Mayo Clinic Rochester
Employee Community Health
Community Health Worker Program
Overview and Evaluation

Onelis Quirindongo-Cedeño, MD
Division of Primary Care Internal Medicine
Mayo Clinic Rochester
Presented at the MN CHW Alliance Conference May 23, 2018
Acknowledgement

• This research was made possible in part by the Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery

Dr. Jane W Njeru
Outline

• Description of the program
• Current state of program
• Evaluation model
• Qualitative results
• Quantitative results
• Lessons learned
The ECH-CHW Program

- In 2012, a CHW program was implemented at ECH through collaboration with Intercultural Mutual Assistance Association (IMAA) [http://imaa.net/about/mission-overview/](http://imaa.net/about/mission-overview/)
- IMAA is a local service organization with more than 30 year history of service to immigrant and refugee populations in Rochester, MN through case management, housing, employment, and victim services
- CHWs are employed by IMAA and trained by Mayo Clinic to care for a subset of medically complex adult ECH patients, who are being care under the Medical Home including patients enrolled in nurse-led Care Coordination and Integrated Behavioral Health programs.
ECH Program outcomes
2012- 2017

• 1117 patients served- 3273 visits
• 9 CHW ‘s - 6.0 FTE for ECH patients
• Serving all patients – Adult/ Peds /IBH
• Serving multiple sites in Rochester (5)
• Co-supervision – Jean Gunderson
• ECH/Mayo staff participating in CHW training
• Referral process and visits documented in EMR
Integration of the Community Health Worker Model Into the Chronic Care Model.

Community Resources and Policies

Health System Organization of Health Care

CHW

Informed Empowered Patient

Prepared, Proactive Practice Team

Productive Interactions

Functional and Clinical Outcomes

Andrea Cherrington et al. The Diabetes Educator 2008;34:824-833
CHW Best Practices

Key elements for success include:

1. having the program be informed by its users
2. full integration into care teams
3. targeting definable and important aspects of multifactorial interventions
4. robust and well-defined processes in hiring, training and supervision of CHW
5. evaluation of programs and interventions

Kapheim and Campbell, 2014. Sinai Urban Health Institute (SUHI)
Theoretical framework: Realist evaluation

• Realist evaluation is a member of a family of theory-based evaluation approaches which begin by clarifying the ‘programme theory’: the mechanisms that are likely to operate, the contexts in which they might operate and the outcomes that will be observed if they operate as expected.

• Realist impact evaluation is most appropriate for evaluating:
  • new initiatives or programs that seem to work but where ‘how and for whom’ is not yet understood
  • programs that have previously demonstrated mixed patterns of outcomes
  • programs that will be scaled up, to understand how to adapt the intervention to new contexts
Theoretical framework: Realist evaluation

• Realist evaluation assumes that programs do not operate exactly the same, in all contexts and for all people:
  • While the basic components of the CHW program are known, and preliminary outcomes data is available, this approach allow one to answer questions such as “how or why does this program work, for whom, under which circumstances”
  • This is a critical step in anticipation of expanding the program to other populations
• These findings can be used to:
  1. refine program theory and
  2. identify appropriate evaluation measures
Specific aims

#1. Determine the relative efficacy of component CHW services:

- Through qualitative methods and an evaluative approach, elicit the experience of the main stakeholders within the existing CHW program to identify elements that led to relative successes or failures for different patients

- This will be done by conducting focus groups and in-depth interviews with patients, CHWs, care coordinators and primary care providers who have used the ECH-CHW program
Specific aims

#2. Extend CHW services to patients with diabetes and social, linguistic, and economic vulnerability

- The qualitative data obtained will be used to refine the existing CHW program framework and extend services to patients with LEP and on Medicaid who have diabetes

- The efficacy of this intervention expansion will be evaluated through practice-based tools that identify diabetes-related process and outcome measures
Timeline and Steps

Aim #1 Step 1
Qualitative evaluation

Aim #1 Step 2
Framework Definition

Aim #2 Step 1
Framework refinement: translation into practice

Aim #2 Step 2
Testing improved program
Figure 1. Data collection and analysis phases

**Phase 1:**
Review of local, state and national CHW program documents. Observation of CHW program in the office and patients’ homes.

**Phase 2:** Interviews and focus groups with CHWs, care coordinators, physicians, and patients.

**Phase 3:** Stakeholder review of summaries from interviews and focus groups and the C-M-O configurations

*Abbr: CHW = Community Health Worker; C-M-O = Context-Mechanism-Outcome*
CHW Program Evaluation

I. Qualitative evaluation

Realist evaluation:

- Assumes that programs do not operate exactly the same, in all contexts and for all people
- A member of a family of theory-based evaluation approaches which begin by clarifying the ‘program theory’: the mechanisms that are likely to operate, the contexts in which they might operate and the outcomes that will be observed if they operate as expected
- Allows one to answer questions such as “how or why does this program work, for whom, under which circumstances”

How?

