

# Early Experiences With the Acute Community Care Program in Eastern Massachusetts

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As managed care programs seek ways to cut costs while improving care quality, reducing emergency department (ED) visits is an obvious target. Most ED visits do not involve medical emergencies, and many patients could safely receive care in less costly and intensive settings.<sup>1,2</sup> However, various strategies to decrease ED use among managed care members have yielded mixed results.<sup>3-7</sup> One study of Medicaid managed care found that patients assigned to primary care practices with more than 12 evening hours per week had 20% fewer ED visits than other patients.<sup>6</sup> Nonetheless, EDs continue to serve important roles in after-hours care and situations in which primary care clinicians have limited same-day or next-day appointments available.<sup>7</sup>

## Background

Here, we describe experiences during the first 2 years of the Acute Community Care Program (ACCP), an innovative program in eastern Massachusetts designed to prevent unnecessary ED visits by providing after-hours nonemergency urgent care to adults with complex care needs.<sup>8</sup> ACCP represents a collaboration between EasCare, an ambulance service provider, and Commonwealth Care Alliance (CCA), a nonprofit health insurer and integrated healthcare delivery system providing a full range of care, from tertiary care to long-term services and supports. CCA's care model involves interdisciplinary teams, integrating behavioral and physical health services with extensive community outreach.<sup>9</sup> All CCA enrollees have Medicaid (MassHealth), the majority also have Medicare, and most care is reimbursed through capitated Medicare and MassHealth payments.

CCA members have complex health and social service needs. Among CCA members 65 years or older and dually eligible for Medicare and MassHealth, approximately 75% are community-dwelling, albeit nursing home-certifiable, according to Medicare criteria; 70% have 4 or more chronic health conditions; and 62% are not primary English speakers. Among enrollees aged 21 to 64 years and dually eligible for Medicare and MassHealth, approximately 70% have behavioral health diagnoses, 15% have current or prior alcohol dependence or substance use disorder, and 7% are homeless, with many others experiencing housing insecurity.

## ABSTRACT

**OBJECTIVES:** Emergency departments (EDs) frequently provide care for nonemergent health conditions outside of usual physician office hours. A nonprofit, fully integrated health insurer/care delivery system that enrolls socioeconomically disadvantaged adults with complex health needs partnered with an ambulance service provider to offer after-hours urgent care by specially trained and equipped paramedics in patients' residences. The Massachusetts Department of Public Health gave this initiative, the Acute Community Care Program (ACCP), a Special Project Waiver. We report results from its first 2 years of operation.

**STUDY DESIGN:** This was an observational study.

**METHODS:** We used descriptive methods to analyze administrative claims, financial and enrollment records from the health insurer, information from service logs submitted by ACCP paramedics, and self-reported patient perceptions from telephone surveys of ACCP recipients.

**RESULTS:** ACCP averaged only about 1 call per day in its first year, growing to about 2 visits daily in year 2. About 15% to 20% of ACCP patients ultimately were transported to EDs and between 7.2% and 17.1% were hospitalized within 1 day of their ACCP visits. No unexpected deaths occurred within 72 hours of ACCP visits. Paramedics stayed on scene approximately 80 minutes on average. About 70% of patients thought that ACCP spared them an ED visit; 90% or more were willing to receive future ACCP care. Average costs per ACCP visit fell from \$844 in year 1 to \$537 in year 2 as volumes increased.

**CONCLUSIONS:** This study using observational data provides preliminary evidence suggesting that ACCP might offer an alternative to EDs for after-hours urgent care. More rigorous evaluation is required to assess ACCP's effectiveness.

Am J Manag Care. 2018;24(9):e270-e277

CCA enrollees visited EDs 3 times more often than other Massachusetts residents, with average annual ED utilization rates of 810 per 1000 for enrollees 65 years and older and 1564 per 1000 for those aged 21 to 64 years.<sup>10</sup> Much of this ED care involved conditions that could have been effectively treated in community settings. Furthermore, ED visits were frequently emotionally uncomfortable for CCA patients, who felt stigmatized by their health conditions or sociodemographic attributes.<sup>8</sup> Many ED visits occurred during evening hours, when patients' primary care clinicians were unavailable for direct patient care.

In July 2014, EasCare and CCA jointly approached the Massachusetts Department of Public Health Office of Emergency Medical Services (OEMS) to obtain a Special Project Waiver to implement ACCP. The waiver allowed pilot testing of ACCP in eastern Massachusetts. ACCP paramedics receive 300 hours of didactic training concerning complex clinical assessments in patients' homes, interpreting laboratory and other test results, and communicating effectively with on-call clinicians. Trainees' technical skills and communication competencies are assessed through a multifaceted simulation program that incorporates standardized patients, manikins, direct observation by supervisors and ACCP-trainee paramedic peers, and trainees' self-assessments.

