

What is the Potential of Community Paramedicine to Fill Rural Health Care Gaps?

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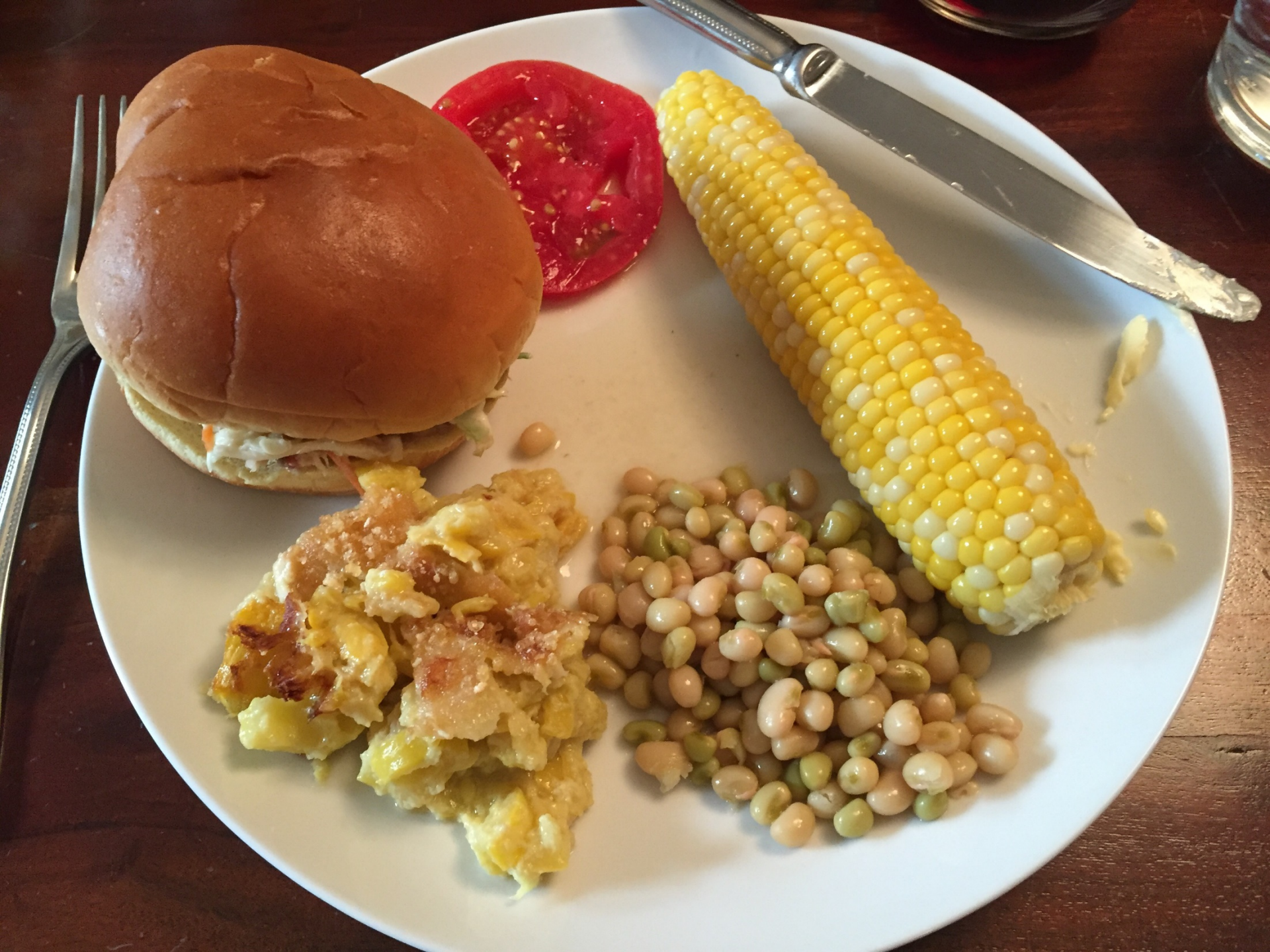
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**Mayo Clinic Medical Transport

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Rural health context

Rural economics

- Poorer, more food stamps (about a quarter of rural children in poverty; minorities even poorer than urban counterparts)
- Less likely to have employer-provided health care coverage, prescription drug coverage, Medicaid coverage

Burden of disease

- Higher rates of hypertension, CVD, suicide, accidental death/serious injury, alcohol abuse among youths, tobacco use, disability, diabetes, etc.

Access

- Rural residents travel farther to access care, with fewer transportation options

(National Rural Health Association: <http://www.ruralhealthweb.org/>)

Study context

Community Paramedicine (CP) has been promoted as a strategy to help rural communities, which frequently experience significant health care disparities and service gaps, by using emergency medical technicians (EMTs) and paramedics in an expanded role to provide public health and primary care services.

CP addresses the Institute for Healthcare Improvement's Triple Aim:

- Improve patient experiences of care
- Improve population health
- Reduce health care costs

...and a fourth aim (the "Quadruple Aim"*):

- Improving the work life of health care providers

*Bodenheimer, T., & Sinsky, C. (2014). From Triple to Quadruple Aim: care of the patient requires care of the provider. *The Annals of Family Medicine*, 12(6), 573-576.

