The use of participatory action research to design a patient-centered community health worker care transitions intervention

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ABSTRACT

Background: Policymakers, patients and clinicians are increasingly eager to foster patient involvement in health care innovation. Our objective was to use participatory action research with high-risk hospitalized patients to design a post-hospital transition intervention.

Methods: We conducted qualitative interviews with sixty-five low-income, recently hospitalized patients exploring their perceptions of barriers to post-hospital recovery and ideas for improvement. We then used a modified grounded theory approach to design an intervention that would address each barrier using patients' suggestions.

Results: Five key themes were translated into design elements. First, patients wished to establish a relationship with healthcare personnel to whom they could relate. The intervention was provided by an empathic community health worker (CHW) who established rapport during hospitalization. Second, patients suggested tailoring support to their needs and goals. CHWs and patients designed individualized action plans for achieving their goals for recovery. Third, patient goals were misaligned with those of the inpatient team. CHW facilitated patient-provider discharge communication to align goals. Fourth, patients lacked post-discharge support for predominantly psychosocial or financial issues that undermined recovery. CHWs provided support tailored to patient needs. Finally, patients faced numerous barriers in obtaining post-hospital primary care. CHWs helped patients to obtain timely care with a suitable provider.

Conclusions: Low-income hospitalized patients voiced needs and suggestions that were directly translated into the design of a scalable patient-centered CHW intervention.

Implications: The approach of using participatory action research to tightly mapping patient input into intervention design is rapid and systematic strategy for operationalizing patient involvement in innovation.

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1. Background

Increasing patient involvement in healthcare innovation has become a national priority. Yet in practice, most interventions are still designed without the input of the patients they are intended to benefit. This gap between principle and practice may be due to difficulties operationalizing the collaboration between health system leaders, researchers and patients.[1] These challenges are even greater with patients of low socioeconomic status (SES) due to barriers such as low health literacy and patient mistrust of healthcare personnel and researchers.[2,3] As a result, innovations may not be designed for the low-SES patient, even though they may have the greatest need for novel approaches.

For example, a significant body of evidence demonstrates that low-SES patients are at high risk for poor outcomes during hospitalization and the post-hospital transition.[4–13] These patients are 18% more likely to report poorer quality of inpatient care,[5] 30% less likely to access post-hospital outpatient care[8,14] and face an

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elevated risk of all-cause readmission and death across a variety of diseases.[9–13] Over the past 5 years, improvement of the post-hospital transition has been a major policy focus,[15,16] sparking numerous novel interventions and redesign efforts. Unfortunately, with few exceptions,[17] low-SES patients have not had input into the design of these interventions, contributing to low rates of uptake[18] and variable success[19] among this high-risk population.

Participatory action research (PAR).[20] may be a useful strategy for operationalizing patient involvement in health care design. PAR is an approach in which researchers collaborate with stakeholders affected by a problem to generate knowledge of, and solutions to, these problems.[21] PAR is characterized by an iterative cycle of knowledge generation and action[20,22] and cooperative inquiry i.e. "research 'with' rather than 'on' people".[23,24] This cooperative and iterative nature of PAR allows researchers, clinicians and patients to collaborate in designing an intervention that has already been validated by end-users. PAR may also be used to adapt and tailor an existing intervention to local needs as it is disseminated to new settings and patient groups.

In this paper, we describe the use of a qualitative PAR study with hospitalized low-SES patients to design a scalable, patient-centered community health worker (CHW) intervention called IMPaCT (Individualized Management for Patient-Centered Targets).

2. Methods

This study developed from a collaborative group of the co-authors which included researchers, health system leaders and representatives from community-based organizations in low-SES neighborhoods within West/Southwest Philadelphia. This study team identified a key issue that was of interest to all three stakeholders: the gaps in care that low-SES patients experienced after being discharged from the hospital. The team was interested in designing an intervention to address this issue and ultimately testing the intervention using a randomized controlled trial (RCT). Some team members hypothesized – based on prior studies suggesting that community health workers (CHWs) were effective in engaging and supporting low-SES patients[25] – that a CHW intervention might be effective. However, the team was uncertain about the specifics of such an intervention, or even if the CHW model would be acceptable for their patient population. The team was elected to conduct a qualitative PAR study in order to engage high-risk patients and understand their needs and preferences. As a first step, the principal author hired a community member who shared life circumstance with low-SES patients, to become a part of the study team and to conduct all PAR interviews. The community member was chosen from a pool of fifteen applicants for the position of "community-based interviewer" for her innate listening skills, experience with community outreach and interest in ethnography. She was trained in qualitative interviewing technique by the University of Pennsylvania Mixed Methods Research Laboratory. Members of the study team communicated as needed over the course of the study.