ACCP started operations in October 2014, serving patients between 6 PM and 2 AM. Beginning in late afternoon, CCA members who call their primary care clinician are evaluated by nurses by telephone. Emergency needs, defined as requiring immediate medical attention, are referred to 911 and thus EDs. Urgent needs, defined as nonemergent but requiring attention before the next business day, span a range of acuity and are triaged using a color-coded system to the ACCP paramedic. Paramedics visit the patients with the most severe needs each night, traveling in their specially equipped SUV to patients' residences.<sup>8</sup> To oversee clinical decision making, on-call CCA primary care physicians interact with ACCP paramedics in the field through real-time smartphone communication and shared electronic health records. These CCA physicians are either general internists or family practitioners, experienced in the care of complex patients with a heavy burden of chronic conditions, disability, and sociodemographic disadvantages. In their practices, they sometimes make home visits and therefore appreciate firsthand what the paramedics will confront on scene.

## Goals and Importance

During this ongoing pilot period, Massachusetts's OEMS monitored ACCP for safety (deaths within 72 hours, postvisit ED transports) and patient satisfaction reports obtained by EasCare. Here, we present these observational data compiled during ACCP implementation. We examine ACCP visits and postvisit service use and deaths, ACCP on-scene activities, and self-reported patient satisfaction. These observational findings provide important preliminary insights into patient outcomes during ACCP's first 24 months.

## TAKEAWAY POINTS

The Acute Community Care Program (ACCP) is a collaboration between a nonprofit, fully integrated health insurer/care delivery system that enrolls socioeconomically disadvantaged adults and an ambulance service provider to offer after-hours urgent care by specially trained and equipped paramedics in patients' residences. Without ACCP, these patients would typically be sent to emergency departments (EDs). Early results suggest that:

- ▶ ACCP appears to reduce ED visits for these urgent care patients.
- ▶ No unexpected deaths occurred.
- ▶ At least 90% of patients are willing to receive ACCP care in the future.
- ▶ More research is needed to quantify the effects of ACCP on ED use and patients' experiences.

## METHODS

The Massachusetts General Hospital/Partners HealthCare Institutional Review Board approved this study.

### ACCP Visits, Post-ACCP Hospital Use, and Deaths

CCA received encounter records from EasCare for each ACCP visit. These claims records are linked to CCA member identification numbers, which also link to member enrollment information, claims for all services provided to members, and death dates. We obtained these claims files from CCA and identified numbers of ACCP visits for individual members, ED use, hospital observation unit stays and admissions post ACCP visits, and deaths. Less than 1% of claims did not distinguish between ED visits and observation stays, lumping them into a combined category. We excluded these claims and retained only claims that clearly differentiated the 2 services. We counted claims to quantify the numbers of different visit types and used service dates to identify events within specified time intervals.

### ACCP Visit Activities

EasCare tracks all ACCP visits and patients' dispositions, recording details about each visit, including arrival time and time on scene; patient's chief complaint treated by the paramedic, as determined by a senior clinician upon reviewing the record; vital signs; tests performed; medications administered and other interventions; and disposition (eg, treated at home, referred to ED). We obtained this information from EasCare.

### Patient-Reported Satisfaction With ACCP Visit

From the outset, CCA and EasCare clinical leaders surveyed ACCP patients to identify patient-reported problems and areas for improvement. Because of the novelty of the program, no existing survey precisely fit their needs. They therefore took questions commonly employed in other patient-reported experience surveys as models and created several new questions specific to ACCP. In addition to a final open-ended question, the survey (available upon request) includes 12 questions on topics such as communication, whether ACCP prevented ED visits, comparing ACCP with ED visits, willingness to use ACCP again, and overall satisfaction with care.

A senior EasCare staff member administered the survey by telephone within 30 days of the ACCP visit. Given the survey's operational purpose (ie, not research), the numbers of calls made, whether a proxy responded, and refusals to participate were not recorded. After 15 months of conducting the survey, staff recognized that frequent ACCP users were weary of being asked to answer the same survey (ie, some persons were surveyed 2 or 3 times). After January 1, 2016, staff administered the survey only once to patients with ACCP visits. Therefore, before year 2, quarter 2, individual patients could have contributed up to 3 survey responses. EasCare provided us with monthly spreadsheets of survey responses, and we compiled these results. Results here represent all surveys conducted.

### Cost Per ACCP Visit

To assess the resources required to design and implement ACCP and the costs to operate the program, we examined financial accounting records and interviewed personnel at both EasCare and CCA. We used visit volume and scale by monthly net operating costs retrospectively gathered from the general ledger accounts and payroll records from both EasCare and CCA. EasCare incurs all operating costs of running ACCP and receives a monthly fee from CCA. Given dates of financial information, the cost analysis looked at calendar years 2015 and 2016.

## RESULTS

Between October 2014 and September 2016, CCA membership in the region covered by ACCP grew from 8026 (3435  $\geq$ 65 years and 4591 aged 21-64 years) to 9223 (4048 and 5175, respectively).

