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# The Business Case for Community Paramedicine: Lessons from Commonwealth Care Alliance's Pilot Program

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**IN BRIEF**

Mobile integrated health care and community paramedicine (MIH-CP) programs expand the role of traditional emergency medical services personnel to address non-emergency needs and bring outpatient primary and urgent care into patients' homes. These programs offer potential for reducing health care costs, eliminating unnecessary emergency department use, and shifting service back to community-based and home settings. Between 2014 and 2015, the Massachusetts-based Commonwealth Care Alliance (CCA) piloted a community paramedicine program, *Acute Community Care (ACC)*, to serve its members in the Greater Boston area.

This brief summarizes *ACC's* business case assessment, which showed that increasing patient volume after the pilot period would result in net savings given the program's success in averting unnecessary emergency care. By illustrating cost considerations for an expansion of MIH-CP services, this brief may inform the design and sustainability planning of other MIH-CP programs. The business case assessment was conducted by Mathematica Policy Research through support from the Center for Health Care Strategies' *Complex Care Innovation Lab*, a Kaiser Permanente Community Benefit-funded initiative.

Rising health care costs, new incentives to reduce avoidable hospital admissions, and widespread interest in addressing the social determinants of health have prompted health care organizations to look for innovative ways to provide care. One such innovation, mobile integrated health care and community paramedicine (MIH-CP), addresses non-emergency needs by expanding the role of emergency medical services personnel. Rather than focusing only on emergency care, paramedics provide outpatient urgent and primary care-like services for patients who might otherwise visit or be transported to an emergency department (ED). For patients with complex medical or behavioral health needs, ED visits can often lead to hospital admissions that might otherwise be avoided by allowing paramedics to provide coordinated services in patients' homes.

Many MIH-CP programs are still experimental or in early stages of implementation. Accurately assessing them is challenging because typical implementation periods are short, the number of patients served is small, and comparison groups are difficult to identify. Early assessments of cost effectiveness may not fully reflect long-term promise or provide the type of information that organizations and policymakers need to assess sustainability. Yet the demand for early cost-effectiveness data remains high, especially given MIH-CP programs' promise to support better care, smarter spending, and healthier people.

Although multiple federal agencies have released MIH-CP program assessment recommendations that include suggestions for cost analyses, interest in the cost-saving potential of MIH-CP programs has outpaced the availability of robust evidence.[1,2] With support from the Center for Health Care Strategies through the Kaiser Permanente Community Benefit-funded *Complex Care Innovation Lab*, Mathematica Policy Research worked with the Massachusetts-based Commonwealth Care Alliance (CCA) to explore the costs and benefits of CCA's *Acute Community Care (ACC)* program and assess the

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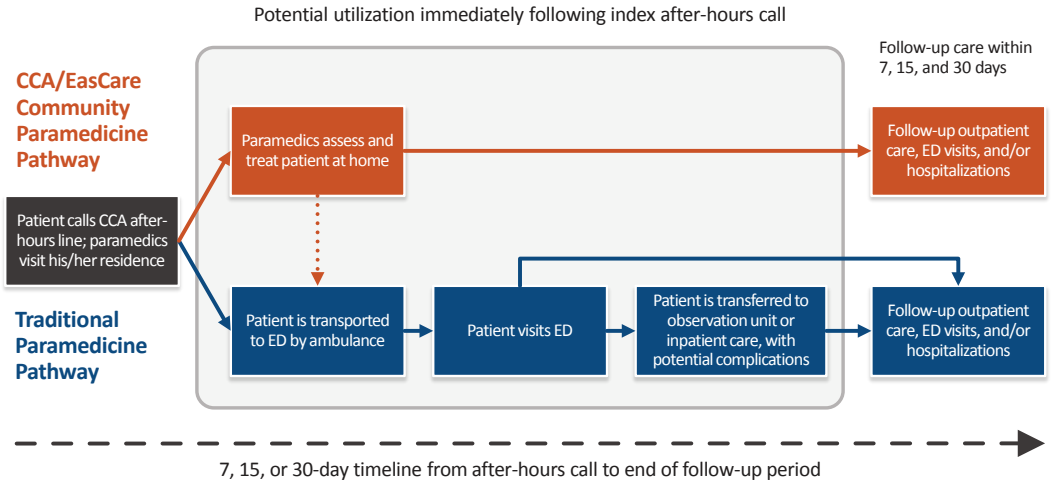
business case for expansion to other geographic areas. This brief explores the results of this analysis and its implications for future MIH-CP programs.

## The *Acute Community Care* Program

CCA is a non-profit health care delivery organization in Massachusetts that serves as both a health insurer and direct care provider to low-income and elderly or disabled beneficiaries, most of whom are dually eligible for Medicare and Medicaid. CCA members have higher levels of medical, behavioral health, and social needs than the general population. For example, CCA members use ED services 300 percent more often than the general population in Massachusetts: the average ED utilization rate for CCA members over age 65 is 810 per 1,000 members. For CCA's under-65 population, the ED utilization rate is 1,564 per 1,000 members, and nearly all of CCA's inpatient hospital admissions occur after an emergency department visit. Half of CCA's members have four or more chronic conditions and nearly 80 percent have a behavioral health condition. To test the value of community paramedicine as a strategy for reducing avoidable hospital admissions through the, CCA partnered with the EasCare Ambulance company and the Massachusetts Department of Public Health to launch the ACC pilot program.[3,4] The program began in October 2014 and served the Greater Boston region, which is home to approximately 2,600 CCA members.