Our qualitative methods have been described in detail previously.[26,27] Briefly, we conducted in-depth semi-structured interviews with 65 recently hospitalized low-SES individuals to explore perceptions of hospitalization and discharge, barriers to recovery, and ideas for improving the post-hospital transition.

We used a modified grounded theory[28] approach for analysis: the study team developed a coding structure including major ideas that emerged from the data, as well as a priori codes for barriers to recovery and ideas for improvement. Two trained research assistants used NViVo 10.0 (a qualitative data analysis software) to code the transcribed data.

Using the constant comparison method, the study team analyzed transcripts synchronously with data collection, continuously refining and adapting the interview guide based on participant responses. For instance, if several participants suggested that the hospital provide post-discharge support, this would be added to the interview guide as a prompt for subsequent interviews: "people we talked to have suggested that the hospital provide some support after hospitalization – what do you think about this?" This iterative process was used to develop, refine and test increasingly specific ideas for a post-hospital transition intervention.

After completing data collection and analysis, we performed a three-step mapping process (Fig. 1, Appendix A) to translate results into the design for an intervention. First, the study team created a list of key interview themes summarizing barriers that patients faced and their suggestions for improvement. Next, the first author and community member used logical problem-solving to design an intervention step that addressed each barrier using patients' suggestions. They then listed the traits and skills required of the workforce performing each intervention step. The resulting map was then presented to study team members for member checking and validation.

We used the map to build on existing care delivery models[29,30] in the design of the intervention model. Specifically, we used the "Intervention" column of the map as the basis for intervention protocols and CHW manuals. We used the "Traits" column as the basis of CHW recruitment and hiring guidelines. Finally, we built on established CHW trainings[31] to design a course that would teach CHWs the skills in the "Skills" column.

This study was approved by the university Institutional Review Board.

3. Results

The study team made initial design decisions based on the three overarching themes that emerged from interviews. First, participants frequently described a sense of disconnect from traditional healthcare personnel and wished for support from someone to whom they could relate. This confirmed the team's hypothesis that the intervention should employ CHWs who were capable of providing marginalized patients with empathic support. Second, patients felt that they were being "set up to fail" when the team set discharge goals that were confusing, in conflict with patients' own goals or unrealistic given financial constraints and lack of social support.[27] The team decided to base the intervention around helping patients to achieve goals that patients considered meaningful and achievable. Third, patients experienced so many barriers in obtaining post-hospital primary care that they preferred to return to the emergency room once they fell ill again.[26] Therefore, the team decided that the endpoint of the intervention should be to help patients obtain care with a suitable PCP.

After establishing these general principles, we began the mapping process to flesh out the details. We grouped qualitative interview nodes into major themes and tightly mapped each theme to suitable intervention steps and workforce requirements (Fig. 1, Appendix A).

3.1. Establishing a relationship

Patients wished to have a relationship with a support person to whom they could relate: "I need to share with somebody that can share with me, like I been there, I know where you're at." Patients suggested that such a relationship be established "before they leave the hospital to build trust" in a safe environment. Participants described traits of a support person that would facilitate a

Theme →	Intervention →	Requirement for Community Health Worker	
		Traits	Skills
1. Establishing a relationship: Patients wish to establish a relationship with a health care provider to whom they could relate, during hospitalization.	CHW establishes a relationship during hospitalization	Community member who is non-judgmental, discreet and reliable	CHW certification and privacy training
2. Patient goal-setting: Patients suggested tailoring support to their needs and goals.	CHW helps patient to create an individualized action plan, or 'Roadmap' for achieving each of their goals for recovery	Listens more than he/she talks, insightful problem solver, organized	Qualitative interviewing, goal-setting theory, action planning
3. Goal-alignment at discharge: Patient and provider discharge goals are misaligned	CHW helps align patient and team goals during discharge	Confident but respectful	Project BOOST, low-cost formularies
4. Goal-support: Patients needed tailored support to address "real-life" issues in order to stay healthy after discharge.	CHWs provide tailored support towards helping patients achieve their Roadmap goals using phone calls, text messaging and visits.	Creative, calm, knows limits, non-directive, compulsive about patient care	Training to address psychosocial, navigation, neighborhood, resource-related, and health behavioral issues reported by patients
5. Primary Care Follow-up: Patients face so many barriers to PCP follow-up that they must wait to get ill and return to hospital	CHWs coach patients to obtain PCP follow-up and hand-off discharge and Roadmap information to PCP	Pushy, polite, punctual. Able to end relationships and transition responsibility.	Post-hospital follow-up visit checklist, appointment scheduling

