

Community Paramedics Health Share of Oregon Evaluation Report

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CORE

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Community Paramedics Program: Executive Summary

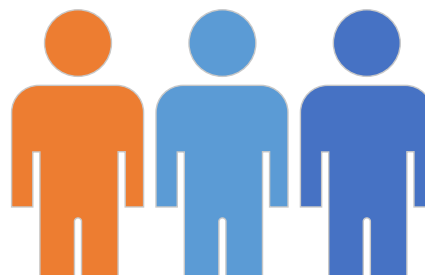
In 2016, Health Share of Oregon launched a pilot Community Paramedics Program that sent participating paramedics into the homes of recently discharged patients to assist in the transition from the hospital care to self-care at home. The goals of the program were to improve health and reduce hospital readmissions. The Center for Outcomes Research and Education (CORE) conducted an evaluation of the program to assess impact on health care utilization, participant health and health management, and overall program satisfaction.

Data & Methods

Our team used a combination of Medicaid insurance claims, program data, and surveys to compare key outcomes of Community Paramedics Program participants to a group of similar patients who did not participate in the program. Using claims, we compared the two groups' inpatient readmissions at multiple time points as well as their use of outpatient and emergency department care. Using surveys, we assessed several measures of subjective health and health management as well as program satisfaction.

The Community Paramedics Participants

Community Paramedics Program participants had to be a Health Share of Oregon member, over the age of 18, and determined to be in need of the program based off of recommendations from staff members at participating hospitals. A total of 123 people were included in this study. Their demographics, medical reason qualifying admission, and social needs are as follows:



Demographics	Admit Reasons	Social Needs
For the case group, the average age was 56 years old...	The top 5 most common medical reason for a qualifying admission were...	Of the program participants who responded to the survey (N=37), in the last year...
56% were female;	1. Heart/vascular	42% struggled to make ends meet all or most of the time.
21% were black;	2. Sepsis	20% went without housing , and 32% went without food .
54% were white;	3. Respiratory	
5% were Hispanic.	4. Metabolic	
	5. Trauma	

What We Found

A downward trend in readmission to the hospital.

Compared to the controls, there was a consistent but non-significant downward trend in hospital readmissions at 7, 30, and 60 days post-discharge among those who participated in the Community Paramedics Program compared to the control group. At 7 and 30 days, the odds of readmitting was reduced by 30% for cases compared to controls. This trend was even stronger for those whose qualifying admission was for a chronic condition.

Significant increase in utilization of outpatient care.

A significantly larger percentage of program participants engaged with outpatient care – specifically primary care and specialty care – at 30 days post-discharge when compared to controls. Community Paramedics cases had more than 1.5 greater odds of having a primary care visit and more than 2.6 greater odds of having a specialty care visit than controls. Increased engagement with outpatient care was even greater for those whose qualifying admission was for an acute condition.

More confidence, more hope, and improving health.

Community Paramedics cases showed a strong upward trend in self-efficacy scores – especially with disease management – compared to controls. There was also a strong upward trend with cases feeling as though their health had improved; however, the rating of overall health status was similar across groups. Significantly more cases than controls felt hope for the future, and fewer screened positive for depression.

A positive experience with Community Paramedics.

The majority of cases who responded to the survey felt that the services provided by community paramedics were very helpful, and that the community paramedic understood their needs. Overall, participants reported a positive experience with the program and felt that they received the right amount of visits.

↓ 30%

trending reduction
in odds of readmits
at 30 days

↑ 1.5

greater odds of
outpatient care at
30 days

7.7

Avg. self-efficacy
score for disease
management
(out of 10)

95%

rated the program
as “excellent” or
“very good”

Bottom Line

The Community Paramedics Program shows promise for reducing readmissions to the hospital while increasing primary and specialty care utilization. Significantly more cases felt more hope towards the future after participation, and there was a strong trend in higher disease management self-efficacy scores among participants compared to controls. Overall, participants were very satisfied with the program.

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Introduction

Community Paramedics – a pilot paramedicine project implemented by Health Share of Oregon – seeks to help patients transition from hospital to home in order to reduce the need for readmission to the hospital by promoting self-efficacy. This report outlines the findings of an evaluation of the Community Paramedics Program conducted by the Center for Outcomes and Education (CORE).