### ACCP Use and Post-ACCP Outcomes

**Table 1** shows ACCP visits by quarter and services used and deaths within 90 days of the ACCP visit, stratifying by whether patients were 65 years or older or were younger than 65 years. Numbers of ACCP visits have risen over time but not monotonically. In each year, quarter 2 (January-March) includes peak influenza seasons. As assessed by persons visiting EDs within a day of their ACCP encounter, the percentage of ACCP visits that ultimately required ED transports ranged from around 15% to just above 20% over time. Across the 2 years, quarterly percentages of observation stays or hospitalizations within 1 calendar day of the ACCP visit ranged from 1.4% to 5.7% and 7.2% to 17.1%, respectively. Only 3.8% to 11.5% visited EDs within 2 to 3 days after their ACCP service. However, more than one-third of patients in each quarter had another ACCP visit within 90 days, and within 90 days, up to 35% to 50% of ACCP recipients had either observation stays or hospitalizations. Death rates within 90 days varied by quarter, with the highest rate (25%) in year 2, quarter 2 (**Table 1**). As determined by OEMS reviews, no unexpected deaths occurred within 72 hours of an ACCP visit.

### Conditions Treated and Interventions

Across the 2 years, various nonspecific conditions, including dizziness, fatigue, pain, headache, and weakness, accounted for

one-fourth to one-third of ACCP complaints (**Table 2**). In year 1, urinary or respiratory conditions were the precipitating complaint in about one-third of cases, and in year 2, respiratory or abdominal conditions accounted for almost one-fourth of ACCP visits. A wide variety of other complaints also occurred. On average, ACCP paramedics spent about 80 minutes on scene. Approximately one-fifth of patients had an intravenous line inserted, one-fourth received medications, and just over one-third had real-time blood tests performed and interpreted using a portable device.

### Patient-Reported Experiences

Patients generally reported high satisfaction with their ACCP experiences. **Table 3** shows results from questions with fixed response categories. The survey closed with an open-ended statement: "We would like to hear anything else about the recent visit of the paramedic to your home." The number of persons surveyed decreased substantially in year 2, for the reasons previously described. Importantly, approximately 70% of respondents thought that the ACCP visit saved them a trip to the ED, as suggested by these quotations from responses to the open-ended question (note that respondents all referred to their paramedic by his first name; all current ACCP paramedics are male):

- [Paramedic's first name] was just great, and this visit certainly saved me a trip to the emergency room. The only thing I didn't like was the needle, but the medication made me feel much better. It's great knowing you guys have this service available. Thank you!
- I was so happy that I didn't have to go to the emergency department again. [Paramedic's first name] was able to evaluate and treat me at home, which was just fantastic. I run the risk of getting sicker in the hospital, let alone all of the wasted time. ... Thank you!
- I was shocked to see exactly how much the paramedic could actually do in my home, from the [electrocardiogram] and vital signs to the amazing blood testing machine. Thank you! Definitely saved me a trip to the ER.
- I can't stand going to the hospital because I get put in the hall and everyone walks past me! Having [paramedic's first name] come to my home was fantastic, and it certainly saved me a trip to the emergency room. Thank you!

Even when the paramedic care could not resolve the problem on scene and the patient required ED transport, the open-ended responses suggested that the paramedic's involvement facilitated the hand-off to ED clinicians and made that process easier for the patient:

- A million thanks to [paramedic's first name] who helped get my mom to the hospital quickly. She was very sick and [paramedic] helped my entire family with the transition to the hospital. She is doing much better, thank you!