Link in other MIH-CP programs, ACC paramedics have specialized training and diagnostic and therapeutic capabilities that exceed those available in standard ambulance services. When patients with acute complaints call CCA's urgent care line after business hours, or are identified proactively by CCA clinical staff, on-call clinicians (typically nurse practitioners or physician assistants) assess whether callers are appropriate for an ACC paramedic visit. Triage decisions are based on each patient's chief complaint, a review of their health record, and, as warranted, consultation with other clinicians familiar with the member. If dispatched, ACC paramedics visit patients in their homes to provide assessment and treatment, and concurrently communicate with primary care teams (Exhibit 1). In the first year of operations, 126 patients received an ACC visit. Out of those patients, 81 percent remained home under the care of ACC paramedics while 19 percent were transported for emergent care needs. Meanwhile, among callers deemed not appropriate for ACC, those who can safely wait for regular in-office or home-based care the next day are instructed and assisted in seeking care the next day, while those who require an immediate ED visit are either transported to the ED or instructed to go to the ED on their own.

**Exhibit 1: Comparison of CCA's *Acute Community Care* Program and Traditional Paramedicine Pathways**



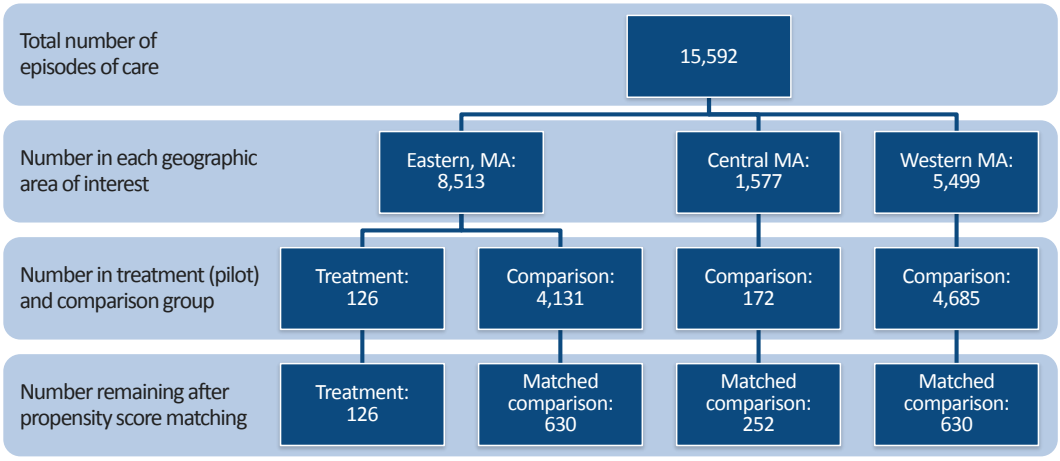
## Business Case Assessment and Findings

To assess program cost and potential savings, the Mathematica Policy Research team examined claims data for ACC patients and CCA comparison patients from three geographic regions of Massachusetts. Because ED visits sometimes lead to further hospital care, the analysis included claims for ambulance use, ED visits, hospital observation stays, and inpatient admissions following the initial event. Using estimated health care service costs and utilization rates, along with actual ED diversion rates, at seven, 15, and 30 days after the intervention, the analysis identified that (Exhibit 2):

- Under the pilot program, patients diverted from the ED had lower average costs than those not diverted on a patient-episode basis (per patient savings were $791 for a seven-day period, $3,677 for a 15-day period, and $538 for a 30-day period).
- Accounting for service costs, utilization, and ED diversion rates, as well as anticipated ACC operating costs and expected ACC patient volume in different geographic regions of Massachusetts, the analysis suggests substantial savings potential.

The analysis highlighted important considerations for both program and evaluation design for MIH-CP initiatives, as discussed in the next section.

**Exhibit 2: Identifying Episodes of Care in the Treatment and Comparison Groups**




## What Drives the Business Case?

The analysis identified several factors driving ACC cost and savings estimates that provide insights for other MIH-CP programs in designing cost-effective programs. Because CCA receives capitated Medicaid and Medicare payments, any incurred savings will help the organization meet state and federal expectations for incremental decreases in the total cost of care for dual eligible beneficiaries. Although ACC's business case findings are specific to a capitated environment, they can also guide program design and evaluation considerations for MIH/CP programs with different financing arrangements.

### 1. Patient Volume

Patient volume is a powerful driver of ACC savings estimates. As long as average per-episode reductions in care costs outweigh the cost of ACC paramedic visits, increasing volume is a promising strategy. However, savings estimates exhibit diminishing returns as patient volume increases, reflecting the fact that it is challenging to consistently divert the same proportion of an expanded population. As volume increases, MIH-CP programs like CCA's are increasingly likely to serve patients whose needs require emergency services.