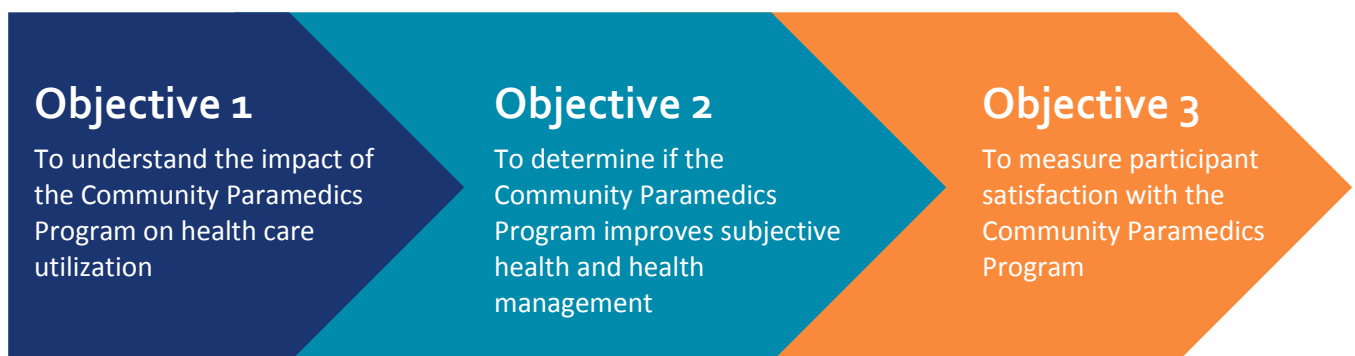
Study Background

Community paramedicine is an emerging home health care strategy that brings together hospital and emergency medical services (EMS) systems to better coordinate the care of patients. Community paramedicine began as a method of reaching patients in rural communities who lacked access to hospitals or clinics, but in recent years, the unique skills of EMS workers have been tapped to fill health care gaps in a variety of communities and settings¹. Today, some models have community paramedics meeting patients in their homes to assist with chronic conditions, provide post-hospital discharge assistance, and improve medical care compliance, among other services¹.

Health Share of Oregon partnered with local hospitals and EMS agencies to operate a community paramedicine pilot program, which began enrolling patients in August of 2016. The overarching goal of the Community Paramedics Program is to reduce readmissions after a patient is discharged from the hospital. To do this, community paramedics meet with program participants who have been recently discharged in their homes to ensure that they have the knowledge and tools needed to prevent another hospital stay, performing short-term interventions where needed and coordinating with hospital care coordination and staff.

Health Share of Oregon hired CORE to conduct an evaluation of its pilot Community Paramedics Program with the research objectives as listed below.

Evaluation Objectives



Community Paramedics Program

Health Share of Oregon’s Community Paramedics Program enrolled its first patients in August of 2016 at three Legacy hospitals in partnership with paramedics at Metro West Ambulance (MWA). Legacy launched the program at a fourth site in 2017. In October 2016 the program was expanded to three Providence Health & Services hospitals, who partner with American Medical Response (AMR) and Tualatin Valley Fire & Rescue (TVFR). Community paramedics with Metro West and AMR/TVFR visit Health Share of Oregon patients in their homes post-hospital discharge to do the following:

- Conduct patient assessments
- Provide medication review
- Ensure outpatient appointments are scheduled
- Provide education
- Perform home safety check
- Submit patient care reports

Case and Control Sites

Our study included seven Legacy and Providence hospitals that implemented the Community Paramedics Program. The Legacy hospitals included as case sites were Emmanuel, Good Samaritan, Meridian Park, and Mount Hood. The Providence hospitals included as case sites were St. Vincent, Milwaukie, and Willamette Falls. The control hospitals included in this study that did not offer the Community Paramedics Program were Oregon Health & Science University (OHSU), Providence Portland, and Providence Newberg. Legacy Mount Hood was included as a control site for the first six months of the study, but transitioned to a case hospital once it implemented the program. The Community Paramedics Program workflow included multiple phases and differed some between the Legacy and Providence hospitals (**Table 1**).

TABLE 1: Program Flow by Site (Legacy and Providence)

		Legacy	Providence
RECRUITMENT	Patient Identification:	Case Management identifies patient using “risk score”	PMG Care Manager, Acute Care Manager, Community Paramedic & Home Health Liaison, Clinics, and Medical Home Team identify patients
	Referral to:	Hospital Care Coordinator	Community Paramedic Coordinator
	Outreach:	MWA coordinator notified and contacts patient to explain program and invite participation	Care Manager contacts patient to gain consent for a community paramedic hospital visit
PLANNING	Set goals:	Care Manager and hospital staff collaborate to set patient goals	Community paramedic calls referral source to discuss intervention goals
	Hospital Visit by Community Paramedic:	None	Community paramedic meets patient in hospital, explains program, gains consent, and schedules first home visit
VISITS	First Home Visit:	Community paramedic gains consent, conducts first visit activities, & schedules more visits	Community paramedic conducts first visit activities & schedules more visits
	More Visits:	Community paramedic conducts more visits and submits reports	Community paramedic conducts more visits after receiving approval from the Care Manager and submits reports
GRADUATION	Coordinated Care:	Coordinates as needed with Care Management and providers	Coordinates as need with Home Health, providers, and Community Resource Desk
	Graduation:	MWA coordinator informed that patient has graduated	PCPCH informed that patient has graduated

Program Statistics

Recruitment & Exit. A total of 364 patients were considered for the program, and 264 patients were contacted for recruitment. Of those, 177 accepted and were enrolled in the program and 87 declined (**Table 2**).

Patients exit the Community Paramedics Program in three primary ways: graduation, patient-prompted cancellation, or cancellation due to readmission to the hospital. Nearly 75% of the 171 participants who received at least 1 visit from the program graduated, indicating successful program completion. Approximately 15% canceled participation, and 6.4% canceled due to hospital readmission (**Table 2**). These trends looked similar between the two program sites. Of note, not all cases had exited the program at the time of the study; thus remaining cases were considered still active in the program.

Number of Visits. Of the study participants who had a visit, about half had 4 visits with a community paramedic. This number was even greater for participants from Legacy where more than 60% had four visits by a community paramedic. At Providence, the number of visits with a community paramedic was more evenly distributed with about 34% of participants having four visits and about 28% having two visits. At both sites, very few patients had more than four visits (**Table 3**).

