalf of why it hasn't happened and then, there's some motivational interviewing – she may say, you may try using this and talking to them this way, so she'll give me some tools to help me try to get the patient moving. **These are for people that I'm having a hard time with. But I think she trusts my judgment, which is great and I trust hers, because I feel like she really does care about the patients and the community that we're serving.** • They've worked within this field for a while. I mean, not really necessarily community health workers, but **what they do they really believe in** and so they just believe in what they're doing and believe in the community health worker and they believe that this was an important job – important work to get out to the Hispanic community. • The fact that they actually in the meetings, they announce that they're CHWs. They can stand out. We are able – if we want to do more, we can. We can do any – the fact that there – again, you always have pros and cons, but those pros have been helpful to make us stand out. So exactly what it is when **you have a good administration that's willing to accept you for who you are and know that we're here** – that helps • Yeah, I think they do because you know, like I said, some nurses I've worked with for a while now and **they know who I am and so they kind of are my support – my little support team**. • I think we always complain about the earnings, but they try to keep motivated. **They gave us all the little things, for example, supply we need – they are very open to suggestions. They – they listen a lot to us**. • Just to be clear, I don't think it's a bad thing, because I think having community health workers based in clinics and ERs and all of that is very handy, but it's partly around some of the limitations they place on the work that community health workers do, because part of it is being – is working over a

	long term with community members, controlling chronic conditions, providing health education, you know, all those kinds of things, but it also working with the larger community itself to make changes that – that will help the health of the whole community and sometimes when – when they're – when organizations are too focused on you know, what a clinic might do, that might be direct services and you know, they want them to spend 15 minutes per patient that's referred to them kind of thing, and that's the part that loses the core of the model, which is that community health workers are based in the communities, are knowledgeable about their community and they work at multiple levels around multiple issues, and that's the part of the model that makes it so effective. But if you start taking pieces of that out, you're going to lose some of the effectiveness of community health workers.
I feel well supported by my organization in carrying out my duties for people who have high blood pressure	• **I also work with a nurse practitioner and so she does the Thursday morning clinic and you know, I kind of work with her just like I work with the other provider**. Maybe sometimes they forgot to refill client's medication; I'll send the reminder to refill his medication. Also if client might have slipped up and bring a dirty test, I'll probably explain to her why and why you shouldn't take him off, give him another chance. Then I have a therapist that I work with and a lot of times. • Because the fact that even though I don't work a lot with the high blood pressure or anything like that, I know a group of community health workers that do and we constantly talk about things and I know they push, **they've done programs to establish about this to have the community know about high blood pressure** and stuff like that. So at this point, I believe they really emphasize a lot on that. They're doing everything possible to get the word out. • The doctors are really amazing. Once I see the patient and they're really interested in going, they made the decision, they're really anxious to go – all I have to do is ask them and tell them this is what I feel and you know, and most of the time, they agree with me. Some patients do have a lot of psychiatric issues and so sometimes with the medications, you have to be very careful and sometimes they don't feel comfortable with some medications. When I tell them and they say, well, you know, it's been proven that even though they take this, these patients more than anybody else need to quit smoking and unless we provide them with the best plan for them to quit, it's not going to happen and they – they send the prescriptions to the pharmacy, because I cannot prescribe it. So they do that for me and never been a case that I had sent them a request for a prescription and they haven't been processed. They're always referring me to patients and commenting on how well they're doing and they thank me for that, because once they start quitting smoking, if they have cholesterol or they have high blood pressure, all that starts to get better automatically. It goes down. So it's a benefit to the patient, for them to work with me. **So they're very supportive. I feel that the medical team is very involved in the process.**

I feel well supported by my organization in carrying out my duties for people with high blood pressure medicines	• Well, **the medication assessment form, we write down their meds and then we usually fax that to the doctor's office and there's a place on the form for the office to get back with us if they're seeing a discrepancy**. We work a lot – some of the larger groups have nurse managers and sometimes they will get back with us and sometimes we'll call the nurse manager, or the nurse manager will call us. A lot of the nurse managers have made the referrals to us. **The community health workers will communicate with the nurse manager and let them know we're seeing this client, this is what we're seeing. We coordinate back and forth and again, if we go to an appointment, we do follow back up.** The nurse managers have been great to work with, so – and they communicate then with the doctor. • If it were up to me, I would have a clinical Pharm.D in every single clinic. **It's not so much for me, but I think for the patients. It's really great thing when a pharmacist can go in and talk to a patient about all the different medications that they're talking about – or that they're taking**, I'm sorry – and then you know, talk with the provider about interactions and different suggestions and the newest latest and greatest and you know, things like that. I think the community health worker ends up talking to the patient a lot more than most people on the team and – and that's just because we're probably working through goals and we're working through just different issues. So we end up talking to the patient a lot and things come out. You know, just – just problems or issues come out that they don't think of as maybe issues or they just haven't talked to anyone or they forgot about telling someone about something. **So there were times when I would go and you know, talk to the pharmacist and say you know, hey, this patient doesn't have any resource for a pill box, or is there anything you can do to talk to them about how they're taking their medications or at what times they're taking their medications because the patient called and she's confused about this**, or – you know? So there's interaction for sure, **but most of the work would be done between the primary physician and the pharmacist and the patient.**
People put a lot of effort into making CHWs a success at my organization	• The fact that we're able to voice what we want to say. To have the resources we need to make out job easier. Our job in general is kind of – I want to say like, so being able to establish this resource, everything around us to be able to make it feasible for a client who we work with on a day to day basis. That a CHW has made it easier for us **– the fact that we're able to say we're CHWs, even though we have different titles**. That's made a big difference. Again, it's like I said, it's more people need to acknowledge that, but that's okay. You never can get everybody on board, but we're working on that. That's okay. **So I think more in the communication. The communication establishes a lot to make our job easier, and having people support us. It makes a big difference**. • **We have a very open organization and so if any one of us comes up with an idea or suggestion, it**

	will be taken seriously and looked at and we'll discuss you know, whether it can be effective, how we might implement, so not every suggestion is acted upon, but there's a lot of openness around creativity and ideas. • There's some people that are just– they're stuck. It's – we've done it this way for so many years, that's how we're going to do it. Now, we'll do it because you know, it's mandated, not because they really, really wanted to do it or they – they feel that they can support it in a – in a way – and again, don't get me wrong, I'm not complaining about my management. What I'm saying is that these are some of the realities that we face and this is not just my reality. These are realities from other people that I've talked to who are doing the same kind of work in other organizations. **I don't think people get what community health workers are or what they do or the value that they can really, really bring to the table and so we – we do a lot of extra work to continue the dialogue, the conversation** – I don't think it's going to happen right away, but I do think that – that there could be a possibility of some changes if we get into the right kind of environment and we can challenge to you know, at least consider this. • We only have three community health workers in our organization and there is a network, but one of the things about us is that we don't work with everybody. I mean, the thing about community work is that we have a high expectation for the people that we work with. If you say you're going to do something, you've got to do it and community health workers are – because they have like, three months or nine months of training, they're not often perceived as the most competent by other medical professionals, okay? So one of the things that we are very cognizant of is that – because we believe that they are one of the most important medical information providers – we have to make sure that when we go out with community health workers, that they're at the top of their game – they have an A game, and so we work with a variety of different organizations, but we select who we're going to work with.
People at my organization believe CHWs are important	• Well, sometimes when your time is scattered on different things, it's pretty hard to stay focused on them because you're switching back and forth. So you're not like, 100 percent on one thing or a couple of things. So I get pulled in many directions, but I do stay focused and do the best I can do. I **believe they could do a little more to support me, but maybe they don't see the role of the healthcare worker as an important role at this point, because I'm more like a patient engagement coordinator than a community health worker** which is more involved out in the community and with the patients. I only get involved with the ones with the tobacco cessation or whether they need guidance with seeing how to navigate the system within the health center and maybe a couple of times here and there making calls out for them to resolve issues, but yeah, I think they need to wake up to

	the value of community health workers. I think that we need to be more out in the community. • But in fact, one our focus has always been that, whenever we go out, we always invite our team – our clinic to go with us, so that way, they can have firsthand knowledge – and some of them do. Some of them have gone out, you know, but you're still in a culture that's very entrenched and sometimes those who are at the top, they don't do it. They don't go out. You know, so they may not see that, **and I think in order for people to really see the value of a community health worker, you have to go out – you have to be in the community and a lot of administrators have no idea about the community that they're serving**. You know, it's a total detachment for them, so therefore, they can make decisions or they can create situations that are actually detrimental, question to their mission. • Most of the time they're really appreciative of what we're doing. Occasionally we have to be assertive about, you know, we can't make this client do such and such because sort of hope that we're going to somehow magically make someone comply with what they want them to do, and we have to educate them that you know, to begin with it's voluntary whether they even want to be involved with us and then secondly, we're going to support them and encourage them but you know, we don't have any power over this person to follow through any more than you do, so – can be realistic about it. • I think they realize how much we help the patients. **I think they appreciate the extra help**. You know, providers many times don't have a lot of time to be with the patient. You know, they will have very full schedules and so sometimes just to have an extra ear, if you will – there's times when we work with patients and then we talk to the provider about what's going on and they say, oh, well, we never knew that you know, they've not had a place to live. They've never said anything like that before; it's a good collaboration, I think. • **I think it's viewed as a highly respected position. I think that's why they didn't just call me a community health worker, but they called me a community care manager.** I think at the end of the year, we're probably going to be trying to hire a part time community health worker, because of the need that we have and I can't do it all. • They understand the work, you know, that we do. It's not – you know, this is not easy. And we do a lot for the clients, certainly more than a social worker who gets paid maybe about $20,000 or $30,000 more a year. But you know, and my boss actually pushed for me, she had submitted my application for community health worker of the year and I actually won it. • I think that here, at least here in the emergency department– **that most of the nurses and doctors realize it's a very vital role**. I think a lot of the nurses and doctors realize that many of the issues that patients face have a very heavy social foundation and a lot of it is stuff like, beyond their realm of care and I think that's where they realize that a community health worker can play a very vital role,

	just getting patients connected. **So I think that they realize our role is very important and very critical to helping address many of the health needs here in this community.** • I think that they are a necessity. I think without us, they would probably be very lost. I think they would lose a lot of trust, because patients build trust in us and if I say hey, you know [name's] my friend here, I've known her, we work together, she's going to be helping us on the team, they're going to be more apt to trust you, versus you going – or them coming to you and you saying hey, I'm [name], I'm going to help you do this. I think we're definitely a necessity. We're able to communicate with people on a totally different level than a provider would be able to. • I've been told all the time since I've been in this position with [organization] that you know, that even though it's only been since I started in [month], so – that even though it's only been a little bit of time, they value my position. I tell them all the time, I'm kind of modest, like I don't like a lot of – I'm not out for the limelight and I don't like to be acknowledged for things I think it's kind of weird. Like I'm really shy, I get embarrassed very easily and so like at team meetings, every team meeting, the primary investigator, **she'll say oh my God, thank you [name] for your wonderful work, we don't know what we would do without you, because I'm the only a community health worker on our program and even that embarrasses me.** I know they're very grateful. • Well, this is my first year. There's been some struggles but I think that the overall company is appreciating the work that we're doing and since coming on to the company, I've implemented some things that I think that will help us target a larger area and reach more families and be more effective and so upon evaluation, they were really pleased with that. So we're looking to expand – so I think that they are appreciating the work that I myself do as a community health worker and my other two partners. • I think they really believe in what they're doing so, you know, they're all up for helping me out in any way I can and it's just been really positive for me. • Yep. So within the practice, definitely I feel very integrated in the team. Within [larger organization], it's been really challenging at times, because you know, like I said before, I'm the only one within [larger organization] and so that means that when I come across these doctors and physician assistants and you know, medical assistants and secretaries, they see me have a [larger organization] badge and they see me walking into their appointment with this patient but they have no idea who I am, nor do they understand the importance of what I'm doing. They unfortunately try to like, give me stuff to do instead and you know, which is weird and I've had to like, nip that in the bud. • Our community health workers – like, without them, this organization and this program would not work and I think the right people see that in our organization and understand that role.

