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Community Health Workers in the Emergency Department—Can they Help with Chronic Hypertension Care

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Abstract

Purpose of Review To review community health worker (CHW) interventions tailored for hypertension management and to determine if the emergency department (ED) population would benefit from such interventions.

Recent Findings When working with patients who have one or more chronic diseases, CHW interventions have been very successful in improving health outcomes and are cost-effective. CHWs use a variety of techniques to address social determinants that patients may face that effect how they manage their chronic disease(s). Current CHW interventions in the ED have targeted the "super-user" population.

Summary CHW-based interventions help address social determinants of patients in a variety of settings, especially in the ED where the physicians have limited resources and time. There is limited information about how CHWs can improve community health outcomes outside of the ED "super-user" population. Future research needs to determine if creating a data-driven CHW intervention for the ED would be effective.

Keywords Emergency medicine · Community health workers · Hypertension · Chronic disease

Introduction

With recent guideline changes, it is estimated that over 100 million Americans have a blood pressure (BP) that exceeds the diagnostic threshold of 130/80 mmHg [1]. This will not only drive up the prevalence of diagnosed hypertension (HTN), which, according to the National Health and Nutrition Examination Survey, was 29.0% among adults in 2015–2016, but also impact the proportion of patients with uncontrolled BP—a figure that stubbornly remains at greater than 50% [2].

With such a high number of uncontrolled hypertensives, healthcare providers need to ask what else they can do. Adding more to an already demanding occupation is inefficient and may no longer be the answer. The uptake in the utilization of community health workers (CHWs) in healthcare settings has been shown to be effective, especially when helping patients navigate the healthcare system [3–12]. Increasingly, CHWs are being placed in emergency departments (EDs) to facilitate linkage to care for follow-up related to their presenting complaint. However, to date, there has been limited exploration of CHWs serving as a means to facilitate entry into the healthcare system for chronic conditions such as HTN. Can such an approach work?

Burden of Emergency Departments

While the ED has historically been viewed as a place utilized mostly for emergent, life-threatening conditions, the climate is ever-changing, and emergency physicians often find themselves in the role of managing chronic medical conditions. This results in ED re-visits and overutilization, along with provider dissatisfaction with regard to expectations for conditions that are not seen as falling within their purview. Challenges with primary care physician (PCP) accessibility perpetuate this evolving role of emergency physicians in healthcare.

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A prevailing issue is that emergency physicians are not trained in managing chronic medical conditions nor do they have the time on a given shift to dedicate to the intricacies of nuanced care. As part of their training, they are expected to stabilize the patient and refer them for outpatient follow-up with a healthcare provider more versed in chronic disease management (i.e., primary care physician, nurse practitioner, or community pharmacist). However, if a patient does not know how to navigate the healthcare system themselves, they may end up back in the ED with a chronic condition-related concern or complication [13].

To alleviate the burden on emergency physicians, some hospitals have implemented a multidisciplinary approach to help ED patients navigate the healthcare system. The objective of these programs is to address social determinants that may prevent patients from obtaining appropriate follow-up care, lowering healthcare costs in the process. Embedding CHWs into healthcare settings is a solution that is not only helpful for the patients but also for physicians.

Why CHWs?

The American Public Health Association defines a CHW as "a frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served" [14]. Also known as lay health workers, community outreach workers, patient navigators, and care coordinators, CHWs have a unique ability to build a strong rapport with patients. In conjunction with the care received by healthcare providers and nurses, CHWs' role can change to fit the patients' needs. This makes them an integral part of a healthcare system whose mission is to provide patient-centric care.

Historically, CHWs have been program specific and positioned in outpatient settings. They have been placed in health department clinics, primary care offices, and community-based organizations. Common characteristics of CHWs include, but are not limited to, past experience working with minorities, identifies as a peer of those they are working with and resides in the community, and have similar demographics (i.e., age, race/ethnicity, gender, socioeconomic status) of the population they are serving [15••]. Additionally, CHWs have been trained to do a variety of different activities (i.e., data entry, outreach, and provide social support). (For further description of the CHW workforce, refer to the systematic review completed by Kim et al. [15••].)