Inpatient Admission & Reason. Not all patients that participated in the Community Paramedics Program had an inpatient stay that met the criteria defined through the Healthcare Effectiveness Data and Information Set (HEDIS)². At Legacy, 86% of participants had inpatient stays that met the HEDIS-definition. At Providence, only 49% of participants had HEDIS-defined qualifying inpatient stays (**Table 4**). The reason for Providence's smaller percentage is likely because Providence allowed for recruitment without inpatient stay, including those who visited cardiovascular clinics and individuals with high utilization of care. Only those with a HEDIS-defined inpatient stay were included in the analysis.

Participants with a HEDIS-defined inpatient stay who were visited by a community paramedic were admitted to the hospital for an array of reasons, and these reasons varied some by site (**Table 4**). At Legacy, the top reason for a qualifying admission was heart and vascular disease (24.2%), whereas the top reason at Providence was sepsis (31.3%). The percentage of participants with a respiratory admit was much greater at Legacy than at Providence (**Table 4**).

TABLE 2: Program Recruitment & Status

	All	Legacy	Providence
Total considered	346	245	101
Total contacted	264	175	89
Total declined	87	65	22
Total patients accepted	177	110	67

	All	Legacy	Providence
Graduated	74.3%	73.6%	75.4%
Patient canceled	15.2%	15.1%	15.4%
Readmission cancel	6.4%	8.5%	3.1%

TABLE 3: Number of Visits & Time in Program

	All N=171	Legacy N=106	Providence N=65
1 visit	18.7%	17.9%	20.0%
2 visits	16.4%	9.4%	27.7%
3 visits	8.2%	3.8%	15.4%
4 visits	50.3%	60.4%	33.9%
More than 4 visits	6.4%	8.5%	3.1%

	All	Legacy	Providence
Average # of days until 1 st visit	6.7	6.6	8.9
Average # of days in program	21.1	21	22.3

TABLE 4: Inpatient Admission & Reason

	Legacy N=106	Providence N=65
Inpatient ¹	85.9%	49.2%

	Legacy	Providence
Heart and vascular	24.2%	18.8%
Sepsis	18.7%	31.3%
Respiratory	23.1%	6.3%
Metabolic	5.5%	9.4%
Trauma	4.4%	9.4%
Gastric	1.1%	12.5%
Cancer	1.1%	6.3%
Unknown	5.49%	0.0%

¹HEDIS-defined inpatient event

Methods

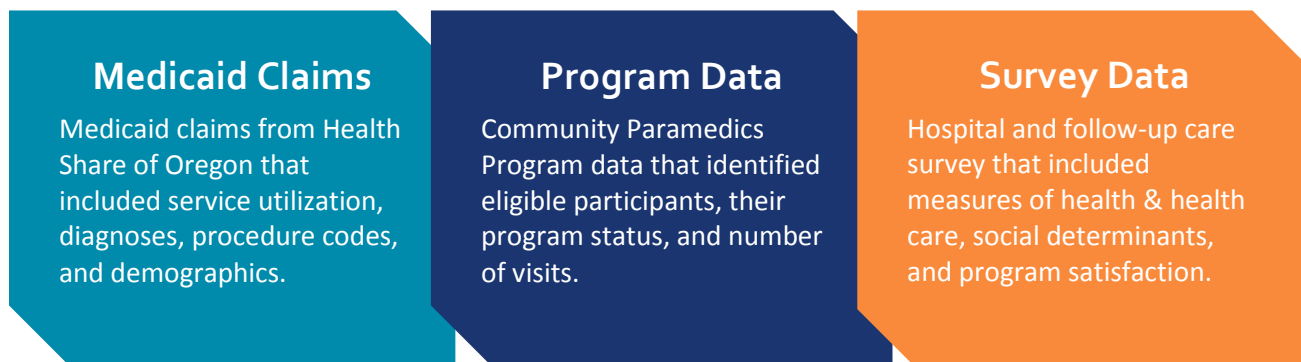
Overview

We used a mixed methods approach to assess the impact of participating in the Community Paramedics Program compared to a similar cohort of individuals that did not participate. Our key outcomes included hospital readmissions, use of the emergency department, use of ambulatory outpatient care, and subjective health and health management following discharge from the hospital. We also assessed participant satisfaction with the Community Paramedics Program.

Data Sources

The evaluation relied on three key data sources: Medicaid Claims, Program Data, and Surveys. More details on these sources can be found below in **Exhibit 1**.