	• Right now we only have two medical providers. All the other providers left our facility, and the rest are. So I'm trying to educate these new ones, you know, who we are and to be cultural – culturally sensitive to our people, because if they want them to come back, they have to understand what they can and can't do or say. • **I've come across as well a lot of people that are really skeptical of me and my job – not me in particular, but just who – who is this person**. Especially the social workers, because they see me as maybe they think, she's doing a lot of the same things I do, but yet she has a bachelor's degree and I have a master's degree and is she trying to take my job and I'm kind of saying like, no, I'm not trying to take your job and this is what I can do to help you be a social worker so that you can give your resources and time to other patients that don't have a community health worker and like, let me help you coordinate their care, let me help you, you know, maybe get connected to a support system or whatever, you know, different examples. So there's been barriers. I mean, I guess overall, the macro level is I don't feel supported. • I think that we're not necessarily valued as much as maybe someone that has a higher education or is going through the academic hierarchy, you know, because this is a university. So there's not a doctor in front of our name, there isn't even an MA might make a difference, or you know, an MPH or something. So I think that the academic hierarchy sometimes is an issue. • The other thing too is, through grants, there's this you know, **stick to the strategic plan, stick to the implementation plan and so sometimes there isn't room for a lot of creativity** and when there is, it's – sometimes it's not necessarily valued because like, let's stick to the traditional practices and so sometimes it's kind of insanity, you know, you do something over and over and it doesn't work but you keep doing it. So I think that sometimes our expertise and our advice isn't adhered to as much because it's not community based even though some of us may know like, hey, we've tried it, it's not working and you know – listen to us. So sometimes we're not – **sometimes we're not listened to**. Other times, they're like, okay, go ahead and try it you know, and we're given the liberty, but for the most part it's kind of like a little bit of a mistrust, even though we're hired in order to kind of understand and give them our expertise.
Mangers and supervisors at my organization are strongly committed to working with CHWs	• Each manager has a different style. In the beginning, the first manager that was here, I think she understood my role to a certain degree but didn't know how to implement it. The second manager that we had was more so ready to implement the role but had to get the initial staff on board with – not just with me, but with themselves in general. And here in the office, there's a lot of issues here beforehand that take precedence – that many of them didn't want to cooperate and there was major issues with our communication here, so the manager that came in, she came in to like, a storm, pretty much. Pretty

	much a storm that was brewing and **it's difficult to try to have my voice heard because now that the team in itself is not working together as a team and I'm trying to hop into a team that's not a team.** • We had a change of managers in April and beforehand I would meet with the team and we'd have a meeting and then when the new manager came, she had monthly meetings – like, typically at the end of the month but it was on a Friday and I would be at on the job training and just – this is going to sound so crazy, but just as of last Friday we no longer have an office manager, so I don't know how that's going to work after that. Now we're waiting for a new manager to come in. But I know for me and myself, everyone's well aware of what I do here because I went around and told them what I do. But they're just hearing it from me. They haven't really heard it from upstairs. • **Oh yeah, I have a great relationship with management. I really do have good relationships with management**. I also have relationships with different people outside of my immediate office that can help me provide advice. I just recently reached out to patient advocacy at the main hospital. So they do something similar to what I do, but different in a sense because they work with those concerns that patients have inside the hospital, but a lot of the resources that they may use, I use as well. So I have good relationships here. The relationships that I have do help and when I had my previous manager, she was really for my position. **She was like, my go to person, so to speak, so she was really for my ideas and implementation and she was letting me know that it's going to take time because there are so many things that need to be addressed first**, but she was always putting my position on the forefront and speaking favorably of me and my role. • **I really believe upper management truly cares about their employees and their patients**. You would think in the healthcare field, everyone's supposed to care about the patients, right? I mean, that's why we're in this business. But I think they just do a really good job at educating their employees, supporting them, making sure that the education material's really pertinent to what you do and they really make it so that the patients have resources in the clinics and the hospital. • **I think our upper management is very visible around [organization]. They do come out and do clinic visits. They have many different forums where they interact with the employees here**. So I think they hear about it. There's also our direct supervisor who meets with those people often. **So they get stories, they get feedback**. • And I have to say, Dr. [name] and our executive director – they both were at the planning stages of community health work– so they really get it, and that's why Dr. [name], you know, came up with the fact that you may have this certification but she came up with the clinical topics course for community health workers because she realized that we weren't getting what we really needed when we go out–

	you know, you can get hired and say oh, I'm certified and they give you some basic stuff, but the hypertension, diabetes, the education around that piece we didn't get, unless we took this clinical topics training. • Probably because I've been doing this a long time. I am just about as loved as it gets, you know? You know, my clients basically just love me and you know, I've never had a – maybe once in the whole eight years I've been doing this and that's – that's almost about as good as it gets, that a client has ever complained about me and I can't even think of the one. So you know, plus I'm just known for being a real good community health worker. • I guess we're kind of in a transition in terms of me just starting and just hiring my new supervisor, so I think we're still trying to work out the communication in that sense, and it's been a – I think a very – up until now things are starting to head in the right direction, but it's kind of been a very sort of fractured leadership, **in terms of figuring out who I'm supposed to report to for different things and some communication has been non-existent or hasn't been as clear as it could be**. There has been some struggles for me, in terms of figuring out how best to do my job and making sure that ultimately, that patients are getting the care that they need. • [Manager] is always open. She tells us she's always open to any suggestions we have. She always includes us as part of the group. • All the providers I work with are so awesome. **They just always are so open to hearing what I have to say and they just respect what I have to say**. They tell me all the time, they love how I see the patients as human beings, not just patients and I look at not only their medical piece but also like, all the other things that are going on. Like, the social determinants of health, right, so I look at all those things and I'm able to see them as a whole person and be able to help the patient, help the doctor, prioritize, okay what really needs to be done first and then we go from there. • I have many different people that I work very closely with over the past year. I will start off with saying my practice manager, up until a few weeks ago, has probably been my biggest support. **She has a master's in public health and she's like, been really good at navigating and helping me learn about this position**. **She's worked with community health workers before, so she was very instrumental in helping me develop my role and supporting me through it**, as well as my social work supervisor, who's a licenses social worker. So she's also been very instrumental in helping me like, with clinical supervision and helping me like, helping families and patients address these psychosocial issues that are getting in the way of their health, as well as medical stuff that comes up. I also work with our RN care coordinator, who works with the same patients I do. So she has a much bigger case load and she focuses a lot more on the medical stuff, and I can try to take in more of the

	psychosocial stuff. I also work with the pharmacist here, who works with patients on medication adherence and making sure they're on the right medications and things like that. I also work closely with all three of the social workers here, as well as our nutritionist, who's a registered dietician, as well as our community resource specialist, who helps patients get connected to community resources, and just any other community members, you know, and [hospital] people that I've kind of come across. But I would say like, my core team has been within this practice. • I think you know, the biggest thing is the relationship that I have with our clinical director and really we've made it such a team effort that that's really what makes it work a lot better than I think it would otherwise. • Yes, I really do, especially our clinical director. She's great about it. I think she understands like, how much it goes back to me really being part of that patient care team and she understands how much of a role I do play in it and so really helps out when she needs to and listens to my opinions there. • **I am just a community health worker here – but the way the management of the project treat us, coaching us to be better, to keep us motivated**. • What happens with us is that when a doctor or a nurse goes out with us, they get a much, much better idea about what we do, but sometimes the internal structure doesn't allow them to make decision – or somebody will say no, we can't do that, and so those are the kinds of things that, they're challenging, but you know, I'm not going to give up. I'm not discouraged, I think I've become much more pragmatic and realistic about what we're really dealing with. • Well, I think in some groups, we're highly regarded. In fact, one of the large medical practices has requested a full time community health worker to be on site, and then the qualified health plans each have a community health worker on site. So we're growing in acceptance. There's some practices that are probably still somewhat new to what the whole concept is, so there is a variety. • Well, this is my first year. **There's been some struggles but I think that the overall company is appreciating the work that we're doing and since coming on to the company**, I've implemented some things that I think that will help us target a larger area and reach more families and be more effective and so upon evaluation, they were really pleased with that. So we're looking to expand – so I think that they are appreciating the work that I myself do as a community health worker and my other two partners. • I think because we're in that academic setting, it's a very heavy workload for everyone, but I think for the most part our – **what you would call supervisor – our coordinator has like, a bunch of projects and so I don't see my supervisor – I want to say I probably see her once every two weeks, and so then there isn't a lot of feedback that I get until maybe there's a problem and so I**

	think that also hurts my work, my job and also, as a community health worker, I'm thinking to myself like, I feel like we are people that need that interaction because then we can communicate what it is that we're experiencing on an ongoing basis and also connect, because you know, we're doing that in the community but that's also needed in our professional environment so that we feel like what we're doing is valuable to the people that are setting up the job and you know, that we're going somewhere with our ideas. So I think that that's one of the things that I don't like about my job and I think it's not because I don't like me community health worker job, **it's the environment that's not set up to be as conducive as I would like.**
I am part of my organization's care team for patients for clients	• Yes. I think they greatly appreciate what we do. I think – I've had nurse practitioners at offices express great relief that we're going to go into the home and follow up with someone because they know there are some serious issues going on, but seeing somebody 15 minutes in the office, they can't begin to deal with some of the things that are going on. • The thing that is really great is because people are looking at a variety of agencies, is the staff are very, very helpful to each other. If somebody has a question, if you throw it out to the group or send an email out, frequently somebody from one of the agencies or somebody may have experience that's helpful and so trying to figure out community resources or is anybody helping with utility shut off right now or I have a senior that we need an assessment, what's the first step, how do we do that or whatever – it's a great – it's a great support network here. So that collaboration I think is – is really helpful. • Sometimes, they will – you know, they will ask me why a person is doing something, you know, why a person hasn't picked up their medication, or what's going on with the person and it's like, a lot of times, there's things that they just don't understand why a client would do something like that. So this is their health, I might tell them that, you know, he's got this going on, he's got that going on, so you know, I'm more in touch with the clients. So usually when I tell them what's going on with a client, , it gives them a better understanding. • **Well, because we work together on most of our issues. We collaborate a lot with each other individually and we do things in such a way that we support our staff in building additional skills. We support a lot of training and we also leverage skills that people have**. My – working electronic platforms is not even a tertiary skill for me but we do have a woman that works for our organization and she's very, very efficient and very capable with those things. So actually posting things on the platform and managing the platform is what she does. That's why I said it's really hard to say – when I said, I might be primary but I don't do it by myself – and then when we have issues that we're trying to figure out, we always have each other to start with. We get a lot of support from our

	executive director around – you know, when we're trying to figure out how to make something work or we have a problem around a community members or a community partner, we always have somebody who can help us work through that. • I think they just come to me a lot to ask me you know, how they would manage, you know, some cases. So that's one good thing. I think that's important if you have that teamwork within your organization it works better. Like what I said, if my other coworker doesn't feel comfortable with doing wound care, she'll come to me and ask me, can you follow up on this patient? They said that they're concerned about a family member that recently had a surgery and they're not sure if they're cleaning it right and I say, I'll go do that. They trust me, that's why they call me and she goes, yeah and she goes, but it seems like you're a doctor. They're always calling you. • Of course, they play a very important role because the nurse care managers can only do so much, you know, and then having a healthcare worker, which I hope in the future the health center will think about that and have a few on site, which I believe they are in process of working on that, but it hasn't happened yet – because the community health worker will be able to do a home visit, will have more flexibility in working with the patients than the nurse care managers. Their time is more limited because they do a lot of management. • You know, I work really closely with the pharmacist – I don't know if you can overhear her, but she's actually in the background in the office with me. • I feel I am like, **100 percent part of the care team and entitled to have my input and my advocacy as part of the team and having shared decision-making**. The way that our practice is actually set up is we actually sit with the team sits with the doctor, the doctor, the nurse, social worker, the medical assistant, everybody is sitting together and the shared resource like myself, we all sit together. So it's a lot of like, shared decision making. It's a lot of you know, trust building, personality, figuring out people's personalities. But yeah, I think definitely being integrated into the team is, essential. • I think it works well as a team because our nurse practitioners and I, we kind of understand how each of us work and like, our roles, so we understand that they might want to – and you know, they want to follow up with patients just as bad as I want to get them back in here, so working together, trying to make sure that they come back in, making sure the provider's telling them I really need you to come back in three months so we can recheck this and, just reiterating all of those different things and we do a lot of late nights or early mornings **and I think the team we have built together works really well together**. • I think we are still seen as outsiders but we are trying to involve in the healthcare more– most of the people we can. But these kind of difficult clients that need a lot of people that have to be involved are

	few. Our our link is mostly with the provider, the PCP. • We communicate the specialist with the PCP and vice versa. Even though we sign a consent with the participant, we cannot have all the information, but at least we can confirm the PCP – that the client went to the specialist appointment and encourage the PCP to get the information as soon as possible. Sometimes the PCP, because of the working hard they don't ask for the note. Sometimes if the specialist that takes a long time to respond to that specialist referral and so we are like – we are linking the specialist – the PCP without really knowing what is the of the specialist about the participant. But we are taking more steps to the provider to close that referral. • I think, **because we come from a public health perspective, our organization doesn't understand us**. The people that are practitioners in our organization, they see people in front of them. One person, one doctor, one nurse. They talk about a team, but they're usually a very, very close team. I'm out in the community and people that I recommend to our doctors don't come in saying hey, [name] sent me in here. You know? They don't say well, I'm here because I talked to your outreach team, and so therefore, sometimes the value of our work is not necessarily appreciated or understood, which is one of the reasons why we went to taking down information, so that we can show the value that we bring to the clinic, but also to the community. So I think as part of our care– **they give lip service to us because in some cases it's mandated, but they don't necessarily understand the real value that we bring, which is one of the reasons why we have to – we have to show the value of our CHWs**.
How hard or easy has it been for you to become part of your organization's care team?	• Definitely from administration and implementing a CHW model here or practice. It's kind of like I'm put here in the office and I'm given a list, but we don't thrive that way because CHWs – a lot of the times, we don't have a clinical background, we don't have degrees or whatever the case may be, we're from the community and this is like, a first step. **We're like the last man on the totem pole, so to speak**, in here – in [city], so it takes a lot of support. It takes a lot of backing up, informing the staff – immediate staff that I work with, **so they know how to utilize me, making sure that they're on board and being more supportive and including me in the healthcare plan instead of leaving me just as an option in an office**. And like with – in comparison, down at [organization], they have it where it's structured. It's really structured that they have a flow of patients, they have a specific case load and they can collect tangible data. Here, the data that I collect is good data, but since the structure I have is not really structure, it becomes difficult to collect good data that they can use. • I think the organization is doing a fabulous job at facilitating a team effort and I think you know, in healthcare, it wasn't always that way. You know, the social workers really did what they did and didn't work with the community health workers and the clinic care coordinators. They all did their thing. Where we are really working as a team, and I think they have really done a lot to try and look at what

