Community Paramedicine

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Karen Pearson, John Gale, and George Shaler

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Karen Pearson and George Shaler

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Katie Rosingana, Evelyn Ali, and Karen Pearson

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Karen Pearson and Katie Rosingana

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What is Community Paramedicine?

Community paramedicine is an evolving model of healthcare delivery in both rural and urban areas as Emergency Medical Services providers look to reduce:

- the use of EMS services for non-emergent 911 calls,
- overcrowding of emergency departments
- healthcare costs

In rural areas, community paramedics help fill gaps in the local healthcare delivery system due to shortages of primary care physicians, providing a role in the care coordination of patients at risk for hospital readmission, and reducing long travel times to the nearest hospital or clinic.

Definitions: Community Paramedicine

While there is no universal definition, common themes include:

- **An emerging field in health care** where EMTs and Paramedics operate in expanded roles in an effort to connect underutilized resources to underserved populations. (*HRSA, Community Paramedicine Evaluation Tool, 2012*).
- **A model of care** whereby paramedics apply their training and skills in "non-traditional" community-based environments (outside the usual emergency response/transport model). The community paramedic may practice within an "expanded scope" (applying specialized skills/protocols beyond that which he/she was originally trained for), or "expanded role" (working in non-traditional roles using existing skills). (*International Roundtable on Community Paramedicine*)
- **An organized system of services**, based on local need, which are provided by EMTs and Paramedics integrated into the local or regional health care system and overseen by emergency and primary care physicians. (*Rural & Frontier EMS Agenda for the Future, 2004*)

Definitions: Community Paramedicine

Community Paramedicine provides a supportive healthcare service based on the needs of the community to help reduce unnecessary emergency department visits and avoid rehospitalizations.

Community Paramedicine in Maine is defined as:

The practice by an emergency medical services provider primarily in an out-of-hospital setting of providing episodic patient evaluation, advice and treatment directed at preventing or improving a particular medical condition, within the scope of practice of the emergency medical services provider as specifically requested or directed by a physician.

(Sec. 1. 32 MRSA §84, sub-§4)

Definitions: Community Paramedic

A state licensed EMS professional who has:

- Completed a formal, standardized Community Paramedic educational program through an accredited college or university.

- Demonstrated competence in the provision of health education, monitoring and services beyond the roles of traditional emergency care and transport, and in conjunction with medical direction.

The specific roles and services are determined by community health needs and in collaboration with public health and medical direction.

(*HRSA, Community Paramedicine Evaluation Tool, Appendix B, 2012*)

Community Paramedicine, Nationally

Our national study conducted in 2013 found:

- **There is no "cookie cutter" approach to CP programs**: they are based on community needs and services may differ across communities; however, the role of the CP to provide those services is similar across programs/communities. Thus, community needs assessments are critical to developing CP goals and services.
- **Partnerships and collaboration** at the local and state levels are essential to successful development of and buy-in for CP programs
- **Reimbursement** is a significant challenge, and funding mechanisms and reimbursement strategies need careful consideration
- **Data collection** is essential
- **Evaluation** is critical

Pearson KB, Gale J, Shaler G. *The evidence for community paramedicine in rural areas: State and local findings and the role of the state Flex program*; 2014. Briefing Paper No. 34. Associated Policy Brief: http://www.flexmonitoring.org/wp-content/uploads/2014/03/pb35.pdf