Do patients want to work with CHWs? Community input is invaluable when determining what interventions are needed to improve health outcomes. Using community-based participatory research techniques as part of local unpublished work, community advisory board members and focus group participants have expressed interest in working with a "mediator"—someone that would provide support and communicate their needs with their physician. With healthcare system and public insurance coverage changes, patients have suffered needlessly if they are unsure how to proceed. Critical actions such as getting follow-up appointments or filling prescriptions may be hindered affecting outcomes. Finding a provider that is accessible and that one is satisfied with can also be difficult. CHWs can assist with care coordination and education has the some of these struggles.

Chronic Disease Management and CHWs

There has been success with utilizing CHWs specifically for chronic disease management. CHW chronic disease management interventions primarily have focused on cancer, diabetes, and cardiovascular disease [15••]. These interventions have taken place in participant homes, community-based agencies, healthcare clinics, faith-based organizations, and over the phone [15••]. Past CHW interventions have included individual or group counseling sessions, goal setting, home visits, and educational classes [15••].

In the National Institutes of Health (NIH)-funded Community Outreach and Cardiovascular Health (COACH) Trial, patients from a federally qualified health center (FQHC) were randomized to either enhanced usual care or a comprehensive cardiovascular disease risk reduction program where a nurse practitioner/CHW used behavioral interventions to improve health outcomes. After one year, the intervention patients showed a significant improvement in total cholesterol, low-density lipoprotein cholesterol, triglycerides, BP, and glycated hemoglobin [16]. This trial also showed that nurse practitioner/CHW interventions improved patients' perceptions of the management of their chronic condition with the use of individualized treatment plans [16].

The Colorado Heart Healthy Solutions (CHHS) Program demonstrated how the combination of technology and CHW involvement can also improve health outcomes. Using an electronic screening and referral system, CHHS CHWs were able to input healthcare screening results, medical history, demographics, and other risk factor values [17]. The software would take these data and calculate a risk score, health messages tailored to the participant, and direct the CHW to what referrals were needed [17]. CHHS showed that among the participants, there was specific improvement in coronary heart disease risk [17].

Using Individualized Management for Patient-Centered Targets (IMPaCT), patients with multiple chronic diseases have benefited from CHW intervention in Pennsylvania. All participants set a health goal and those working with CHWs received additional resources to reach that goal [18•, 19•]. Two NIH-funded randomized clinical trials determined that low-income patients with two or more chronic disease receiving CHW interventions using IMPaCT had reported higher quality of care and had lower number of hospitalizations [18•, 19•]. The first trial enrolled patients from two internal

medicine clinics who already had their HTN under control. There were improvements in other chronic disease control and mental health [18•]. The second trial enrolled patients with at least one uncontrolled chronic disease at a PCP, FQHC, and family medicine practice. The control and intervention groups both saw improvements in chronic disease control; however, the intervention group reported higher quality of care regarding comprehensiveness and support for self-management [19•].

CHWs in the ED

Historically, CHW interventions in the ED have targeted the "super-user" population [3, 7]. Understanding that "super-users" are a financial burden, identifying effective interventions is important. Through the CHW interventions, "super-users" had improved health outcomes as community resources were made available. For example, providing housing services to an individual that identifies as being homeless may decrease their ED utilization. Addressing "upstream" factors such as housing and transportation can positively influence behaviors related to healthcare use.

In addition to addressing social determinants, CHWs have been implemented in EDs to offer healthcare screenings and education. Urban ED CHWs have performed point-of-care tests (i.e. HbA1C and HIV) and have provided health education related to these screenings. Additionally, they have offered care coordination for a vast number of health conditions to a variety of medical services.

A State of Michigan Department of Health and Human Services (MDHHS)-funded ED-based rapid HIV testing program has been successfully linking HIV-infected individuals to medical care for the past 12 years. CHWs provide testing and counseling services, which includes linkage to care activities for HIV-infected individuals. During the 2013 fiscal year, the CHWs linked newly positive individuals to care at a higher rate than the national average (82.0% vs. 72.6%, respectively [20].

Expanding the CHW Reach in the ED

Hypertension is a condition ripe for a CHW-based intervention in the ED. In the city of Detroit, residents are disproportionately affected by cardiovascular disease. Among the Detroit population, 44.9% have been told they have high BP [21]. Furthermore, the city of Detroit continuously has higher rates of sequelae of HTN than the rest of the State of Michigan [21, 22]. When examining some of the social determinants of this population, Detroit residents are less likely to have a PCP and insurance compared to the national averages [21, 22]. Additionally, BP screenings held at Detroit farmers markets, part of an academic-community outreach program, showed that 84.9% ($n = 139$) of individuals currently taking anti-HTN treatment had an average measurement of greater than or equal to 130/80 mmHg.