	it is we're all doing on a daily basis and trying to make that a good team and so I – I feel like they're doing everything the right direction. Is it perfect? Probably not. But it's – it's pretty darn good. • **At first it was like –we was almost just there, you know what I'm saying? We didn't feel like a part of the team, whereas today we feel like a part of a team**. We felt like we was left out on a lot of things like, leading and help with a person that had something that we could work with them, to help them better themselves, they wouldn't - it was like we were just there. **But now, if they send us people, they make sure that we're in the meetings and everything that goes on that calls for the whole group, they make sure we're there**. • I would say they're pretty well integrated into our network. You know to engage the [organization] people, the folks who are working in local health clinics and while they have different titles, they're very much doing the community health work, you know, education, informing people of resources available to them, making sure they're getting the referrals. They also are doing outreach that is required and not only that question. Our major concern is getting folks into long-term paying positions because it typically has been where– if it's a grant and we provide for no funding and there's an ending to it and that's when we try to find ways to keep that going, but you can only do volunteer so long and we've been very fortunate, though, to have people who volunteer with us for years and then once they leave, they find somebody else to put into position so we are able to continue some of our work based on that. • We invite [the providers] to come down and we invite them – like, how we have our weekly support group, we have them come down, introduce themselves and then we sit down in a circle and we talk to them and we tell them, we want you to help our people, we want your hearts to be there to help our people. So they just kind of give him that advice, and if he takes it in, that shows respect to our group and then we'll you know, have a luncheon with him, to share the meal because in our culture, it's our way of them eating in what was said to the individual • It was pretty difficult to first adapt to, I want to say, because I never was in healthcare before that and I still struggle because there's a lot of medical terminology and stuff, what I try to do is simplify things and have it try to be in layman's terms. So if for example, if a patient ever wanted to get their record, they could easily understand what it was about. • So from what I've learned about community health workers, because I've never been a community health worker before this job, you know, two key things that I'm sure you know are the – probably the most important to be successful is A, they have to be empathetic and B they have to be really well integrated into their healthcare team. So as far as integration with the healthcare team, I think, totally it took work but I think I got it. It's still challenging sometimes. With some people, they're not really

	willing to change and things like that, you know, be open to change, but – so basically my practice – I work out of primary care practice that's a level three patient center medical home – do you know what that is? • So we have an RN care coordinator that manages the most high risk patients, we have a pharmacist, we have a nutritionist, community recourse specialist, three social workers, you know, big, big team. **So basically, I work within that and I think that what's really made it easy for me to transition into it, to be integrated in because there were so many other voices in the room**. It wasn't just a doctor, a nurse, a medical assistant you know, and a secretary with – they already had all these extra resources. So you know**, I think the team I work with is really open** you know, and they're vulnerable to hearing new people's opinions and we call each other by each other's first names. Like, it's not Dr. So and So. It's a very relaxed and calm environment and I think that was really important in integrating a community health worker into something like that, versus like, meeting more of the more like standard or like, traditional doctor's offices. • **In the beginning, I really had to have people build trust in me, like I know what I'm doing or I'm trying to know what I'm doing**. I asked a lot of questions and I still ask a lot of questions, but not as much as in the beginning and just sitting in on these appointments, sitting in on what we call huddles, you know, where the teams meet before all the like, patients come in, to show them that I'm interested in learning about the cases. Following up with the doctors, the nurses and whoever, as needed when I see something and it doesn't seem right to me or I think of something maybe a different type of plant that they should be having instead, I try to bring it up to the person – usually the primary care doctor. Yeah, so and always like people I work with are very open to hearing new ideas and stuff, • I think the major conflict when I first came here was what was clinical and what wasn't clinical, for me to discuss. That was the major conflict. That was with management upstairs. Some things they felt uncomfortable with in the beginning such as what I could say, what I couldn't say. When I realized that I was dealing with mainly a population that has mental health – that became an issue, because they didn't want me to be – they didn't want the patient to mistake me as a therapist, but I had to help them to realize that as a frontline worker, I'm going to find out a lot of information. It's about really – so what I do with it. So that was a major thing, but it wasn't a conflict, so to speak, it was just that grey area of knowing what my bounds and what's clinical or who steps in after me. Me and a nurse practitioner mainly spoke about those grey areas – and our regional practice manager. We discussed those boundaries as to what's clinical, what's – who do I refer to and what do I say to the patient if they start to ask me medical questions, and referring them to the right person.

	• We're being more accepted, you know, as time goes on, but at the beginning, no. I felt people, like the case managers felt they were – felt threatened by the opposition. So, we pretty much does almost the same – the only thing we doesn't do is we don't do referrals and that's what they do, and what we do, we're on foot. We go out into the neighborhoods and we go find these clients, whereas they – they feel like if we go find them, we're going to do what they need, offer to do as much as we can for them, to where they won't need the case managers. But that's not true. We're supposed to work together, you know? • Well, with me being new and the other two being part of the program for a number of years and me being the youngest, I think sometimes it may be a struggle, because where I see a need, they may not see a need and so we're just being collaborative now to support each other in the areas of expansion that we want to see. Some may think that we only need to have the health fairs, where I like having those sessions. I think it's more personal, I think that we should do the community surveys so that we can see how to tailor the program to fit their needs and not just doing things – so we're working together the best we can in order to see that this program will be – will have longevity but also be a benefit to the client and to those residents that we come in contact with. • Well, as of now, just making sure that if I have an idea that is thought through – they like to see things on paper, so I'm making sure that I map out the plan and how the residents will benefit from incorporating this new idea into the program, because the program is a very detailed and put together – it's well put together, so to add any other aspect to it, it definitely has to be thought through and so with the community survey, I think that the way I presented it to them, they saw that it would definitely be a benefit to the already established curriculum and program and so our boss through the organization that we work with, she saw that as well and so I feel – I took pride in having it initiated as a regular part of our Wells Program, to make sure that we do the community survey and then the follow up with [organization]. • I think that it's also – it would also have to do with an overall perspective of how things are set up in the team. **It's almost a division between like, ethnic culture.** Like, you know, here's the Latino team, here's the African American team and then there's even a satellite office that divides and there is this – and I've even heard the – the perspective of people who've been here longer than I have where it's like, well, don't tell them everything, you know, because they're not with us, you know, or – so there's that division really speaks volumes when we don't learn about each other's work until we see it happening in the community and it should be the other way around. We should be hearing about it, being part of it before it even gets to the community, and so that's why I give my team a two, because I don't think – I think we're working separately. It's like a cycle.

	• And I have talked to the other side and befriended the other side and it's looked down upon from the side I'm supposed to be in and so I think it's just part of what's become the culture in my job. So it's unfortunate, and I don't think it's the first time it's happened anywhere. I think that happens a lot. People get territorial. But I think some of the academic environment and also the resources not being available – sometimes we're fighting for resources – that's kind of what happens, so I don't necessarily blame myself, but at the same time my personality is kind of hard to – to match it, because I've never been one to just side with one, you know – one portion of something. **I'm part of a community – if I'm part of a team, I'm part of the whole team.**
My organization will continue to support my work and the work of other CHWs in the future	• **I thought I was [supported], but I mean, they're not funding my position, so how could I feel like I'm supported**? It honestly makes me heartbroken, that community health workers are not integrated into what should be the most advanced probably healthcare system. It just makes me really heartbroken that they're not willing to take the leap, you know? • They were on the beginning of the planning of community health workers, so they understand the need of them and so they have built a structure within our clinic for that and they are very well in supporting it. It's been financially supported in writing grants. • I'm not going to lie. You know, I'd be lying if I said I wasn't upset. It's very bittersweet, because the project – I really – I threw my whole heart into this and I really like, love what I do and I really wanted this to be my like, career, like, my next phase of my career. I never thought I'd be in public health, but I really love it. I love working with the people on a long term basis, getting to know them and helping them reach this like, really amazing goals, like, learning how to read for the first time. I mean, I never thought I'd have that experience.
OTHER	• They leave us alone. I mean, I would rather have people not bother us. I mean, here's the deal – here's what I'm saying to you: I'm collecting data. I'm working with organizations – in fact, one organization gave us a quarter of a million dollars because of the work that we didn't get a dime of it. Okay. So people – we are recognized but that doesn't mean that our organization knows what to do with us. Interestingly enough, we've done that. We brought in researchers that knew their stuff. Now, they – but sometimes people get stuck in their world and – so what we've done is we just work around them. One of the things I tell – so, you know, in my department, we're ignored. So here's what I tell people. The reasons why we have been successful is because we've been allowed to develop in isolation, okay? They don't bother us. You know, we will still present information – and you're going to see this. I have talked to the other side and befriended the other side and it's looked down upon from the side I'm supposed to be in and so I think it's just part of what's become the culture in – in my job. • I would say the referrals. I'm just like, really into the referrals to try to get participants, so when I don't

	really have referrals from [organization] that doesn't really help the program. So it's been getting way better but that's the only thing that gets in the way is just the referrals. Sometimes we don't get none at all and then there's times we do. I don't know if they kind of forget about kind of promoting to the clients that they see every day, because the clinic is open Monday through Friday, so usually we tell the providers to kind of let them know that [program] is here for them, so when I get that referral from the providers, I'll be giving the client a call. • Yeah, it can be funding at times, you know, obviously we're federally funded and so it's not – you know, we don't have a ton of money at all times, so we have to be careful on budgets and when we can do things, so yeah, that's really what it comes down to. • Well, sometimes we have resistance from the PCP. They know that it's going to be very helpful even interpreting but going and – when we start working, a providers feeling like we are there to kind of – I don't know, like, to see what happens and maybe judge the PCP the way they talk with the client or make decisions. But going with the participant is more because they feel – they feel better and they feel that they can take time to ask the CHW what's going on and the CHW in that way, became as a advocate for them. • This is how strong the paradigm is – and again, everything I'm telling you I can document, okay? So again, but I'm not being critical, I'm just talking about what some of the challenge is in terms of doing this work, as a community health worker. People will not understand you because you're talking about public health. I went to school with public health people who didn't really understand what public health was, and that's sad but that's true and it's not – I'm not mad about it, I'm just saying it just makes me work harder to really show the connection between this and really how our world is – how the world can be better. You know, and I think that public health, for me – like I said, I've already drank the Kool-Aid, but public health is really one of the places where I think that we need to do a much better job of telling people what it is and then giving people an opportunity to enter into the conversation. There's been so much research that's been done, but it hasn't been translated.

Appendix G. Outer Setting Support Quotes

DIMENSIONS	
CHW needs and resources (are CHW needs prioritized by organization)	• Oh yeah, I have a great relationship with management. I really do have good relationships with management. **I also have relationships with different people outside of my immediate office that can help me provide advice.** I just recently reached out to patient advocacy at the main hospital. So they do something similar – similar to what I do, but different in a sense because they work with those concerns that patients have inside the hospital, but a lot of the resources that they may use, I use as well. So I have good relationships here. **The relationships that I have do help and when I had my previous manager, she was really for my position. She was like, my go to person, so to speak, so she was – she was really for my ideas and implementation and she was letting me know that it's going to take time because there are so many things that need to be addressed first, but she was always putting my position on the forefront and speaking favorably of me and my role.** • I think it's viewed as the – it's a highly respected position. I think that's why they didn't just call me a community health worker, but they called me a community care manager, because of – I think at the end of the year, we're probably going to be trying to hire another part time – a part time community health worker, because of the need that we have and I can't do it all. So the position is totally respected and – I'll tell you this little quick story. I have a patient who's on my community health work case load who has prostate cancer and just found out that he also has colon cancer and he does not like going to the doctor and so we had a meeting with the doctor that did his colonoscopy and had found, you know, the cancer. So we were meeting with this one day and she says, now – she kept going, what is your role? You know, what is – what are – what are you and he said, this is my community health worker and she said, I've never heard of that, what is that? So I started explaining to her that you know, I was there to support the patient, being an advocate for the doctor and the patient, making sure that the patient understands what the doctor's saying and you know, coming to the appointment – for – you know, explaining what I was doing with him, basically and she goes, I've never heard of that, and then she says, **I have so many patients that need someone like you. How do I go about getting them a community health worker and I thought that was just hilarious, because I was like, she's got it and she recognized that there's people who need it and they don't have one. So I think the role of a community health worker, not just within [organization name], but period in the healthcare field is so needed.**

CHW Cosmopolitan (how CHW is networked with external organizations) Networking with other CHWs (77.9%) Being a member of CHW alliances and/or associations (49.7%) Being a member of a professional organization (38.3%)	• There is another, an outside group where people who have gone through the community health worker training it's called [name]. It's a meeting where we kind of all get together – **all the community health workers get together and kind of just discuss, visions, things that we're facing.** So there is a group – we meet once a month. It's open– it's probably about – if everybody came, it would probably be about 50 people, but it's probably around 19 to 25 that come on a regular basis. • So they're **one of the organizations out there who have the meetings and have the networking and are out in the community with community health workers and so you're – what they're trying to do is making community** – they're a piece, **because I know there's a lot of legislation and a lot of government organizations that are really trying to get community health workers a professional term rather than just a job description. [Name of network] is part of that. A small part of it, but you know, part of the collective nationwide**, because community health workers at this time are more seen as being patient navigators in a medical setting rather than broad spectrum, out in the community, because the community health worker– what they're trying to do is get someone who's – trying to get a professional definition in a broad spectrum sense, as a community health worker can be anyone who is working out in the community – for their community to build community capacity and community engagements and not necessarily working strictly in a medical setting. Like, in a medical office as a patient navigator or a hospital, you know, same thing. • That component is through every CHWs personal experience and personal network and contacts. I have my groups or my boards that I sit on. My community groups that I'm a partner with and – so there's no protocol for who or where these different resources are found, it's just within the community. • That would be through personal – that component is through every CHWs personal experience and personal network and contacts. Their personal – I have my groups or my boards that I sit on. My community groups that – that I'm a partner with and – so it's – it's – there's no protocol for who or where these different resources are found, it's just within the community. • Yeah, that work a lot with the Hispanic community that know me, that I know them and we work together pretty you know – just pretty much the outreach people out there, the other community – other workers that are out there. So, yeah. Those help a lot. • Other CHWs who help me – get me sources to help clients in a matter of need of clothing, foods, things like that. That's basically it.