**TABLE 1.** ACCP Use and Subsequent Services and Deaths Within 90 Days: October 2014–September 2016

| Utilization/Outcomes   |                  | Year 1 <sup>a</sup> |         |         |         | Year 2 <sup>a</sup> |           |          |          |
|--|------------------|---------------------|---------|---------|---------|---------------------|-----------|----------|----------|
|  |                  | Q1                  | Q2      | Q3      | Q4      | Q1                  | Q2        | Q3       | Q4       |
| <b>Number of ACCP Visits (number of individual patients)</b> |                  |                     |         |         |         |                     |           |          |          |
| Number of ACCP visits<br>(number of individual patients)     | Total            | 35 (24)             | 79 (54) | 61 (44) | 83 (62) | 80 (60)             | 165 (110) | 129 (95) | 139 (90) |
|  | Aged 21–64 years | 17 (14)             | 35 (26) | 25 (22) | 39 (29) | 30 (22)             | 70 (39)   | 47 (34)  | 54 (35)  |
|  | ≥65 years        | 18 (10)             | 44 (28) | 36 (22) | 44 (33) | 50 (38)             | 95 (71)   | 82 (61)  | 85 (55)  |
| <b>Percent of ACCP Visits</b>                                |                  |                     |         |         |         |                     |           |          |          |
| % of ED transports within 1 day<br>of ACCP visit             | Total            | 22.9                | 16.5    | 21.3    | 16.9    | 16.3                | 17.0      | 22.5     | 13.7     |
|  | Aged 21–64 years | 5.9                 | 5.7     | 28.0    | 12.8    | 16.7                | 20.0      | 27.7     | 14.8     |
|  | ≥65 years        | 38.9                | 25.0    | 16.7    | 20.4    | 16.0                | 14.7      | 19.5     | 12.9     |
| % with ED visit 2 to 3 days<br>after ACCP visit              | Total            | 5.7                 | 3.8     | 11.5    | 9.6     | 6.3                 | 4.2       | 3.9      | 5.0      |
|  | Aged 21–64 years | 11.8                | 2.9     | 20.0    | 12.8    | 6.7                 | 5.7       | 8.5      | 3.7      |
|  | ≥65 years        | 0.0                 | 4.6     | 5.6     | 6.8     | 6.0                 | 3.2       | 1.2      | 5.9      |
| % with another ACCP visit<br>within 90 days                  | Total            | 54.3                | 41.8    | 44.3    | 32.5    | 40.0                | 48.5      | 38.8     | 35.3     |
|  | Aged 21–64 years | 47.1                | 37.1    | 36.0    | 35.9    | 46.7                | 61.4      | 40.4     | 35.2     |
|  | ≥65 years        | 61.1                | 45.4    | 50.0    | 29.6    | 36.0                | 39.0      | 37.8     | 35.3     |
| % by number of subsequent<br>ACCP visits within 90 days      | 0 visits         | 45.7                | 58.2    | 55.7    | 67.5    | 60.0                | 51.5      | 61.2     | 64.8     |
|  | 1 visit          | 17.1                | 24.1    | 23.0    | 14.5    | 18.8                | 19.4      | 20.2     | 13.7     |
|  | 2 visits         | 14.3                | 11.4    | 14.8    | 7.2     | 7.5                 | 10.3      | 8.5      | 7.9      |
|  | 3 visits         | 22.9                | 6.3     | 6.6     | 10.8    | 13.8                | 18.8      | 10.1     | 13.7     |
| % with observation stay<br>within 1 day of ACCP visit        | Total            | 5.7                 | 2.5     | 3.3     | 2.4     | 3.8                 | 2.4       | 5.4      | 1.4      |
|  | Aged 21–64 years | 0.0                 | 2.9     | 0.0     | 2.6     | 3.3                 | 1.4       | 4.3      | 1.9      |
|  | ≥65 years        | 11.1                | 2.3     | 5.6     | 2.3     | 4.0                 | 3.2       | 6.1      | 1.2      |
| % with observation stay<br>within 90 days of ACCP visit      | Total            | 11.4                | 19.0    | 19.7    | 22.9    | 22.5                | 17.6      | 30.2     | 22.3     |
|  | Aged 21–64 years | 11.8                | 11.4    | 20.0    | 20.5    | 30.0                | 17.1      | 36.2     | 13.0     |
|  | ≥65 years        | 11.1                | 25.0    | 19.4    | 25.0    | 18.0                | 17.9      | 26.8     | 28.2     |
| % hospitalized within 1 day<br>of ACCP visit                 | Total            | 17.1                | 10.1    | 8.2     | 9.6     | 15.0                | 8.5       | 12.4     | 7.2      |
|  | Aged 21–64 years | 5.9                 | 2.9     | 12.0    | 5.1     | 13.3                | 8.6       | 10.6     | 5.6      |
|  | ≥65 years        | 27.8                | 15.9    | 5.6     | 13.6    | 16.0                | 8.4       | 13.4     | 8.2      |
| % hospitalized within 90 days<br>of ACCP visit               | Total            | 65.7                | 44.3    | 34.4    | 53.0    | 46.3                | 34.6      | 34.9     | 42.5     |
|  | Aged 21–64 years | 47.1                | 22.9    | 28.0    | 66.7    | 36.7                | 44.3      | 40.4     | 35.2     |
|  | ≥65 years        | 83.3                | 61.4    | 38.9    | 41.0    | 52.0                | 27.4      | 31.7     | 47.1     |
| % died within 90 days<br>of ACCP visit                       | Total            | 11.4                | 6.3     | 6.6     | 3.6     | 15.0                | 25.5      | 11.6     | 13.7     |
|  | Aged 21–64 years | 0.0                 | 0.0     | 8.0     | 2.6     | 10.0                | 20.0      | 2.1      | 7.4      |
|  | ≥65 years        | 22.2                | 11.4    | 5.6     | 4.6     | 18.0                | 29.5      | 17.1     | 17.7     |

ACCP indicates Acute Community Care Program; ED, emergency department; Q, quarter.

<sup>a</sup>Year 1: October 2014–September 2015; year 2: October 2015–September 2016.

- Unfortunately, [patient's name] had to go to the hospital where she was admitted for 3 days. She is doing much better, and we are thankful that [paramedic's first name] was able to coordinate the transfer to the hospital so seamlessly. Thank you!

In most quarters, at least 90% of patients strongly agreed that they were satisfied with the quality of the paramedic care, and at least 90% strongly agreed they would be willing to receive ACCP care in the future. The following quotations exemplify the views of survey respondents:

- This is the best thing to happen to [my uncle] in a long, long time. Your service has prevented at least four trips to the hospital in the month of November alone. Thank you very much!
- This is a great service. The guy [paramedic] was very professional, and I felt very relaxed after the visit. I felt like I could talk comfortably with the paramedic, and I didn't have to go to the hospital. Thank you!
- They [the paramedics] are fantastic guys! You need to advertise this program to make it available to more folks who would benefit from it. Thank you!