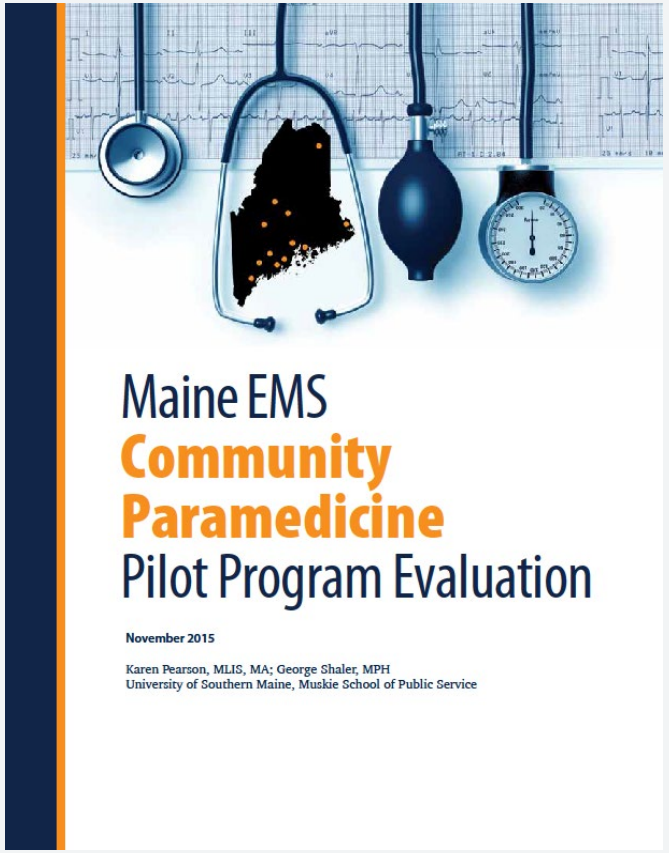
Community Paramedicine in Maine

- Twelve Community Paramedicine pilot projects were authorized in 2012 by the Maine Legislature (LD 1837, 125th Maine Legislature, Second Regular Session, March 29, 2012).
- In 2014, Maine EMS contracted with the University of Southern Maine to conduct an evaluation of these pilot projects.
  - Evaluation report, 2015

    Pearson KB, Shaler G. Maine EMS Community Paramedicine Pilot Program Evaluation. Portland, ME: University of Southern Maine; November 2015.
  - Journal article, 2017, including a case study of United Ambulance.

    (Pearson KB, Shaler G. Community paramedicine pilot programs: Lessons from Maine. Symposium on community-based health care. *Journal of Health and Human Services Administration* 2017;40(2):141-185.)
- Legislative re-authorization in 2016 removed the maximum number of pilot projects, enabling the Board of EMS to renew existing projects and expand the pilot. (LD 1427, 128th Maine Legislature, First Regular Session, June 28, 2017.)

Community Paramedicine in Maine



2015 Evaluation Key Findings

Successes:

- Increase in CP visits by 177% from 2014-2015
- Referral processes implemented with workflow
- Training included both internal and external programs

Challenges:

- Funding and reimbursement
- Data collection, especially lack of cost data
- Documentation in EMS run reporting system

Pearson KB, Shaler G. Maine EMS Community Paramedicine Pilot Program Evaluation. Portland, ME: University of Southern Maine; November 2015.

LincolnHealth
MaineHealth

Lincoln County Community Paramedicine Data Collection Initiative, 2019

Boothbay Region Ambulance Service

Central Lincoln County Ambulance Service

Waldoboro EMS

Full report available at:
https://digitalcommons.usm.maine.edu/substance-use-research-and-evaluation/24/

Catherine Cutler Institute

Project Overview

In 2019, with funding from a private foundation, LincolnHealth hospital and healthcare system contracted with the Cutler Institute to conduct data collection and analyses of patients in Lincoln County, Maine who use Community Paramedicine Services (CP). The goals of the project were to:

- Standardize collection of patient data from all previous and current participants of the CP program, during the data collection time frame of 2016-2019
- Analyze data for trends in patient population, patient care, and high-cost service use
- Create a user-friendly report that can be shared with policymakers and stakeholders to help garner support for reimbursement of CP services and providers.