	• There is a lot of amazing community health workers here in [state name] and I'm blessed to know many of them. So when I find a particular need that I don't know what to do, I know who to go to so that that person can come in and then help me with that patient to get them where they need to be. So it's like, a good networking system, even though it hasn't been – it's not a recognized networking system yet here in [state], there is a huge community bonding here. So we kind of know each other by just being in meetings or knowing from one person to another. • Definitely the resources that I obtain from the community. Workshops that I go to – I've been to collaboration meetings where I found out more about substance abuse programs that are out there, food agencies, food banks. So definitely having the community resource piece under my belt is an excellent help because I'm able to refer to patients – to things they may not know about. They may not know about these resources that help them. They know stuff is out there, but they don't know how to access it or they had trouble accessing these resources before, so that – that's a major piece to – to my job, too. • Oh yeah, I have a great relationship with management. I really do have good relationships with management. I also have relationships with different people outside of my immediate office that can help me provide advice. I just recently reached out to patient advocacy at the main hospital. So they do something similar – similar to what I do, but different in a sense because they work with those concerns that patients have inside the hospital, but a lot of the resources that they may use, I use as well. So I have good relationships here. The relationships that I have do help and when I had my previous manager, she was really for my position. She was like, my go to person, so to speak, so she was – she was really for my ideas and implementation and she was letting me know that it's going to take time because there are so many things that need to be addressed first, but she was always putting my position on the forefront and speaking favorably of me and my role. • I'd say community resources, the county, interacting with patients, both in and outside of the clinic, if we're at you know, health fairs or making connections with them. • That's a big part of being able to – to do the patient navigation component, is just having that team of network – you know, networking out there and having those people and knowing those people and making that connection to be able to refer out. So we can have nutritionists that – these are just people that I've made contact with over the years in the field. So I may know a nutritionist or a – a resource center. A lot of – my big – I guess my – one of my big successes would be the scholastic enrollments. So being able – you know, knowing the administrators at some of the little colleges and knowing the grants that are out there – the free grants. So for example, I was able to get a few of the participants enrolled in you know, furthering their education, academic studies.

	• I belong to, I will network with the other people out there – the other resources that are out there. People who will show up at the meetings and offer their services or referrals. • Just knowing the community. Like I said, I was born and raised here and I did not grow up underprivileged but I went to a Catholic school where, you know, philanthropy was like the essence, was the core of our – like of our graduating class. So I knew – I got into network, like I had the opportunity to network with a lot of people and find resources and like I created like a handbook of resources of – that are not so commonly known for the individuals that I work with. • Trying to make myself accessible and interacting with like, American Heart Association, going to things that they hold, going to trainings and programs that's held by our health department, going to trainings that's held by [name]. So I try to go to a lot of different trainings to gather more information and more resources that I could offer to the residents and the clients outside of the resources that we already have through the [name] Program. • I use a resource up here in [city] for my patient education stuff. It's called the [organization] and they have a community health education center where the community health workers can actually go to the center and take out of their library – like, they can rent, you know, for a dollar – for membership for a year it's really awesome – and you can rent all these like, patient education materials and give it back within a month or something. So I've been using that a lot. I also, you know, try to get any information I can from reliable resources and I'll try to reach out to the doctor or the nurse or whatever that knows what the greater resources are on the different websites and stuff. But I would say the majority of information I give to them is through the healthcare team. I would say my job, because it's so like, complex with the patients that I'm working with, I get a lot of the medical stuff from the healthcare team and then I take the medical stuff and meet the patient where they're at and pull that stuff to where the patient can understand it and the stress management – I think that's a big tie to it. • . You know, it could be the American Heart Association materials that they publish and things like that. Just different organizations, really. You know, it might be from a local hospital in materials that they have as well and others produce stuff and we kind of all work together so it's just – **it's really hard deciding what – what is acceptable or not.** • **Everyone's doing their own parts, but as a collective** (about a CHW organization). • You know, I started learning from there and then came I want to say more passion, where I'm involved with the [CHW association], where I'm part of the – **being a community health worker leader of the network**. So there are more – my passion is through trying to make other

	community health workers be aware of who they are and hoping that we can accomplish – to make a change in [state]. • I was involved from the inception, when they were first establishing the organization. It's a professional organization for the support and education for community health workers. I belong to the regional network of [organization], which is a group that meets regularly around, you know, how do we coordinate things, what is it we need, how do we obtain funding, you know, all those types of things. I belong to the – the local Community Advisory Council for our Coordinated Care organization and that – so I attend local meetings in [name] County as well as regional meetings. What else do I do? I just recently resigned a lot of positions. I was on the state commission that created a lot of these standards. Stuff like that. • I've kind of set up and it's still really early in the process, but I think that whole networking really plays a really important aspect into – into my job in being able to access more patients that need the care that they do. • They also allow us to go to conferences which is great. Some can't go, so we take turns for those who can – who are new on board and able to go to those conferences. Some are able to go to a lot of the conferences because I guess their programs have the money to do so, so they're able to be out there and do things, but the fact that we might be able to come back, talk about it and that they can you know – part of the network – we talk about that stuff and when I say the network, I'm talking about [organization]. We – in the network meetings, we talk about that. Now, if they attend the meetings – because some can, some can't – so that's something that you know, not a lot of organizations allow and [organization] does. • Well yeah, the conferences help for us as CHWs to be aware of where more community health workers are at, but I also want to say the fact that we – within the [organization], as well, I reach out a lot to the CHWs there to help me to do my job and they, too, have come – I have a lot of them who came to help me with clients that have lots of needs. • I've attended a lot of conferences, you know, with [name] Medical School, things like that. So just like, trying to put myself out there and just get to know what's out there and like, that's been supported for me. • I'm the vice president of the Community Health Worker Professional Association of [name]. – I – I was working to build the Association since 2011 and we are working mostly toward the sustainability, that way that we as community health workers don't need to work for a grant and I always – I – for that reason that I go everywhere, explaining that the only one – but maybe I

	exaggerate a little bit, but the only one person that can see and help clients is the CHW, because they can work in the social determinant of health – let's say environment, family and culturally. • I'm kind of part of the prevention world through the region and so they provide some trainings, and I'm also part of a coalition that does tobacco prevention and also another coalition that does substance abuse and alcohol, and so they provide some – some trainings – and then it's really supposed to be more of a complimentary training. So like, you're supposed to be versed in just what it is – what prevention is and so you kind of do it on your own, you know, you read the articles, you read best practices that are provided through the state. • I mean, **I've always kind of formed networks everywhere I went**. You know, formed – helped establish groups. Like, right now there's a group that's called [organization] and you know, I was one of the founders and so like, I just think that there's so much room for improvement in the community, especially for people who look like me and work like me, work hard like me, you know.
Organization Cosmopolitan (how much organization is networked with external organizations) Networking with non-CHW organizations (50.3%)	• We are a grant project—there's three grants in the state of [state], and we are run out of the [name] hospital system. • We **align with mostly community based organizations that provide services**. For instance, we established several coalitions. One has been the [name] Coalition through some funding we received from the [name] and the [name] was very involved in giving us money to establish a coalition with similar people who were – similar interests and basically what we've done was to bring all those partners-- over 200 partners that we have that has worked with us in various capacities to – including our state officials, our local county governmental officials and our partnerships across the state and six other communities are doing similar work around childhood obesity and the associated perhaps you know, coming from that. • They're from the organization directly. So from like, the [name[that's from their – directly from Career Link. They give a listing of job information or where can old, mature adults find jobs and websites – so these fliers come from the organizations directly, because I go out to the organizations and I receive these fliers and bring them back. • Well, it's – we have an initial training, which is a weeklong training and then we've had ongoing trainings on various topics. Like, the – the motivational interviewing was three days. There's been the training on the iPad videos was a day, but there's been monthly – just about monthly, there's some type of training going on. So – so the staff has received a lot of training. We've also added new staff, so it's a continuous process, keeping people trained.

	• We work – our other CHW works very closely with our police department here. We are – we have a high Latino population here, in our clinic, and so that's – that work with the police department actually helps us a lot because they have an actual outreach person that works with the Spanish community, too. We help – we partner with all kinds of different organizations around the [city] and there's like, adult day programs that we've gone out to see and we use for referring patients to or talking to providers about. There are organizations that help with getting your education or your GED or learning English as a second language, computer skills, places – organizations that help people find work and different education, help people try and find food – our local food shelf, we work with them a lot, our community center, as well, here. So we go out to all these different organizations at different times, depending on kind of what's going on. There's a church in our community that's very involved in the community and we've done different events with them, as well. • We do have [name] Medical Center is a large organization and we have pharmacies. They're not onsite here, but we might have a patient meet with the pharmacist. We might help them schedule that appointment to go over medications, maybe even get a pill box set up. There are patients who actually work with the pharmacies to have their like, bubble packs. • We have pharmaceutical organizations, they come, as well as other healthcare organizations (describing trainings). • We called 211, got some housing programs and then I just was helping them with calling, trying to find out any openings. So you know, my job isn't just about the health piece, but the overall health piece, you know, for them. So I do work with other organizations based on specialty care, because one of my patients has prostate cancer and so I go to his appointments with him, because he doesn't have anybody with him to go. So I go to his appointments with him and then making sure that he understands what's being asked of him to do. So like, labs and he's going to have surgery and how to prep for that, who can come in and help him after surgery. You know, it's like, a lot. So there's some things that are way outside of medical scope, but part of the medical piece of working with our patients that I do. • One thing is the community health web, you know, and community engagement down in [city]. There's a lot of community engagements. There are a lot of health fairs. There's a lot going on to give and put out into the community. A lot of community gardens are starting to come up now. So there's a lot of groups and professional organizations, that you mentioned earlier, that are really wanting to give back to the community. So that's never really been an issue on the level that I'm working at right now. It's just been – these meetings – I mean, it's not – the meetings that we go to

	with some of the groups – with some of them collaborative, there's quite a bit of organizations that will show up and offer services. It's not really so much advocating. People are already offering services, so it's just a matter of matching them up, if you know, the service is required. • We partnership with [organization] and sometimes I feel like I wish that we could – we partnership with only [organization], like, we could have another partnership with other organizations or other companies or other people that could come in during our sessions and meet their needs the way they need to be met. Like, if we could partnership with others. I think that we have a strong partnership with them, but I think that sometimes our residents or our clients may not feel as comfortable with [organization] as we do, so we could partnership with another organization that could target our residents in another way. • What we do within our session – we do have a partnership with a clinic and they'll come in and they will get all of those who are our participants, their vitals and educate them on you know, body mass, take their height and their weight and then we will try to – once we get those results, we try to connect them with different healthcare physicians or organizations that could help them. So once you see a need, it says high blood pressure or diabetes or cholesterol that's not controlled, that we find out here, we try to connect them with a clinic or a physician where they could do follow up care. • You know, and I've worked with – here with them as I – you know, we go together as – going out to the health fairs, so I go together with all of the – with people I work with. • We have three distinct relationships with [university names]. The University of [state] relationship one was kind of distant because the fact that they're, you know, a couple of hours drive away from us. We started working with them around issues of race and racism and because there was a concern about, again, how might we address things that are not spoken and what impact it has on health. And so over the years, we've, in that partnership, have begun to talk about the CBPR aspect of it and what that means to people who are in a community and having an opportunity to work with folks at the academic level. We jus we had some challenges, you know, around that because initially starting out, the idea was that, you know, folks would come in, they wanted to develop a survey instrument before they got here and then they wanted to monitor us to get us to do the work in the community once they've done their survey and we said no, we have to help you design these instruments, you know, get input from our people that they – in case they want to be involved with this, what does that mean to them. And then did they actually have an equitable type of a partnership with you, what does that mean in their eyes and what does that mean in the university eyes and so we did took the CBPR thing to another level and in about 2008, have been

	really working at and to – because before now, we've been able to secure several National Science Foundation grants for Summer Field Institute to teach other students, particularly anthropology, about ethnography and ways to enter the community and that type of approach, so we've been very excited about how that's done and what we can make happen as it relates to that. And so this is our – this is our fourth year with the Summer Field school and the summer school has about five weeks and it's intensive because the students, you know, who travel, in the very first two or three years, the students came from out of state. They came from across the country and even internationally to – to find ways to broaden their understanding of various field research methods. • Well first of all, I think the having a system of community, we work a lot around community organizing and getting them aware of where the issues are that we have been exposed to, where the programs are and resources and where the people, if there's a need, you know, and how might we get them aware, you know, that being aware and resourceful are key things that they need to know. Then knowing how to go in and how to enter communities and then you know, one of the things we've been really talking about is developing the community's trust and know that you are consistent, you're not going to just be fly by night, you know, come in and be gone and there's no track of – that you've been there and then the other aspect of it is getting the – them to understand that their work is really designed to help people build their own capacity to some degree and that so when you are gone, that they do know where they can go and what they can do to continue to – the resources they need as well as to be informed of the various areas and keeping to the trends that are in health. • In collaboration with, you know, or – and so we – we try to be at different tables so that we can bring that information to people, let them know that there are gaps in their proposals or whatever, so we ourselves, you know, but we are instrumental in making sure that the word is or something that speaks to the community and issues that matter around health. • Well, we do that because we believe that it's very hard for somebody to be healthy if they don't have the necessary things for a healthy life. So we connect them to perhaps the food banks. We try to work around housing issues. Respite care, if they're caring for a family member intensely, we have a caregiver support group and we don't – we as [organization] don't run all these things. But we're able to refer and we know what's available in the community, and that's the case around a lot of the community organizations. So [organization] might sponsor a caregivers class or a class. We know about it, we help recruit participants from the community. There might be referrals for those types of educational pieces from a variety of organizations. [Organization] might have a parent with a chronic condition and so they'll refer them to classes and workshops. [Organization] also