CP program examples

Ontario, Canada

The Community Health Assessment Program through Emergency Medical Services (CHAP-EMS):

A Community Paramedicine Initiative for older adults in subsidized housing
(Credit: Dr. Gina Agarwal)

CHAP-EMS: About the Program

- Weekly drop-in health risk assessments with community paramedics
 - Using validated tools
 - Cardiovascular (e.g. BP, weight, smoking)
 - Diabetes (Fasting CBG if moderate/high risk)
 - Falls
- Tailored health education and promotion
- Referrals
 - Local wellness programs
 - EatRight Ontario
 - Health Care Connect
 - CCAC
- Reports back to family physician (“closes loop”)
- Using common area of subsidized seniors’ apartment buildings



Calgary, Alberta



Alberta Health
Services

Community Paramedic In Home Blood Transfusions

Dana Dalgarno, ACP
Senior Quality Assurance Strategist
Community Paramedic Program
Calgary, Alberta, Canada



IRCP 2016 Saskatoon, SK, Canada

Ventura County, CA

Ventura County, California Community Health/EMS Collaboration



Credit: Mike Taigman, MS
First Watch

TB Project

Population

Weekends and Holidays

Side Effects
Management

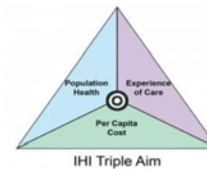
Identify/Monitor
Toxicity

Experience

DOT just before bed

Food, Shelter, diabetes
self-care

Completion
Celebrations



Cost

Dispense not Deliver

Clinic staff OT = 0
Estimated savings of
\$40,000

Winnemucca, NV

Humboldt General Hospital EMS
(Credit: Pat Songer and Louis Mendiola)



Integration: Surgical Services Clinic

- EMTs serve as expanded medical Assistants, helping with procedures and other patient visits
- EMTs are able to run calls and staff ambulances during off-hours

Expansion: Community Paramedicine

- Cost effective preventative and in-home care
- Health care system navigators
- Wellness services
- Physician extenders
- Decrease readmissions

Study aims

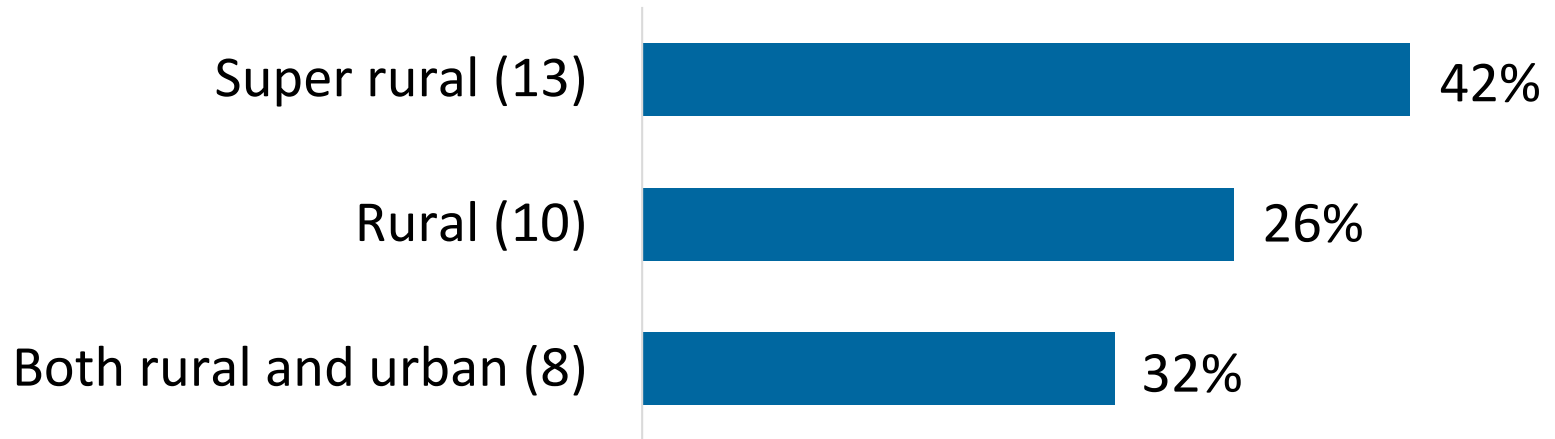
Improve our understanding of CP programs that serve rural communities:

1. Organizational characteristics
2. Goals, target populations, and services offered
3. Integration into community systems of health care and human services
4. Evidence to demonstrate success