This project provided evidence of the value of Community Paramedicine services, particularly regarding

- patient health outcomes,
- reduction in emergency department (ED) use
- reduction in hospital re-admissions, and
- cost effectiveness

Lincoln County Community Paramedicine (CP) Service Area

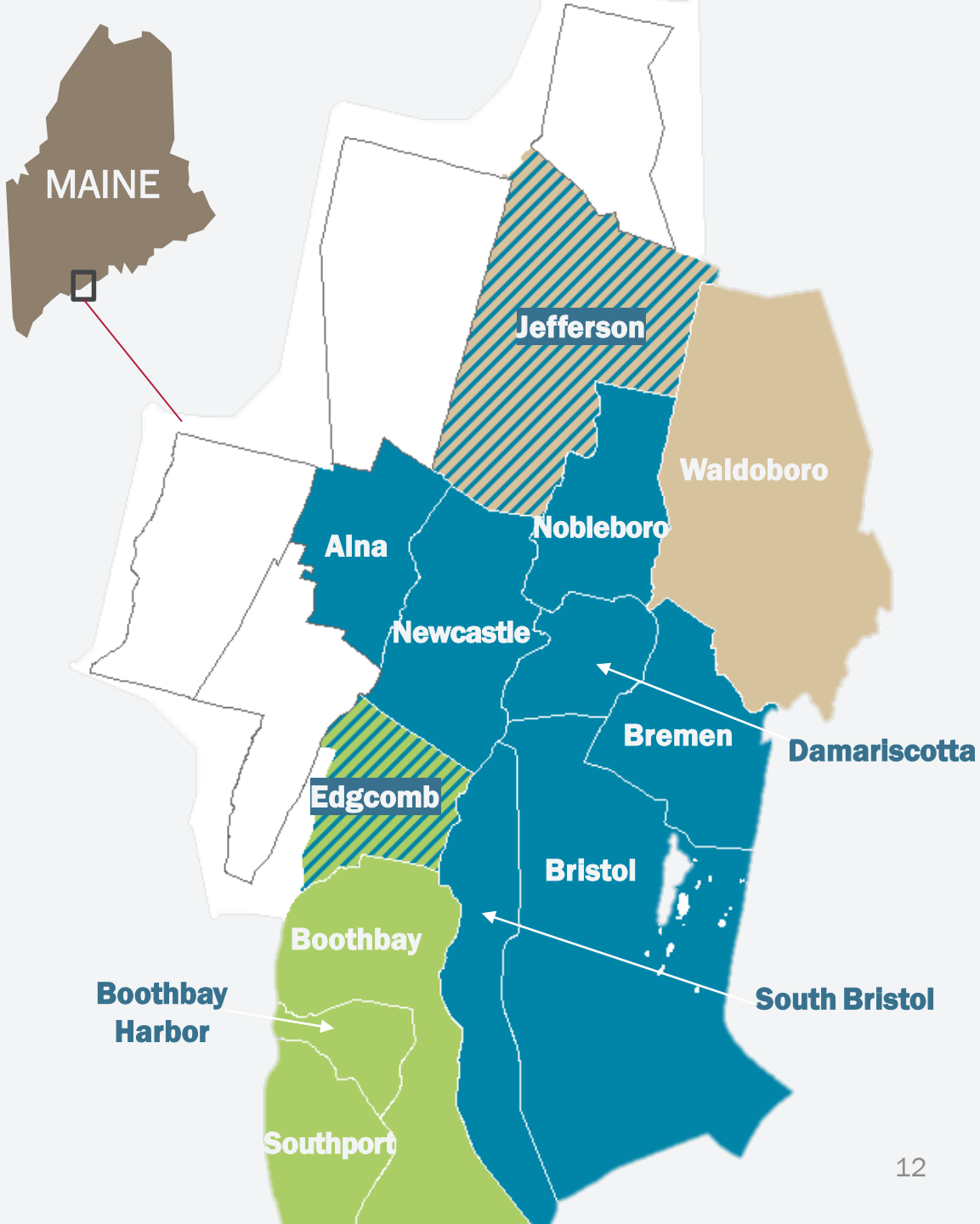
- Boothbay Regional Ambulance Service (B.R.A.S.)* *population: 6,500*
- Central Lincoln County Ambulance Service (CLC): *population: 14,400*
- Waldoboro ** *population: 6,200*
- Potential future service areas

Stripes indicate town is shared service area

Population is approximate combined service area, based on 2017 census.