**TABLE 2.** ACCP Assessments and Interventions on Scene

|  | Year 1  | Year 2   |
|--|---|--|
| ACCP visits, n                             | 255   | 487  |
| Top 3 chief complaints, n (%)              | Nonspecific symptoms <sup>a</sup> : 89 (34.9)<br>Urinary: 39 (15.3)<br>Respiratory: 30 (11.7) | Nonspecific symptoms <sup>a</sup> : 118 (24.2)<br>Respiratory: 60 (12.3)<br>Abdominal: 57 (11.7) |
| Average time on scene, minutes, mean (SD)  | 81.7 (45.2)   | 82.5 (43.8)  |
| IV line insertion, n (%)                   | 51 (20.0)   | 112 (23.0)   |
| Electrocardiogram, n (%)                   | 36 (14.1)   | 38 (7.8)   |
| Blood testing using handheld device, n (%) | 101 (39.6)  | 171 (35.1)   |
| Urine testing, n (%)                       | 49 (19.2)   | 70 (14.4)  |
| Other laboratory testing, n (%)            | 48 (18.8)   | 38 (7.8)   |
| Any medication administered, n (%)         | 66 (25.9)   | 142 (29.2)   |
| Top 3 medications, <sup>b</sup> n (%)      | Normal saline bolus: 14 (5.5)<br>Levofloxacin: 10 (3.9)<br>Ondansetron hydrochloride: 9 (3.5) | Normal saline bolus: 44 (9.0)<br>Ondansetron hydrochloride: 32 (6.6)<br>Furosemide: 29 (6.0)     |

ACCP indicates Acute Community Care Program; IV, intravenous.

<sup>a</sup>Nonspecific symptoms include dizziness, pain, fatigue, edema, headache, poor nutritional intake, shortness of breath, vomiting, weakness, and weight gain.

<sup>b</sup>Many different medications were administered, but to small numbers of patients.

**TABLE 3.** Responses to ACCP Patient Experience Survey: October 2014-September 2016

| Question and Selected Responses <sup>a</sup>   | Year 1  |         |         |         |                         | Year 2  |          |        |        |                         |
|--|---------|---------|---------|---------|-------------------------|---------|----------|--------|--------|-------------------------|
|  | Q1      | Q2      | Q3      | Q4      | Year Total <sup>b</sup> | Q1      | Q2       | Q3     | Q4     | Year Total <sup>b</sup> |
| Total number served  | 49      | 108     | 93      | 113     | 363                     | 119     | 222      | 170    | 171    | 682                     |
| Total number surveyed <sup>c</sup>   | 30      | 59      | 35      | 37      | 161                     | 43      | 20       | 13     | 13     | 89                      |
| <b>n (%)</b>   |         |         |         |         |                         |         |          |        |        |                         |
| I could talk comfortably with paramedic <sup>d</sup> :   |         |         |         |         |                         |         |          |        |        |                         |
| Strongly agree   | 22 (73) | 51 (86) | 33 (94) | 36 (97) | 142 (88)                | 39 (91) | 19 (95)  | 8 (62) | 6 (46) | 72 (81)                 |
| Agree  | 8 (27)  | 6 (10)  | 1 (3)   | 1 (3)   | 16 (9)                  | 3 (7)   | 0 (0)    | 5 (38) | 7 (54) | 15 (17)                 |
| I felt the healthcare provider was comfortable with evaluating me via the paramedic <sup>d</sup> : |         |         |         |         |                         |         |          |        |        |                         |
| Strongly agree   | 15 (50) | 49 (83) | 29 (83) | 35 (95) | 128 (80)                | 42 (98) | 20 (100) | 8 (62) | 8 (62) | 78 (88)                 |
| Agree  | 14 (47) | 10 (17) | 5 (14)  | 2 (5)   | 31 (19)                 | 0 (0)   | 0 (0)    | 4 (31) | 4 (31) | 8 (9)                   |
| The paramedic allowed me to see a healthcare provider sooner <sup>e</sup> :                        |         |         |         |         |                         |         |          |        |        |                         |
| Strongly agree   | 15 (50) | 45 (76) | 27 (77) | 31 (84) | 118 (73)                | 37 (86) | 20 (100) | 4 (31) | 6 (46) | 67 (75)                 |
| Agree  | 13 (43) | 10 (17) | 6 (17)  | 6 (16)  | 35 (22)                 | 5 (12)  | 0 (0)    | 7 (54) | 4 (31) | 16 (18)                 |
| Neither agree or disagree  | 2 (7)   | 4 (9)   | 1 (3)   | 0 (0)   | 7 (4)                   | 0 (0)   | 0 (0)    | 2 (15) | 3 (23) | 5 (6)                   |
| Because of the paramedic visit, I did not need to travel to an ER <sup>f</sup> :                   |         |         |         |         |                         |         |          |        |        |                         |
| Strongly agree   | 8 (27)  | 35 (59) | 23 (66) | 27 (73) | 91 (57)                 | 30 (70) | 17 (85)  | 3 (23) | 9 (69) | 59 (66)                 |
| Agree  | 16 (53) | 12 (20) | 6 (17)  | 7 (19)  | 41 (25)                 | 5 (12)  | 1 (5)    | 7 (54) | 3 (23) | 16 (18)                 |
| Neither agree or disagree  | 5 (17)  | 7 (12)  | 2 (6)   | 0 (0)   | 14 (9)                  | 5 (12)  | 0 (0)    | 2 (15) | 1 (8)  | 8 (9)                   |
| Disagree   | 1 (3)   | 4 (7)   | 3 (9)   | 3 (8)   | 11 (7)                  | 2 (5)   | 2 (10)   | 1 (8)  | 0 (0)  | 5 (6)                   |
| I learned everything I needed to know about my diagnosis from the paramedic <sup>g</sup> :         |         |         |         |         |                         |         |          |        |        |                         |
| Strongly agree   | 6 (20)  | 36 (61) | 23 (66) | 28 (76) | 93 (58)                 | 34 (79) | 19 (95)  | 5 (38) | 6 (46) | 64 (72)                 |
| Agree  | 23 (77) | 19 (32) | 10 (29) | 8 (22)  | 60 (37)                 | 6 (14)  | 1 (5)    | 5 (38) | 6 (46) | 17 (19)                 |
| Neither agree or disagree  | 1 (3)   | 4 (7)   | 1 (3)   | 1 (3)   | 7 (4)                   | 1 (2)   | 0 (0)    | 3 (23) | 1 (8)  | 5 (56)                  |
| The paramedic visit was as good as a regular ER visit <sup>h</sup> :                               |         |         |         |         |                         |         |          |        |        |                         |
| Strongly agree   | 13 (43) | 40 (68) | 25 (71) | 29 (78) | 107 (66)                | 37 (86) | 17 (85)  | 4 (31) | 5 (38) | 63 (71)                 |
| Agree  | 13 (43) | 13 (22) | 6 (17)  | 5 (14)  | 37 (23)                 | 4 (9)   | 3 (15)   | 6 (46) | 6 (46) | 19 (21)                 |
| Neither agree or disagree  | 2 (7)   | 4 (7)   | 1 (3)   | 1 (3)   | 8 (5)                   | 1 (2)   | 0 (0)    | 3 (23) | 2 (15) | 6 (7)                   |