EXHIBIT 1: Data Sources



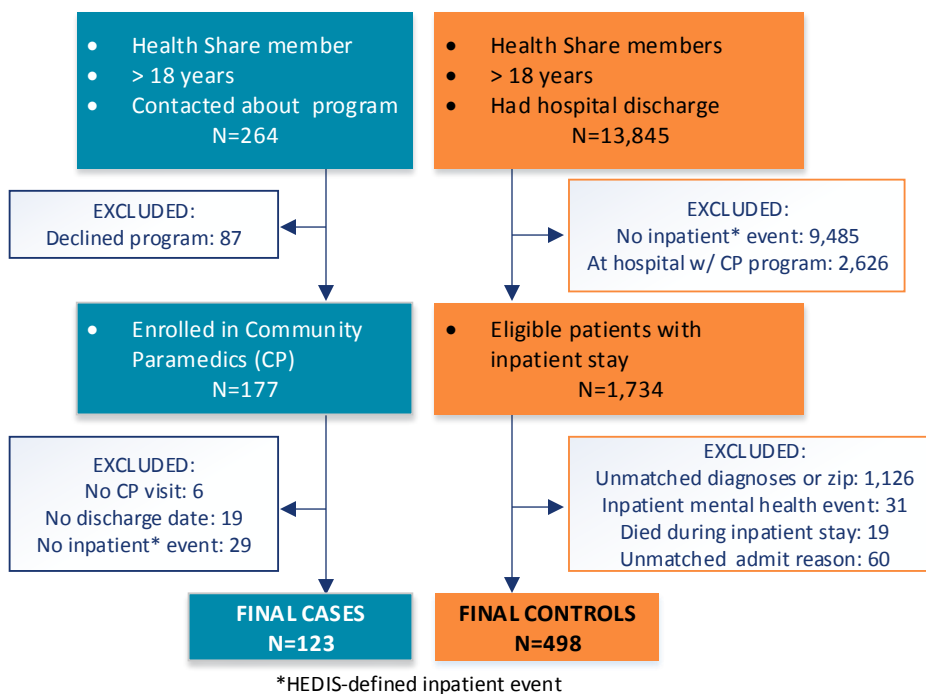
Study Design

Study Population.

Community Paramedics cases were selected from the program data, which identified individuals enrolled in the program. To be eligible for enrollment you had to be a Health Share of Oregon member, over 18 years old, and discharged from the participating hospitals during the study window (Sept. 1, 2016 – Aug. 30, 2017).

A total of 177 people enrolled in the program. To be included in the claims analysis, the participant had to have at least 1 visit with a community paramedic, a hospital discharge, and a HEDIS-defined inpatient event (123 people) (**Exhibit 2**).

EXHIBIT 2: Case & Control Inclusion Criteria



The comparison group was built from a monthly list of Health Share of Oregon hospital discharges. To be considered for inclusion in the analysis, the individual had to be a Health Share of Oregon member, over 18 years old, and discharged from one of the five control hospitals during the study window. Their hospital admission had to meet the same HEDIS-defined criteria. Individuals in the comparison group were excluded if they did not have similar diagnoses, did not have a similar reason for their qualifying admission, or if they did not reside in a zip code shared with the cases. Additional exclusions included individuals with an inpatient behavioral health admission and those that died during their inpatient stay. This left 498 controls for the claims analysis (**Exhibit 2**).

Survey Design and Fielding. Through extensive literature review, CORE collaborated with Health Share of Oregon to design a hospital and follow-up care experiences survey using validated measures of subjective health and health management. Additional questions included measures developed to assess social determinants of health and satisfaction with the Community Paramedics Program.

The hospital and follow-up care survey was sent to Community Paramedics Program graduates and individuals in the comparison group approximately 2-3 months after their qualifying discharge from the hospital. Surveys were re-sent to non-respondents three times, followed by phone outreach to encourage survey completion. A total of 612 surveys were sent to the cases and controls. We received 131 completed surveys – a 21% response rate (**Table 5**). A few surveys from each group were excluded if the individual did not meet the requirements outlined in Exhibit 2; thus, we had 37 surveys from the cases and 78 from the controls for the final analysis (**Table 5**).

TABLE 5: Surveys

Surveys Sent 612	
Surveys Received 131 Response Rate: 21%	
Surveys Excluded 16	
Cases 37	Controls 78

Analysis. Demographic characteristics of the study sample were assessed using member data stored in their medical claims history. We compared the demographics of the cases and controls as well as the characteristics of their qualifying event using chi-square tests of association. While controls were selected to be similar to the cases with respect to their geography and their admission reasons, they were not guaranteed to be demographically similar to each other.

Raw claims data was collected for each study participant for the three months before and after the qualifying event. Using HEDIS metric definitions², claims data was converted to represent each participant’s inpatient, ambulatory outpatient, specialty, and primary care provider visits for the period directly after the qualifying event. The utilization following the event was flagged as being within 7, 30, or 60 days and was used as a marker for both readmission rates and follow-up care. Lastly, by analyzing the set of diagnosis codes associated with the qualifying event we distinguished admits for chronic and acute conditions for subgroup analyses. We used adjusted logistic regressions to determine the differences in utilization between cases and controls. Regressions were adjusted for age group, gender, race, and language.

Survey respondents made up roughly a quarter of the study population defined by the claims data. Comparisons between responses of cases and controls were done using t-tests (for continuous data) and chi-square tests (for categorical data). Although the slight differences in demographic makeup of the survey sample make adjusted regression appropriate, the small sample size would likely lead to unstable estimates that do not accurately reflect the differences in means or proportions.

All data transformation was conducted in SQL Server 2016, and all data analysis was conducted in R version 3.3.3. P-value <0.05 considered statistically significant.

The Study Population

Demographics

Community Paramedics cases in the claims analysis differed somewhat by age, race, and language compared to controls. Our claims analysis accounts for these demographic differences. Survey respondent demographics reflect a subset of individuals included in the claims analysis. There are slight demographic differences between case and control survey respondents. We are unable to adjust for demographic differences in the survey analysis due to the small sample size (**Table 6**). Demographics for cases that were excluded from the analysis can be found in the Appendix (**Table 1A**).