*BRAS also services Monhegan, not shown

**Waldoboro also services Friendship, not shown



Data Collection & Analysis: Methodology

Document Review

Reviewed hard copies from 2016, 2017, and 2018 for summaries of:

- CP visit referrals
- CP visit records and reports

Data was collected for program years 2016-2018, and part of 2019. For this analysis and summary report, only full data years (2016-2018) were used to determine trends.

EMR Review

Conducted using these systems:

- MEFIRS: Paramedicine visit data point records
- EPIC: up to date records of MaineHealth patients
- Arcadia: all records, including out of state, with 4 month lag time
- HealthInfoNet: up to date records for all of Maine, but can be 'opted out' of by patients

Data Collection Tools

Data elements were loaded into Excel spreadsheets, to include:

- Patient demographics
- High-cost service use: ED visits and hospitalizations
- CP referral and service use

Data was analyzed for trends using SPSS and Excel on variables such as: CP visits, completion rates, and service utilization data.

Results: Patient Data

On average, who is being referred to community paramedicine in Lincoln County?

- 63% female; 37% male
- Average age: 78.3
- 58.5% have at least one of the following chronic conditions: Diabetes, Congestive Heart Failure (CHF), or Chronic Obstructive Pulmonary Disorder (COPD)

Types of CP services provided by referral

General Assessment

Includes: evaluation, vital signs, blood sugar, weight check, medication compliance or reconciliation, oxygen saturation, or other assessments

Clinical Care

Includes: CHF follow up, COPD follow up, diabetes follow up, dressing changes or wound checks, or other clinical care

Lab Collection

Includes: blood draw, POC A1c, POC INR, or other requested lab/blood tubes

Prevention Assessment

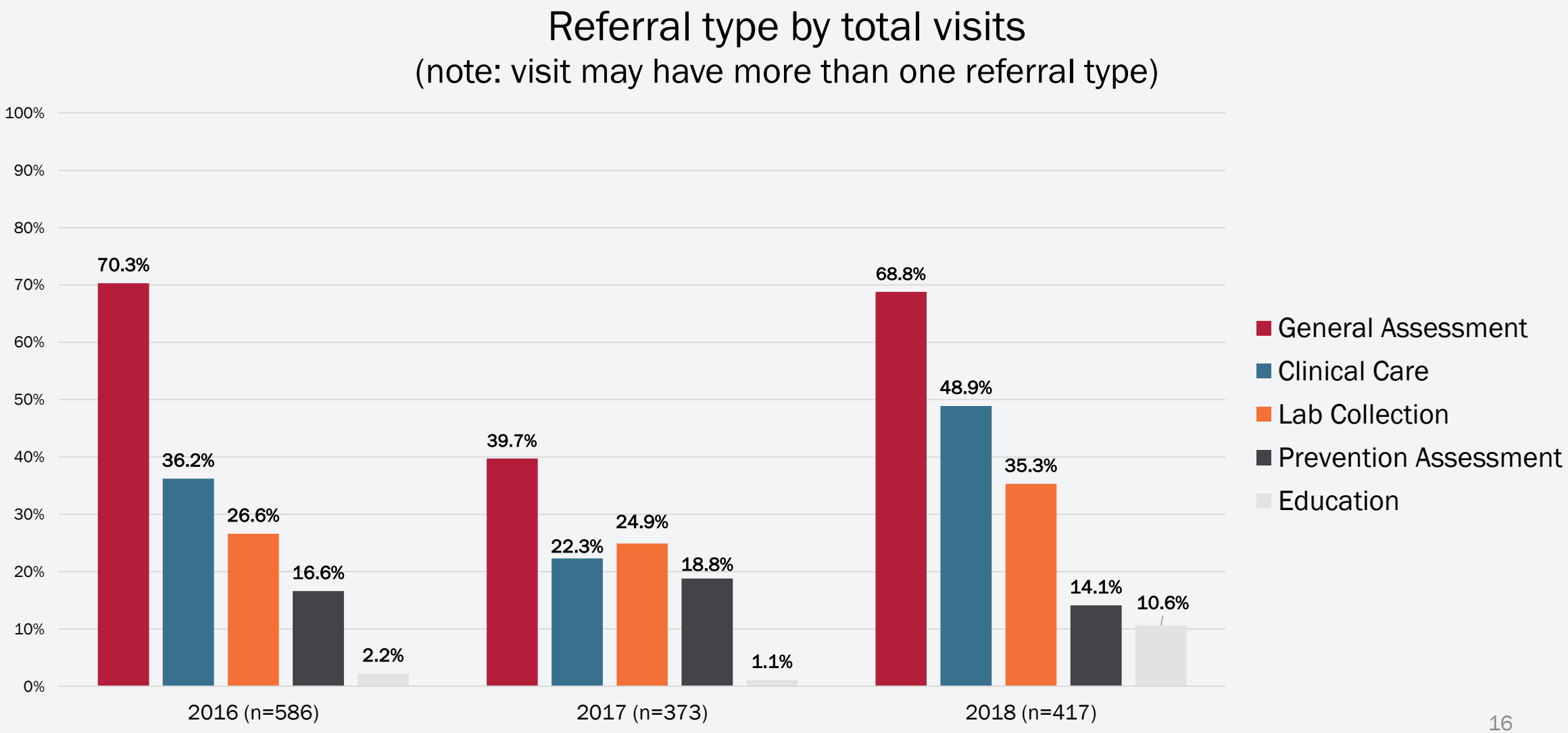
Includes: home safety or social assessment, or flu vaccination

