

CLINICAL INVESTIGATION OPEN ACCESS

Connected Care for Older Adults: A Pilot Intervention Engaging Community Health Workers to Advance Age-Friendly Care in Rural Oregon

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Correspondence: Bryanna De Lima (delimab@ohsu.edu)**Received:** 4 September 2025 | **Revised:** 5 December 2025 | **Accepted:** 13 December 2025**Keywords:** age-friendly health systems | community health workers | older adults | rural primary care

ABSTRACT

Background: Aging in a rural setting presents unique challenges including limited access to in-home care, lack of social support, language and cultural barriers, and the lack of transportation. We conducted a pilot study embedding community health workers (CHWs) into rural primary care teams to assist with implementation of the 4Ms of the Age-Friendly Health System: What Matters, Mentation, Medication, and Mobility.

Methods: The Connected Care for Older Adults model embeds CHWs in primary care and they conduct home visits to implement 4Ms protocols for patients 55 and older, living independently, and considered to be “medically frail” by a PCP, or meet criteria by the Edmonton Frail Scale. Patients complete the program in approximately 90 days. Feedback was collected from patients, caregivers, providers, and CHWs; health care impact was collected from electronic health records.

Results: We enrolled 388 patients from 79 PCPs at 7 clinics. Patients were 63% female with an average age of 77 years. Over 95% were public payer, 49% had been to the ED in the past 12 months, and 34% had been hospitalized. The program made a positive difference for 95% of responding patients ($n=120$) and 100% of responding providers ($n=19$) were “very satisfied” with the program. Clinicians cited the CHWs’ ability to support resource connections, address social isolation and social needs, provide regular check-ins, and help to get patients and families engaged in care as positive components of the model. Early data suggests this program may reduce health care utilization.

Conclusions: Connected Care for Older Adults incorporates CHWs in primary care settings to deliver age-friendly care to rural, underserved adults 55 and older. Early findings and feedback from participating patients, caregivers, providers, and CHWs suggest that this is a promising approach to delivering age-friendly care.

1 | Introduction

Older adults are the fastest growing demographic in the United States, and almost 27% of older adults in Oregon live in rural areas [1]. Aging in a rural setting presents unique challenges including limited access to palliative and in-home care, lack of resources and social support, challenges coordinating existing

services, language and cultural barriers, and the lack of transportation, making it increasingly difficult for older adults with complex medical needs to live safely and well at home [2]. A 2020 community assessment found that most primary care clinics in our rural area do not offer in-home geriatric assessment, care planning, medication management support, or social work support.

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The Connected Care Protocols are based on the 4Ms of the IHI's Age-Friendly Health Systems Framework. Each protocol includes tools, scripts, and resources that help CHWs uncover important information about a patient's well being, wishes, and priorities.

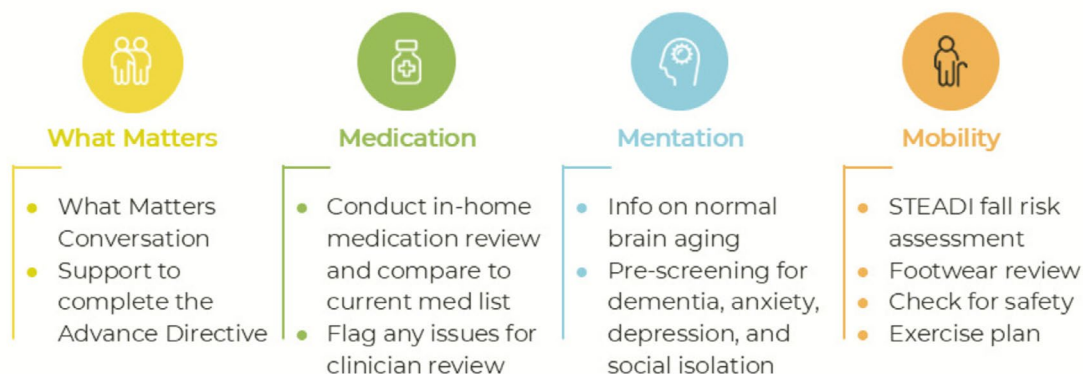


FIGURE 1 | Connected care CHW protocols.