CHWs
- 3 In-depth interviews
- Non-participant observations (16 hours)

Patients
- 28 Focus group discussions (3)
- In-depth interviews (4)

RN Care Coordinators
- 8 In-depth interviews

Providers
- 3 In-depth interviews

Using an evaluative approach, the interview and focus group discussion guides were formulated to elicit experience with program, mechanics of perceived utility, challenges and opportunities for improvement

- Experience of interacting with patients, care coordinators, other clinic staff, and community resources, trying to identify both facilitating and challenging factors; adequacy of training as it relates to job demands
- Elicit care experience, perceived utility, and opportunities for improvement
- Overall experience with the program, utility, best practices for care team integration, challenges and possible solutions
**Community health workers:**
CHWs have community and health care knowledge and they serve as liaisons to community and health care services, teach and build capacity, act as advocates, and provide social support. They are also members of the community and they build trust through cultural competence, communication, and an understanding of poverty.

**Initial hypothesized program theory:**
CHWs come from the communities they serve, which builds trust. This trusting relationship enables the CHWs to be effective links between their own communities and systems of care. CHWs provide access to services, improve the quality and cultural competence of care, create an effective system of chronic disease management, and increase the health knowledge and self-sufficiency of under-served populations in order to reduce health disparities.

---

### The various CHW roles

**Micro level**
- Institutional arrangements, infrastructure (including EMR access)
- Process of sharing documentation
- Organizational norms
- Institutional champions/leadership
- Stakeholder beliefs and norms (including community), esp. related to chronic disease, cultural competency, social determinants of health, and socioeconomic status

**Macro level**
- CHW training and capacity, as well as turnover and absenteeism
- Relationships and role clarity between CHWs, care coordinators, and clinicians

**Meso level**
- Availability/history/relationships of community support services

**Context**

**WHY THE PROGRAM WORKS – INDIVIDUALS’ RESOURCES AND REASONING**
- Empowered and compassionate CHWs and clients and trusting relationships with the health care system
- Capabilities related to communicating and navigating the system (attending appointments, negotiating insurance, paying bills)
- Support, mobilize resources (transportation and language services), and problem-solve logistics
- Addressing norms and beliefs and bridging the client and health systems so clients receive culturally competent care
- Building teamwork of CHWs, care coordinators, and clinicians – positive interactions with clients
- CHW credibility in health care system and feelings of belonging in the community
- Ability of CHWs to mobilize resources
- Understanding barriers to access, building knowledge of services, and empowering and supporting clients when service needs are not met
- Being a spokesperson/advocate for clients
- CHW credibility in the community
- Identifying individual and community service needs and then articulating and advocating for those needs
- CHWs with range of health knowledge
- Client educational preferences and motivation to learn
- Providing culturally appropriate health information to clients and providers
- Credibility of CHWs as having first-hand knowledge of managing a chronic illness
- Identifying individual strengths
- Investment in an on-going relationship
- Understanding preferences and motivating

**Outcome**

**MEASURABLE FOR SUBGROUPS**
- Increased access to primary care
- Cost savings (reduced emergency use and readmissions, and increased appointment follow-through)
- Chronic disease prevention
- Chronic disease control
- Increased patient satisfaction and increased compliance
- Reduced health disparities and improved patient-centered care or quality care
- Cultural mediation and improved provider-patient communication
- Increased self-sufficiency and quality of life
- Increased access to basic needs
- Increased knowledge of community services
- Increased community capacity
- Increased health knowledge (e.g. self-reported diabetes knowledge) and self-efficacy
- Health behavior change
- Increased attendance at wellness visits
- Increased health data collection for EMR
- Adherence to goals
- Cost savings
- Chronic disease control

---

**Original framework**

Community health workers:
CHWs have community and health care knowledge and they serve as liaisons to community and health care services, teach and build capacity, act as advocates, and provide social support. They are also members of the community and they build trust through cultural competence, communication, and an understanding of poverty.

**Initial hypothesized program theory:**
CHWs come from the communities they serve, which builds trust. This trusting relationship enables the CHWs to be effective links between their own communities and systems of care. CHWs provide access to services, improve the quality and cultural competence of care, create an effective system of chronic disease management, and increase the health knowledge and self-sufficiency of under-served populations in order to reduce health disparities.
### Revised framework

**Community health workers:**
CHWs have vast knowledge of community health and social service resources, and they help patients navigate systems, including insurance. They operate as an extension of the health care team, going into patients’ homes to understand their needs, providing personal and social support, reinforcing health education provided by clinic providers, and sharing relevant patient information with clinical providers.

**Revised program theory:**
CHWs serve as a bridge that connects patients, providers, and community resources. CHWs are able to go into patient homes to understand contextual issues that may impact health. They reinforce health education given by care coordinators, and they share information about patients with care coordinators that could impact care planning. CHWs help patients navigate and gain access to a wide variety of health and social services in the community. These services are perceived as social support by patients, who may otherwise feel unable to manage.

