

## Service Delivery Innovation Profile

### Trained Paramedics Provide Ongoing Support to Frequent 911 Callers, Reducing Use of Ambulance and Emergency Department Services

#### Snapshot

##### Summary

The Area Metropolitan Ambulance Authority (more commonly known as MedStar), an emergency medical service provider serving the Fort Worth, TX, area, uses community health paramedics to provide in-home and telephone-based support to patients who frequently call 911 and to other patient populations who are at risk for potentially preventable admissions or readmissions. Working as part of MedStar's Mobile Integrated Healthcare Practice, these paramedics conduct an in-depth medical assessment, develop a customized care plan based on that assessment, and periodically visit or telephone the patient and family to support them in following the plan. Support generally continues until they can manage on their own. Three additional similar programs serve individuals with congestive heart failure, patients who can be managed transitionally at home versus an overnight observational admission in the hospital, and in-home hospice patients who are at risk for hospice revocation. These programs have significantly reduced the number of 911 calls, the number of potentially preventable emergency department visits and hospital admissions, the number of overnight observational admissions, and the number of hospice revocations, leading to declines in emergency medical services and emergency department charges and costs, and freeing up capacity in area emergency departments.

See the Description section for an update on programs, identification of eligible individuals, patient assessment, and special protocols for patients with congestive heart failure; the Patient Population section for a description of patients served; the References section for two new resources; the Results section for updated data on the decline in ambulance and emergency department usage, charges, and costs, as well as results related to congestive heart failure and hospice patient admissions; the Planning and Development section for information about a hospice patient pilot test; the Resources section for updated staffing and cost data; the Funding section for updated information about program funders; and the Use by Other Organizations section for updated data on program adopters (updated January 2013).

##### Evidence Rating (What is this?)

**Moderate:** The evidence consists of pre- and post-implementation comparisons of 911 calls from program participants, along with estimates of the cost savings generated and emergency department capacity freed up as a result of the reduction in calls.

##### Developing Organizations

Area Metropolitan Ambulance Authority

Fort Worth, TX

##### Date First Implemented

2009

##### Patient Population

The program serves people who frequently call 911 in situations not considered to be an emergency, patients who call 911 with low-acuity medical complaints, patients at risk for potentially preventable admissions or readmissions, and patients at risk for hospice status revocation (updated January 2013). Vulnerable Populations > Medically uninsured; Insurance Status > Uninsured

#### What They Did

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##### Problem Addressed

Inappropriate calls to emergency medical service (EMS) providers and unnecessary use of the emergency department (ED) occur frequently. Typically, a handful of "super users" accounts for a disproportionate share of the problem. These individuals generally lack health insurance and a medical home and face multiple barriers to care, causing them to repeatedly turn to EMS providers and local EDs with problems that could have been prevented or do not require immediate care by EMS or ED staff. Other patient populations responsible for inappropriate calls to the ED include those with non-urgent (also known as low-acuity) problems, those with chronic conditions (such as congestive heart failure, or CHF) that can be managed in an outpatient setting, those who are admitted on an "observational" basis but whose needs are social or environmental rather than medical, and those with terminal illness who may prefer to die at home. These inappropriate calls result in higher costs and the diversion of valuable resources away from true emergencies.

- **High utilization, dominated by a few (often uninsured) users:** A few super users often account for a disproportionate share of 911 calls and ED visits. In 2009, MedStar found that 21 patients had been transported to local EDs a total of 800 times over a 12-month period, generating more than \$950,000 in ambulance charges and even larger ED expenses. Most of these individuals did not have health insurance and relied on EMS and local EDs for health services. Other cities have found similar problems. For example, the Tucson Fire Department identified 50 individuals who accounted for more than 300 non-emergency 911 calls over a 12-month period.<sup>1</sup>
- **Calls often for non-urgent needs or for needs that the ED is not equipped to handle:** Various studies have found

that between 11 and 52 percent of 911 calls come from individuals who do not face serious health problems.<sup>2</sup> Many ED visits by super users and other patients are for conditions that should be treated in a primary care setting, including acute upper respiratory infections, viral infections, otitis media, and acute pharyngitis. Still other patients may routinely call 911 and visit the ED with exacerbations of chronic conditions (such as CHF) that could be avoided with adequate ongoing care, or with psychosocial problems that cannot be effectively treated in the ED, such as alcohol or drug dependency and depression. In some cases, patients are observationally admitted for reasons that may be social or environmental in nature. In other cases, patients at the end of life may be taken to the ED (resulting in a revocation of their hospice status) when they would have preferred in-home, less aggressive measures.