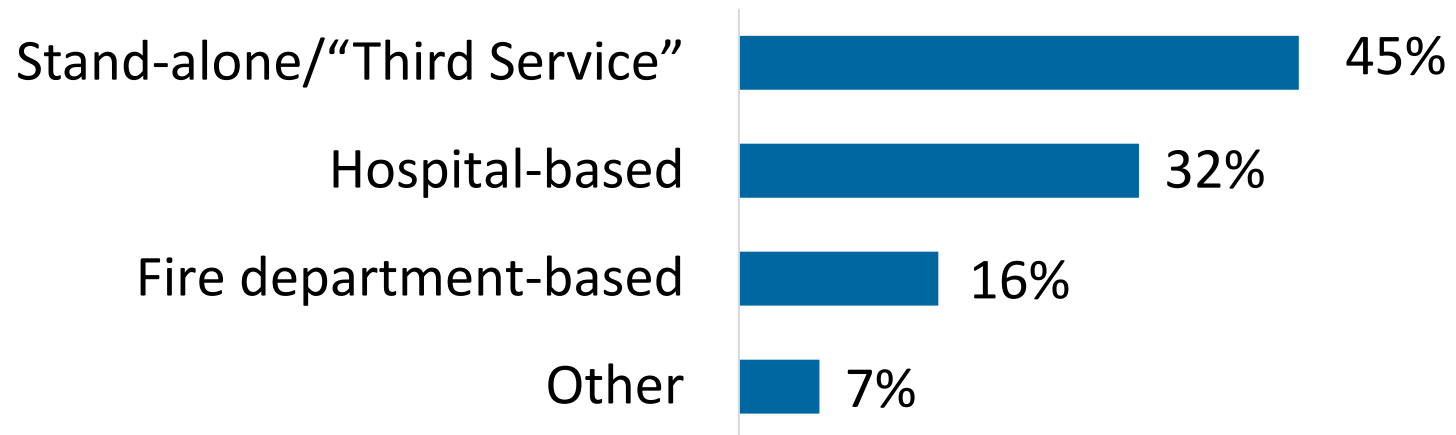
Methods

1. We compiled a list in December 2014 of 86 CP programs using articles, reports, presentations, and Web searches.
2. We identified program and service area ZIP codes, classifying them using Rural-Urban Commuting Area (RUCA) codes.
3. We conducted structured interviews (about 30 minutes) with 36 program leaders (100% response):
 - 31 programs serving rural communities
 - 5 urban programs that had generated evidence on outcomes

Final sample



EMS organization type



Program characteristics

Service area population:

- 35,000 (median), from 1,950 to 2.3 million

Time CP program in operation:

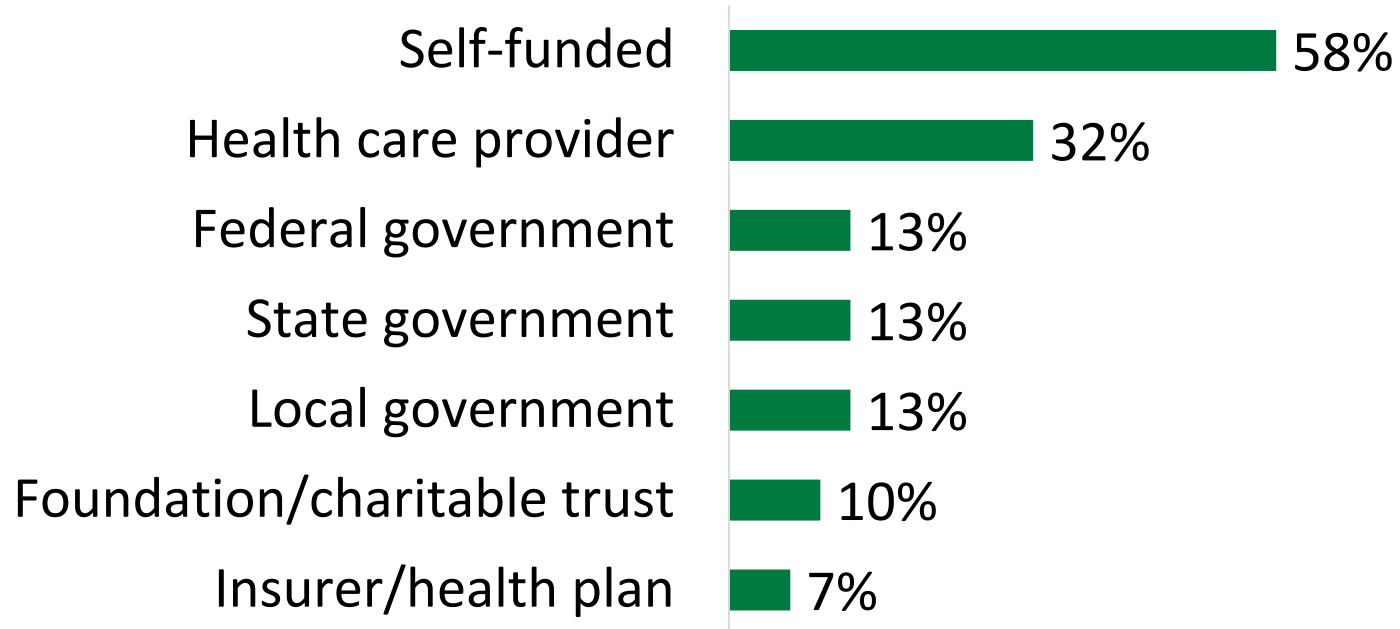
- 29 months (median), from 2 months to 13 years

Staffing:

- 7 community paramedics each providing 0.4 FTEs (median), from 1-60 persons and 0.1-10.0 FTEs

Two programs noted that both their EMS agencies and CP programs were staffed solely by **volunteers!**

Funding* : More than 3/4 were self-funded only or relied on a single external funding source.