TABLE 6: Demographics of Claims Analysis Group & Survey Respondents

	Claims Analysis			Survey Respondents		
	Cases N=123	Controls N=498	P-value	Cases N=37	Controls N=78	P-value
Age group			0.015			0.136
18-30	3.3%	6.2%		0.0%	5.1%	
31-40	4.1%	8.6%		2.9%	2.6%	
41-50	17.9%	15.9%		14.7%	11.5%	
51-60	39.0%	33.7%		32.4%	41.0%	
61-70	28.5%	19.5%		44.1%	25.6%	
71-80	5.7%	11.0%		5.9%	7.7%	
Over 80	1.6%	5.0%		0.0%	6.4%	
Gender			0.159			0.147
Female	55.3%	48.2%		56.8%	42.3%	
Male	44.7%	51.8%		43.2%	57.7%	
Ethnicity			0.751			0.074
Hispanic	4.9%	4.2%		8.1%	1.3%	
Unknown	95.1%	95.8%		91.9%	98.7%	
Race			<0.001			0.048
White	54.5%	57.4%		64.9%	51.3%	
Black	21.1%	11.0%		16.2%	15.4%	
Asian	0.0%	7.2%		0.0%	11.5%	
Other/Unknown	24.4%	24.3%		18.9%	21.8%	
Language			<0.001			0.085
English	97.6%	88.2%		97.3%	88.5%	
Other	2.4%	11.9%		2.7%	11.5%	

P-value <0.05 considered statistically significant

Admission Reason for Qualifying Inpatient Stay

Having an inpatient stay was a criteria for inclusion in our analyses. The program did not have specific requirements around the reason for admission that would qualify someone for the Community Paramedics Program. To improve comparability between case and control groups, we selected controls who had similar diagnoses surrounding their qualifying event. After collecting claims data on the control sample we further refined this by excluding controls who did not share broad admit reasons with the case group.

For the cases and controls, the most prevalent admit reason were heart and vascular conditions, followed by sepsis and respiratory conditions. There is no difference in admission reason between cases and controls (**Table 7**). We also determined whether the admission was for an acute or chronic condition. In both groups, approximately 40% of the qualifying admissions were for chronic conditions (**Table 7**).

TABLE 7: Reason for Qualifying Inpatient Stay

	Cases N=123	Controls N=498	P-value
Admit Reason			0.841
Heart and vascular	22.8%	20.9%	
Sepsis	22.0%	23.9%	
Respiratory	18.7%	13.9%	
Metabolic	6.5%	5.8%	
Trauma	5.7%	4.8%	
Gastric	4.1%	5.4%	
Cancer	2.4%	3.2%	
Other/Unknown	17.9%	22.1%	
Admitted for chronic condition			0.929
No	53.7%	51.8%	
Yes	42.3%	44.2%	
Missing	4.1%	4.0%	

P-value <0.05 considered statistically significant

Social Determinants of Health

Through administrative data, we are able to compare demographics and diagnoses for all people included in our study. However, it is more difficult to assess social determinants of health, which can have a big impact on outcomes. We asked basic social determinants of health questions in our survey that was sent to cases and controls.

For our survey respondents, we found a similar prevalence of social determinants in cases and controls, including having to go without housing, food, transportation, and clothing (**Table 8**). Social determinants were similar across groups, but more people in the control group struggled with their utilities, while more people in the cases struggled with stable housing. There were no significant differences in “struggling to make ends meet” across groups, with approximately 40% of people in each group struggling “all of the time” or “most of the time” in the past 12 months (**Table 8**).

TABLE 8: Social Determinants of Health

	Cases N=37	Controls N=78	P-value
Go without any of the following, past 12 months			
Food	32.4%	34.7%	0.813
Utilities	8.8%	22.7%	0.068
Transportation	29.4%	24.0%	0.552
Clothing	32.4%	25.3%	0.451
Stable Housing or Shelter	20.6%	12.0%	0.252
Medical Care	11.8%	8.0%	0.536
Medicine	14.7%	16.0%	0.862
Any of the above	55.9%	49.3%	0.526
Struggles to make ends meet, past 12 months			0.260
All of the past 12 months	21.6%	28.2%	
Most of the past 12 months	21.6%	12.8%	
Some of the past 12 months	35.1%	21.8%	
None of the past 12 months	18.9%	32.1%	
Missing	2.7%	5.1%	

P-value <0.05 considered statistically significant

Objective 1. Utilization of Health Care

Key Findings

- There was a consistent downward trend in readmissions for Community Paramedics cases compared to controls.
- We found a significant increase in outpatient ambulatory care visits for Community Paramedics cases compared to controls.
- Community Paramedics cases admitted for a chronic condition had a strong downward trend in 30 day readmissions and increased use of specialty care. Those admitted for an acute condition had increased use of all outpatient ambulatory care.

What We Wanted to Know

We wanted to understand whether participation in the Community Paramedics Program reduced readmission to the hospital compared to a similar control group who did not receive the program. We also wanted to know whether people that participated in the Community Paramedics Program had increased follow-up with outpatient care after their discharge and reduced use of the emergency department.

What We Did

We used Medicaid claims data to determine hospital readmissions at 7, 30, and 60 days post-discharge for cases and controls. We also measured the use of outpatient ambulatory care, which includes primary and specialty care, and emergency department care use at 30 days following discharge. Finally, by examining admission diagnoses, we measured these outcomes stratified by admissions for chronic or acute conditions.