During an ED visit, the emergency physician obtains a social history, but they do not have the resources to address social needs of their patients. Data from our on-going, Prospective HTN Registry has shown that adherence for our urban ED population was associated with not taking medication correctly rather than refiling prescriptions, according to the Adherence to Refills and Medications Scale (ARMS-14) Survey (Table 1) [23, 24]. If more education was provided at the bedside about medication adherence or chronic diseases, there could be more patients with controlled HTN. CHWs are ideal to provide this, along with other relevant services. At the bedside, CHWs can complete a needs assessment to determine any barriers the patient may face, whether it be scheduling appointments, working with the insurance companies to find an accessible PCP, or health education. A previous study showed that among low-acuity ED patients those receiving immediate PCP care coordination were more likely to attend at least one PCP follow-up visit compared patients that did not receive the intervention [25].

In partnership with Wayne State University, the MDHHS is currently embarking on an ED-based CHW intervention project called "Bring it Down" (Fig. 1). Focused on utilized of electronic health record prompts, CHWs will be alerted when an ED patient's systolic BP is greater than or equal to 130 mmHg and will engage the patient regarding their healthcare needs. Working closely with the surrounding primary care community, and involving other components of the healthcare profession including pharmacists, the CHW will perform linkage to care activities within the context of an individual's psychosocial and socioeconomic circumstances. In doing so, Bring it Down will evaluate the benefits of a comprehensive, multidimensional effort to improve BP control while enabling the ED to truly serve as a population health center.

Advocating for Need of CHWs

With the preconceived notion that EDs are for urgent and emergent issues, sustainability for public/population health initiatives can be difficult. Emergency physicians have adapted to the changes of the ED environment with the realization that public health programs in this setting can improve patient health outcomes. Both the American College of Emergency Physicians and the Society for Academic Emergency Medicine have shown interest in and support social emergency medicine, "an exploration of the relationship between social forces and the emergency care system, and how together these two influence the lives of our patients and their communities" [26]. Provider support and acknowledgement of the need for ED-based public health initiatives is only one advocacy component but is critical in successful implementation.

Table 1 ED-based HTN Registry Responses to Adherence to Refills and Medications Scale (ARMS-14) Survey, September 2016 to February 2018 [23, 24]

	Controlled ($n = 69$)		Uncontrolled ($n = 226$)		All ($n = 295$)		Wilcoxon rank sum
	Avg score	St dev	Avg score	St dev	Avg score	St dev	p value
Total: for full survey	21.52	5.73	22.81	5.79	22.51	5.80	0.1083
Factor I questions: adherence to taking medication correctly	11.71	3.65	12.84	3.99	12.58	3.71	0.0141
Factor II questions: adherence to refilling medication	6.94	1.57	7.15	1.56	7.11	1.56	0.5460

ARMS-14 is a 14 question survey where 12 questions are split into two categories, factors I and II

Funding for CHW interventions primarily have come from grants and internal healthcare system funds [15••]. Understanding the cost-effectiveness of CHWs in a non-traditional setting, such as the ED, is crucial in creating public policies supporting reimbursement and/or obtaining support from the healthcare systems themselves. Among the ED "super users" working with CHWs, the care coordination intervention demonstrated a decrease in costs per patient for the ED and in-patient [7]. In non-ED settings, CHW interventions showed decreases in future ED utilization [4–6, 8, 9, 11, 18•, 19•]. A cost-benefit analysis found that CHW programs can be feasible and cost-neutrality could be achieved with uncontrolled hypertensives if they adverted 3% of ED visits per year [27].