*Programs could report multiple funding sources

Program goals and the Triple Aim

| | Improve patient experience | Improve population health | Reduce costs |
|--|----------------------------|---------------------------|--------------|
| Improve patient satisfaction with care | ✱ | | |
| Improve management of chronic disease | | ✱ | ✱ |
| Prevent falls in the elderly | | ✱ | ✱ |
| Increase/decrease outpatient visits* | | ✱ | ✱ |
| Increase immunizations | | ✱ | ✱ |
| Prevent traumatic injury | | ✱ | ✱ |
| Reduce hospital admissions or readmissions | | | ✱ |
| Reduce ED visits | | | ✱ |
| Reduce EMS/health care costs | | | ✱ |
| Reduce EMS use/transports | | | ✱ |
| Refer or transport to alternative destinations | | | ✱ |
| Reduce inpatient length of stay | | | ✱ |

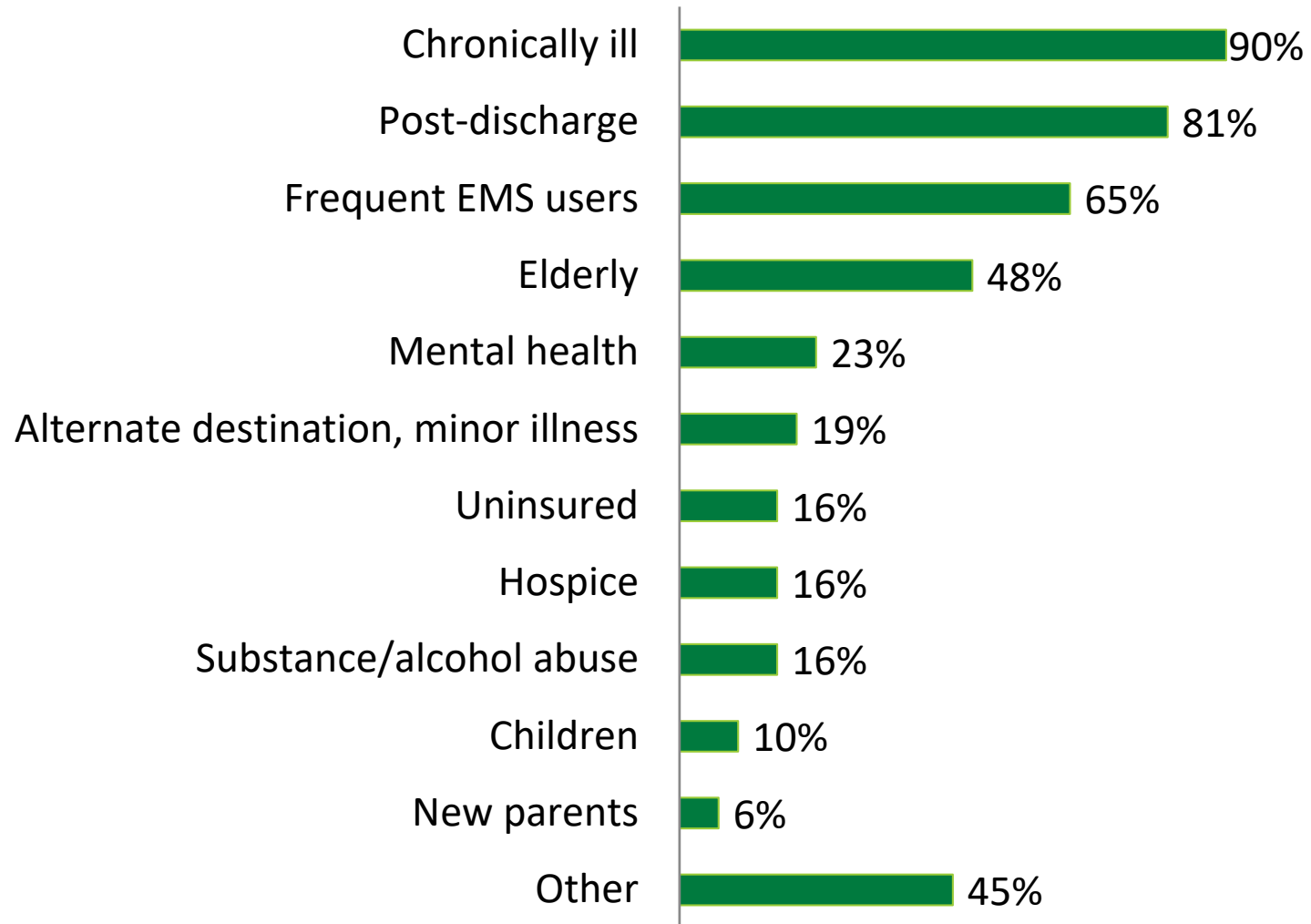
*Programs aim to connect patients to appropriate care, which can mean increasing or decreasing outpatient visits.