2.2 | CHW Training

All CHWs completed a 90-h certification course recognized by the Oregon Health Authority [17], up to 20h of asynchronous CATCH-ON modules developed by RUSH Center for Excellence in Aging [18], and 4h of protocol-specific training. These CHWs are clinic employees and are supervised by clinic staff to conduct home visits and implement the Connected Care protocols related to the 4Ms.

2.3 | Recruitment of Participants and Communication With the PCP Team

Eligible patients are 55 and older, living independently (without in-home medical support such as home health or hospice) in rural communities, and who are considered “medically frail” by a PCP, or who meet criteria according to the Edmonton Frail Scale [19]. As CHWs complete each protocol, they provide information and education to patients and families and connect them with existing community services. They also relay information about the outcomes of the protocols, home conditions, and social situation back to the referring PCP by documenting directly in the EHR.

2.4 | Intervention

On average, CHWs conducted 5–6 visits in the home or clinic, seven patient phone calls, and three resource coordination calls to facilitate connections to community services during the 90-day program. Home visits were more common than office visits (4.8 vs. 0.6 per patient). Connected Care CHWs ($n=9$) typically managed a patient panel of 12–15 patients at a time and served between 40 and 55 patients per year. The program seeks to improve the quality of care delivered to older adult patients; improve the patient, caregiver, and provider experience with care; integrate the 4Ms into primary care; and decrease high-cost

utilization among participating patients. Connected Care also advances health equity and access by prioritizing enrollment of non-English speaking patients, Indigenous patients, patients enrolled in both Medicare and Medicaid, and uninsured patients.

2.5 | Intervention Refinement

Feedback was collected from patients, caregivers, and PCPs on how to improve the program through online surveys. CHWs provided input on an ongoing basis through in-person discussions. Based on feedback from the first 12 months, minor changes were made to the Connected Care Protocols, including improvements to the Medication review form and incorporating additional resources that were available in languages other than English.

2.6 | Analysis

Demographic and needs assessment data were collected upon patient enrollment including age, sex, race, ethnicity, primary insurance, and current patient needs. Descriptive analyses were performed on enrollment data. Survey data collected after 12 months of implementation were reviewed from patients, caregivers, providers, and CHWs to learn ways to improve the pilot program (File S1). Open-ended survey responses were examined for meaningful and representative quotes. Impact of the program was assessed by reviewing emergency department (ED) and hospitalization rates 12 months pre- and post-intervention from one clinic site. Chart review identified ED and hospital stays to calculate a monthly utilization rate. The average number of ED visits, hospital admissions, and days hospitalized per month were calculated and displayed as percentages for 3, 6, and 12 months pre- and post-program. Patients were excluded if they left the clinic or died before the corresponding time period. This work was deemed “Not Human Research” by the Oregon Health and Science University Institutional Review Board (#28817).

3 | Results

The pilot launched at a Federally Qualified Health Center (FQHC) in Oregon in 2022, and has since expanded to 7 sites (one site was active for just 1 year). As of June 2025, the Connected Care pilot served roughly 250 patients annually across 6 rural clinics in Oregon. Table 1 provides more information on each clinic and Figure 2 provides an overview of the program.

From seven clinics, 411 patients were referred by 79 PCPs and 388 (94%) were enrolled in the program. Patients were mostly

female (63%) and White (82%) with an average age of 77 years and public insurance (95%). Characteristics of patients and CHWs are shown in Table 2. Most enrolled patients did not have an Advance Directive on file at enrollment (68%) or an identified caregiver (52%). Out of those who identified a caregiver, family (42%) and spouse (35%) were indicated most often. In the past 12 months, 49% had been to the ED and 34% had been hospitalized. The most prevalent patient needs identified at enrollment included Assistance with Activities of Daily Living (42%), Safety (40%), Social Isolation (33%), Transportation (30%), and Behavioral Health (26%).