Fig. 1. Design Map. This figure delineates our process of mapping qualitative themes into the design for an intervention and workforce requirements. The first column contains themes describing barriers that patients faced during hospitalization and recovery, and suggestions for improvement. In the "Intervention" column, we describe intervention steps that address each barrier using patients' suggestions. Finally, we listed the traits and skills required to perform each intervention step in the "Requirement" column.

rapport: a non-judgmental nature, the ability to "take time and listen" and to "work with people and have patience." Patients emphasized the need to "win [patients'] confidence and become part of their life. It's not a fly by night thing. It got to be sincere from your heart that I'm going to be here for you no matter what you go through."

Several people explicitly suggested that the support person might come from within their community, "from the neighborhood…I think it would be a wonderful thing. They're able to help you and people bond together like that." Many affirmed that the desire to build capacity within the community and "get some kind of bond together."

Finally, participants explained some concerns about a community-based support person: "You're always going to have that person who wants to take advantage and use fraud." Patients suggested that support people be vetted to minimize such risks and to ensure compatibility for the job. A few expressed privacy concerns: "a lot of people are reluctant to have people come in, because of diagnosis and they don't want other people into their business." However, when prompted to discuss privacy concerns, most patients thought these were outweighed by the benefits of additional help. "Even…a stranger, you take help where you could get it from. It is worth it for the feeling you're not alone."

Based on these findings, the team created CHW hiring guidelines. These included mandatory background checks and screening questions for applicant references about reliability and discretion. The team also created behavioral job interviews to identify CHW applicants who were non-judgmental, patient listeners, and able to convey a sense of passion and commitment to their patients. Finally, CHWs would be required to complete a training course and obtain certification in order to demonstrate legitimacy and accountability to patients.

3.2. Patient goal-setting

Patients explained that health care personnel often did not take the time to understand their perspective or their personal goals for

recovery. Participants suggested that the support be tailored "on a patient by patient basis": "When patients are in the hospital, ask them what they might need [after discharge]. They can get them prepared for those issues." Several patients echoed this sentiment: "Just talk to the patient and see what they might need and help them with that."

The study team designed intervention protocols in which a CHW would establish a relationship by conducting an open-ended interview with patients on the day of hospital admission. The focus of these interviews would be to understand patients' goals for recovery, beginning with the question: "What types of things do *you* think you will need to do in order to stay healthy after you leave the hospital?" Patients would then be able to describe unique, patient-centered goals for recovery.

CHWs would then work with patients to create an individualized action plan for achieving each patient-centered goal. Action plans, or 'Roadmaps' would be comprised of four elements: a measureable goal, patient confidence in achieving the goal, resources, and a step-by-step plan for goal-achievement (Fig. 2). These action plans would guide the CHW in providing tailored support for each patient. This approach builds on the Pathways technique developed by the Community Health Access Project[29] and action-planning work by MacGregor et al.[30], but allows patients and CHWs to create individualized goals and action plans, rather than selecting from pre-specified standard templates.

To prepare CHWs to perform these intervention steps, the study team created training modules on goal-setting[32] and action-planning. This training focused on teaching CHWs to help patients set goals that were realistic, concrete and measureable.

3.3. Goal alignment

Patients viewed provider discharge goals to be confusing, unrealistic or in conflict with other more pressing goals patients had for themselves.[27] For example, patients often could not afford discharge medications that the team prescribed without impairing

Roadmap 1	
Roadmap Component	**Patient Info**
Long term goal	Stay healthy after discharge
Short-term goal: Let's make this real concrete so we know what exactly you want to achieve. What will it look like when you reach your goal? *[Can you measure it?]*	
Confidence: How confident are you that you'll be able to reach this goal? *[Reset Action if Confidence less than 7]*	
Resources: What do you think we can use to help you with this goal? *[Supportive people, resources, etc.]*	
Plan: Ok ,what exactly do we need to do next? *['To-Do' list with who, what, when, where]*	
[Goal Achieved?]	