Program goals

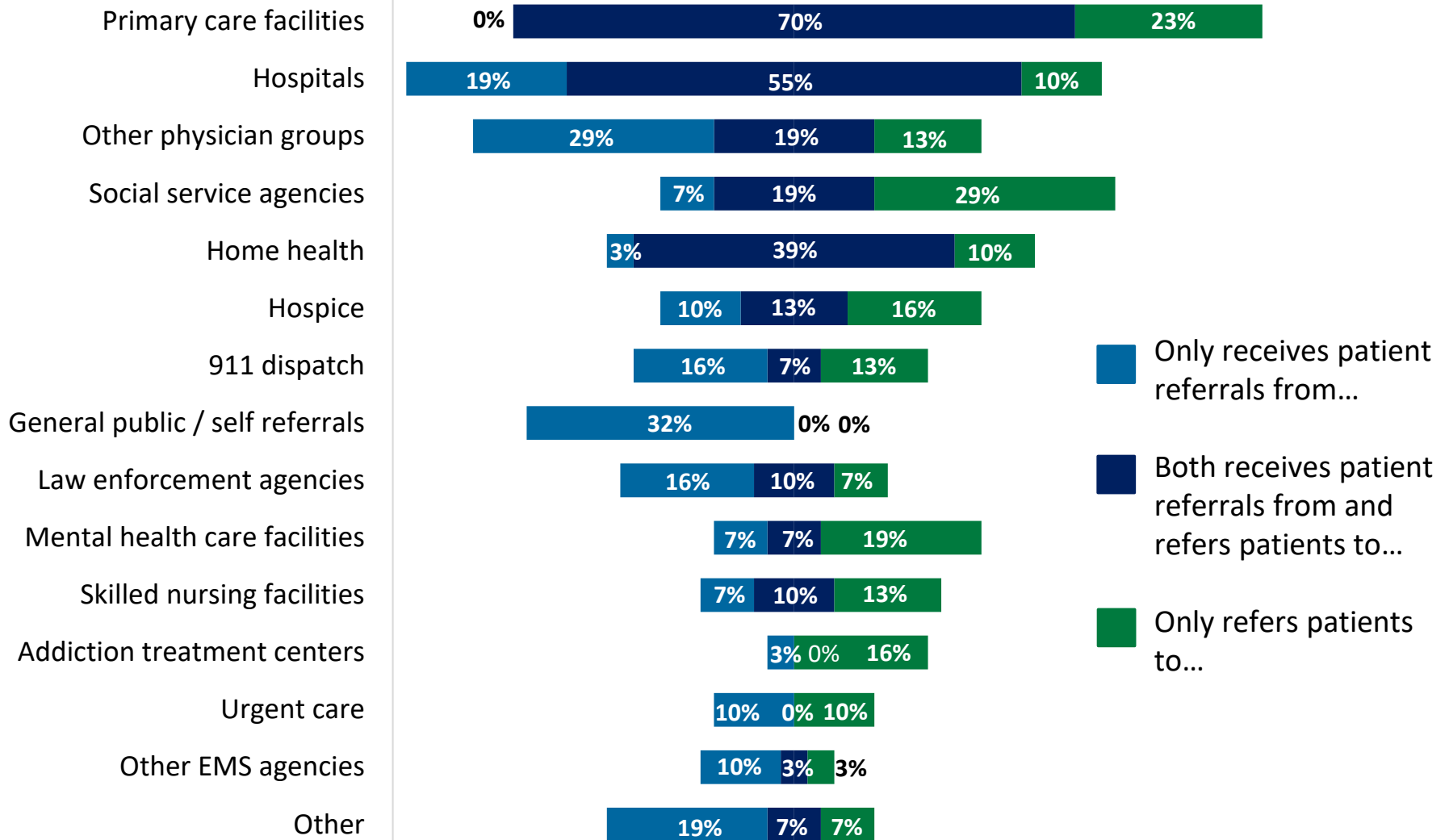


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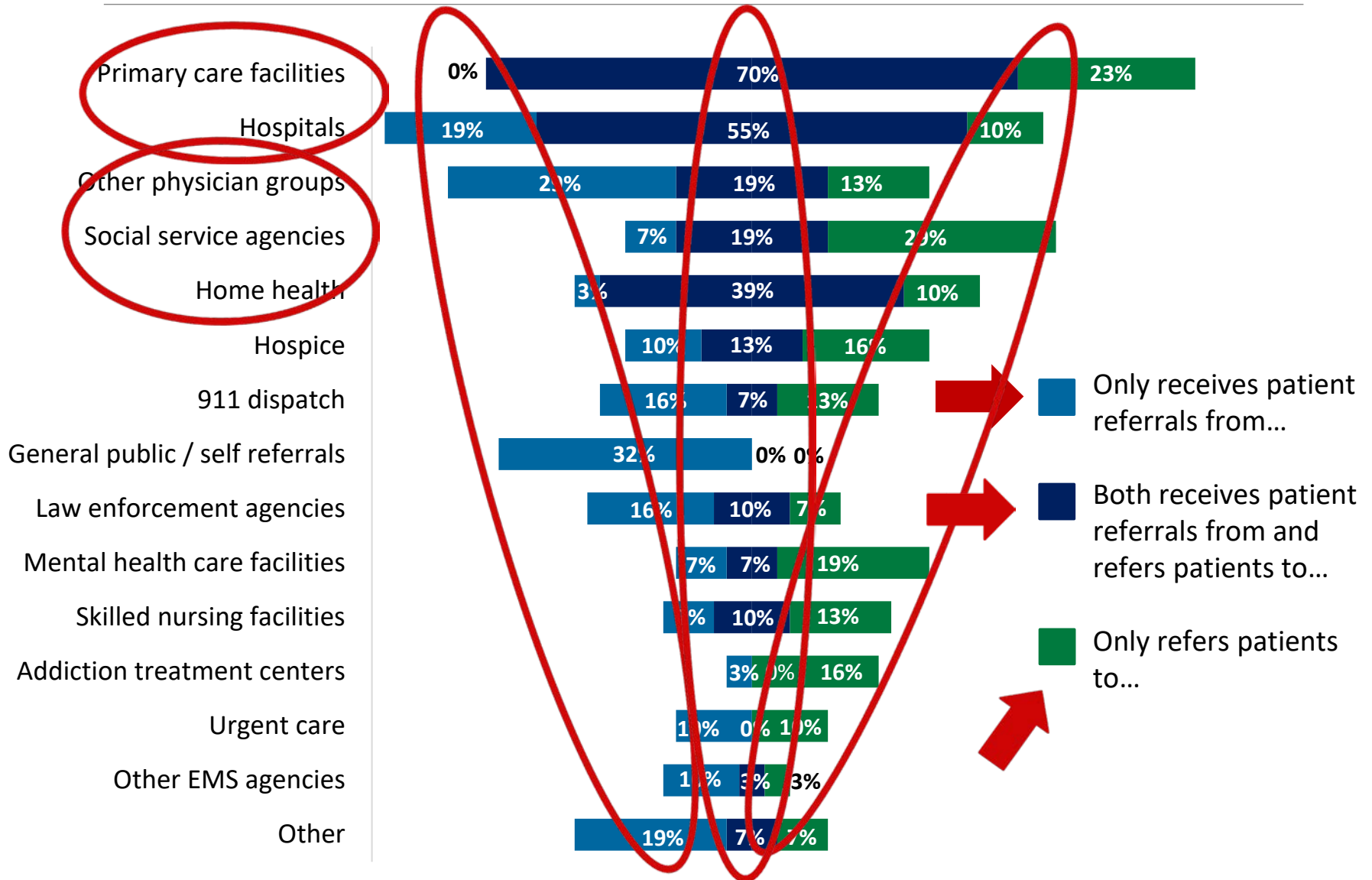
Target populations



Patient referral sources and destinations