- **High costs, diverted resources, little lasting value for callers:** Handling nonemergency calls raises the costs of providing EMS and ED services and diverts scarce resources away from true emergencies, leading to longer response times. In addition, although those who respond to these cases can resolve the immediate problem(s), they lack the resources and knowledge to educate the individual about appropriate self-management and the many community-based resources (e.g., home health care, behavioral health services, public health clinics, substance abuse services) that could better address their needs in the future.

### ***Description of the Innovative Activity***

MedStar uses a registered nurse (RN) in its 911 center to work with 911 callers who call with very low acuity calls to find more appropriate resources than an ambulance response to an ED. In addition, community paramedics provide in-home and telephone-based support to patients who (a) frequently call 911 or call 911 for low-acuity medical complaints, (b) are at risk for CHF-related readmission, (c) can be referred to monitored home care as opposed to observational admission, or (d) are at risk for hospice status revocation. The paramedics conduct an in-depth medical assessment, develop a customized care plan based on that assessment, and periodically visit or telephone the patient and family to support them in following the plan (updated January 2013). Support generally continues until they can manage on their own. Key program elements are described below:

- **Identification of eligible individuals:** MedStar identifies eligible individuals in various ways, including a pre-defined 911 call intake protocol, internal analysis (a monthly report lists those with 10 or more 911 calls in the past month) and referrals from ED case workers at local hospitals, other first-responder agencies, and MedStar employees working in the field. Currently, the program serves those who have called 911 at least 15 times in the past 90 days. (Those close to this threshold may be tagged as someone to monitor for enrollment at a later date.) For the CHF program, staff at local cardiac intensive care units (ICUs) identify and refer patients who are at risk for bounce-back to the ED within 30 days or who could benefit from ongoing support; these patients need not meet the 15-call threshold. Information provided in January 2013 indicates that in June 2012, MedStar added a 911 Nurse Triage program to the Patient Navigation program, using an RN in the communication center to receive low-acuity 911 calls and help navigate callers safely to a patient-centered medical home.
- **Brief enrollment visit:** Anyone deemed eligible for the program receives a telephone call or visit from a community paramedic, either at home or in the hospital. The community paramedic explains the benefits of the program to the patient and his or her family members and other caregivers. Those interested sign a consent form authorizing the sharing of relevant information with appropriate parties.
- **In-depth medical assessment:** The community paramedic conducts a 1.5- to 2-hour in-home visit with the patient, family members, and caregivers. The visit includes a full medical assessment, including checking vital signs, blood glucose levels, oxygen saturation levels, and other key indicators. During the visit, the paramedic reviews the following:
  - Current medication use, making note of any potential problems (e.g., taking two medicines for the same condition, potential drug-drug interactions) to be discussed with the prescribing physician(s).
  - Any chronic conditions the patient may have, focusing on appropriate self-management of those conditions and related comorbidities.
  - Existing support and resources available to the patient and family, including financial resources, insurance coverage, and access to nonemergency medical care (including primary care and home health care), mental health services, transportation, and other relevant social services.
  - Assessment of the patient's ability to manage his or her own health care. Information provided in January 2013 indicates that the patient is given the EuroQol (EQ-5D) Health Assessment Questionnaire to rate current health status and ability to manage his or her health care needs. This same assessment is given to the patient at the end of enrollment to see how the assessment has changed.
- **Individualized care plan based on assessment:** The community paramedic who conducted the review works with the patient and family to develop an individualized care plan that outlines their needs and responsibilities related to managing the patient's health and health care on an ongoing basis. As part of this process, the community paramedic may talk with other providers who serve the patient (as identified in the assessment), including primary care clinicians and mental health care providers. The resulting plan includes concrete steps to be taken by the paramedic to help in accessing needed resources, such as securing insurance coverage or other financial resources and linking the patient and family to county hospital-affiliated clinics and other local agencies and resources that serve low-income and uninsured individuals (e.g., transportation, home health care, hospice, Meals on Wheels). The plan also includes mutually agreed on goals for the patient and family to manage the patient's health, such as checking his or her blood pressure or blood glucose levels, eating an appropriate diet, exercising more regularly, taking medications appropriately, and scheduling and attending needed appointments. The patient and family members receive a copy of the care plan, and the plan is also entered into the patient's electronic medical record (EMR) where it can be accessed by community paramedics and other authorized providers as appropriate.
- **Ongoing support via home visits and telephone calls:** Based on the needs identified in the care plan, a community paramedic conducts periodic 30- to 60-minute home visits with patients, with the frequency of visits determined by need. (The same paramedic may not conduct each visit, but all have access to the patient's information, and most know all patients enrolled.) Visits initially occur two or three times a week, with the frequency tapering off to one or two visits a week over time. The community paramedic may make telephone calls instead of in-person visits if the patient is making adequate progress. Visits provide an opportunity to ensure that the patient and family are following the plan. As appropriate, the paramedic will intervene, providing referrals and support in accessing needed services. For many patients, visits also provide an opportunity for much needed social interaction. All community paramedic contacts with patients are entered into the patient's EMR, including current vital signs, medications, and other relevant information. Patients are also given a 10-digit telephone number to call to request a community paramedic home or telephone visit