Education

Includes: Asthma medication education, COPD education, diabetes education, or inhaler use

A CP visit may have more than one referral ‘type’ based on services requested by referring provider. Referrals are made by providers (often PCP), hospital staff, and/or Home Health agency.

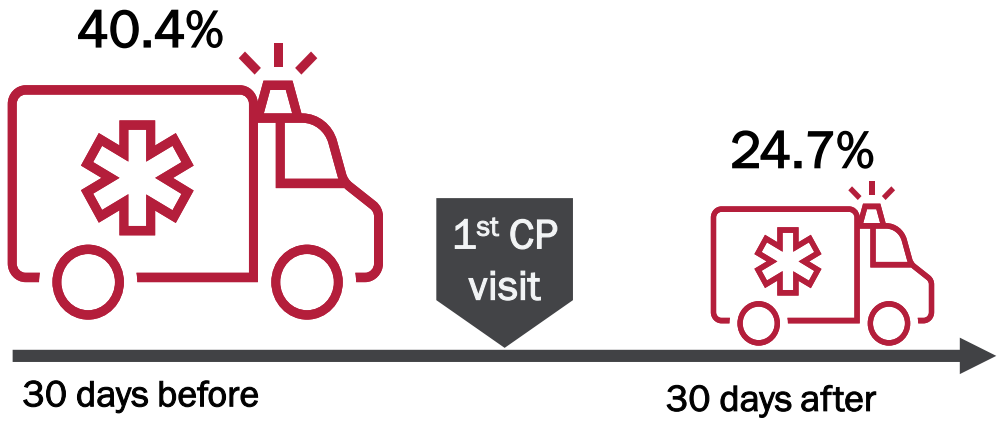
Results: Referral Type



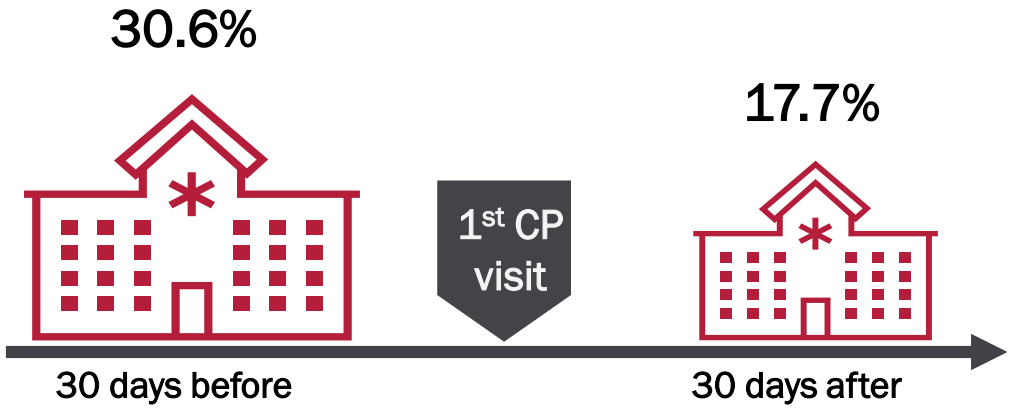
Results: Service Utilization

Data indicate a decline in both ED and hospital utilization for patients in the month after their initial CP visit for all years 2016, 2017, 2018

Percent of patients with ED visits



Percent of patients with hospitalizations



Results: Home Health Services & CP

CP workflows aim to ensure appropriate use of service resources.

- Request workflows include reviewing home health (HH) eligibility
- Patients ineligible for HH at the time of hospital discharge may be referred to CP while awaiting HH eligibility
- LincolnHealth has been working to educate providers on how CP can help patients who may not be eligible for HH

Close collaboration between CP and HH ensures patients receive robust, non-duplicative services.

Cost Avoidance Examples
Using CP Data Collected by LincolnHealth

Generally, cost avoidance is defined as a representation of an avoided potential increase in expenses.

The following slides show examples of cost avoidance using Lincoln County CP data points and the cost avoidance formulas (below) developed by MedStar Mobile Healthcare (Ft. Worth, TX), and national & Maine averages for cost of care.

Emergency Department Cost-Avoidance Formula:

Cost Avoided per patient $= \frac{(C_A + C_{ED}) * TA}{P}$