### The various CHW roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care navigator or liaison</td>
<td>CHWs help patients navigate the health care system and being a liaison for health care appointments and communication</td>
</tr>
<tr>
<td>Rules and systems navigator</td>
<td>CHWs help patients navigate insurance or social service systems, rules, and paperwork</td>
</tr>
<tr>
<td>Outreach and social support</td>
<td>CHWs help patients identify and access community resources</td>
</tr>
<tr>
<td>Advocacy</td>
<td>CHWs advocate for community needs</td>
</tr>
<tr>
<td>Health educator and individual capacity building</td>
<td>CHWs provide and reinforce basic health education regarding health prevention and management of chronic disease</td>
</tr>
<tr>
<td>Member of health care team</td>
<td>CHWs gather client self-reported health related data</td>
</tr>
<tr>
<td>Health education and Individual capacity building</td>
<td>CHWs monitor and reinforce movement towards goals and self-management</td>
</tr>
</tbody>
</table>

### Revised program theory

**Mechanism**

**Context**

- **Micro level**
- **Macro level**
- **Mesol level**

**Why the program works – Individuals’ resources and reasoning**

- Providing hope that there is someone to help/someone in your court.
- CHWs with confidence make patients feel like “this is a person who can help me.”
- Helping patients who are so overwhelmed that they feel stuck. Helping patients get organized get a handle on things.
- Working full-circle to make sure everyone is on the same page and that the outcome is clear.
- Care coordinators, providers and patients know what is available to patients and can make connections between patient needs, available resources, and health impacts.

**Outcome**

- Care coordinators, providers and patients can make connections between patient needs, available resources, and health impacts.
- CHW-patient relationships over time/over the course of several visits.
- Relationship building: Building trusting relationships over time/over the course of several visits.
- Care coordinators who feel like they’re not at the end of the road with options.

**MEASURABLE FOR SUBGROUPS**

- Patients feel better or more hopeful/relieved.
- Decreased patient stress and increase quality of life.
- Removal of social barriers to health, e.g. access to healthy food for diabetics or clean air housing for people with asthma.
- Connections to other social service agencies and getting paperwork done correctly and on time. Identification of community assets like prescription drug programs or donations of durable medical equipment.
- Reinforced educational messages/adherence/self-management.
- Care plans that are informed by patient’s social context (barriers and social support).
- Staff satisfaction: Providers and care coordinators who feel like they’re not at the end of the road with options.
- Adherence to monitoring, e.g. blood pressures, which get reported back to clinical staff.
- Reduced ER visits due to health, diet, activity, substance abuse.
- Cost-effective delivery of health education and other services in the home (CHW vs RN).
II. Other outcomes (quantitative evaluation)

1. Health care utilization

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Total (N=452)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age years, Mean (SD)</td>
<td>48.5 (28.3)</td>
</tr>
<tr>
<td>Gender, F (%)</td>
<td>267 (59.1%)</td>
</tr>
<tr>
<td>Number of visits, Mean (SD)</td>
<td>3.8 (4.8)</td>
</tr>
<tr>
<td>Visit time (hours), Mean (SD)</td>
<td>6.9 (9.5)</td>
</tr>
<tr>
<td>Non-visit care time (hours), Mean (SD)</td>
<td>1.4 (2.5)</td>
</tr>
<tr>
<td>Duration in program (days), Mean (SD)</td>
<td>139.7 (122.9)</td>
</tr>
</tbody>
</table>
Adult patients

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre Rate</th>
<th>Post Rate</th>
<th>IRR* (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient</td>
<td>7.09</td>
<td>6.10</td>
<td>0.86 (0.78, 0.95)</td>
<td>0.0023</td>
</tr>
<tr>
<td>Inpatient</td>
<td>0.66</td>
<td>0.54</td>
<td>0.82 (0.66, 1.04)</td>
<td>0.0944</td>
</tr>
<tr>
<td>Emergency</td>
<td>1.48</td>
<td>1.12</td>
<td>0.76 (0.63, 0.93)</td>
<td>0.0100</td>
</tr>
</tbody>
</table>

* IRR= Incidence Rate Ratio
Patients with High Charlson score (medical complexity)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre Rate</th>
<th>Post Rate</th>
<th>IRR* (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient</td>
<td>9.16</td>
<td>7.45</td>
<td>0.81 (0.72, 0.92)</td>
<td>0.0021</td>
</tr>
<tr>
<td>Inpatient</td>
<td>1.02</td>
<td>0.79</td>
<td>0.77 (0.59, 1.02)</td>
<td>0.0655</td>
</tr>
<tr>
<td>Emergency</td>
<td>1.99</td>
<td>1.50</td>
<td>0.75 (0.59, 0.96)</td>
<td>0.0247</td>
</tr>
</tbody>
</table>

* IRR= Incidence Rate Ratio
Other outcomes (chart review)

- **Categories of needs identified by care team and/or patients (n=218):**
  - Health Insurance navigation
  - Health system navigation
  - Non-Health system navigation
  - Health education and promotion
  - Psychosocial Support
- **Needs met majority of the time (n=218):**
  - fully met - 29.1%
  - partially met - 47.4%
  - not met - 5.1%
  - unable to determine - 8.4%
Lessons learned

• The importance of collaboration
• The importance of a framework
• The value of comprehensive data
• The importance of the long term plan
• Understanding the data that is important to your stakeholders
Questions

quirindongocedeno.onelis@mayo.edu
gunderson.jean@mayo.edu