as an alternative to calling 911.

- **Special protocols for patients with CHF:** Information provided in January 2013 indicates that community paramedics who work with CHF patients are able to take point-of-care blood values (e.g., blood urea nitrogen [BUN], potassium levels) at the patient's side and use standing order protocols to adjust doses of diuretic medications based on a patient's weight gain and other indicators. The paramedic, in consultation with the patient's primary care physician and EMS medical director, can also use intravenous diuretic therapy in the home with a 3- to 5-hour reassessment home visit and an appointment with the primary care physician within 1 day.
- **Multiple paths for leaving the program:** At some point, patients receiving services (designated "active" patients) formally leave the program. This process can occur in several ways, as outlined below:
  - **"Graduating" from the program:** Most patients successfully graduate, which occurs when the community paramedic believes that they can effectively manage their own health and health care without proactive support. Part of that assessment is the use of the EuroQol (EQ-5D) Assessment of Health Status. Graduation typically occurs in about 30 to 60 days, with the shortest time being 2 weeks and the longest time being 6 to 8 months. Graduates can call a special 24-hour nonemergency number that will trigger a paramedic or ambulance visit within an hour to check on their well-being and an intervention as necessary. Before graduating, some individuals may be placed on "watch" status, which means they are almost ready to graduate, but their 911 use remains elevated or has recently increased, suggesting they still need some support.
  - **Designation as a system abuser:** Those who do not change their habits and continue to call 911 repeatedly may be terminated from the program. These individuals are either designated as "pending system abusers," meaning they do not have any medical issues that require ongoing care, or as "system abusers," meaning they have ongoing medical issues. If a pending abuser calls 911, the community paramedic goes to the home (in addition to the regular response team) to conduct a full medical evaluation and then works with the medical director to determine the right course of action. System abusers are assigned to a designated home hospital; whenever they call 911, the ambulance takes them to that facility so they can be monitored by providers familiar with their condition.
- **Regular case discussions with hospital caseworkers:** Once or twice a month, MedStar's Community Health Program coordinator meets with hospital, ED, and cardiac ICU caseworkers to discuss patients enrolled in the program. The caseworkers provide information on recent ED visits or hospitalizations, including diagnoses, treatments and tests performed, medications prescribed, and discharge and followup instructions. This information, which is entered into the EMR, helps the community paramedics determine the appropriate level of ongoing support and identify those who may be abusing the system by seeking care (e.g., medications) at multiple facilities. The Community Health Program coordinator also shares relevant information with hospital-based caseworkers about recent contacts that the community paramedics have had with patients.
- **Ongoing monitoring via electronic database:** The coordinator regularly reviews an electronic database to check on the progress of individual patients and update classifications as appropriate. This information is regularly shared with the associate medical director.