TABLE 1 | Characteristics of participating rural clinic locations.

Clinic #	Type	Designation	Patients served	Referring PCPs
Clinic 1	Nonprofit Integrated Health System	RHC, PCPCH, CAH (pending)	47	16
Clinic 2	Nonprofit Clinic	FQHC, PCPCH	35	2
Clinic 3 ^a	Private Clinic	RHC, PCPCH	87	8
Clinic 4	Nonprofit Integrated Health System	RHC, PCPCH	47	12
Clinic 5	Nonprofit Clinic	FQHC, PCPCH	96	22
Clinic 6	Nonprofit Integrated Health System	RHC, PCPCH, CAH	17	4
Clinic 7	Private Clinic	PCPCH	52	6

Abbreviations: CAH, Critical Access Hospital; FQHC, Federally Qualified Health Center; PCPCH, Person-centered Primary Care Home; RHC, Rural Health Clinic.

^aClinic 3 provided the pilot utilization data.

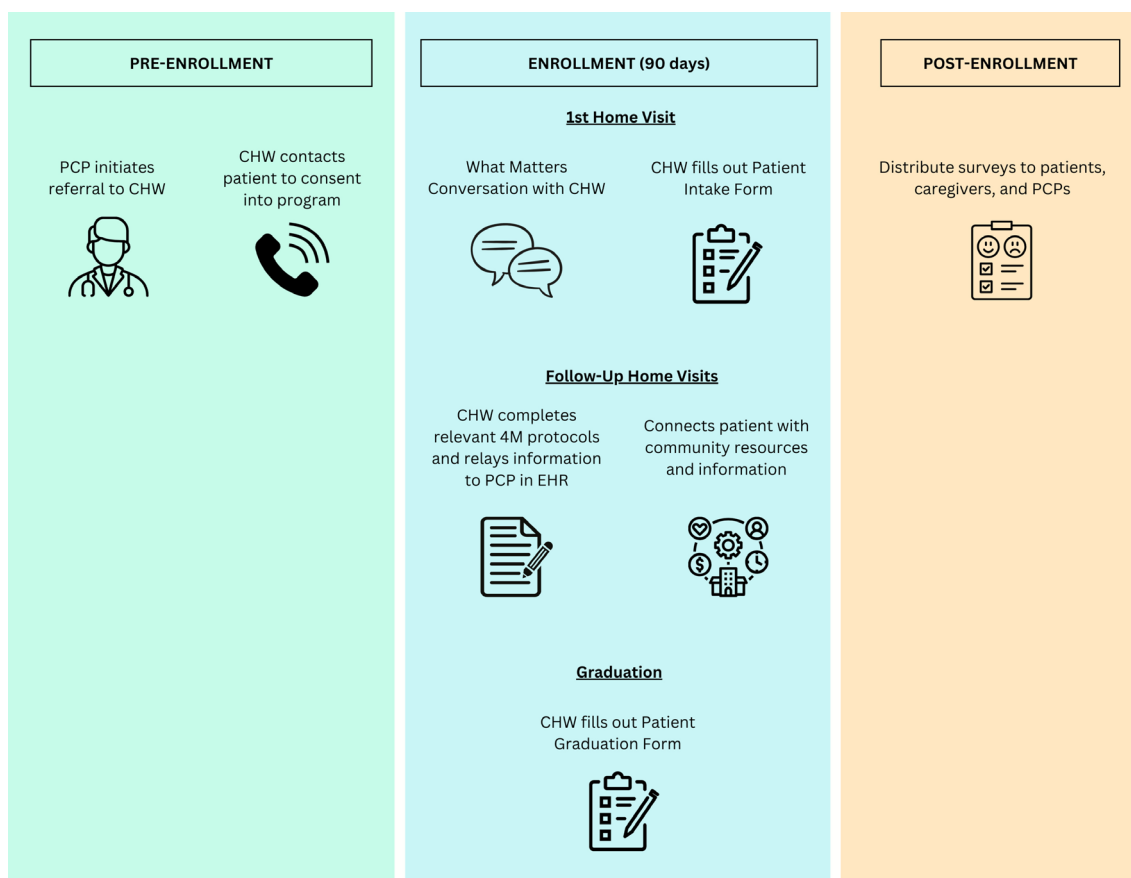


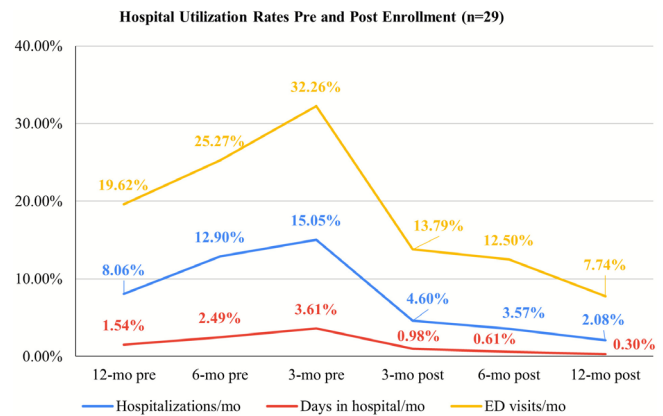
FIGURE 2 | Connected care program overview. PCP, primary care provider; CHW, community health worker; EHR, electronic health record.

TABLE 2 | Characteristics of enrolled patients and participating community health workers (CHWs).

Characteristics	Patients (n = 388)	CHWs (n = 9)
Age, mean (SD)	77 (8.83)	—
Age 55+, n (%)	—	4 (44.4)
Female sex, n (%)	245 (63.1)	9 (100.0)
White race, n (%)	318 (82.0)	4 (44.4)
Hispanic, n (%)	63 (16.2)	5 (55.6)
English-speaking, n (%)	329 (84.6)	8 (88.9)
Rural-dwelling, n (%)	389 (100.0)	9 (100.0)
Insurance, n (%)		
Medicare	223 (57.5)	
Dual eligible	57 (14.7)	
Medicaid	48 (12.4)	
Medicare advantage	39 (10.0)	
TriCare	4 (1.0)	
Private	12 (3.1)	
Uninsured/other	5 (1.0)	
Caregiver present, n (%)	186 (47.9)	
CHW experience		
CHW certification after hire		8 (88.9)
> 1 year in role		8 (88.9)