(continued)

**TABLE 3.** (Continued) Responses to ACCP Patient Experience Survey: October 2014–September 2016

| Question and Selected Responses <sup>a</sup>  | Year 1  |          |         |          |                         | Year 2  |          |         |         |                         |
|---|---------|----------|---------|----------|-------------------------|---------|----------|---------|---------|-------------------------|
|   | Q1      | Q2       | Q3      | Q4       | Year Total <sup>b</sup> | Q1      | Q2       | Q3      | Q4      | Year Total <sup>b</sup> |
| I would be willing to use a paramedic visit again in the future <sup>d</sup> :                              |         |          |         |          |                         |         |          |         |         |                         |
| Strongly agree  | 21 (70) | 54 (92)  | 32 (91) | 36 (97)  | 143 (89)                | 42 (98) | 19 (95)  | 10 (77) | 11 (85) | 82 (92)                 |
| Agree   | 8 (27)  | 1 (2)    | 1 (3)   | 1 (3)    | 11 (7)                  | 0 (0)   | 1 (5)    | 3 (23)  | 2 (15)  | 6 (7)                   |
| Overall, I was satisfied by the quality of services provided by the paramedic visit <sup>d</sup> :          |         |          |         |          |                         |         |          |         |         |                         |
| Strongly agree  | 21 (70) | 59 (100) | 32 (91) | 37 (100) | 149 (93)                | 42 (98) | 20 (100) | 9 (69)  | 9 (69)  | 80 (90)                 |
| Agree   | 7 (23)  | 0 (0)    | 1 (3)   | 0 (0)    | 8 (5)                   | 0 (0)   | 0 (0)    | 4 (31)  | 3 (23)  | 7 (8)                   |
| Did the visit save you a trip to the ER? <sup>e</sup>   |         |          |         |          |                         |         |          |         |         |                         |
| Yes   | 20 (67) | 39 (66)  | 23 (66) | 27 (73)  | 109 (68)                | 30 (70) | 17 (85)  | 8 (62)  | 9 (69)  | 64 (72)                 |
| No  | 6 (20)  | 12 (20)  | 5 (14)  | 6 (16)   | 29 (18)                 | 6 (14)  | 2 (10)   | 4 (31)  | 0 (0)   | 12 (11)                 |
| I don't know  | 4 (13)  | 7 (12)   | 4 (11)  | 4 (11)   | 19 (12)                 | 5 (12)  | 1 (5)    | 1 (8)   | 1 (8)   | 8 (9)                   |
| Would a friend/family member have accompanied you to the ER if the paramedic wasn't available? <sup>f</sup> |         |          |         |          |                         |         |          |         |         |                         |
| Yes   | 10 (33) | 35 (59)  | 19 (54) | 14 (38)  | 7 (48)                  | 18 (42) | 7 (35)   | 4 (31)  | 4 (31)  | 33 (37)                 |
| No  | 10 (33) | 9 (15)   | 9 (26)  | 15 (41)  | 43 (27)                 | 14 (33) | 8 (40)   | 6 (46)  | 6 (46)  | 33 (37)                 |
| I don't know  | 10 (33) | 13 (22)  | 5 (14)  | 6 (16)   | 34 (21)                 | 8 (19)  | 3 (15)   | 3 (23)  | 1 (8)   | 15 (17)                 |
| If YES, how many hours of total time do you think the paramedic visit saved this person? <sup>g</sup>       |         |          |         |          |                         |         |          |         |         |                         |
| Less than an hour   | 7 (23)  | 0 (0)    | 7 (20)  | 1 (3)    | 15 (9)                  | 1 (2)   | 0 (0)    | 0 (0)   | 0 (0)   | 1 (1)                   |
| 1-2 hours   | 3 (10)  | 10 (17)  | 9 (26)  | 4 (11)   | 26 (16)                 | 1 (2)   | 0 (0)    | 1 (8)   | 0 (0)   | 2 (2)                   |
| 2-4 hours   | 3 (10)  | 20 (34)  | 4 (11)  | 7 (19)   | 34 (21)                 | 8 (19)  | 5 (25)   | 2 (15)  | 1 (8)   | 16 (18)                 |
| 4-6 hours   | 1 (3)   | 3 (5)    | 2 (6)   | 0 (0)    | 6 (4)                   | 5 (12)  | 1 (5)    | 0 (0)   | 1 (8)   | 7 (8)                   |
| More than 6 hours   | 3 (10)  | 2 (3)    | 1 (3)   | 2 (5)    | 8 (5)                   | 3 (7)   | 1 (5)    | 1 (8)   | 1 (9)   | 6 (7)                   |
| Of this time, how many hours of work/school do you think it saved this person? <sup>h</sup>                 |         |          |         |          |                         |         |          |         |         |                         |
| Less than an hour   | 10 (33) | 0 (0)    | 7 (20)  | 2 (5)    | 19 (12)                 | 1 (2)   | 0 (0)    | 0 (0)   | 0 (0)   | 1 (1)                   |
| 1-2 hours   | 1 (3)   | 10 (17)  | 9 (26)  | 3 (8)    | 23 (14)                 | 1 (2)   | 0 (0)    | 2 (15)  | 0 (0)   | 3 (3)                   |
| 2-4 hours   | 3 (10)  | 19 (32)  | 4 (11)  | 7 (19)   | 33 (20)                 | 8 (19)  | 5 (25)   | 0 (0)   | 1 (11)  | 14 (16)                 |
| 4-6 hours   | 1 (3)   | 3 (5)    | 2 (6)   | 0 (0)    | 5 (3)                   | 5 (12)  | 1 (5)    | 1 (8)   | 0 (0)   | 7 (8)                   |
| More than 6 hours   | 1 (3)   | 2 (3)    | 1 (3)   | 2 (5)    | 6 (4)                   | 3 (7)   | 1 (5)    | 0 (0)   | 1 (8)   | 5 (6)                   |