Some states are a bit more advanced in their uptake of CHWs and Medicaid reimbursement, such as Minnesota who has legislation regarding coverage of CHW services [28]. Others, such as Michigan, are still advocating for the coverage of CHW services. With already-established CPT codes that could be assigned to the CHW activities, reimbursement is possible when allowed. However, sustainability can

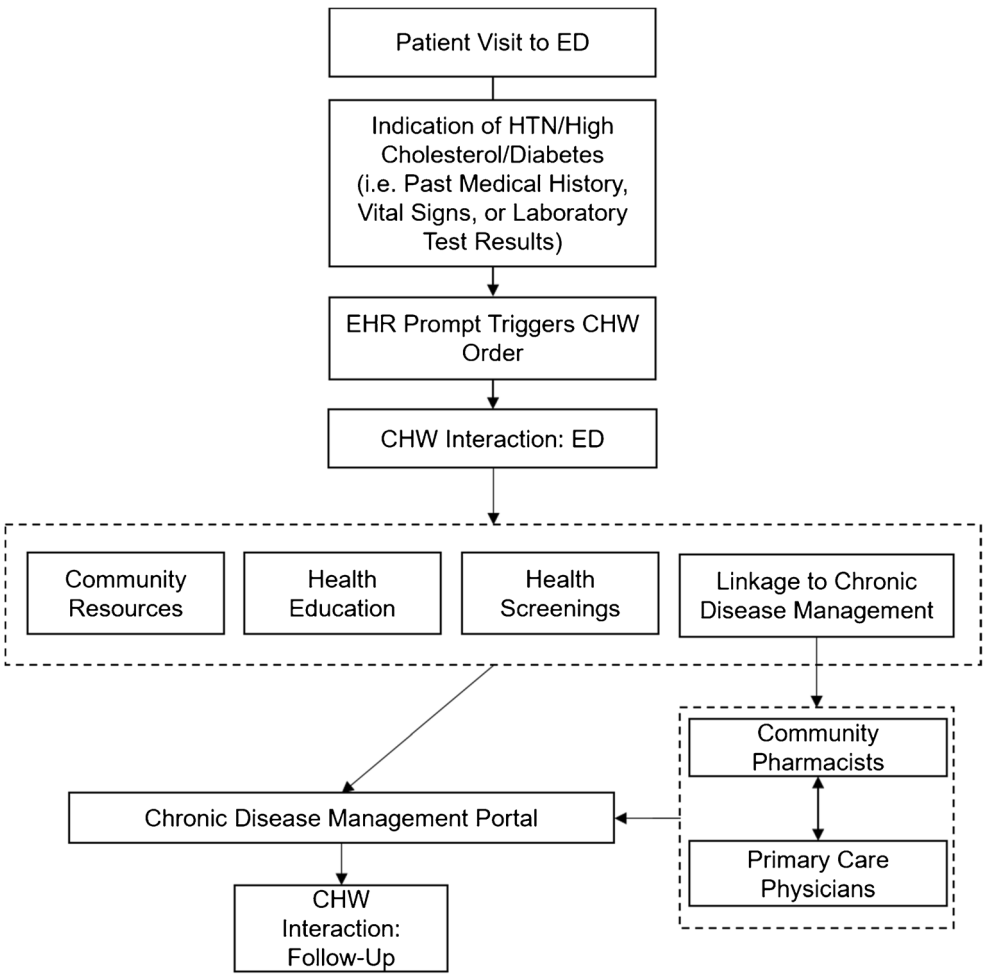

Fig. 1 Bring It Down ED-initiated chronic disease management

only be achieved when the margin exceeds the mission, highlighting the need for greater advocacy of billing codes for ED-based CHW activity at the policy level.

Conclusions

With little doubt, CHWs can help leverage EDs as an entry point into the healthcare system. Social determinants play a crucial role in chronic disease management and emergency physicians recognize that. However, emergency physicians do not have specific training nor the time to determine social needs and most do not know what resources are out in the community to fill in the gaps. Having a CHW service embedded in the ED workflow can allow for patient-centric care to improve overall health outcomes and elevate some of the emergency physicians' responsibility in ensuring proper follow-up. To achieve this, we need to expand the focus of CHW's beyond the "super-user" population. Targeting ED patients based on population health level data is the next step in understanding how CHW interventions can improve health outcomes. With additional data demonstrating cost-effective health benefits, CHW-based interventions can become an integral and sustainable component of ED patient care.

Compliance with Ethics Guidelines

Conflict of Interest Dr. Levy reports grants from Michigan Department of Health and Human Services, during the conduct of the study. The other authors declare no conflicts of interest relevant to this manuscript.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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