Fig. 2. Action plan Template. IMPaCT CHWs work with patients to create an individualized action plan for achieving each patient-centered goal. Action plans are comprised of four elements: a measureable short-term goal that patients believe will lead to their long-term health goal, patient confidence in achieving this short-term goal, resources, and a step-by-step plan for goal-achievement. This approach builds on prior work by the Community Health Access Project[29] and MacGregor et al.[30]

their ability to pay for pressing needs like groceries or rent. They wished for copayment information for discharge medications "before you get to the pharmacy and get a shock." A few participants thought that a support person could be an advocate to make sure patients and providers were aligned during discharge: "An advocate for that person…someone else to yell at the doctors, or the nursing staff or whatever makes a great difference."

The team decided that CHWs should attend multidisciplinary rounds to explain patients individualized goals to the team. On the day of discharge, CHWs would also provide information about medication co-payments to both patient and provider. CHWs would advocate for the patient while the nurse was providing discharge instructions, making sure instructions were realistic and asking patients to perform a teach-back using the Project Boost Patient Pass[33] – a validated discharge communication tool – as a guide.

3.4. Goal support

After discharge, patients often felt abandoned by social and health system supports, just as they began to face a variety of "real-life" barriers to recovery. Patients needed support to address these barriers in order to stay healthy after discharge.

In addition to describing barriers for which they needed support, patients described the types of support that CHWs might provide. Many patients talked about emotional social support: "I would want the kind of stuff that you can't buy in bottles. You cannot make a prescription for it." Participants thought that encouragement from a support person would improve patients' engagement with their own care, "Once they know somebody care for them, then they'll care for themselves."

Others wished for instrumental support, for example with health system navigation: "Right now the doctor is doing all the prescriptions and appointments, but once I go home…it would be nice to have someone helping me get this done." Patients also wanted the CHW to be humble enough to help with every-day tasks: "People are sick and just got back from the hospital and it's like, I ran out of soap. A support person could say, well make a list of what you need and I can go and get it." Several patients explained that instrumental support was more useful than

informational support or referrals. "[The hospital social workers] was telling me something about a transportation service that I can have. I have to call them ten days prior or something to that nature. And it is something that I am not use to, so did not use it. Maybe somebody could go set it up with you the first time to make it more feasible."

Based on this information, the team decided that CHWs would provide emotional and instrumental support – rather than informational support – towards helping patients achieve their goals during and after hospitalization, using phone calls, text messaging and visits. To prepare CHWs to provide this support, the study team created training modules to address the types of challenge patients described: psychosocial, health system navigation, neighborhood, daily life resources, and health behavioral.

3.5. Primary care follow-up

Patients emphasized the importance of communication between hospital providers and PCPs, particularly those who worked in community health centers and lacked access to hospital electronic medical records. Patients discussed facing so many obstacles to obtaining primary care after hospitalization that they waited to fall ill again and return to the hospital.[26]

In response, the study team decided that CHWs would help all patients to obtain post-hospital follow-up care with a PCP. CHWs would assist patients in selecting a PCP if they lacked – or were dissatisfied with – a provider. CHWs would coach patients to get the most out of their PCP appointment using the guide developed by Coleman et al.[34] CHWs would accompany patients to these appointments and deliver the discharge summary and action plan summary to the PCP. At this point, they would hand patients off to the PCP office and end the patient relationship.

3.6. IMPaCT (Individualized Management Towards Patient-Centered Targets)

The study team used this study to design a standardized intervention in which CHWs provide tailored support to help patients achieve individualized health goals and to establish

primary care.[35,36] The IMPaCT model contains staff recruitment guidelines, a college-accredited CHW training curriculum, and detailed manuals for work practice and health system integration. These materials have been translated into a comprehensive toolkit (chw.upenn.edu) in order to facilitate transparency of intervention protocols and reproducibility. IMPaCT has been successfully implemented and tested in a randomized controlled trial among a population of 446 low-SES hospitalized patients with varied general medical conditions.[35]

The study team has also initiated another qualitative PAR study among chronically-ill primary care patients, in order to adapt the IMPaCT model for use in this setting. This adapted model has been implemented and is being evaluated in another ongoing RCT. The team plans to use this iterative cycle of PAR and evaluation as an approach for tailoring IMPaCT to new settings and patient groups, in a manner that maintains fidelity to key aspects of the model and confirms effectiveness.

4. Discussion

This paper describes how we used qualitative participatory action research with recently hospitalized low-SES patients to design a CHW post-hospital transitions intervention. There is a rich literature describing the use qualitative data and theory to inform intervention [37,38]; we build on this by describing a process by which specific design elements are tightly mapped to participant qualitative data and iteratively validated by study participants. The intervention model addresses participants' unmet needs, using their suggestions as well as prior published literature on patient-centered intervention tailoring,[39,40] goal-setting,[41–43] action-planning,[29,30] CHW training[31] and care transitions.[33,34]

There are three main findings from this study that may help low-SES communities, researchers and health systems to improve health care delivery.