	does budgeting classes. There are organizations for aging in the area. Yeah. Our just try and connect and coordinate among the organizations in the community. • Just being out there, just you know, at different like, community health fairs, you know? We will have a little table and we tell them this is our phone number, call us, you know, so we – we look at other programs, we collaborate with other programs and we let them know, you know, what we're doing. The other thing is that we also do – I forgot to mention – is we do a monthly cooking class and – and the other thing is that a lot of providers tell them, you know, well you need to go see the dietician because you need to cut down on your salt, you need to cut down on you know, these foods and – and a lot of our people are like, you know what, that's what I get from the food assistance program, you know, and that's all I get, you know, so they need to realize too that, you know, you're asking someone that gets these food items and they can't use it, so what do they do with it? You know, so again, the education – so we do a monthly cooking class. • Yes, just like the referrals – that helps me a lot. I usually try to tell [organization] or [name] to please try to help us out with the referrals. The more participants we have the better for the program. So we usually try to promote [CHW organization] everywhere. We just take fliers. I've been to stores but not necessarily – for health fairs, for example, we usually take water bottles and bags, that usually helps us a lot. A lot of people sign up. I've had like, back and front sheets actually filled with people interested and I think that they're more interested because of the gym pass we give. We give them some little freebies, their water bottle, bags, a pedometer that actually takes – records their steps they do, their calorie. • Some would be that they don't have money to actually keep going to the doctor. They don't have Medicaid or insurance and that's when I actually tell them about [organization], because [organization] came to our facility to actually talk about patients that have high blood pressure, diabetes, cholesterol – how they would help them, and it's all dependent on income. So when they tell me that and they tell me oh, it's so difficult, I can't go to a doctor no more because I can't afford it and I don't have insurance, I always give them that option that they could go visit [organization] so they can get more information and get the help, because they will help them with medications, too. • We go to – here in [state], here in [town], we usually go to like, [organization]. We go out to meet companies – big [trucking] companies, where they work. These are actually companies that let us in and usually health fairs – and then like I said, our referrals from [organization] that – they give us – refer us people from high blood pressure, cholesterol, diabetes or that they're interested to lose a little – couple pounds. We also go every quarter to go out in the community and give out fliers,

	post up fliers in stores, schools, elementary. I usually go hand out in the restaurants, the ones that let me. So I'm usually out there every quarter, trying to give out those fliers so I can get some calls, which I do sometimes get random calls. So that's really good. • We work through what's called crew leaders, most of the time. So like, a crew leader would be somebody who hired 75 migrants to come up from [state] to work here in [state]. So a lot of times, the easiest way to – to get to this patient population is locating these crew leaders and you know, it might be that the crew leaders aren't interested – excuse me – giving patients time off to – to come to a clinic, so we really try and work with those crew leaders to talk about you know, wouldn't you rather have healthy workers you know, and things like that, to make them allow access to the patient. I think I have a list of about maybe 20, 25 different crew leaders. • Self-management, but the very first is CHW training. That is the [organization] so the [organization] with the [organization], that is the [organization] published – there is one of months and a half of training and then we learn about diabetes, hypertension and asthma and working in self-management of that and also the self-management and we have conflict resolution, motivational interviewing. • **I think the fact that people outside of our organization recognize our value and people outside of our organization are willing to help us.** Right now, I'm getting ready to go to a place where people – an organization has actually given us an office so we can provide free blood pressure for their people on a regular basis. So people have given us – in our work, we actually had – one organization gave us 250,000 square feet of a space to do our work. So what happens is that we just leverage a lot of stuff. **We don't get a lot of money, but people recognize our value and they're willing to support us and we just stretch our resources to make those things happen.** • I'm part of a lot of different associations and stuff but not to help us with that – but I do think that we have some great partners, like some of the funders who provide us with things – and maybe not necessarily directly, but whenever we go out, they give us incentives, they give us information. So a lot of our work is leveraged, **so definitely when we talk about being community oriented, we are definitely community oriented.** • So whenever we do an event like that, we generally report back to the community what we have done. So that's the other part about creating validity for the community health worker is that when they go out into their communities and they say that we're going to do this kind of work, we give them information so they can go back to their community and tell them, so this is the result of what we have done. So a lot of our work is done – we do a lot of evaluation, we take a lot of surveys, you know, when people come on we do a questionnaire – so we have demographics – I

	mean, so when I tell you we have you know, 7,000 screenings we can document everything that we do, and once again, it's because we understood that the community health worker was an important person in terms of making the community better, and we know that in the medical profession and funders and everybody else, they want – they want documentation. So we have trained, we have evaluated our people so that they can provide the funders I mean, with information that they want and at the same time, go back to the community and tell them, this is what we've done. • But we do it through leveraging our relationships with other organizations, because what we feel like is that, you know, no one organization can do everything so you have to figure out who's best at what and then develop a relationship with them and then have them come alongside of you in order to provide services to the community. So any time we go out into a community event, we have anywhere from probably from six to 20 other organizations that come alongside of us. That way – and again, this is all utilizing community health workers – that way, when we go into a community – for example, [city] has North Side, South Side and a lot of times there are territorial issues – or we may go into another ethnic community. What we do is we find partners within that community that we work with in order to serve that community. We also provide information for people from that community to go to clinics within that community. **So our whole focus has been – because we have a public health focus – our whole focus has been around finding out who are the people that are the most appropriate to present the message and come alongside of them and then to promote public health**. • A lot of our partnerships is more about like, project partnerships. So if they have – are running events, we go and participate in order to kind of keeping running our campaign – our community action campaign.
Peer Pressure (competing organizations are doing CHW-related interventions)	• I'm actually going to – Dr. [name of doctor] and I are going to go down to [city] and see some community health workers at this one clinic. So I think seeing other people doing it – because see, here in [city], people weren't – people haven't been doing it, because this is new. So actually going somewhere where it's actually happening and being able to see what they're doing is going to be a plus – I think real helpful.
External Policies and Initiatives (government, mandates, collaborative, public or benchmark performance)	• Now we see people who have the [State] Health Plan – the Affordable Care Act. We see those, as well. • I think that [the Affordable Care Act] that has definitely helped me – all of us to – and specifically, yes, like, as a community health worker, it's helped to do my job better because just you know, giving – **helping people obtain coverage that they may not have had before is great because**

Recognition of role of CHWs in my state or region (59.1%)	**that's you know, obviously helped a lot of people afford medication that they before couldn't afford at all.** I think that's helped not just the healthcare industry in general, although I think one of the things that – another thing that – I guess kind of a negative aspect of that is having people get coverage doesn't necessarily help them obtain access to primary care, so you know, we've definitely seen that – an increase in the number of people in the area who are covered but haven't necessarily seen a similar increase in the number of primary care providers. So that means, you know, there are a lot more people who have primary care doctors, without increasing that number of primary care doctors. So I think it creates a lot more stress and strain and – on you know, the current primary care providers. So I guess that's kind of been one negative side of – of the Affordable Care Act is – is not really addressing – or not the Act itself, but just in this neighborhood, not really addressing the shortage of primary care physicians to help address all these new people who are covered under the new law. So yeah, I think there's kind of a positive and a negative spin to that, but in terms of helping like – **you know, helping people get better, but that's helped me helped patients get connected with – with medications that they aren't – you know, might not have been able to afford before.** • Part of the work we did, established in [year] was we called a [name of organization] and that was designed in the initiative from our local governor at the time to revitalize communities, the best way to do that was through partnerships and with these partnerships, **we were able to align ourselves in the community with the folk at the state levels in each of the departments, you know, so that you've got the governor and then the community based groups were able to get whatever resources we needed to have leveraging done because that was the way he felt that we needed to get more of what we wanted to have in our local communities, having associated partners**. And so **over the past years, we've kept those relationships in many ways and now we've been able to sustain a lot of our programs even though we didn't have funding, which has really helped tremendously.** But yeah, including our local state officials, we do have health departments and our community based organizations, private and non-profit as well, and for-profit, so public and private partnerships and we have a number of volunteers and students who work with us around some of these initiatives that really work to get young people more engaged in their own learning. • Well, one of the things is advocating for CMS [Centers for Medicaid and Medicare] to create a system where things that community health workers do can be billed. Also, the [name of specific funding mechanism] is a way to provide some funding because the payments are based on outcomes of the pathways.

	• So **we connect people with existing assistance through [name of health plan], which is the state Medicaid program**, help people with Medicare issues, with obtaining prescription medications if they need help with that and then we also work at the community level on identifying gaps and collaborating with other organizations to fill the gaps. **We have a policy of not duplicating services, because in rural frontier areas, there's always an issue with funding. So we try to work with other community partners in making sure that we don't have a duplication of services so that our funding that we do receive is leveraged in.** • That was around the same type of thing. What we did [name of CHW association] and [name of organization] worked together with some legislatures to create and pass some legislation that secured a form of a way for community health workers to have a commission and that it would be community health workers that were on the commission. So it created a state commission in legislation that has a designated number of community health workers on it. The first thing we did was create the commission – well, it was first the steering committee and then it rolled into a commission after the legislation, but what we did was create the standards and also a process for training programs to receive state approval for training community health workers and having them be eligible for – to be on the registry at the state level. So they're state certified community health workers – and they're putting this in place for a number of reasons, but one of them is that CMS is working on a system to be able to pay for some of the work that community health workers do. • Some of the things right now that has been very hectic lately, because it's the new Obama Care, because of the Healthcare Reform Act, we have a lot of patients with a lot of questions trying to understand the policies or what it is they have, what the doctor role is and because it's something new, we have had a lot of troubleshooting. • I would say networking has been huge for me, as well as you know, like, networking with state agencies, federal, you know, people, policy makers and things like that, as well as local agencies, policy makers and I try to advocate for the community as a whole, as well as patient by patient. • The fact that [state] didn't expand Medicaid has played kind of a big role for our patient population, because so many people go back to [state]. So even if they are documented here, we can get them access to Medicaid but then when they go back to [state], they don't have it. • I hope we can keep growing as a movement, because right now the community health worker is a movement in all the country, but what I want to remark is all of this is possible because of the – the Affordable Care Act. That is, I think, or our hopes to – to get health for everyone – everyone reach – have a home healthcare.

	• …but I am just a community health worker here – but the way the management of the project treat us, coaching us to be better, to keep us motivated and for that reason, sometimes we – for example, Tuesday and Wednesday, we have a summit about healthcare – it's sponsored by the Department of Health. • I technically am employed underneath a grant. It's a – called a [name] grant. It was administered by the state of [name]. It was given out to five different areas within the state of [state] where cardiovascular health – cardiovascular issues are highly prevalent. So [city] was chosen as one of those zones. So it's a four year, five million dollar grant. So I work at [name] Hospital, but it's underneath the grant organization, which is the [name of organization] and that's an organization – that's an organization that has I believe upwards of 16 different, you know, non-profits and hospitals and health systems within [city] that are all working together to address the alarming rates of cardiovascular issues and cardiovascular disease. • Well, I guess one of the key things would be the recognition of those folks who make decisions and who are in positions to change policies to make funding happen in areas of need. And that type of boundary, of barrier can be inhibitive. You know, it doesn't allow for the folks who may be not highly trained, or may be in a paraprofessional role, you know, to move forward into being classified as community health workers, because there's not a lot of respect in that area. • I think we have a really good strong network here in this region – a strong collaboration among organizations. • We've been working on that, because this region historically has not recognized community health workers but at this point there's a lot of enthusiasm and organizations have maybe this is the way to start understanding – for the training, we don't – we have not, for the four trainings that we've already had – we had grant funding to actually put the training on. We did not ask any registration fees. What we asked was that the employing organizations support the training of their staff as community health workers by allowing them to use staff time to be at the training. Most of the organizations in this area are pretty small, so when you're talking about taking one or two staff members out for a week at a time, that's a lot of commitment on the part of the organization that's sending staff. So I would say there's a pretty positive view of community health workers and they've also been watching [organization] for years, and what we've been able to accomplish. The ongoing concern is sustainable funding to be able to pay for the work that community health workers do. • It's a collaborative effort. **What we're trying to do is have no wrong door in the region and so if they connect to any of the social service organizations or clinics or anything like that, we**

	have an assessment tool that can be used and then they can be connected to somebody that will help them walk through. So it's care coordination, connection to services and then depending on which organization, we provide the education on how to use the medical system and how to manage their chronic condition. • But we also have just begun what's called a community hub, where other organizations can identify a community member that perhaps needs assistance with are cardiac issues, hypertension, connection to care. We have limited funding for the outcome payments at this time, but we're doing a pilot project and continuing to look for funding. • The [state] actually have a screening that you go through – it depends on the school, some is for nine months, some is for three months to become a certified community health worker and they utilize those – that certification to get people jobs and to at least establish that they have a minimum degree of proficiency in certain areas and I grandfathered in, because I had a master's degree, I grandfathered in and then also, because I'd been in – working in the community for over 20 years. • Yeah, they give you – they really go in depth about what a community health worker is and what it entitles and they give you – they teach you tools and they help you to better your skills to be a more efficient community health worker. It's becoming [required]-- right now, as far as I know and from what I hear from different venues, what's coming from the health department is that in [state], it might be a requirement eventually, yes. As of now, it's not, but it will become. • There's My Plate – [name] made these. She got the information from the DHHS. She got the information from there. She's actually the manager of the program – the program manager and she said she actually – it took time for her to build up this program, but with the help of the DHHS she's actually been doing really good.
Other	• The internet. I have had you know, interesting diagnoses and I just – I like learning about things. I had a young client assigned to me who has gastroparesis and so I was looking up things and learning about complications with that and just – I don't know. Continuing to learn through conferences or the internet or from fellow staff. So, those things are helpful. • We advocate for our patients at many levels. Wherever it seems to be that there's a struggle for them, we may talk to their landlords. We may talk to their supervisors at work. We may talk to you know, the provider on their behalf. We may talk to their county case workers, their caddy case managers – that's kind of a county worker, as well. So we talk to a variety of different people and I think it's when the patient is struggling with something and can't quite get a resolve, we try to help