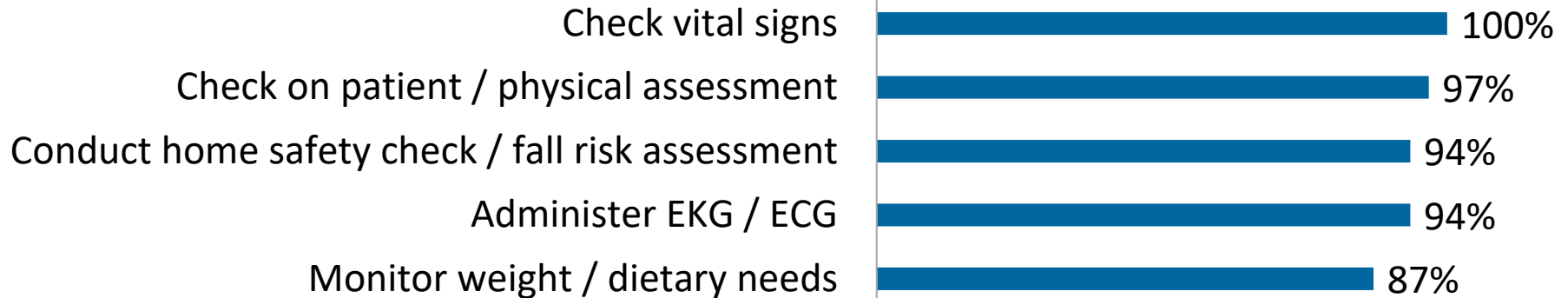


Patient referral sources and destinations



Program services

Assessment services



Laboratory services

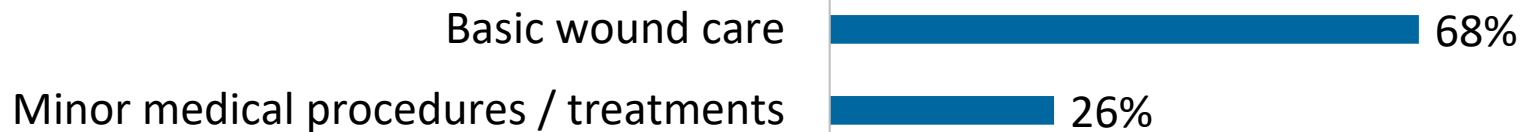


Program services (continued)