First, the approach of using qualitative PAR to tightly mapping patient input into intervention design is rapid and systematic strategy for operationalizing patient involvement in research and innovation. This may be more generalizable than the traditional community-based participatory research (CBPR) approach of engaging select patients through advisory boards. The use of qualitative PAR might allow for inclusion of ideas from high-risk patients, many of whom might be too marginalized to participate in advisory boards.

Second, emerging health policy initiatives – such as value-based purchasing and bundled payment models – have created a climate that is ripe for expanded use of CHWs. Yet health systems are hampered by a lack of practical delivery science. Existing literature describes general strategies for the recruitment and hiring[44] but less is known about what specific traits and skills patients require from a CHW,[45] and how health systems should screen for these traits in during the hiring process. This knowledge gap may lead to variable CHW performance and high turnover.[46] In addition, there is lack of definition and standardization in CHW roles and work practices. On one extreme, this can lead CHWs to perform clinical duties for which they are insufficiently qualified, leading to adverse outcomes. On the other hand, CHWs may perform menial or overly prescriptive tasks, leading to loss of productivity and job dissatisfaction. This study informed the creation of practical tools for recruitment, training and function of a qualified CHW workforce, based on the needs of the patients they will serve.

Finally, most existing CHW interventions are disease-specific, hindering generalizability for a growing population with multiple comorbidities. In this study, patients with a variety of medical conditions articulated common, disease non-specific challenges and suggestions. In addition, patient requirements did not map to any one of the previously described CHW roles: patients were skeptical of CHWs ability to provide direct care delivery and health education, but did wish for CHWs to perform advocacy, outreach for underlying psycho-socioeconomic and behavioral issues, and navigation to disease-specific medical resources when necessary. Therefore, the resulting intervention is a patient- (rather than disease-centered) hybrid of the navigator, health coach and advocacy roles.

The main limitation to this study is its small sample size, which limits generalizability. Yet, the iterative use of PAR to design and then adapt interventions for new settings may be a useful method for addressing this limitation. This strategy reconciles the tension between achieving model fidelity and tailoring for local needs. For instance, in order to disseminate the IMPaCT model to a population of rural undocumented Mexican immigrants, a local study team might conduct a small qualitative PAR study with 5–10 patients. They could look for new qualitative themes that did not arise in the original study (Appendix A) and adapt the IMPaCT model accordingly – perhaps adding a Spanish-speaking requirement to hiring guidelines and a training session on immigration advocacy – while maintaining core model features. This approach may be an important methodological contribution to health care delivery science because it can help interventions scale efficiently, but with adaptation for local needs.

5. Conclusion

In conclusion, this study describes an example of how tightly mapping qualitative data to intervention design can lead to health care innovations that are, in a sense, pre-approved by the patients they are intended to benefit. This strategy can ensure that the most marginalized patients have a voice in solving health care problems, such as the post-hospital transition.

Acknowledgments

Appendix A

See Table A1.

Table A1
Detailed design map

Theme	Sub-theme	Intervention	Requirement	
			Traits	Skills
1. Establishing a relationship: patients wish for a relationship with a health care provider to whom they can relate.				
	Support person should come from community and share SES with patients	Intervention performed by CHW	• Resident of community • Experience with community outreach	
	CHW should be vetted to ensure compatibility and minimize risk of fraud	Behavioral and case interviews and background check	• Trustworthy • Good match for job requirements	• CHW certification • Background check
	Relationship should be established during hospital stay	Initiate intervention on day of admission		
	Patients want to be heard and do not want to feel judged	CHW conducts open-ended, strengths-based intake conversation to understand patient perspective	• Friendly face • Patient • Non-judgmental • Listener more than talker	
	CHW needs to demonstrate commitment to earn trust	CHW should be clear about what they will and will not do and always follow-through	• Passionate • Reliable: always does what they say they will do	
	CHW needs to respect privacy	CHW clearly explains confidentiality guidelines to patient during first meeting	• Respects privacy	• HIPAA and mandated reporting
2. Patient goal-setting: patients suggested tailoring support to their needs and goals.				
	CHW should understand patient perspective and goals	Intake interview elicits patient needs and goals for recovery	• Excellent listener • Able to take notes and stay organized	• Qualitative interviewing technique and interview guide • Goal-setting theory
	Support should be tailored to patient needs and goals.	CHW records this information and helps patient to create "Roadmaps" or action plans to help patients reach their own goals and ultimately stay healthy after discharge.	• Good with problem-solving: Listens to patient story and can understand what is important and how to handle it • Able to document • Organized	• Action planning
3. Goal-alignment at discharge: patient and provider discharge goals are misaligned				
	Providers are not aware of patients' needs, preferences and goals	CHW attends multidisciplinary rounds and explains patient goals to team	• Confident but respectful when interacting with team	• How to present on rounds
	Patients are discharged suddenly and without sufficient preparation	CHW prepares patient in advance of discharge.	• Able to "manage the clock". Not a procrastinator.	
	Patients do not understand discharge instructions or find them to not be feasible	CHW advocates for patient during discharge instructions asks RN to perform teach-back.	• Friendly but comfortable being assertive	• Project BOOST pass
	PCPs in community often don't receive discharge summary	CHW collects discharge summary from RN	• Respects privacy • Diligent about safekeeping patient records	