	them find a way to do it on their own. That's our first goal, is to empower them to get them to do things. But if they can't, we may try and make phone calls and talk to people for them. • And mental health providers. That's challenging, too, because we help – we help coordinate a lot of appointments. Not so much that we are the ones that are looking for housing, but we do refer to our social worker usually for housing issues and there's just a lack of housing and – and with the weather here and the lack of housing, winter gets to be pretty rough. So, the lack of housing and lack of psychiatry and or mental health counselors. Yeah. Those are huge. Yeah, and I would say also insurance copays at times can be really high for medications and – you know, it's tough. It's tough when you see a patient who is really struggling to make their co-payments on their medications. • So we're trying to follow those residents and make sure that they have successfully integrated into these communities and so we're going to be taking the [organization] into the communities where those residents have went, that have left that high-rise with the demolition of the high-rise, so that has opened up an avenue for us again to a number of communities to reach their needs as far as educating them on high blood pressure, cholesterol, diabetes, the importance of exercise into their routine and eating that way, so it has opened an opportunity for us to get into a number of other developments. • And so that has really been a really big step, a lot of our people, to see that that really happened and that we had a voice in that. And the other part of it has been the integration of – at the table, **getting those people's voices at the table**. So if we're doing outreach, you know, sitting in to say okay, this is what's happening, so the ground perspective. So the people who are making the decisions are not out there thinking that they've got it all together, but that when you get a person to the table, oftentimes what's written is not always what you know, you don't get the whole story in the written format normally and you get pieces and parts and it's good reporting but result when you get to the table and they have to expand upon that reporting, you find out things that really have to bring the – the work alive, so. • I mean, it's always good that if there were more money always to be able to provide for your patients, sometimes specific needs. For example, for me, patients who do not have money to buy any of the medications for the tobacco cessation, so they're stuck because there is nothing out there that I – no one out there that I can call and say can I get some patches or can I get Bupropion. So it's problematic in that sense. **So sometimes you find these roadblocks, they cannot – that don't allow you to do your job as good as you want.** The same with the social services. You know, with the economy, a lot of stuff has been cut down and shrunk, so sometimes you find that and

	unfortunately all you have to do is do your best and see how much you can get out there for them and explain to them that you've done the best you can and that that's all you can do. • I would totally say that – can I give this as kind of like a – you know, like, kind of zoom out and kind of explain like, community health. So from what I can see in [city] I've noticed patients and people in general have a difficult time understanding the healthcare system. You know, when I go in the neighborhoods, when I ride the buses with people, when I am at grocery and I'm waiting in line, that there's a lot of poverty, there's a lot of homelessness – all things that get in the way of peoples' health – substance use, you know, unfortunately it seems like housing is like a silent epidemic that's – I don't think a lot of people realize how bad it is. It's pretty bad, even though [city] probably like, one of the most supportive of like, housing from what I've heard out of the nation, it's still a pretty bad problem. What other factors? Just like a general – I would say there's definitely a lot of viewpoints out there. There's a lot of values out there. I know a lot of families I've come across are just in chronic poverty and they don't see a way to get out of it. You know, I have families that, they grew up in public housing and they want to have their grandkids grow up in public housing and you know, like you and I see it, we see it as a temporary option and you get on your feet and you pay apartment rent or get a house or whatever. The people I work with not always can do that because – I was actually watching a video on Upworthy today and it was a great example of poverty. You know, it's like you make a dime, and they take a dollar. You know, I mean, that's literally what it's like to live off of social security. And these are all factors that you know, contribute to peoples' health – **it's almost like a big circle, and it's like, okay, you have these environmental things growing up that basically predispose you to these chronic health conditions, unfortunately. They're not able to be prevented, so therefore you have a disability. You've got this disability and you are not able to work and so you get on social security disability income. Then, because you have all that stuff, you now have these appointments. Oh, but wait, you don't make like, basically any money. You are basically at the federal poverty line. So it's just this big circle. It's like, well, where does it stop, you know, which is why like, I like, try to stop it and I'm like, wait. Let's get you to work. Let's get you to college. Like, you – yeah, you have diabetes or yeah you have epilepsy or yeah you have a developmental disability, but that shouldn't stop you from, you know, earning a livable wage and having a family and having your own house and a white picket fence and a dog, if you want. Like, that shouldn't stop you from tha**t. So if I can, I try to push them. It's a very different – I mean, very – the way that a lot of people I work with – the way that they think is very different than the way that I grew up from like, someone that was like, middle class – it's very different working with like, low income, poverty – you know, and I get it. I totally empathize. I

	feel so bad, **but it's just this chronic cycle that won't end, I feel like, until we really as a society start to look at chronic diseases much more like – you know, like, really look at – look – like, look at it and try to prevent these things.** • I'm going to be totally honest with you. I think it's a couple things. One, and I don't know that it keeps us from doing our job well, but it sometimes impacts the way things occur. One is people feel like we're competitors and that's definitely the craziest thing in the world, and so therefore they're willing to – they're willing to diminish or minimize the work that we do so that they can feel better about themselves and their work, which is crazy, because we invite people to be a part of us and if they want to be – if they want to be the leader, they can be the leader. We don't care. You know, I mean, so that's that. I think that's a part about it. The other factor is that we don't have enough resources. We could use more resources, and we're working on it. • The important thing is getting the work out there, you know what I mean? And so we have really been conscientious about you know, getting the work done without – without getting stuck on my picture needs to be out front, because that's not – that's not what we're about. But it has helped us in terms of really getting people here involved, and we train –every year, we have – we'll talk about CHWs – every year we work with probably about anywhere from 15 to 20 new CHWs a year. You know, we bring them in, they can come in – yeah, we do – we do a lot. I'll take that number back, but we do a lot of community health workers or students who are becoming involved in the community, because that's important for us. • Well, my husband. He also works full time, but he – managing all of the care of our kids, and so if I have to work on a Saturday he takes care of my babies, and then also my babies. I – like I said, you know, I learned about public service and being the one receiving service because of my daughter and so because of my daughter, I wanted to make a difference because I wanted to like, live the change that you want to see, and so I wanted to have a world that is going to be good to my children. So, you know, so that's – that's one of the reasons I do what I do – and then the other is just kind of maintaining like, having a vehicle where I can go everywhere, having the friendships that I basically have to nurture and I'm able to nurture my friendships and relationships in the community because I get to be in the community, I get to be seen in the community through various projects and events that I do. So that really helps. • **I – yeah, I think – I think it's like, a full circle thing. You know, you work for the community, the community works for you, too.** • Outside the organization? Money. You know, the – there's still – we've kind of got that desire – oh, if only, you know, if I – if I worked in the private sector, I'd be making a lot more income so that I

	can have my kids go to private school or, you know, just kind of like that. It just becomes more – the bills become a little bit more and the budget becomes a little more tighter. So I think that kind of hinders sometimes what events I can participate in. So having to turn some things down, not being able to do it. Let's see. Things outside. Sometimes with some relationships, they're harder to manage because I have children. So I can't always go to certain – or be a part of certain like, boards or something like that, because I need to also have my family life. Sometimes because you're not the – you're not the – necessarily the ethnicity or the – part of the culture of a group that you're trying to help, it's harder to build that trust. So the best way I can explain that is that I work – I work for the LGBT community, too, and so I've actually experienced – because I'm – I'm not White and because I'm not gay, therefore I cannot be trusted as well – as much. So I've actually experienced that, so much so that I actually was voted off of a board because that trust was so bad –

Appendix H. Training Quotes

	Examples
I feel well trained to carry out my duties as a CHW	• Because with everything that's out there – to be training, for a community health worker – we get to know about it. I have to say again, that it has to go with someone's supervisors who look into that and let us be aware of it and depending on our field, **we always get properly trained**. So we are – you know, once it's out there for us, they'll let us know, see if we're available at that time and we're on it – they're on it for us to take those trainings, and that helps us when we need to know more, because – and I think that's great. • Within the organization? I believe that they believe that they are wonderful. We have a very small organization, so right now, we have six people and of those six, four are trained as community health workers and our executive director is one of our guest presenters at the community health worker training. **So you know, it's a very core function to what we do, being the approved training organization for our region.** • Well, it depends. Now, the mentoring group is going to assess that with the people at the so sometimes in – and personally, it happened to me – we know we can handle everything, but sometimes we need help with different clients. So the mentoring program, the goal is to go see a family or the ones that their supervisor and see what happened and what – and what is the – what is the training people will need. • **Because we were well trained and also we still continue to receive the training for a community health worker and then also just the experience on the job**. So I've been here a year, I've learned a lot over the year and three months. That's constantly keeping me trained and informed and I also keep myself abreast of certain things that are going on with community health workers, as well. • Yes. I received extensive training. **When I first started here, everything was normal paper charts and then they started rolling out the electronic medical record here at our practice and they had personnel come out and sit with us and show us how to use the process – use the EMR and then we had to go to the main hospital to sit through two classes**, I believe, depending on where you were in the office. So for me, I specifically received front desk training. So learning how to schedule, reschedule, cancel appointments, documenting in [medical records] and stuff like that. • They offering the training, that this was a pilot training, that this was something new that they were going to do and they were looking for participants in the training. It was a pilot training, so of course it had the bumps in the roads of anything that's just starting out. We had two big binders that we learned

	from and actually the concept was really good. We had some people that came out and was able to talk with us and speak with us about community health workers, what you do, cultural competency, mapping out your resources, talking with all doctors and medical terminology and stuff like that. So the training was actually good and it was six weeks – four weeks, I believe. Four weeks. But we had additional training afterwards. It was from nine to three. I think 120 hours was the requirement. We had to take two workshops, resume writing, how to dress for the interview. We met with [university] they have an impact project and they taught us how they collected data and what process they used as far as meeting with patients and the guidelines that they had. • I'm hoping that it does become a recognized professional with probably even a licensing with competency. The person that wrote our grant promised me she would get the [state] licensing credential stuff for me to take a look at, because I think as we move forward, we probably could tighten up on our competency requirements and our training. **Kind of down the road, it would be good to have some standards trainings put together.** • I would say a four, just because it's an ongoing process to learn resources, because even though I've worked in the community for a lot of years, my previous job was more as an administrator. So learning community case management resources – there's a different skill set. So I've had to pick some more of that up. • What we've talked as staff about needing further work in motivational interviewing, because motivating people is a skill that the better you are at it, the more likely you could help people actually taking action to make changes. • Sure. Well, the [organization] is getting training information together and then those will be things that we will all be using for educating our patients. So it would be on those tools. I think it's really important to learn kind of across everything, as far as psychosocial issues, mental health issues, medical issues. I think it's – you need to kind of have a pretty well-rounded education on those things. So I think just continuing education on those is great. • I'd say it varies. We have a Community Health Work Network that puts on different training sessions. I believe they do it five times a year, and then our organization does chronic disease training on an ongoing basis. • I went through **it strictly because I wanted some more education and I just felt that it would be beneficial to our patients**. • What would make me a better community health worker? I would say more education, more training. As a community health worker and that's the way that I'm going. I'd like to train other community health workers.

	• Communication skills, motivation interview, culture competency, there's a health issues training. We get it from different organizations. They will come to our organization and come and train us on different things. Yeah, we do a training every month. • We get training, ourselves, so we get training at least once a month, at the end of the month so that we can keep up with new information, so we do an eight hour training on the last Wednesday of each month. In our training, we learn how to – how to talk to a client, we learn information about heart diseases, high cholesterol, stroke, all different types of other illness – illness that a person may come across, and they give us information so that we can take this information to our members and show them the information that we have and to teach them how to take care of themselves, that'll also prevent these things to happen to them. We have pharmaceutical organizations, they come, as well as other healthcare organizations. • There was, actually. [University] – there was a six week intensive educational series of seminars – informative seminars, workshops. Six weeks to be fully trained as a community health worker. It was on campus. On site. One component was research ethics. Let's see. Research ethics was a large component of it. Psychological first aid was another component of it. History of course, and then a lot of interactive workshops in between all of those who took the training. The original training I believe had 12 students. There was a test. By completing our own projects. There was different topics that we all chose – randomly chose and then we were – throughout the course, we developed that in using the different components and modules that we learned about that day, and at the end there was a dissemination process where we were rated or – we weren't really tested, we were rated. Like, our – our presentations were rated. • I actually went to [name of community college] which has a community health worker training program. A lot of the things in community health worker class I already knew, so basically I was just there. And you know, because a drug and alcohol counselor, community health worker, a lot of times they go hand in hand, especially the population I work with. • **So I mean, I received training on – actually, to be honest with you, not a whole lot and I think that's been a part of my struggle in this transition is kind of – is sort of feeling like I was just thrown in and I think that a lot of trust was placed on the fact that I was going to be in the same environment that I had served in** and so I think that you know, my supervisors who hired me saw the benefit of that, of knowing that I was familiar with the staff and enmeshed well with the staff and could kind of create a strong connection and being aware of the environment and the patient population, you know, even certain patients who come in frequently and being able to work with those patients on a closer basis than I was as a volunteer, but in terms of getting patients to outside resources, , I haven't

	necessarily been given information on what sort of resources we can connect people with. **So that was something that I had trouble with, you know, at the beginning was – was feeling as if I was kind of just pushed in and – and I guess expected to learn it on the fly.** • Most of it was just through like traditional education, like my master program. But then I went through a formal training, I just got done with an eight week training through the [community health worker association] or health educators and I went to [city] for that. And I guess they do those kind of all around the United States and [state] has a chapter. So as of two weeks ago when I completed the training, I'm now an active member. It was every day. So for the first four weeks, it was an intensive training that I had to go to [city]. Because I have a small child at home, I just commuted every day and then the last four weeks of the training was like remote access, so online and with Skype and kind of did the training that way through webinars. [Modules] varied but because when I had this similar position, it wasn't the title of community health worker, it was more like social worker, social services or community social worker, community case manager. All kinds of different names. And previously, it was not working in the medical field so they had different like classes or trainings we could take. • I would say very well trained. And the – **it's been sort of scattered in a sense though because I've gotten training in different levels, you know, community based participatory research training, community organizing training, citizen's development training, health education training,** you know, I've gotten different pieces of that and sat in with the training for the community health workers through several other grants that occurred, so I've gotten that. **What I'm still missing though, and I would say this is very good training when you put it all together**, and again, I can make it happen that way, for people who are new in the area, I would say there's a gap there because again, you have to get funding to do these things. There's not anywhere that is a designated program, you know, that is skilled and institutionalized that gets that training into our young people or to our professionals early on in their career, particularly if you're talking about public health and health education, behavior sciences, those types of things in those areas, even public administration, you know, things that people and their needs in community making changes that is not institutionalized yet enough that I can see, it needs to be. • I'm also a master trainer through the [name] Institute. Yeah, that's been something that **I just think is really important, because if you provide adequate training for folks, then you facilitate both what they're able to do and what and how useful it is for the community**, and it takes a lot of the problems out of the things. It puts parameters on it.