$C_A + C_{ED}$: Average Transport Cost (Ambulance Cost + ED Cost)
TA: Number of Transports Avoided
P: Number of Patients Enrolled *

Hospitalization Cost-Avoidance Formula:

Cost Avoided per patient $= \frac{(C_{RA}) * TA}{P}$

C_{RA}: Average Hospital Readmission Cost
TA: Number of Transports Avoided
P: Number of Patients Enrolled *

* For our purposes, an enrolled patient is a patient with at least 1 complete CP visit

Emergency Department Cost Avoidance, Using 2018 Lincoln County CP Data

Using CP patient data collected by LincolnHealth and national and Maine averages, we can estimate cost avoidance in 2018 for patients' ED visits 30-days post- CP first visit.

Avoided emergency department visits:

$TA = \underline{48}$ ED visits pre-CP visit 1 – $\underline{25}$ ED visits post-CP visit 1 = 23 avoided transports to the ED in 2018

- **Average national cost of ED visit from 2017 MEPS:** $C_{ED} = \$1482$
- **Average cost of Maine rural ambulance transport** from *Ambulance Rate Study for ME DHHS*, 2017 * : $C_A = \$483$
- **Number of patients with complete visit:** P=103

$$\text{ED Cost Avoided per patient} = \frac{(\$483 + \$1482) * 23\ avoided\ transports}{103\ patients\ enrolled} = \frac{\$45{,}195}{103} = \$438.79$$

For our purposes, an enrolled patient is a patient with at least 1 complete CP visit

**Study used Indiana rates*

Source: MaineCare Ambulance Rate Study. https://www.maine.gov/dhhs/reports/2017/Maine-Ambulance-Rate-Study.pdf; Jan. 9, 2017.

Hospitalization Cost Avoidance, Using 2018 Lincoln County CP Data

Using CP patient data collected by LincolnHealth and national averages, we can also estimate cost avoided for re-hospitalizations 30-days post- CP first visit for all patients.