### 2. ED Diversion Rate

The ED diversion rate is a primary driver of ACC savings estimates. Increasing diversion rates may be a particularly important strategy where diversion rates are low, or where the patient population is limited. MIH-CP programs may be able to increase diversion rates through more accurate triage or by increasing the range of services provided by community paramedics. However, increasing already high diversion rates may result in unwarranted or unsafe avoidance of emergency care. MIH-CP programs should also consider the joint effect of patient volume and diversion rate because they are likely to change at the same time.

#### Examples of Program Cost Drivers

Drawing from ACC's experience, if all other variables remain constant, increasing patient volume, the ED diversion rate, overall operating costs, and/or per-episode utilization and health care spending may yield noticeable changes in financial outcomes:

- ***Patient Volume****:* A 10 percent increase in patient volume would increase savings by 18 percent.
- ***ED Diversion Rate****:* A 2.5 percent increase in the average ED diversion rate would increase savings by five percent.
- ***Operating Costs****:* A 10 percent increase in ACC operating costs would decrease estimated savings by eight percent.
- ***Per-Episode Utilization and Health Care Spending***: A 10 percent increase in the difference between per-episode utilization or costs for diverted and non-diverted patients leads to a three percent decrease in estimated savings.

### 3. Operating Costs

ACC operating costs include clinical supervision of paramedics and a fixed payment to the ambulance service provider. Savings estimates sensitive to operating cost increases—therefore, managing aggregate costs of community paramedics, clinical supervision, and program administration will be important for an MIH-CP program as it increases patient volume, particularly if the program expands to new geographic regions.

### 4. Per-Episode Utilization and Health Care Spending

Relative to patient volume, diversion rates, and program operating costs, per-episode utilization and health care spending on ED visits and hospital stays are less important cost drivers. However, these costs still matter: the cost-effectiveness of the ACC program could increase if there are increases in costs or utilization for services more often received by non-diverted patients, such as ambulance transports, ED visits, and hospital stays.

## Implications for Other Community Paramedicine Programs

CCA's experience offers several insights to help other MIH-CP efforts assess their own long-term program viability:

- ***Defining a reasonable timeframe for assessing existing programs is crucial***. Achieving net savings within a 12-month (or shorter) pilot period may be difficult. Programs are more likely to demonstrate net savings if allowed more time to mature. Program sponsors should consider how to spread start-up costs over the life of MIH-CP programs to avoid premature operating losses.

- ***Constructing comparison groups is challenging***. While CCA had data resources to identify potential comparison group members, others might struggle to identify patients similar to those who participated in a MIH-CP intervention. Other MIH-CP sponsors may want to consider

identifying comparison group options prior to implementation, and utilizing pre-post designs if multiple years of pre-period data are available.

- ***Calculating savings estimates depends on reimbursement structure***. CCA's business case assessment was relatively straightforward because CCA is an integrated delivery system and able to retain all ACC program savings. MIH-CP programs that depend on reimbursement from other stakeholders may have a more complicated equation in estimating cost savings, suggesting that these programs are most easily adapted to capitated environments.

- ***Business case assessments assume that future programs will be similar to pilot implementation***. Program leaders should bear in mind that any evaluation is based on a limited time period and consider how changing circumstances might affect costs.

Based on the results of this financial impact analysis, CCA anticipates expanding its ACC program into parts of Central and Western Massachusetts. CCA plans to expand the program to these regions with these insights in mind, and to date has hit the necessary volume targets identified in this analysis to generate a return on investment.

## Conclusion

Conducting robust business case assessments in the growing field of MIH-CP programs is challenging but necessary. These assessments can help individual programs identify cost drivers and improve the chances of long-term success. Robust business case assessments may also, singly or collectively, help to convince payers to provide reimbursement for these potentially valuable programs, paving the way for additional innovation in patient-centered care.



## ENDNOTES

[1] United States Department of Health & Human Services, Health Resources & Services Administration, Office of Rural Health Policy (2012). *Community Paramedicine Evaluation Tool*. Available at: http://www.hrsa.gov/ruralhealth/pdf/paramedicevaltool.pdf.

[2] National Highway Traffic Safety Administration, Office of the Assistant Secretary of Preparedness and Response, and Health Resources and Services Administration (2013). "Innovation opportunities for emergency medical services: A draft white paper." Available at: http://www.ems.gov/pdf/2013/EMS_Innovation_White_Paper-draft.pdf.

[3] Commonwealth Care Alliance and EasCare Ambulance LLC (2016). "Acute Community Care: Reshaping Healthcare Delivery Through Community Paramedicine." Available at: http://www.commonwealthcarealliance.org/wp-content/uploads/2016/05/Acute-Community-Care-White-Paper-FINAL-v2.pdf.

[4] L. I. Iezzoni, S. C. Dorner, and T. Ajayi. "Community Paramedicine – Addressing Questions as Programs Expand." *New England Journal of Medicine*, 374 (2016): 1107-1109.