Preventive care services

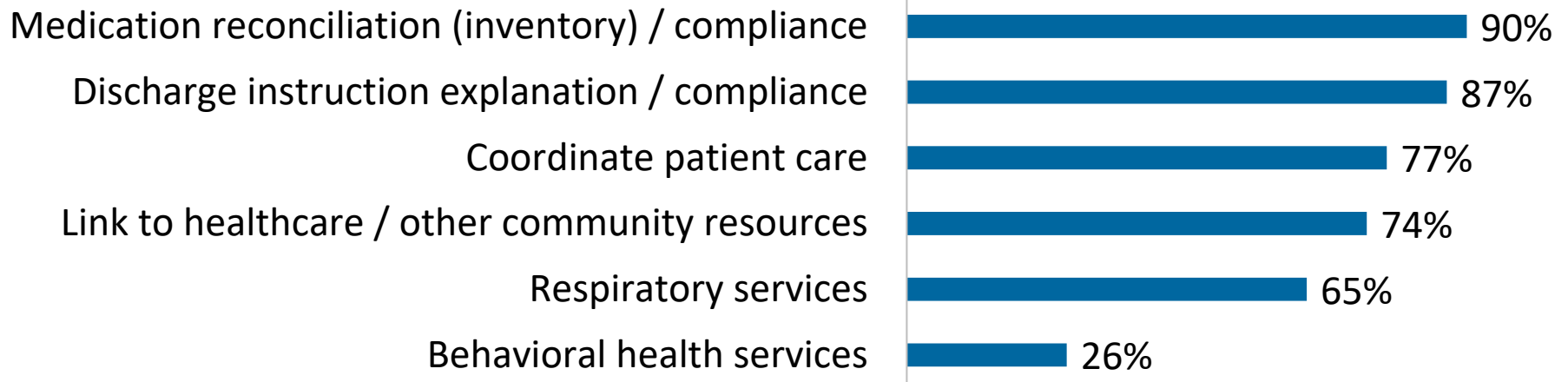


Acute care services

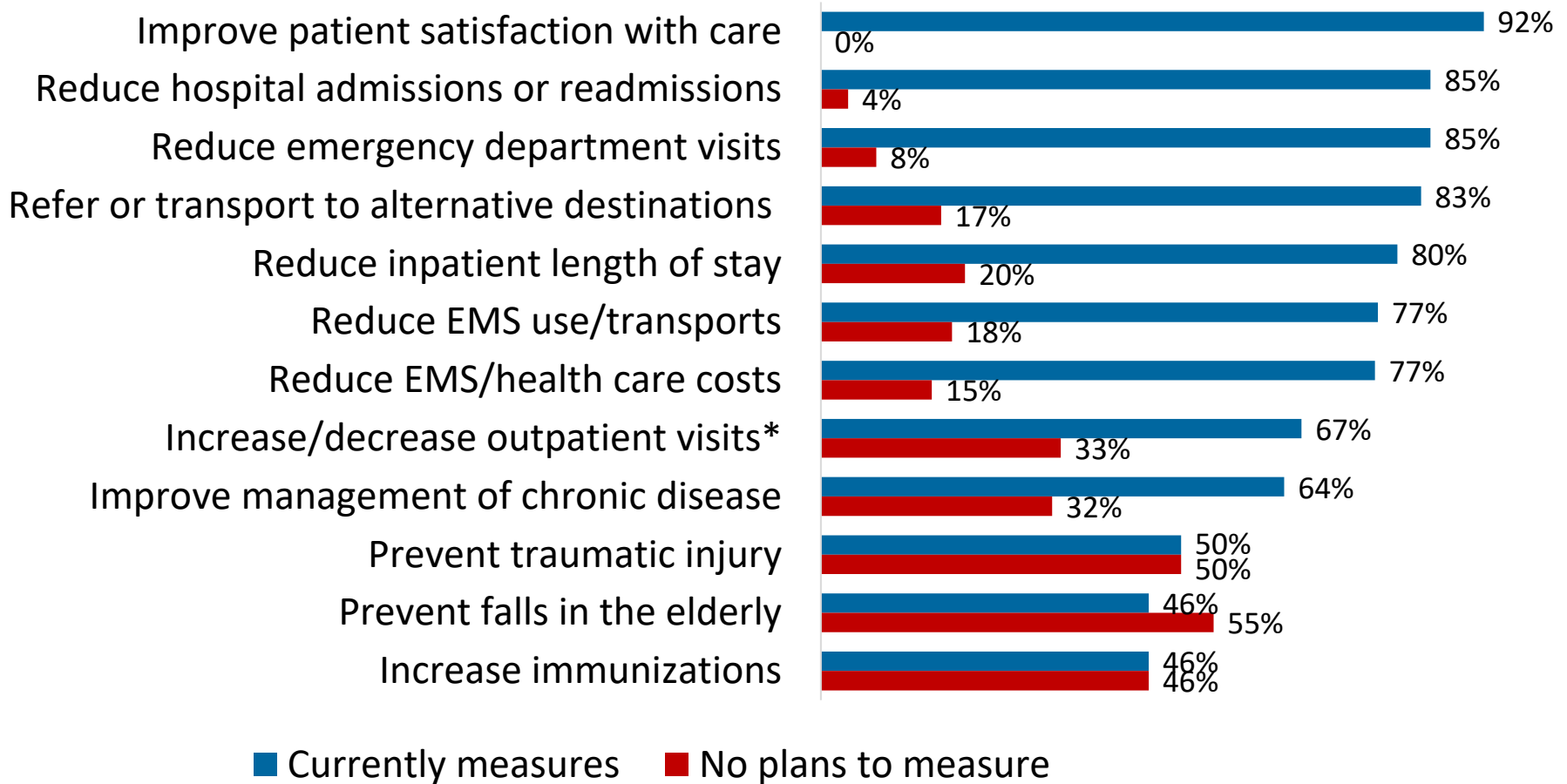


Program services (continued)

Other services



Of programs aiming for each goal, how many are measuring?



*Programs aim to connect patients to appropriate care, which can mean increasing or decreasing outpatient visits

Evaluation findings are promising but *preliminary!*

20/31 programs had generated outcome data

13 (42%) programs provided the study team their evaluation outcomes.

Most evaluations were internal and informal:

- One longitudinal case-control design; otherwise no control groups or other rigorous methods

Self-reported evaluation data

Formal evaluations/reports: 5

Internal audits (not published):

- Raw data/PowerPoint/emails: 5
- Verbal during interview: 3

Two programs had no plans to measure outcomes for any of their program's goals because of lack of access to data and small numbers of patients.

Evaluation findings

| Desired outcome | Number of programs reporting | Aggregate outcomes | Selected individual program outcomes reported |
|---|------------------------------|---------------------------|---|
| Reduce hospital admissions/readmissions | 8 | 655 avoided (N=5) | <ul style="list-style-type: none"> 76% reduction in total hospital readmissions 44% reduction in readmissions for heart failure patients 41% reduction in readmissions for CP patients 0 readmissions in the first two quarters of 2015 |
| Reduce EMS/healthcare costs | 8 | \$7,461,981 savings (N=7) | <ul style="list-style-type: none"> \$8,500 savings per CP patient \$1.5 million savings through transport to alternate destinations CP program saved 33% more than it cost to operate |
| Reduce EMS use/transport | 6 | 1,428 avoided (N=5) | <ul style="list-style-type: none"> 37% reduced use for top 15 frequent EMS users 206 transports avoided |

Evaluation findings

| Desired outcome | Number of programs reporting | Aggregate outcomes | Selected individual program outcomes reported |
|---|------------------------------|------------------------|---|
| Reduce emergency department (ED) visits | 5 | 1,552 avoided (N=3) | <ul style="list-style-type: none"> · 1,121 visits avoided · 58.7% reduction in avoidable visits · 50% reduction in ED usage by CP patients |
