

## A Community Paramedic Program to Reduce Hospital Readmissions

### Project Overview

### Background

TMF Health Quality Institute, the Quality Improvement Network Quality Improvement Organization (QIN-QIO) for Arkansas, Missouri, Oklahoma, Puerto Rico and Texas, under contract with the Centers for Medicare & Medicaid Services (CMS), worked collaboratively with stakeholders to form the North Dallas Care Coordination Community Coalition, with the ultimate goal of reducing readmissions. In November 2014, the community of North Dallas (Plano), which includes the counties of Collin, Rockwall and Dallas, experienced an all-time high hospital readmission rate of 17.4 percent.

The North Dallas Care Coordination Community Coalition collaborated with Plano Fire-Rescue, who had implemented an innovative intervention targeting unnecessary admissions called the Community Paramedicine (CP) program. Plano Fire-Rescue wanted to respond to the rising hospital admissions by joining the North Dallas Care Coordination Community Coalition to create change across the continuum of care. The coalition, growing to over 17 acute care hospitals, including many post-acute facilities and stakeholders in the North Dallas area, supported referrals to the CP program. Patients who needed follow-up but non-emergent care were referred to the CP program to be evaluated and followed, but not to be transported to the hospital.

To bridge the gap between primary care and emergency medical services (EMS), the program expanded the paramedic's role, performing in-home patient visits and making referrals to community-based services. The paramedics assist with filling prescriptions, counseling on hospital and clinic discharge instructions, disease management, nutritional assessments, fall prevention and establishing healthy habits like sorting medications and explaining how to take them as prescribed. This QI Snapshot describes an evaluation of the CP pilot program implemented during 2015 to reduce unnecessary hospital admissions.

## Intervention

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The CP program's goals included lowering hospital admissions and readmissions among a targeted group of patients that utilize EMS services frequently for non-emergent situations—the high utilizer group (HUG). These program goals were based on 1,161 9-1-1 calls made by 198 identified high-utilizer patients in the Plano area, totaling 784.6 hours of out-of-service time during 2015. In this CP pilot program, 61 patients were originally enrolled, identified by either local hospitals or others from Plano Fire-Rescue HUG lists. The program targeted HUG heart failure patients, as this was the most costly disease process in both Plano and the U.S. in 2015.

Patients were introduced to the program using a warm handoff approach while in the hospital, either by the paramedic or the care manager, where consent was obtained and program information shared. An in-home patient visit and/or referrals and coordination of community-based services were offered to each patient. During the in-home patient visit, paramedics would provide services such as counseling on discharge instructions, assistance in establishing healthy medication habits (medication safety), medication reconciliation, education on the prescribed medication and referrals to other services in need. Of the patients seen, 70 percent had their medical issues resolved on-site, and the remainder received continued support and care coordination for up to 90 days.

Specific intervention components included the following:

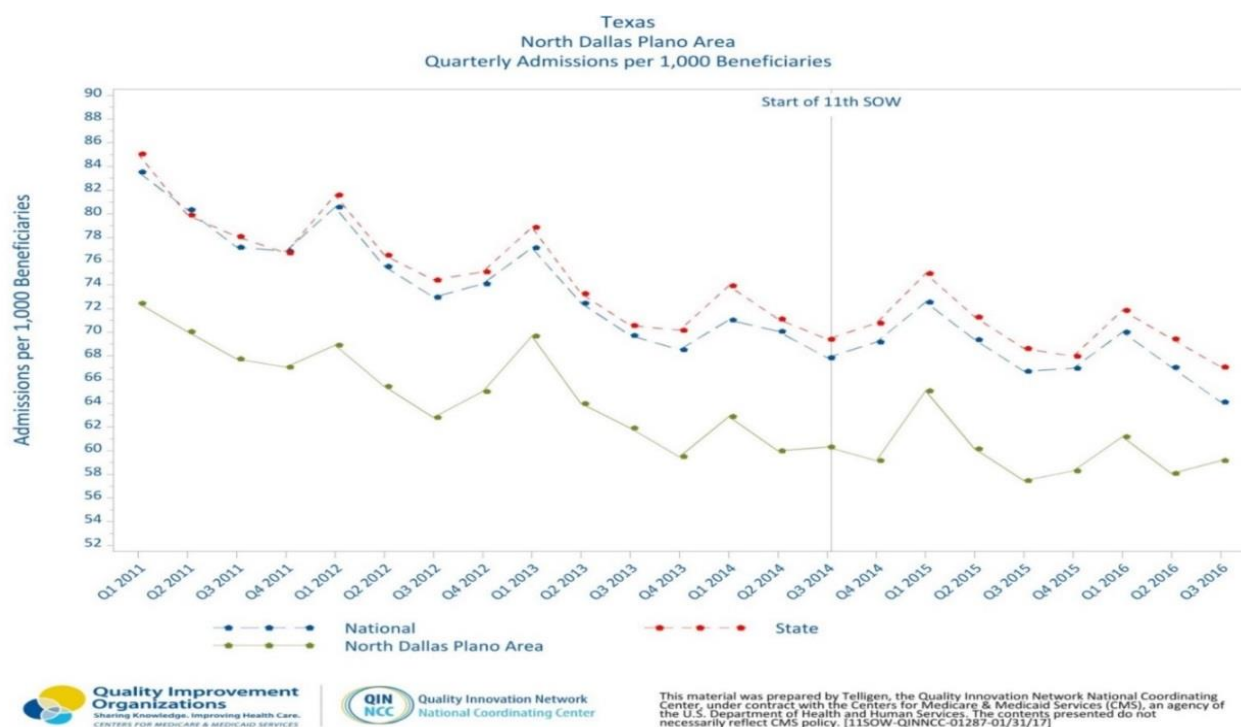
- Review of discharge instructions and education on follow-up care
- Medication management, including explanation of medications, medication reconciliation and correction of medication regimen
- Disease management, including patient education diagnostic testing, wound care and other services approved by the medical director
- Assistance with establishing a primary care physician appointment for follow-up care
- Referral to other community-based programs, such as fall assistance programs, heart failure clinics, Meals on Wheels, transportation services and more
- Deployment of a home safety program to include phone accessibility, emergency numbers, trip and fall hazards, fire extinguishers, smoke alarms, heaters and a file of life (emergency medical information)