What We Found

Readmissions. The percentage of people that readmitted 7, 30, and 60 days following their qualifying inpatient stay did not significantly differ between Community Paramedics cases and controls. However, we did observe a consistent downward trend in readmissions for Community Paramedics cases compared to controls. This trend existed at all measured time points, which strengthens the finding. At 7 and 30 days, the odds of readmitting reduced by approximately 30% for Community Paramedics cases compared to controls (**Table 9**). For those who readmitted, there was no difference in length of stay between cases and controls (**Appendix Table 2A**). Diagnoses associated with the readmissions are available in the Appendix (**Table 3A**).

TABLE 9: Readmissions at 7, 30, & 60 Days

Days post discharge	Cases N=123	Controls N=498	OR	P-Value
7 days	6.5%	8.8%	0.71	0.390
30 days	17.9%	21.9%	0.73	0.223
60 days	27.6%	30.7%	0.82	0.395

Adjusted for age, race, and gender

P-value <0.05 considered statistically significant

There were also no statistically significant differences in readmissions when examined by individuals whose qualifying inpatient stay was for chronic or acute conditions. For those whose qualifying admission was for a chronic condition, there was an even stronger downward trend in readmissions at 30 days, with a 45% reduction in the odds of readmitting for cases compared to controls (**Table 10**).

TABLE 10: Readmissions at 7, 30, & 60 Days – Chronic & Acute Conditions

	Chronic Condition				Acute Condition			
	Cases N=52	Controls N=220	OR	P-Value	Cases N=66	Controls N=258	OR	P-Value
7 days	5.8%	8.2%	0.64	0.490	7.6%	8.1%	0.83	0.726
30 days	15.4%	23.2%	0.55	0.149	18.2%	19.4%	0.86	0.686
60 days	25.0%	30.0%	0.77	0.471	27.3%	29.8%	0.82	0.527

*Adjusted for age, race, and gender
P-value <0.05 considered statistically significant*

Outpatient Ambulatory Care. A significantly greater percentage of Community Paramedics cases engaged in outpatient ambulatory care compared to controls at 30 days following their hospital discharge. Within this domain, we found that the percentage of cases engaging specifically in primary and/or specialty care was significantly greater in Community Paramedics cases compared to controls. Community Paramedics cases had more than 1.5 greater odds of having a primary care visit and more than 2.6 greater odds of having a specialty care visit than controls (**Table 11**).

For those whose qualifying admission was for a chronic condition, there were strong trends for increased engagement in outpatient ambulatory care, but this did not reach statistical significance. Interestingly, they did have significantly more engagement in specialty care

TABLE 11: Utilization of Outpatient Services – 30 days – Overall

	Cases N=123	Controls N=498	OR	P-Value
Outpatient Ambulatory	79.7%	63.7%	2.36	<0.001
Primary Care	64.2%	55.0%	1.57	0.036
Specialty	39.0%	19.9%	2.62	<0.001
Emergency Department	28.5%	29.3%	0.96	0.851

*Adjusted for age, race, and gender
P-value <0.05 considered statistically significant*

compared to controls, and this increase was even greater seven days after discharge (data not shown). Those admitted for acute conditions had significantly increased engagement with all outpatient ambulatory care, including primary and specialty care, compared to controls (**Table 12**). For patients admitted for acute conditions, this resulted in more than three-times the odds of having an outpatient visit at 30 days for cases compared to controls (**Table 12**).

Emergency Department. There were no significant differences in emergency department use 30 days following hospital discharge between Community Paramedics cases and controls (**Table 11**). There were also no significant differences when results were examined by those whose qualifying admission was for a chronic or acute condition (**Table 12**).

TABLE 12: Utilization of Outpatient Services – 30 days – Chronic & Acute Conditions

	Chronic Condition				Acute Condition			
	Cases N=52	Controls N=220	OR	P-Value	Cases N=66	Controls N=258	OR	P-Value
Outpatient Ambulatory	75.0%	65.5%	1.72	0.1272	81.8%	61.6%	3.11	0.0007
Primary Care	57.7%	55.5%	1.20	0.5693	68.2%	53.9%	2.04	0.0195
Specialty	36.5%	22.3%	2.24	0.0242	40.9%	18.6%	3.08	0.0003
Emergency Department	25.0%	26.4%	0.99	0.9718	28.8%	32.2%	0.83	0.5588

*Adjusted for age, race, and gender
P-value <0.05 considered statistically significant*

Objective 2: Self-Reported Health Outcomes

Key Findings

Compared to controls, Community Paramedics cases showed:

- An upward trend in general disease management self-efficacy;
- A greater percentage of people indicating that their health has gotten better, but no difference in subjective health overall;
- Fewer positive depression screenings and significantly more hope for the future.

What We Wanted to Know

We wanted to discern whether the Community Paramedics Program increased patients’ confidence in caring for themselves, recognizing medical needs, coping with a condition, and other skills. We also wanted to know how the patients viewed their own health after the program, whether or not their health had improved since participation, and their hope for the future.

What We Did

We administered a hospital experience and follow-up survey to the cases and controls that asked for respondents to rate their confidence managing their health, their health in the past month, how their health has changed in the past month, depression, and their level of hope for the future. We compared results between the case and control groups.

What We Found

Self-Efficacy. To measure self-efficacy, we used the General Disease Management self-efficacy scale developed by the Self-Management Resource Center³. This measurement tool uses a 10-point scale, with 10 indicating “most confident” and a 1 indicating “not confident at all.” Community Paramedics cases had higher average scores, indicating more confidence than controls (**Table 13**). These differences were not statistically significant, but there were strong upward trends. The biggest improvements were in confidence with “the things necessary to manage their condition,” “judging when illness changes require a doctor visit,” and “managing condition to minimize doctor visits.” There were minimal differences in emotional distress due to their condition and alternatives to medications between groups. Overall, Community Paramedics cases showed positive signs of increased confidence in managing their health conditions.

