

# Community Paramedicine — Addressing Questions as Programs Expand

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Growing increasingly short of breath late one night, Ms. E. called her health care provider's urgent care line, anticipating that the on-call nurse practitioner would have her transported to the emergency department (ED). Over the past 6 months, Ms. E. had made many ED visits. She is 83 years old and poor, lives alone, and has multiple health problems, including heart failure, advanced kidney disease, hepatitis C with liver cirrhosis, diabetes, and hypertension. In the ED, she generally endures long waits, must repeatedly recite her lengthy medical history, and feels vulnerable and helpless. She was therefore relieved when, instead of dialing 911, the nurse practitioner dispatched a specially trained and equipped paramedic to her home. As part of a pilot program overseen by the Massachusetts Department of Public Health, the paramedic retrieved Ms. E.'s electronic health record, performed a physical examination, and conducted blood tests while communicating with her provider's on-call physician. As instructed, the paramedic administered intravenous diuretics and ensured that Ms. E. was clinically stable before leaving her home, where her primary care team followed up with her the next morning.

The Massachusetts acute community care program is one of numerous new initiatives in the United States using emergency medical services (EMS) personnel. These mobile integrated health

care and community paramedicine programs aim to address critical problems in local delivery systems, such as insufficient primary and chronic care resources, overburdened EDs, and costly, fragmented emergency and urgent care networks.<sup>1</sup> Despite growing enthusiasm for these programs,<sup>2</sup> however, their performance has rarely been rigorously evaluated, and they raise important questions about training, oversight, care coordination, and value.

EMS systems were established in the United States in the 1950s and expanded, using federal funding, in the 1970s to create 911 response networks nationwide. Operating EMS systems around the clock requires trained workers with diverse skills. In 1975, the American Medical Association recognized emergency medical technicians (EMTs), paramedics, and other EMS staff as allied health workers. The federal government specifies educational standards for the various EMS occupations. As entry-level EMS providers, for example, EMTs undergo about 6 months of training and must pass state certification exams. In contrast, paramedics must have substantial prior EMT experience and then complete at least 2 years of didactic and field training before passing rigorous state licensing exams assessing knowledge and psychomotor skills.

Since the 1980s, reduced federal funding has contributed to EMS fragmentation. Local fire

departments provide roughly half of today's emergency medical services. Almost all 911 calls result in transportation to an ED because of state regulations and payment policies: insurers, including Medicare, typically reimburse EMS providers only for transporting patients. At the receiving end, many EDs face escalating demand and soaring costs, as more people seek attention for nonurgent acute and chronic conditions — in part because they lack regular sources of primary and chronic disease care. One estimate suggests that about 15% of persons transported by ambulance to EDs could safely receive care in non-urgent care settings, potentially saving the system hundreds of millions of dollars each year.<sup>2</sup>

Other countries have faced similar health care delivery challenges, and some have enlisted EMS personnel as part of their solutions. For example, in Australia and Canada, specially trained paramedics provide preventive and nonurgent primary care in rural regions, which benefits both patients and the paramedics, who can use their clinical skills to maximum advantage in regions with low emergency call volumes. In England, Wales, Canada, Australia, and New Zealand, EMS personnel provide urgent care on scene, averting unnecessary trips to the ED. The United Kingdom spent more than £4 million (\$5.7 million) investigating new approaches that would allow EMS

personnel to safely care for people who called 999 — the U.K. equivalent of 911 — in their homes or communities.<sup>3</sup> It implemented the successful approaches to substantially change how EMS providers respond to 999 calls, reducing ED transport rates from 90% in 2000 to 58% in 2012.<sup>3</sup> These changes have not affected patient safety.

Community paramedicine has come to the United States only recently, but initiatives are already under way in nearly 20 states. These programs vary widely.<sup>1</sup> In

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Madison, Wisconsin, EMS personnel visit patients at home, providing wound care and chronic disease management. In Clayton County, Georgia, paramedics target ED “high utilizers” — persons who averaged at least 17 ED visits in the previous year. Paramedics in Orange County, California, can now make triage decisions, transporting patients to urgent care centers rather than EDs when appropriate. In western Eagle County, Colorado, paramedics provide home health care-type services to homeless persons. And in Dallas and Fort Worth, Texas, the MedStar Mobile Healthcare program educates and monitors persons with chronic disease, aiming to prevent hospital readmissions for heart failure. Between 2010 and 2015, MedStar Mobile Healthcare appears to

have prevented a total of 1893 ED transports for 146 patients, saving Medicare more than \$800 million.<sup>1</sup>

Despite high expectations for mobile integrated health care and community paramedicine programs, we largely lack rigorous data on their performance. A systematic literature review funded by the U.S. Department of Health and Human Services Office for Preparedness and Response evaluated the safety and effectiveness of allowing EMS personnel to determine treatments and the set-

ting of care.<sup>4</sup> The researchers sought answers to several important questions — for example, what proportion of patients who would otherwise be transported to the ED can be safely treated in alternative care settings? The literature suggested that 11 to 61% of Medicare beneficiaries who received ED transports might not actually have required ED care, but no studies “described their methods in sufficient detail to support a firm conclusion.”<sup>4</sup> The researchers also examined whether, after on-scene evaluations, EMS personnel could accurately determine whether patients could be treated outside the ED, and again they found few studies that were rigorous enough to “support confident conclusions.”<sup>4</sup>

Nonetheless, U.S. EMS systems, communities lacking primary and

chronic care resources, and delivery systems with overwhelmed EDs will probably continue experimenting with new care models involving EMS personnel. Going forward, community paramedicine programs will need to address multiple critical issues.<sup>1,5</sup> First, there are workforce issues such as identifying the best methods for training EMS personnel, testing their competencies, and maintaining those competencies over time. The roles of physicians (e.g., emergency medicine or primary care physicians) overseeing and supervising these programs require specification, as do methods for establishing and supporting these relationships. Effects on EMS personnel — including on their job satisfaction and career aspirations, as well as on employee-retention rates — also merit attention.

Second, questions have been raised about how community paramedicine programs should be integrated and coordinated with services from local primary care networks, regional EMS providers, and health care delivery systems. In particular, how can electronic health data be retrieved at point of care and documentation be shared among providers? Third, reimbursement and regulatory policies will need to be changed to create incentives for the use of these programs and to ensure that they provide high-quality care efficiently. Finally, monitoring effects on patient and population health is paramount, as ensuring safety and optimizing patients’ comfort and experiences with care.

Mobile integrated health care and community paramedicine could offer important benefits to individual patients like Ms. E.

and relieve overburdened delivery systems. New specialized initiatives are addressing particularly challenging population health and health care needs, such as end-of-life care (especially difficult symptom management at home); in-home urgent care for persons with serious behavioral health or substance-use problems, who often find ED care problematic; and care for children with chronic conditions. Identifying and encouraging best practices among community paramedicine initiatives while targeting local needs will require collaboration among EMS regulators, payers, practitioners, and community public

health officials — as well as new ways of thinking about local health care delivery along the continuum of care.

The patient's identifying characteristics have been changed to protect her privacy.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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