### **References/Related Articles**

National Conference of State Legislatures. Beyond 911: State and community strategies for expanding the primary care role of first responders. Available at: <http://www.ncsl.org/issues-research/health/expanding-the-primary-care-role-of-first-responder.aspx>. (Added January 2013.)

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Mitchell M. In Fort Worth, MedStar's Community Health Program cutting costs, improving patients' well-being. Fort Worth Star-Telegram. July 9, 2011.

Johnson K. Responding before a call is needed. The New York Times. September 19, 2011. Available at: [http://www.nytimes.com/2011/09/19/us/community-paramedics-seek-to-prevent-emergencies-too.html?\\_r=2](http://www.nytimes.com/2011/09/19/us/community-paramedics-seek-to-prevent-emergencies-too.html?_r=2).

### **Contact the Innovator**

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### **Innovator Disclosures**

Mr. Zavadsky reported receiving travel expenses for various national conferences where he spoke on "Patient Navigation" programs relevant to the work described in the profile; in addition, information on funders is available in the Funding Sources section.

### **Did It Work?**

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### **Results**

These programs have significantly reduced the number of 911 calls and redirected some low-acuity calls to other, more appropriate dispositions, leading to declines in EMS and ED charges and costs, and freeing up capacity in area EDs.

- **Significant decline in ambulance and ED use:** Information provided in January 2013 indicates that between July 1 and September 30, 2012, 125 patients who called 911 were successfully referred to dispositions other than an ambulance to the ED. Between the formal launch in July 2009 and November 2012, the frequency of 911 calls from the program's 326 enrollees fell by 76.5 percent, from an average of 76.3 monthly calls during the 12-month period before enrollment to 17.9 monthly calls afterward.
- **Corresponding declines in EMS and ED charges and costs:** Information provided in January 2013 indicates that the decline in calls has led to a corresponding drop in MedStar's charges and health care system expenditures for ambulance services, with the program leading to savings of \$321,500 in ambulance and ED charges (\$2,572 per patient). Data on 44 patients with 12-month pre-enrollment and post-graduation data available revealed that annualized EMS transport charges for these patients fell by more than \$1.18 million (from \$1,524,390 to \$328,202), representing \$26,818 annual savings per patient enrolled. Based on information provided by area EDs, MedStar estimates similarly large declines in ED charges and costs for patients transported by MedStar to area EDs, with charges falling by nearly \$9 million and costs by more than \$1 million. (The large difference between charges and costs stems from the many uninsured patients being served and the low rate of reimbursement by public payers, particularly Medicaid. Consequently, full charges are set at a level that allows adequate collections to cover costs.)
- **Freed-up ED capacity:** MedStar estimates that the decline in the number of patients being transported by ambulance has freed up more than 14,000 bed hours at area EDs, allowing these capacity-constrained facilities to better serve those facing real emergencies.
- **Avoidance of CHF readmissions:** Information provided in January 2013 indicates that, under the new CHF enrollment protocol launched in June 2012, 10 patients at risk for CHF-related readmissions have been enrolled in the program. For these 10 patients, there have not been any 30-day readmits and, in fact, only one cardiac-related ED visit. The diuresis protocol has been used 16 times in 6 months.
- **Positive results from the hospice pilot test:** Information provided in January 2013 indicates that of the 20 patients who have been enrolled in the hospice program, only 2 have required admission to the hospital. In one of those cases, the patient was directly admitted from the field to a hospice bed in the hospital, so no revocation of hospice status occurred because of the ED visit.