TABLE 13: Self-reported Self Efficacy of Cases & Controls

	Cases N=37	Controls N=78	
How confident are you in doing the following?	Mean	Mean	P-value
The things necessary to manage condition	8.2	7.5	0.169
Judge when illness changes mean doctor visit	8.4	7.8	0.221
Managing condition to minimize doctor visits	7.7	6.9	0.157
Reducing emotional distress of condition	6.9	6.7	0.728
Doing things other than taking medication	7.3	6.9	0.448
Overall	7.7	7.2	0.240

P-value <0.05 considered statistically significant

Subjective Health. We asked survey questions that assessed subjective health for Community Paramedics cases and controls (**Table 14**). We did not see any significant differences in how either group rated their overall health in the past four weeks, but there was a strong trend for more Community Paramedics cases indicating that their health has gotten better over the past four weeks compared to controls (Community Paramedics cases: 32.4% vs. controls: 19.2%).

TABLE 14: Self-reported Health of Cases & Controls

	Cases	Controls	P-value
Overall health, past 4 weeks			0.731
Excellent/Very Good	18.9%	12.8%	
Good	29.7%	25.6%	
Fair/Poor	46.0%	56.4%	
Missing	5.4%	5.1%	
Change in overall health, past 4 weeks			0.138
My health has gotten better	32.4%	19.2%	
My health has stayed about the same	40.5%	60.3%	
My health has gotten worse	16.2%	16.7%	
Missing	10.8%	3.9%	

P-value <0.05 considered statistically significant

Depression and Hope for the Future. We asked the PHQ-2 depression screening questions and a question about hope for the future. We found a strong downward trend in positive depression screens for Community Paramedics cases compared to controls (**Table 15**). There were statistically significant differences in “hope about the future” between groups, where Community Paramedics cases had more people in the “some hope” category and much fewer in the “very little hope” category.

TABLE 15: Depression & Self-Reported Hope of Cases & Controls

	Cases	Controls	P-value
Current Depression (PHQ-2)			0.169
Yes	13.5%	24.4%	
No	86.5%	75.6%	
Hope about the future			0.034
A lot of hope	29.7%	33.3%	
Some hope	59.5%	34.6%	
Very little hope	2.7%	18.0%	
No hope at all	2.7%	2.6%	
Missing	5.4%	11.5%	

P-value <0.05 considered statistically significant

Objective 3: Program Satisfaction

Key Findings

- The majority of Community Paramedics cases who responded to the survey found their community paramedic’s services and experience helpful.
- No survey respondents felt they had too many visits, and 81% felt they received the right amount of visits.
- 95% said their experience with their community paramedic was “excellent” or “very good.” Nobody rated their experience as “fair” or “poor.”

What We Wanted to Know

We wanted to learn about patient experience with the Community Paramedics Program – which services were helpful and which were not, the quality of interactions with the community paramedics, satisfaction with the number of visits, and their experience overall.

What We Did

As part of the hospital and follow-up care survey, we had a specific section of questions about experience with the Community Paramedics Program. This section was only completed by those who had a visit with a community paramedic. We performed descriptive analyses on the Community Paramedics cases who responded to the survey and met all eligibility criteria for inclusion in the sample (N=37).

What We Found

Helpfulness of Services and Experience. We asked survey respondents who had a visit with a community paramedic to indicate the helpfulness each of the community paramedic’s services (**Table 16**). The majority indicated that the services were “very helpful,” and very few, if any, indicated that the services were “not helpful.” Some people indicated that they did not receive a service; “checking on health care appointments” and “care coordination” was not received by approximately 10% of respondents.

The majority of Community Paramedics cases who responded to the survey also strongly agreed with statements indicating that their community paramedic understood their needs, helped them set health goals, helped them feel in control of their health, and helped them understand how to get help. Very few, if any, disagreed with these statements, and a few people felt the statements did not apply to them (**Table 16**).

TABLE 16: Helpfulness of Community Paramedic Services & Experiences

How helpful were the following services?	Very Helpful	Somewhat Helpful	Not Helpful	Did not Receive
Physical health assessment	89.2%	8.1%	0.0%	0.0%
Medication review	78.4%	13.5%	2.7%	2.7%
Home assessment	70.3%	10.8%	2.7%	8.1%
Checking in on health care appointments	62.2%	18.9%	0.0%	10.8%
Care coordination	62.2%	13.5%	2.7%	10.8%

TABLE 16 (Continued): Helpfulness of Community Paramedic Services & Experiences

How much do you agree with the following statements?	Strongly Agree	Agree	Disagree	Strongly Disagree	Does not apply
Understood my needs	81.1%	16.2%	0.0%	0.0%	0.0%
Helped set health goals	54.1%	35.1%	0.0%	0.0%	5.4%
Helped me feel in control of health	67.6%	21.6%	2.7%	0.0%	5.4%
Helped understand how to get help	73.0%	21.6%	0.0%	0.0%	2.7%

Number of Visits. The majority of survey respondents who saw a community paramedic indicated that they received “just the right amount” of visits (**Table 17**). Only 16% said that they did not get enough visits and nobody said that they had too many visits (**Table 17**). It is important to note that about 68% of the Community Paramedics cases that responded to the survey had four visits with a community paramedic.