	• I would just say probably, you know, time and working. I don't know. Because I'm pretty involved in all the way from the state and national policy level all the way through working individually with community members. Maybe stronger computer skills? • Because I'm a [program name] leader, I've been through the [organization] training for [organization] is our state. I'm an application assistor, I'm a CPR and first aid instructor, I'm – you know, so there's a lot of things like that. I've been through an extensive HIPAA training to make sure that we're doing **that. If a training comes up and it looks like it will be useful for our organization, we try to send somebody to training and conferences that are applicable**, and that moves around the organizational staff as to whose work would this help most. So, I mean, **we all have opportunities to continue building our skill base.** • We have requirements of supervisors among the staff of the organizations that are contracted with us around the hub and so this supervisor training, aside from just helping people know how to supervise community health workers, because they have to understand the work that they do as well as understand that it takes time and you know, different things like that – so they can be supportive of their staff – they have to have this supervisor training because there needs to be chart reviews and documentation and all that type of stuff. So this particular supervisor training meets both those requirements, and it's not just going to be [organization] staff that's there. It will also be people that will be in the supervisor position from other organizations as well. • We have a 90 hour curriculum that we licensed from the [name] County Health Department Community and it's based in popular education – that's how we deliver the curriculum. So it's very participatory and it covers a number of topics, popular education, community health worker, outreach, access to care, mental health, nutrition and exercise, service coordination, disease processes, public health, individual and community assessment – what else – social determinants of health, community organizing, addictions and recovery, communication, multidisciplinary teams, leadership, self-care, cross cultural work – so those types of things. • There's a certification now. That was part of the policy work that I was doing, was to create a certification, to clarify pathways for sustainable funding, for the work community health workers do. • Okay. That one, we did go through the basic CHR (community health representative) course and it's a three week – or at that time, it was a three week – and we kind of went through everything, all the different chronic diseases, all the different services that we provided, because we do have service codes and health codes that we do implement into our charting. So we go over all that, and then put it into the data entry coding system. You know, we have to learn how to code all that into our forms. So all those

	codes, we review over and also just at the time, me having the experience of being an EMT, you know, all the things I've learned helped me, as well. • I've been working with the community for many years, **so I feel that I have a good, deep, sound knowledge of how they feel, what they needs of the community are and I know my resources around, in order to help them. And I'm very a dedicated and empathetic and compassionate person.** • Yeah, they really go in depth about what a community health worker is and what it entitles and they give you – they teach you tools and they help you to better your skills to be a more efficient community health worker. • Yes, they're all [staff] included in there. Anybody that actually has to deal with the community, this helps us with how to deal with community people, how to actually talk to them, how to record information, and how to always have important resource to help our community in case, for example, they need food, some electricity bills they can't pay. Just how it's important to actually have this resource. • I got most of it from our nurse care coordinator, who's an RN as well as you know, by our practice manager and staff training along the way. It was pretty difficult to first adapt to, I want to say, because I never was in healthcare before that and I still struggle because there's a lot of medical terminology and stuff, what I try to do is simplify things and have it try to be in layman's terms. So if for example, if a patient ever wanted to get their record, they could easily understand what it was about. • **So I've done a lot of different trainings. I think it's honestly life experience [that] really prepared me for this role more than anything, and then once I got to the job, I really did so much research and so much digging into what is a community health worker, to make sure I'd be the best one ever**. As far as official training, I went through a four day long asthma, home visiting, community health worker training, which was through the Department of Public Health here. I've gone to several trainings, that's like held on a monthly basis with the [organization]. So it's like, varied from how to help somebody with smoking cessation to how do you build a relationship with a patient. What else? I've also done a bunch of trainings with somebody that used to run a community health worker program at [organization] that closed down, and that was, who is a community health worker and what do they do, all the basics, you know, navigation of healthcare system, mental health, things like that. • I would totally say that having had some issues myself has prepared me for this job, as well as being a patient within the healthcare system, having family and friends – seeing them go through the healthcare system, that have had more medical issues than I have and helping them – well, seeing them – things that – challenges that patients have within the healthcare system. I, myself, have had a lot of poor

	experiences with health insurance companies, so understanding that perspective as well, as well as understanding like, you know, the mental health side. I myself have had mental health issues and so being a patient that has had mental health issues and then working with patients that have mental health is, I just – you know, I can empathize with them and I understand, you know, I don't stereotype them at all. I've also worked with a lot of different cultures in my past, as well as religions, ethnicities and races, you know, as well as the LGBT community, you know, I'm a big activist, as well as a part of it. So you know, being around a lot of very different people all the time in my life, has I think totally prepared me for this job and just being open to you know, people are who they want to be and just accept them, you know? • **There's constant training, there's constant learning** – I mean, when I go to different communities, I'm learning and I think that I have to be hungry like that. I mean, that's what we ask for from our people. We want you to be hungry. We want you to learn. So to feel like I'm completely skilled, no, I'll never be that. • I definitely can always learn more, so I would say three because although I'm educated as far as health, I think that in dealing with the clients and the residents, sometimes we have to be able to meet their need outside of wellness, outside of just talking to them about high blood pressure and high cholesterol. Sometimes they come in and they're so overwhelmed with parenting and so just finding a way to meet their needs outside of what our scheduled session is for. So I was trying to educate myself more that way, making myself approachable and being able to not just talk at them but talk with them about changes that they need to implement into their life that will then benefit them and make them healthier all around. • **I've been doing this for two years and I have the energy and I've gone through some of the trainings but I don't know everything and there's so much room to still learn and I'm open to it.** But at the same time, I feel like I can contribute a lot just by having like, a raw perspective of what can work and what can't and what doesn't work for me, because I feel myself very part of the community. • I do appreciate the on the job experience. You know, learning from that versus like, a training, but I don't think that it's very conducive if you're doing on the job learning and you're doing it by yourself, and not having someone to bounce back or someone to mentor you through that, so **I think the mentorship is really missing. So I think if I had someone that I worked with – even if it was a peer, it would help me be a little more successful, and of course it would be ideal if it was a supervisor that was a little bit more available.** • On the job, really, and I laugh because it's like, that's kind of how every job I've ever had works and so the trainings that are available are more like, when they become available due to grants or due to

	whatever projects are running within the college, outside of the college, like, in the community or within partnerships. So I'm kind of part of the prevention world through the region and so they provide some trainings, and I'm also part of a coalition that does tobacco prevention and also another coalition that does substance abuse and alcohol, and so they provide some – some trainings – and then it's really supposed to be more of a complimentary training. So like, you're supposed to be versed in just what prevention is and so you kind of do it on your own, you know, you read the articles, you read best practices that are provided through the state.
I feel well trained to carry out my duties in helping patients or clients who have **high blood pressure**	• Secondly, and a real big part of it goes back to the healthcare managers is talking and doing health education. So we – at the end of a doctor's visit, the patient comes and sits with the healthcare manager and we go over you know, different ways on diet and exercise and really – you know, all those different aspects of what they can do to help control their blood pressure and we use a main technique of like, motivational interviewing, you know, what do you think is causing your high blood pressure versus your salt intake – you need to stop taking so much salt. You know, it's really trying to get them to come up with the answers on their own and maybe if they don't, you know, suggesting things, but **I've done quite a few different conferences and trainings on – on techniques to make that work better as well.** • A little bit, yeah. So there was some training at this fitness class on – with the fitness instructors on the – I guess **knowing what constitutes high blood pressure and pre-hypertension and that sort of stuff and being able to address numbers and know what different numbers mean** and you know, ways to address that • I have no actual certification as a nurse or a CNA. I work with our clinical director here who has trained me on taking blood pressures and other vitals and the labs that we do in house as well. • I: Great. Great. And you mentioned that there is continual training that happens in your organization. P: Continual. Right. It's ongoing all the time. Like I said, you know, I wouldn't say once every three months or something like that, but we're always looking – if there's an opportunity to learn, we're there. • Diabetes, how to reconcile medications, charting – so my case notes – and what else did we learn? Because it was – it's a clinical topics for community health workers, so it gives them a more in depth look at the type of things that they will be facing when they meet with patients – and the other one is communication and nutrition. **So we had the hypertension – so in hypertension, we also learned how to use the blood pressure machine.** • Our clinic actually taught us on the blood pressure machine. Through the American Heart Association – I mean, **so we're always going through trainings**, we're always out there, practicing, being supervised,

	you know, as we go through that step. We're always getting information – new information about – about changes in blood pressure. • We also have presenters to our on the job – continuing on the job training, so we may have someone that speaks about hypertension and what it is and how can we help combating that. But it all depends on how comfortable the organization that you are with feels with you speaking about. • I think I could use more for that. I know how to take a high blood pressure. I know what medications there – I know some medications that is needed for high blood pressure, because I suffer from high blood pressure myself. So – I can always use more information on that. • They [the trainings] varied but because when I was – when I had this similar position, it wasn't the title of community health worker, it was more like social worker, social services or community social worker, community case manager. All kinds of different names, but previously, I was not working in the medical field so they had different – different like classes or trainings we could take. And so one of the ones that I chose was like medical language because that was something new to me, because I speak Spanish, I took it both in English and in Spanish. Things again, it was – I was unfamiliar with a lot of terms. **So for like the first week, it was like very in-depth learning of medical terminology and then how to kind of network with other people who work with similar individuals or the similar population that I work with, so that we could find out what – like I could find out what terms they use because it's not like I can go into a lot of my patients' houses and say, you know, talk about hypertension.** They're going to look at me with a very blank stare, what's hypertension? But I mean, they know it better as like blood pressure. So even something as simple as that. So that was the biggest thing for them and then I did a lot the first two weeks learning medical language like terms that they use and then what's the other one? Like medical pharmacology, stuff that some more like the psychiatric. Cultural barriers, more like a sensitivity training, cultural stuff. • Well, we were taught how to do that, but we've chosen with the program to actually bring in the clinic, because they can better help them and you know, outsource them to their doctors or clinics and supply them with things like that. So as of yet, within my year of working with this company and with the program, I haven't had to do hands on in that area, because of our partnership with the [clinic name]. But they did educate and train us on that. • Yes [motivational interviewing was] something we learned from [program] in the years. We did a couple of different kinds. So basically don't quote me on who or when, but yeah, there's different types. We've done a couple of them – trainings – to help us be reassured about how to talk to clients and sort of telling them – it's more like letting them – to meet, it's giving questions so they can go ahead and talk to you and be able to express their illness in a better – without offending them in any way. Different

	things, different techniques. So it's helped us in a lot of ways. It helps me in a lot of ways, to be able to think on their health and not the health – to help – talk with them, let them talk and let them debrief themselves in reference to what they have. So things like that, basically. • Yeah, I mean, we're working a lot with the nurses, that the nurses themselves are working with our clinic. Our clinic actually taught us on the blood pressure machines. Through the American Heart Association, so we're always going through trainings, we're always out there, you know, practicing, being supervised, as we go through that step. We're always getting information – new information about – about changes in blood pressure. We actually put machines into barber shops. This is different than the kiosk. These are little small individual machines that the barbers can utilize or the clients can utilize to test their blood pressure for themselves. So we trained the barbers. • I think we had an on the job – we had a couple sessions. We had an on the job session about it and that was about two hours and then, in the training, I think it came along with the medical terminology piece and that was two days. We learned about the diastolic and systolic pressure and what does it mean. **We learned what they mean and what a normal range is, what a high range is, what medicines are used, stuff like that. It's like a general overview, nothing extensive.** • And I think we could benefit from probably some – for the instructions from like, a dietician. What we've talked as staff about **needing further work in motivational interviewing, because motivating people is a skill that the better you are at it, the more likely you could help people actually taking action to make changes.** • We talk about – we get training, ourselves, so we get training at least once a month, at the end of the month so that we can keep up with new information, **so we do an eight hour training on the last Wednesday of each month.** So in our training, we learn how to – how to talk to a client, we learn information about heart diseases, high cholesterol, stroke, all different types of other illness that a person may come across, and they give us information so that we can take this information to our members and show them the information that we have and to teach them how to take care of themselves, that'll also prevent these things to happen to them. **We have pharmaceutical organizations, they come, as well as other healthcare organizations.** • Well, **the training was very formal.** Basically, talking about the African American – the urban community and their health and so we talked about a lot of health issues, diabetes, high blood pressure, high cholesterol, we talked about the borderlines, we talked about it being like, just family genetics or it's picked up. We talked about the risk factors. They educated me on how to properly – properly take those tests, you know, where you stick the finger and do those things. We talked about ways to actually educate the community on the risk factors, how to avoid getting these diseases, because they can be