### **Evidence Rating (What is this?)**

**Moderate:** The evidence consists of pre- and post-implementation comparisons of 911 calls from program participants, along with estimates of the cost savings generated and emergency department capacity freed up as a result of the reduction in calls.

### **How They Did It**

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### **Context of the Innovation**

The Area Metropolitan Ambulance Authority, also known as MedStar, operates as the sole provider of emergency and nonemergency ambulance service for 15 cities in Tarrant County, TX, including Fort Worth. More than 880,000 people live in this area, making roughly 112,000 calls to 911 a year that are handled by a fleet of 54 MedStar ambulances. The impetus for this program came from MedStar's current medical director (associate director at the time), who in preparing for another busy summer season in 2009, began thinking about how the organization could better serve 911 callers who repeatedly use the system for non-urgent situations. He knew many of these individuals personally and felt that the current approach did not serve them or the community well.

### **Planning and Development Process**

Key steps included the following:

- **Quick analysis to document the problem:** To test his theory, the then associate medical director ran a quick analysis and found that 21 patients accounted for more than 800 calls in 2008, with the vast majority being for primary care and other non-urgent needs.
- **Pilot test with a subset of patients:** MedStar reviewed information on the 21 identified individuals and enrolled 9 of them in a 60-day pilot test of the program. These individuals had a long history with and were very familiar to MedStar staff. During the trial, two paramedics on "light duty" (owing to their recovering from an injury) who had experience in primary care served as the community paramedics. The test proved quite successful, leading to a 77-percent reduction in monthly 911 calls.
- **Funding plan to support rollout:** Because home visits and other services provided as part of the program are not eligible for reimbursement by third-party payers, MedStar lacked a funding source to cover the costs of shifting paramedic time from their traditional duties to program activities. To address this issue, MedStar leaders decided to "marry" the Community Health Program to a new critical care transport program, a service not previously offered by MedStar that involves transporting critically ill patients from facilities that cannot adequately care for them (usually in outlying areas) to those that can (often tertiary facilities in urban areas).
- **Paramedic training:** The medical director and associate medical director developed a 16-day program, delivered 1 full day each week over 16 weeks, to train existing paramedics on how to provide Community Health Program services (which was covered in 3 sessions) and how to conduct critical care transports (the focus of the remaining 13 sessions). The community health portion emphasized how to assess patients for long-term, chronic conditions, in contrast to the paramedic's traditional approach of identifying and addressing immediately life-threatening issues. Specialists from the local mental health authority provided in-depth education on common mental health issues facing this population, including schizophrenia and bipolar disorder. Training also focused on how to intervene with patients and how to access community-based medical and social services that can help them.
- **Partnerships with community-based organizations:** MedStar leaders forged partnerships with community-based organizations serving the same population, including hospitals, EDs, the county health department, the local Medicaid office, mental health organizations, home health and hospice agencies, and Meals on Wheels. They first met with organizational leaders to explain the program and gain their buy-in, and then discussed how the community paramedics could coordinate with them on an ongoing basis, including how each party should make referrals to the other.
- **Expansion to patients with CHF and other chronic conditions:** In September 2010, the program expanded to serve CHF patients. The CHF program continues to evolve, as MedStar leaders have worked with local cardiologists to develop the aforementioned standing order protocols that allow community paramedics to adjust medication doses. Now that the

CHF model has been "perfected," MedStar leaders hope to use the same basic approach to support those with other conditions that frequently lead to EMS and ED use, such as chronic obstructive pulmonary disease, asthma, pneumonia, and diabetes.

- **Pilot test with hospice patients:** In partnership with local hospice agencies, MedStar is conducting a small pilot test where community paramedics support patients and families receiving in-home hospice care who call 911.