Overall Experience. The majority of survey respondents (78.4%) said that their experience with the community paramedic was “excellent” and 16.4% said their experience was “very good” (**Table 17**). No respondents gave the experience a “fair” or “poor” rating.

TABLE 17: Visits & Overall Experience

Did you feel like you received the right amount of visits from your community paramedic?	
Too many visits	0.0%
Just the right amount	81.1%
Not enough visits	16.2%
Overall, how would you rate your experience with the community paramedic?	
Excellent	78.4%
Very Good	16.2%
Good	2.7%
Fair	0.0%
Poor	0.0%

Conclusion

Summary of Findings

Readmissions & Health Care Utilization. While the differences in readmission between case and control groups did not significantly differ, we did observe a consistent downward trend in readmissions by those who participated in the program compared to those who did not, a trend that persisted across all three measured time points. This trend in reduction of readmission was even strong for those whose qualifying inpatient stay was for a chronic condition.

We also observed a significantly greater percentage of program participants who engaged in outpatient care – primary and specialty care – when compared to controls at 30 days following hospital discharge. Community Paramedics cases had more than 1.5 greater odds of having a primary care visit and more than 2.6 greater odds of having a specialty care visit than controls. We did not observe any significant differences in emergency department use between cases and controls.

Subjective Health & Confidence. Community Paramedics cases showed a strong upward trend in self-efficacy scores – especially with disease management – compared to controls. There was also a strong upward trend with cases feeling as though their health had improved. In addition, significantly more cases felt hope for the future than controls and fewer screened positive for depression.

Program Satisfaction. The majority of cases who responded to the survey felt that the services provided by community paramedics were “very helpful,” and that their community paramedic understood their needs. The majority of respondents (about 95%) rated their experience with the program as “excellent” or “very good.”

Implications

Our findings suggest that community paramedics may be an effective part of health reform strategies aimed at improving transition from hospital to home to reduce readmissions^{4,5} and increasing connection with outpatient care settings to promote prevention and health management^{6,7}. We found that readmission and use of outpatient care differed among patients admitted for chronic or acute conditions, suggesting that customized care based on medical diagnoses might further improve outcomes. We did not find a significant reduction in emergency department utilization, a difficult outcome to achieve⁸, and other strategies may be needed to reach that goal. Finally, the increase in self-efficacy in health care and hope for the future may have long term health benefits⁹.

Limitations

One limitation of this study was the small number of program participant cases, which decreases the power of the analysis. We examined hospital readmission, but further research is needed to determine whether a readmission was considered “avoidable” and to measure long-term outcomes. Surveys were only sent to patients with addresses, and were only offered in English which may have limited our population, and some responses are a subject to recall bias.

Bottom Line

The evaluation of the Community Paramedics Program revealed promising findings that indicate the program’s potential to decrease hospital readmissions, increase connection with outpatient care, improve confidence in self-management of health, and increase hope for the future. Participants also really liked the program with many feeling it met their needs and that the overall care experience was excellent.

Appendix

Tables

Appendix Table 1 displays demographic characteristics of the cases, controls, and excluded cases included in the claims analysis. Excluded cases reflect those who were enrolled in the Community Paramedics Program but did not meet the criteria for inclusion in the analysis (see Exhibit 2).

APPENDIX TABLE 1A: Demographics of Claims Analysis Groups (Cases and Controls) & Excluded Cases

	Claims Analysis		Excluded Cases N=48
	Cases N=123	Controls N=498	
Age group			
18-30	3.3%	6.2%	7.1%
31-40	4.1%	8.6%	3.6%
41-50	17.9%	15.9%	10.7%
51-60	39.0%	33.7%	42.9%
61-70	28.5%	19.5%	21.4%
71-80	5.7%	11.0%	14.3%
Over 80	1.6%	5.0%	0.0%
Gender			
Female	55.3%	48.2%	50.0%
Male	44.7%	51.8%	50.0%
Ethnicity			
Hispanic	4.9%	4.2%	0.0%
Unknown	95.1%	95.8%	100.0%
Race			
White	54.5%	57.4%	66.7%
Black	21.1%	11.0%	14.6%
Asian	0.0%	7.2%	0.0%
Other/Unknown	24.4%	24.3%	18.8%
Language			
English	97.6%	88.2%	93.8%
Other	2.4%	11.9%	6.3%

Appendix Table 2 displays the length of stay in the hospital for those who were readmitted within 60 days of their qualifying inpatient stay.

APPENDIX TABLE 2A: Length of Stay After Readmission of Claims Analysis Groups

	Cases N=123	Controls N=498
2 days or less	39.87%	35.3%
3-7 days	43.14%	41.2%
1-2 weeks	9.15%	14.7%
More than 2 weeks	7.84%	8.8%

Appendix Table 3 displays the reasons why cases and controls in the claims analysis were readmitted to the hospital within 60 days of their qualifying inpatient stay.

APPENDIX TABLE 3A: Readmission Reasons

	Cases N=123	Controls N=498
Heart and vascular	15.7%	20.6%
Sepsis	24.2%	14.7%
Respiratory	15.0%	20.6%
Metabolic	6.5%	8.8%
Trauma	6.5%	5.9%
Gastric	4.6%	11.8%
Cancer	5.9%	0.0%
Unknown	5.9%	5.9%

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