Surveys were completed by 120/317 (38%) patients, 17/182 (9%) caregivers, and 19/79 (24%) referring PCPs. Early qualitative results of the Connected Care pilot were extremely positive. A CHW shared, “I’ve had an evolution in my own thinking as a result of this project. The 4M’s that this program focuses on really hit on key areas for our older patients. In a rural area, our people are so isolated, they can degrade and go downhill really quickly. It brought us into their home in a way that wasn’t threatening or invasive, but just helpful. Those observations that we saw in the home were able to help the provider to focus on areas that would make a difference for the patient.”

Out of 120 patients who completed the survey, 95% said that the program made a positive difference in their life. One patient said, “[This program] keeps us aware that there are those who care how we are doing...[My CHW] has gone out of her way to even help me get to appointments. [The CHW] has made a tremendous difference in our day to day lives.” Another patient shared, “Being able to have someone come to your home and see your home setup is very helpful. Having that as an option is excellent.” Another shared, “My daughters are more aware that I’m becoming more forgetful, and they are able to make a safety plan for me with lovely support from all my family members.” Multiple patients state that having a

**FIGURE 3** | Hospital and emergency department utilization data from 29 patients at one clinic.

CHW to support them gave them improved “peace of mind.” Caregivers also expressed appreciation for the program. One caregiver stated, “Having this program helped get in-home care organized and kept [patient] from moving into a facility. Having a go between us and PCP gets medical care faster and more efficiently.”