### **Resources Used and Skills Needed**

- **Staffing:** The program has 5.5 full-time employees allocated to it. Managers and directors (e.g., medical directors, operations managers) participate in program-related duties as part of their regular job responsibilities. One community paramedic is on duty at all times (7 days a week, 24 hours a day), with one additional community paramedic working 8 hours each weekday to assist with home visits. Community paramedics, however, do not spend all of their shift time on the Community Health Program, as some time goes to critical care transports and other duties. (Updated January 2013.)
- **Costs:** The program required an upfront outlay of roughly \$46,000 to buy and equip a response vehicle for the community paramedics. This vehicle houses specialized equipment and computer technology, including monitors. Other upfront costs included the time spent by paramedics in training, while ongoing costs include uniforms and supplies for the paramedics. Ongoing costs are \$560,000 annually. (Updated January 2013.)

### **Funding Sources**

Area Metropolitan Ambulance Authority

The program is primarily funded internally by MedStar, but the agency has recently engaged in fee-for-service agreements with a local accountable care organization for the Observation Admission Avoidance Program, a hospice agency for the Hospice Revocation program, and with three local hospitals for the 911 Nurse Triage program. MedStar has also been included in an 1115a Waiver Delivery System Reform Incentive Payment program with the local regional health care plan to expand the program resources to enroll 5,500 additional patients over 3 years. That funding amount is \$3.5 million over 3 years. (Updated January 2013.)

The 911 Nurse Triage program is being jointly funded by MedStar and three area hospital systems, with the hospital systems sharing equally in the cost of the nurse and MedStar providing the technology and infrastructure. (Updated January 2013.)

### **Tools and Other Resources**

More information on the program can be found at [www.medstar911.org/community-health-program](http://www.medstar911.org/community-health-program) [↗](#).

### **Adoption Considerations**

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### **Getting Started with This Innovation**

- **Consider the financial implications:** This program can present financial challenges, because it provides services (e.g., in-home visits) that are often not covered by payers and, if successful, eliminate some EMS transports that potentially would have been reimbursed. MedStar has thus far found revenue losses to be fairly minimal, because most people served by the program lack insurance or are covered by a payer that either does not reimburse or pays very little for ambulance transports in nonemergency situations. As noted, MedStar leaders decided to couple the program with a new revenue-producing one (critical care transports) to make the finances work.
- **Identify community needs:** The population served by this program will have different needs in every community. Consequently, potential adopters need to survey the local environment to understand the situation faced by heavy users of 911 services and the community resources available to serve them.
- **Begin with a small pilot test:** Testing the program with a small group of patients provides an opportunity to build relationships with patients and potential community partners. Over time, the various organizations serving these individuals will come to realize that they can and should depend on each other.

### **Sustaining This Innovation**

- **Continue investing in partnerships:** Ongoing communication based on transparency, honesty, and respect is critical to keeping partners together. In particular, the various organizations must honor their commitments to each other. MedStar has forged good relationships with virtually all key stakeholders, including four competing hospitals that have a tense relationship with each other, but freely share data and collaborate with MedStar.
- **Approach payers about funding support:** Third-party payers may be interested in supporting the program once they understand how it can benefit them. To that end, MedStar leaders plan to meet with representatives of the three largest payers in the area to find out what aspects of the program would be most meaningful and beneficial to them (e.g., its ability to reduce EMS transports, ED visits, and hospitalizations). MedStar will then hire an independent party to evaluate and document the program's impact on these metrics, later sharing that analysis with the payers as part of a conversation about reimbursement.
- **Prepare for reimbursement changes:** As accountable care organizations, pay-for-performance systems, and other new payment and care delivery programs become a reality, health systems and other large provider organizations will increasingly take responsibility for covering EMS transport services (rather than traditional insurers). Consequently, those adopting this program should consider partnering with organizations that plan to participate in these new initiatives.

### **Use By Other Organizations**

As of January 2013, approximately 38 other EMS programs from across the U.S. and four international communities have visited MedStar in the past 20 months to learn more about these programs.

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<sup>1</sup> Referred services and alpha trucks: Norma Battaglia leads Tucson Fire Department toward response efficiency. JEMS. 2009 Apr; 34(4): 4-5.

<sup>2</sup> Dale J, Williams S, Foster T, et al. Safety of telephone consultation for "non-serious" emergency ambulance service patients. Qual Saf Health Care. 2004;13:363-73. [PubMed]

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