ACCP indicates Acute Community Care Program; ER, emergency room; Q, quarter.

<sup>a</sup>Some response categories had 0 or very few responses and are therefore not shown.

<sup>b</sup>Year totals. Year 1: October 2014–September 2015; year 2: October 2015–September 2016.

<sup>c</sup>This row shows the total number of surveys conducted in the time period (some individuals might have been surveyed more than once if they had more than 1 ACCP visit). The n's in rows below show the number of responses for each specific question.

<sup>d</sup>Other response categories were strongly disagree, disagree, neither agree or disagree, and other (please specify).

<sup>e</sup>Other response categories were strongly disagree, disagree, and other (please specify).

<sup>f</sup>Other response categories were strongly disagree and other (please specify).

<sup>g</sup>Other response category: other (please specify).

## ACCP Costs

ACCP start-up costs were approximately \$95,000 and included labor costs (training and administration), capital costs (vehicle and equipment), and other costs (ie, licensing, medical supply inventory). The annual operating costs for 2015 and 2016 were \$350,000 and \$344,000, respectively, and costs per patient encounter in each year were \$844 and \$537. Because volume increased more than 50% between 2015 and 2016 and costs slightly decreased, the cost per encounter decreased by 36%, suggesting that EasCare has achieved some economies of scale. As volume continues to increase, it is likely that the cost per encounter will decrease until there is a need to increase capacity and incur more costs of a start-up/overhead nature.

## DISCUSSION

ACCP aimed to provide a clinically effective and patient-centered alternative to ED care for patients with urgent health needs during evening hours. From these preliminary data, it appears that ACCP largely succeeded, because less than one-fifth of persons with ACCP visits ended up going to EDs within the same calendar day as their ACCP encounter. Anecdotally, most same-day ED visits that occurred after ACCP visits were initiated by the paramedic in collaboration with the on-call physician, who determined that the patient's condition warranted more in-depth evaluation and treatment than could be safely provided in the home setting. Of the patients who were treated at home, in most calendar quarters,

less than one-tenth visited EDs within 3 days, suggesting that the immediate urgent issue had been effectively addressed by the ACCP visit. Recipients seemed pleased with their ACCP services, with most reporting their belief that ACCP had prevented them from needing ED care.