Avoided re-hospitalizations:

$TA = \underline{29}$ hospitalizations pre-CP visit 1 – $\underline{18}$ hospitalizations post-CP visit 1 $= 11$ avoided transports to the hospital in 2018

Average national cost of hospitalization from 2017 MEPS: $C_{RA} = \$20{,}031$

Number of patients with complete visits: $P = 103$

$$\text{Hospitalization cost avoided per patient} = \frac{\$20{,}031 * 11 \textit{ avoided transports}}{103 \textit{ patients enrolled}} = \frac{\$220{,}341}{103} = \$2{,}139.23$$

For our purposes, an enrolled patient is a patient with at least 1 complete CP visit

Lincoln County CP Services:
Focus on Patients with Chronic Diseases

Recognizing that persons with chronic diseases contribute to higher utilization rates of higher-cost services and poorer health outcomes than those without these diagnoses, Lincoln County CP services focus on individuals with any of the following three chronic conditions:

- Diabetes
- Congestive Heart Failure (CHF)
- Chronic Obstructive Pulmonary Disease (COPD) or Asthma

To better understand their service utilization, Cutler Institute staff conducted subanalyses of CP patients in Lincoln County with these three chronic conditions.

Lincoln County CP: Targeted Chronic Diagnoses, 2018

3 in 10 referred patients had a diabetes diagnosis

4 in 10 referred patients had a CHF diagnosis

3 in 10 referred patients had a COPD diagnosis

Data source: Lincoln County Community Paramedicine Dataset; comorbidity data not shown

Summary of Key Findings

- With this project, Lincoln County CP and LincolnHealth followed published recommendations to track patients served by the Community Paramedicine program and collected and aggregated data in order to show trends and progress across patient groups, years, and diagnosis.
- Data show that the CP service providers in Lincoln County are seeing and treating the target population: people with chronic diseases (diabetes, CHF, COPD) that are typically high-cost service users.
- For all patients included in the data collection, ED visits and hospitalizations declined after the first complete CP visit.
- Preliminary cost avoidance estimates indicated cost avoidance at the system level for all Lincoln County CP patients.

Limitations

- The data collection process is vulnerable to human error.
- This was not an evaluation or study with a comparison group, but rather, a summary of data collection.
- Standard national measure specifications were not used; for example, data collected on hospitalizations and ED use focused on the 30 days before and after the first completed CP visit for each patient, and not throughout the year. Comparing re-admissions to a national benchmark is for reference and discussion purposes only.
- Cost avoidance formulas were for this study used the number of LincoIn County CP patients as the “enrolled” patient, which is the denominator in the formula.
- This initiative did not include analysis of programmatic and/or administrative costs of community paramedicine services.
- Small sample sizes can lead to a higher variability in findings.
- No statistical testing was conducted.

Recommendations

Public and private insurance reimbursement is key for the sustainability of this CP program, moving beyond funding from charitable gifts, grants and in-kind donations for administrative support and EMS patient visits.

Ongoing efforts and activities supporting the goal of reimbursement include:

- Establishing clear definitions of CP services by working with the Maine State Community Paramedicine Committee.
- Standardizing the role and responsibilities of the medical director position for CP programs.
- Continuing to show the programmatic and cost effectiveness of CP sustainability, providing a model for other CP pilot sites and/or CP programs across Maine.
- Standardizing data collection and cost analyses for CP programs to determine statewide CP effectiveness through engagement with the State EMS Office.

Taking the Pilot Study Statewide

In 2022, Maine EMS contracted with the Cutler Institute to expand this pilot study and undertake an evaluation of the CP programs in Maine, with the following goals:

- Evaluate the efficacy and financial stability of community paramedicine programs in Maine
- Inform policy to assist in developing a reimbursement model for CP, laying the groundwork for a future MaineCare state plan amendment (SPA) for Medicaid reimbursement of CP services

Continuation of standardized data collection

Qualitative interviews with CP and EMS stakeholders

In-depth cost analyses with EMS provider and hospital cost data, MaineCare claims data

Contact Information

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