| Improve patient satisfaction with care | 3 | -- | <ul style="list-style-type: none"> · Mean satisfaction scores exceeded 4.9/5 · 99% would recommend the program to someone else |
| Increase or decrease outpatient visits | 2 | 178 prevented (N=2) | <ul style="list-style-type: none"> · 11 wound dressing changes at home may have prevented office visits |
| Increase immunizations | 2 | 327 vaccinations (N=2) | -- |

Evaluation findings

| Desired outcome | Number of programs reporting | Aggregate outcomes | Selected individual program outcomes reported |
|---|------------------------------|----------------------|---|
| Improve management of chronic disease | 2 | -- | <ul style="list-style-type: none"> · 85% of diabetic patients showed decreased blood glucose; 70% of hypertension patients showed decreased blood pressure; COPD patients decreased ED admissions for shortness of breath by 91.6% |
| Improve quality of life | 2 | -- | <ul style="list-style-type: none"> · 67% of patients reported the same or better health status as at first CP visit; 59% with the same or fewer physical limitations · 7% increase on standardized quality of life instrument |
| Prevent falls in the elderly/prevent traumatic injury | 2 | -- | -- |
| Refer or transport to alternative destinations | 1 | 502 transports (N=1) | <ul style="list-style-type: none"> · \$1.5 million savings through transport to alternate destinations |
| Reduce inpatient length of stay | 0 | -- | -- |

Conclusions and implications for rural-serving CP programs

| | |
|---|---|
| Can programs meet the Triple Aim? | <ul style="list-style-type: none">▪ High patient satisfaction▪ Potential to shift costs from more to less expensive settings▪ Appropriate care where vulnerable patients live has potential to improve health. |
| Impact on the workforce? (Quadruple Aim) | <ul style="list-style-type: none">▪ More study needed. (Note: some programs use volunteers.) |
| Integration or competition? | <ul style="list-style-type: none">▪ Many programs were well integrated into health and human services systems. |
| Does CP work? | <ul style="list-style-type: none">▪ We need more evidence to show that CP is safe, effective, and economical. |
| Is CP sustainable? | <ul style="list-style-type: none">▪ CP programs (many self-funded) need evidence to demonstrate value and improve long-term sustainability. |



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