From these observational data, it appears that ACCP recipients have a heavy burden of disease, as suggested by substantial fractions requiring both ACCP visits and hospitalizations within 90 days. Early in this pilot program, recognizing the significant symptom burden faced by many CCA members with multimorbid chronic conditions and approaching the end of life, CCA and EasCare clinical leaders developed special workflows and training for ACCP paramedics to care for patients with end-of-life symptoms. This involved an expanded formulary, rapid response, and direct interactions between paramedics and palliative care-trained physicians. The relatively high death rates within 90 days of the ACCP encounter likely reflect this end-of-life care initiative, as well as the overall medical complexity of CCA enrollees.

Although 8000 to 9000 CCA members lived in the ACCP catchment area, during its first 2 years of operation, the program served few individual patients and provided relatively small numbers of visits: on average, roughly 1 visit per day in year 1 and slightly under 2 visits per day in year 2. ACCP needed to build awareness and trust with CCA primary care practitioners that the program offered a safe and appealing alternative for after-hours urgent care management compared with reflexively sending patients to EDs. Equally importantly, the paramedics and CCA clinicians leading ACCP needed to learn from their early implementation experiences to improve the program and extend its reach. From its start, ACCP leaders have met every month in a morbidity and mortality (M&M) rounds format, reviewing each patient who required ED transport, was admitted to hospital within 72 hours, or raised special interest. These M&M meetings led to improvements in ACCP practices and program enhancements. Since the ACCP's inception, lessons learned include the following:

1. Patients referred for ACCP have wide-ranging acuity. We had to refine our triage practices to prioritize by medical need, making the highest-value use of the paramedics' time. We developed a color-coded triage system, honing it with experience, to identify the most acutely ill patients, whom paramedics visit first.
2. Demand for ACCP is highest in the early evening, falling off substantially after midnight. Although our Special Project Waiver provisions currently prevent us from changing hours of operation, we shall staff as required to accommodate this timing of patient demand in the future.
3. Ensuring seamless communication among all participants is critical. This includes tracking the ACCP SUV's location and facilitating calls between paramedics in the field and CCA clinicians. Having online access to CCA's electronic health records allows paramedics to learn about patients before the

visit and gives CCA clinicians immediate access to paramedics' clinical observations, notes, and test results.

4. Many CCA members with physical disabilities and/or mental illness have experienced discomfort and stigma at EDs and are therefore reluctant to visit them, even with severe symptoms. These individuals frequently wait at home until their illness is so advanced that they risk worse outcomes. Although we originally conceived ACCP to reduce unnecessary ED use, for these members we believe ACCP allows us to intervene earlier, thereby avoiding complications and more severe illness or debility.

Validating these lessons will require further study.

### **Limitations**

This observational report has significant limitations for evaluating the effectiveness of ACCP. Most importantly, we do not have a comparison group for judging post-ACCP service use or satisfaction with care. Believing that ACCP truly offers value to its recipients, CCA leadership has dismissed the possibility of randomly assigning persons with after-hours urgent health problems to ACCP versus the standard approach of ED transport. Therefore, any study of ACCP effectiveness will need to use quasi-experimental methods. EasCare staff members administered the patient survey, potentially biasing participants' responses in the highly positive direction found (eg, because of social desirability bias). Finally, the generalizability of ACCP has yet to be tested.

## **CONCLUSIONS**

Despite its limitations, this report offers preliminary insight into ACCP, with findings suggesting that the program may be able to largely replace the after-hours ED visits that have been standard care for CCA's complex patients with urgent care needs. This early sense of success has led CCA and EasCare leadership to develop ideas for extending the program, in addition to expanding it to central and western Massachusetts. Other clinical areas under active consideration include care of homeless populations, opioid-directed programs, monitoring following hospital or rehabilitation facility discharge, telehealth, and veterans' healthcare initiatives. Systematic evaluation will be required to assess the effectiveness of ACCP's initial urgent care initiative and expansion programs using this care model. ■

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**Source of Funding:** This work was funded through a Patient-Centered Outcomes Research Institute (PCORI) Award (IHS-1502-27177).

**Author Disclosures:** Dr Iezzoni was a member of the board of Commonwealth Care Alliance (CCA) until July 6, 2017, and received grants as principal investigator (PI) on the PCORI contract that funded this work. Mr Cluett is employed by EasCare

Ambulance, which owns and operates the mobile integrated health program. Dr Ajayi is an employee of CCA, the nonprofit organization that developed the program researched here; she was also a co-PI on the PCORI contract. Mr Goudreau reports employment and meeting/conference attendance for EasCare Ambulance. Dr Blanchfield is employed by Partners Health Care, which contracts with CCA to care for Medicaid accountable care organization patients. The remaining authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

**Authorship Information:** Concept and design (LII, MG, BBB); acquisition of data (LII, AJW, WSC, MG, BBB, JP); analysis and interpretation of data (LII, AJW, WSC, MG, BBB, JP, YT); drafting of the manuscript (MG, BBB, YT); critical revision of the manuscript for important intellectual content (TA, MG); statistical analysis (JP, YT); provision of patients or study materials (WSC); obtaining funding (BBB); administrative, technical, or logistic support (LII, AJW, WSC); and supervision (LII).

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