All responding providers (n = 19) said they were “very satisfied” with the program. One referring clinician said, “Our CHW has helped navigate support systems for a caregiver, in order for the caregiver to continue to care for the patient. That was a really profound improvement and impact on the patient’s health and I believe is preventing readmission to the hospital.” Another shared, “It has been very helpful to get feedback about a patient’s home situation, safety risks, advanced directive discussions and medication adherence. I have had positive responses from patients who were very grateful for the home visits.” Clinicians repeatedly were grateful for the CHW’s ability to support resource connections, address social isolation and social needs, provide regular check-ins and help to get patients and families engaged in care.

Pilot utilization data on 29 patients from one clinic site showed promising findings. ED visits decreased from 32.26% of patients 3 months prior to implementation to 7.74% 12 months post-intervention. Hospitalizations decreased from 15.05% 3 months prior to the intervention to 2.08% 12 months post-intervention (Figure 3). As the pilot continues to expand, we are building capacity to collect data on the impact of the program.

4 | Discussion

Connected Care for Older Adults incorporates CHWs in primary care settings to deliver age-friendly care to rural, underserved adults 55 and older. This pilot study has been extremely successful from the perspectives of older adults, caregivers, CHWs, and the primary care providers who care for them. Early data on impact shows there may be associated reductions in measures of health care utilization.

CHWs are becoming more common throughout the healthcare landscape and are particularly important for under-resourced,

culturally and linguistically diverse populations. Previous studies have suggested that CHWs feel ill-equipped to assist patients in improving mobility and mentation, and CHWs and clinicians have reported that CHWs may not be appropriate to assist older adults with what matters and medication interventions [7]. However, our results indicated that CHWs, when trained in well-developed 4Ms protocols and given appropriate clinical supervision, feel confident in assisting the implementation of all 4Ms, even in rural, under-resourced settings where it may be most challenging but critical to foster age-friendly care. Encouragingly, not only do patients, CHWs, caregivers, and PCPs believe the CHWs make a valuable contribution, but early utilization data speak to the possibility that they may also make health care more affordable. The core components of the program, which we feel were critical to its early success, were having the CHWs embedded in primary care clinics with direct access to clinics' EHR systems so that the CHW could serve as an extension of the PCP, increasing their capacity to provide age-friendly and patient-centered care; program leadership developed specific, feasible, role-aligned protocols that CHWs completed and entered into the patients' medical records for ease of review by the PCP and care team; and quality improvement methods were utilized to improve the protocols and ensure CHWs and PCPs could communicate easily.

Limitations of this pilot are the short duration, low numbers in the utilization data, low survey response rates, and lack of person-centered quantitative outcomes of the project. Another limitation is that PCPs may have had different frailty definitions for inclusion. Referring PCPs used their own judgment of frailty and patient risk to determine eligibility and may not have been standardized across all providers. Next steps for our team will be to continue to enhance our ability to collect data from the health plans and other sources to make this dataset richer and deeper. The pilot has relied on grant funding to support CHW positions and implementation costs to date. Exploration and trials of CMS billing codes available to support CHW services are currently underway. However, updated policies and practices for supporting CHWs in clinical and home settings, such as paying for time needed to drive to rural older adults' homes, are needed to ensure sustainability of projects like this one in rural areas.

Early findings and feedback from participating patients, caregivers, providers, and CHWs suggest that this is a promising approach to delivering age-friendly care. Our team welcomes outreach from others to assist with implementation in other states and across diverse communities, as well as collaboration on advocacy for public funding of programs such as Connected Care for Older Adults.

Author Contributions

All authors contributed to the study concept and design, acquisition of subjects and/or data, analysis and interpretation of data, and preparation of manuscript.

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Disclosure

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Conflicts of Interest

The authors declare no conflicts of interest.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **File S1:** [jgs70279-sup-0001-FileS1.pdf](#).