	prevented and so the education was basically on the information that will be taught in the program. It was six weeks and it was twice a week. It was three others, but I'm the only one who I guess had completed the program. The other two decided that they didn't want to be a part of it. We did have a test, and I was basically tested over the information. • Okay. I guess probably just having the skills that I do have. That's you know, me coming from an EMS background, you know, knowing that I'm competent in blood pressures, blood sugars and even just the language and knowing my culture, you know, and the community, I think that has helped me. • **I would say the education I've learned just from being in the appointments with the patients**, I actually want to say has been like, probably one of the biggest li things that I've learned is I've literally been able to sit with a patient like, side by side and learn with them about blood pressure and about other health conditions. • Yeah, I've done a few conference calls [about motivational interviewing]. Here in our office, we also did a lot of work with the outreach and enrollment, getting people signed up for the Affordable Care Act and there were a lot of trainings that went along with that about motivational interviewing in reference to those things, so it was about like, taking my knowledge of hypertension and you know, all that stuff and putting it into practice for the patients. • Well, as I mentioned, they gave us to teach how a person needs to measure their blood pressure and if they don't us to do it, our clients can have the training to do it by themselves. • Well, even though I have the knowledge, the way that – through the self-managed tools present the information, it's really – I learned that, so what – you cannot explain that – it's more the way to learn how important is the client, how important is the position, but also the skills they need. So maybe we know we went to the right – the blood pressure sometimes is higher than the normal, but also that we need to work with the provider to see what is the problem for every person. So it's not one thing to all, it's mostly what is the goal that the provider wants to achieve with that particular client, know what I mean? • Self-management, but the very first is CHW training. That is the [organization] so the [organization] along with the [organization], that is the [organization] published – there is one of months and a half of training and then we have the – we learn about diabetes, hypertension and asthma and working in self-management of that and also the self-management and we have conflict resolution, motivational interviewing. • I would say more extensive talk about it or discussion about it, since it's more prevalent. **I know some community health workers deal with it more than others, but as far as a whole, we could probably be more educated about it and more prepared to deal with it.**

	• I'm knowledgeable of high blood pressure but since it's not my primary focus, that's where it becomes a little grey for me because my primary focus are those that really utilize the ER frequently. Blood pressure does pop up and does become a problem but it's not my main focus. • Well, every patient is so different and I think that the knowledge that we have or the direction that we get with working with a patient really comes from the primary care provider. And the patient. So we don't make any decisions for the patient, but rather help them with goals and with, you know, just helping them stay focused on what they have decided with the primary care physician. • There's a clinical topics six week course that I took after I got certified to be a community health worker and I did that with [name of program director]. • And so one of the ones that I chose was medical language because that was something new to me, because I speak Spanish, I took it both in English and in Spanish. Things again, I was unfamiliar with a lot of terms. So for like the first week, it was like very in-depth learning of medical terminology and then how to kind of network with other people who work with similar individuals or the similar population that I work with, so that we could find out what – like I could find out what terms they use because it's not like I can go into a lot of my patients' houses and say, you know, talk about hypertension. They're going to look at me with a very blank stare, what's hypertension? But I mean, they know it better as like blood pressure. So even something as simple as that. So that was the biggest thing for them and then I did a lot the first two weeks learning medical language like terms that they use and then what's the other one? Like medical pharmacology, stuff that some more like the psychiatric. Cultural barriers, more like a sensitivity training, cultural stuff. • Maybe just like a better understanding of the patients we deal with are complex patients, so they have multiple diagnoses. So when it comes to their psychiatrics diagnoses, I'm on it. I know everything about it, I know how each, you know, one interacts with the other and how it affects it. But when it comes to how their psychiatric illnesses may affect their like physical illnesses, I kind of get lost unless it's something that I've already been trained on.
I feel well trained to carry out my duties in helping patients or clients with high blood pressure medicine	• I haven't – in the sense of like, which medications can be used to treat high blood pressure, I haven't received any training on that, per se. But just through work – you know, volunteering in a hospital and being around nurses and doctors and kind of being educated through my environment, you know, I've learned a good bit – fair amount on controlling high blood pressure, but there was never – you know, I didn't take a class or anything like that through my organization to learn what hypertension is and how to control that and different medications, anything like that. • How to reconcile medications, charting – so my case notes – and what else did we learn? Because it was – it's a clinical topics for community health workers, so it gives them a more in depth look at the

	type of things that they will be facing when they meet with patients – and the other one is communication and nutrition. • Because at [name] program called [program name] and they were looking for a couple of people that they could send to community college for – to become a community health worker and they paid for eight months for us to go and I just started working. And that was in 2011, when I went to school. And after that, I started working for one of the major insurance companies in [city] called [name of insurance company] and what I do is I go out into the community, I work with clients that haven't been into care – haven't been in healthcare within the last three to six months. If it's been three months or more, actually, we go and reach out to them and see what's causing them to not go to the doctor, what's causing them not to take their medication. And it's a lot of barriers so barriers like homelessness, transportation, it – it could be food, drugs – mainly drugs, you know, so we work with them as far as resources to help them get – overcome their barriers so that they can go to the doctors and take their medication.

Appendix I. Additional Quotes

- *"It's a barrier for my inter-professional team and not for the community, I'm like – for instance, I'm Hispanic, I'm heavily tattooed. Most of the time, I cover them up, like when I go to clinical meetings every week but I'm covered up– I clean up well. But providers that know me know my – my work ethic, you know, know what I'm capable of and they look beyond my exterior. It's more of like the clinical team that has an issue with how I look versus the – the patients I work with. If anything, because of the way I look, they're very welcoming and opening and honest with what they say. For example like yesterday, I got a new patient that I just met and they had disclosed to me things that when they went and did the medical assessment on them, like when the nurse and the nurse practitioner went to their home and did it, they didn't ever disclose, they weren't planning on, and within like probably about 5, 10 minutes with me sitting in their living room, they kind of laid it all out on the table. But because it has its pros and cons, so because of the way I do look, I feel that I – I built a very immediate rapport that's necessarily to do it. So within the first five minutes, if that person doesn't trust you, they're going to have faith in you that you're going to be able to help them with anything, they're not going to talk to you. They're going to tell you what you want to hear. Because like with our patients, a lot of them are frequent fliers they call them and they've been to the clinic several times, they've been to the emergency room several times. They know doctors by name, they know the residents by name. They know what they want to hear, like what we want to hear as medical professionals or what they want to hear. And I think with me, they're better able to be more genuine."*
- *"So I'd say, you know, one thing is – or one thing that I advocate for patients is simply just through like, attitude or behavior and kind of trying to change the culture of the rest of the emergency department staff. I really just think you know, a lot of the staff are just overworked and maybe not receive the recognition that they need to feel their job – they're doing a great job, that there job is worthwhile and I think that, you know, I want to hope to be a part of that change, because I do see how it affects patient care and how it affects the attitudes towards our hospital. So you know, if I see a patient being mistreated, you know, I'll often try to A, you know, I guess talk to that staff member who may have mistreated that patient, but also try to show that patient that that's not how all of the staff members treat patients and you know, that's definitely one way of doing that and also just I guess being persistent and not giving up on a patient in a sense that. Just last week, I was trying to help a patient who suffers from recurrent seizures and she is on medication – on seizure medication but continues to have these seizures and was kind of getting the go around from her neurologist in terms of getting an in-patient observation and so I just kind of taking how – however much time I needed to get that set up for her and just kind of showing patients that I do care about the follow up care that they get and how important it is that they can obtain that follow up care so that – I mean, no one wants or deserves to, bounce from emergency department to emergency department trying to get the care that they need and maybe it's just a simple education thing, helping them to understand the importance of keeping their primary care appointments and of taking you know, their daily medications and – so just taking whatever time I need with each patient to understand – make sure that they understand the care that they're receiving and the care that they need."*

- *"I'll tell you this other thing, since you're into public health I went back to school because I was so frustrated with all this information that's available, why aren't people getting better? I got back into the School of Public Health, I got even more frustrated because some of the issues have been already researched and we've had the answers for over a hundred years and people still don't get it, you know what I'm saying? So obviously there's a disconnect and so you have to figure out what the heck do we do to create a connection and so for me, it was that – for my role, and this is what I call staying in my lane, what I discovered was that* ***if we can get people to acknowledge the fact that there is an issue, but also to get people to understand that they have a role in solving the issue and that they have a support that they need to provide information to get the issue resolved, then you'll start to see movement, and so that's what we've done****. That's all we've done is to say look, I'm not your competitor. I always tell people, I'm not your competitor because we're never going to run out of sick people. So you don't have to look at me as an enemy. So part of our strategy was to change the way that we presented medicine and we presented outreach, so that people could understand that there is a holistic approach to this and that other people wouldn't feel threatened or feel like they had to compete with us, and actually, one of the reasons why we also make sure that we are going to a community and we ask people from the medical community in that area to work with. So I don't want you to be threatened by me. I just want you to understand we need to get this stuff done."*
- *"I really believe as a community health worker, we're a bridge, okay, to connecting providers with the clients, to have a better understanding****. I believe that we're also a bridge within the clinic to draw people to the clinic. I believe that we make a big difference in people's lives but as well for the clinic itself****."*
- *"Well, it's why we take a lot of data and information is so that they can see and they can decide whether they want to enter into the conversation. You know, they send people – they're there at the top and they're going to be at the top, you know what I mean, so no matter what you say to them, they're going to do what they're going to do, but there are a lot of other people that really do want to make a difference. I mean, the organizations you know – I use it as an example. We have a zip code in [city], okay? I call it [zipcode] because it's always an emergency over there, okay? You know, it's a dumping ground. It's where people are at the highest rates of everything. They have spent hundreds of millions of dollars on health services in that area in the last 30, 40 years and people are sicker now than they've ever been. That, to me, is crazy. Especially when you take a look at [state]. According to the Health Index Rate, it's one of the healthiest states in the nation, except for people of color. I'm like, that's crazy. You know what I'm saying? And so it's frustrating for me to understand why we have such huge disparities, but I think it's because there's not a real commitment for people to get people well and that sounds pretty harsh, but I'm figuring like, you don't know the community you're not going to be making decisions that's going to make that community better, you know what I'm saying? Because it doesn't affect you. You have to find those treasures in the community and those are people that are doing the work and you have to figure out ways to support them as they do the work until you can change and shift the paradigm."*
- *"I would totally say that – can I know kind of zoom out and kind of explain like, community health. So from what I can see in [city] I've noticed patients and people in general have a difficult time understanding the healthcare system. You know, when I go in the neighborhoods, when I ride the buses with people, when I am at grocery and I'm waiting in line, that there's a lot of poverty, there's a lot of homelessness – all things that get in the way of peoples' health. And these are all factors that you know, contribute to peoples' health –*

it's almost like a big circle, and it's like, okay, you have these environmental things growing up that basically predispose you to these chronic health conditions, unfortunately. They're not able to be prevented, so therefore you have a disability. You've got this disability and you are not able to work and so you get on social security disability income. Then, because you have all that stuff, you now have these appointments. Oh, but wait, you don't make like, basically any money. You are basically at the federal poverty line. So it's just this big circle. It's like, well, where does it stop, you know, which is why like, I like, try to stop it and I'm like, wait. Let's get you to work. Let's get you to college. Like, you – yeah, you have diabetes or yeah you have epilepsy or yeah you have a developmental disability, but that shouldn't stop you from, you know, earning a livable wage and having a family and having your own house and a white picket fence and a dog, if you want. Like, that shouldn't stop you from tha*t. So if I can, I try to push them. It's a very different – I mean, very – the way that a lot of people I work with – the way that they think is very different than the way that I grew up from like, someone that was like, middle class – it's very different working with like, low income, poverty – you know, and I get it. I totally empathize. I feel so bad, **but it's just this chronic cycle that won't end, I feel like, until we really as a society start to look at chronic diseases much more like – you know, like, really look at – look – like, look at it and try to prevent these things."***

- *"They leave us alone. I mean, I would rather have people not bother us. I mean, here's the deal – here's what I'm saying to you: I'm collecting data. I'm working with organizations – in fact, one organization gave us a quarter of a million dollars because of the work that we didn't get a dime of it. Okay. So people – we are recognized but that doesn't mean that our organization knows what to do with us. Interestingly enough, we've done that. We brought in researchers that knew their stuff. Now, they – but sometimes people get stuck in their world and – so what we've done is we just work around them. One of the things I tell – so, you know, in my department, we're ignored. So here's what I tell people. The reasons why we have been successful is because we've been allowed to develop in isolation, okay? They don't bother us. You know, we will still present information – and you're going to see this. I have talked to the other side and befriended the other side and it's looked down upon from the side I'm supposed to be in and so I think it's just part of what's become the culture in – in my job."*
- *"This is how strong the paradigm is – and again, everything I'm telling you I can document, okay? So again, but I'm not being critical, I'm just talking about what some of the challenge is in terms of doing this work, as a community health worker. People will not understand you because you're talking about public health. I went to school with public health people who didn't really understand what public health was, and that's sad but that's true and it's not – I'm not mad about it, I'm just saying it just makes me work harder to really show the connection between this and really how our world is – how the world can be better. You know, and I think that public health, for me – like I said, I've already drank the Kool-Aid, but public health is really one of the places where I think that we need to do a much better job of telling people what it is and then giving people an opportunity to enter into the conversation. There's been so much research that's been done, but it hasn't been translated."*