Table A1 (continued)

Theme	Sub-theme	Intervention	Requirement	
			Traits	Skills
	Patients often cannot afford medications	CHW obtains copayment information prior to discharge and coaches provider to use low-cost formularies	• Can tell providers about low-cost formularies without appearing to be telling them what to do	• List of low-cost formularies and prescription assistance programs
4. Goal-support: patients needed tailored support to address "real-life" issues in order to stay healthy after discharge.	Patients have suffered trauma and want to find joy or purpose	CHW encourage "Fun Roadmaps" that connect patients to joy and purpose, e.g. mentoring youth, gardening, YMCA.	• Creative and able to think outside of the box • Comfortable with home visits, knows neighborhood	• Trauma-informed care training • Knowledge of existing community resources • Home visitor safety training
	Patients are socially isolated or have social dysfunction and need support	CHW re-connects patient to social support (caregiver, church, community)	• Respects privacy • Able to de-escalate conflict	• Mediation and conflict resolution training
	Patients need mental health support	CHW provides emotional support and helps navigate patients to social supports and mental health resources	• Calm • Knows limits	• Alarms: suicidality, homicidality • Referral options • Personal safety training • Close supervision and home visits in groups of two
	Patients need to address substance abuse	CHW uses motivational interviewing to understand why patients use and connects to resources when ready	• Non-judgmental • Avoids projecting other people in patient's life (e.g. nagging mom)	• Motivational Interviewing • Substance abuse resources
	Patients need insurance	CHW works with hospital team and department of public welfare to connect eligible patients to medical assistance	• Organized	• Medical assistance enrollment process
	Patients need motivation to perform health behaviors	CHW does motivational interviewing	• Non-directive • Patient	• Motivational interviewing
	Patients want medical advice about medications, side effects or residual symptoms	CHW does NOT provide medical advice, but helps them to get in touch with discharging attending or primary care provider	• Knows limits • Compulsive about patient care and does not ignore medical issues	• SBAR training • Contact information for physicians
	Patients need help with food insecurity, housing instability, debt, lack of childcare	CHW helps connect patient to community resources such as food banks, housing programs, job readiness programs, etc.	• Good at building relationships with community organizations • Can set limits on patient requests for help	• Community resource guide
5. Primary care follow-up: patients face so many barriers to PCP follow-up that they must wait to get ill and return to hospital	Patients lack or do not like current PCP	CHW helps patient to get a PCP that suits their needs		• Directory of PCPs recommended by other patients

Table A1 (*continued*)

Theme	Sub-theme	Intervention	Requirement	
			Traits	Skills
	Patients have trouble obtaining timely PCP appointment	CHW conducts 3-way call with PCP office and patient and coaches patient on how to advocate for timely appointment	• Pushy but polite	• Basics of clinic appointment scheduling
	Patients feel like PCP is not addressing their needs	CHW coaches patient on how to get the most out of PCP appointment		• Training on post-hospital PCP visit (Coleman)
	Patients forget their PCP appointment	CHW reminds patient of appointment one day prior and trouble-shoots barriers to appointment (transportation, childcare, etc.)	• CHW is organized and punctual	• CHW has a calendar of appointments for all patients
	PCP often does not know what happened in hospital	CHW offers to attend post-hospital PCP visit and hands PCP discharge summary and Roadmap summary. CHW explains that he/she is handing off care to PCP	• CHW able to end relationships and transfer responsibility to PCP	

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