For staff training, EMS personnel completed an Advanced Practice Paramedic program, costing approximately \$1,695 in tuition, not including textbooks and equipment, which was paid for by Plano Fire-Rescue. Graduates can then go on to other cities and initiate similar programs.

## Outcomes

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As determined by September 2016 reconciled fee-for-service claims (post study evaluation period), the annual hospital admission rate in the North Dallas (Plano) area per 1,000 beneficiaries showed a statistically significant reduction from 242.62 at the beginning of the project to 236.69 by the end of the study period ( $\chi^2 = 9.85$ ,  $p = 0.0017$ ). This was a relative improvement of 2.4 percent and translates to an estimated 698 fewer hospital admissions per year. Although a relative improvement of 2.7 percent in the annual hospital readmission rate per 1,000 beneficiaries in this community had occurred (decrease from 40.93 to 39.82), this was not a statistically significant change ( $\chi^2 = 1.67$ ,  $p = 0.1967$ ) (see Figure 1).



**Figure 1. North Dallas (Plano) Hospital Admissions**

In addition to reduction in hospital admission rate, Table 1 contains specific outcomes related to health care utilization and the Plano CP program based on 61 enrolled participants.

Measure	Goal	Result
<b>Primary Care Utilization</b>	Increase the number and percent of patients using a primary care physician (if none upon enrollment)	<b>95%</b>
<b>Medication Inventory</b>	Increase the number of medication inventories conducted and issues identified/communicated to the patient's primary care physician	<b>90%</b>
<b>Adverse Outcomes</b>	Reduce the incidence of adverse effects resulting from a medication or other treatment related to the CP intervention (goal is zero percent adverse effects)	<b>0%</b>
<b>Ambulance Transports</b>	Reduce the rate of unplanned ambulance transports to an emergency department (ED) by enrolled patients (number of unplanned ambulance transports up to 12 months pre-enrollment to 12 months post enrollment)	<b>67%</b>
<b>Hospital ED Visits (90 days)</b>	Reduce the rate of ED visits by enrolled patients by intervention (ED visits up to 12 months pre-enrollment to 12 months post enrollment)	<b>40%</b>

**Table 1. Plano CP Program Outcomes**

## Discussion

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The Plano CP program met the goals of lowering hospital ED visits, admissions and readmissions of a high utilizer group of EMS services, as well as decreasing the use of non-emergent 9-1-1 calls for paramedic response. Additionally, this program spurred an increase in the utilization of primary care services promoting better population health for patients, decreased medication adverse events, improved patient quality of life and decreased unnecessary ambulance transports resulting in savings for EMS. Local hospitals in the community are satisfied with the CP program, resulting in expanded program participation from one hospital to five during the course of this project. Some of the avoidable cost savings from the 61 patients enrolled in the program in the North Dallas Care Coordination Community Coalition include:

- Ambulance Transport Savings: \$419 average cost; \$27,459 expenditure savings
- Hospital ED Visit Savings: \$969 average cost; \$77,298 expenditure savings
- All-Cause Hospital Admission Savings: \$10,500 average cost; \$715,875 expenditure savings

This community-based approach to reducing hospital admissions and readmissions has facilitated the development of relationships between Plano Fire-Rescue and other stakeholders in the community to support patient self-management in the home setting. This will become increasingly important as the proportion of the U.S. population over 65 years of age continues to grow.

The opportunity for spread and sustainability of the paramedic model is great. There are various CP program models used across the nation, with each functioning slightly differently. Blue Cross Blue Shield of New Mexico (BCBSNM) formed a CP program in 2015 targeted at Medicaid members who have either been identified as ED high utilizers or are at high risk for readmission within 30 days of being discharged from the hospital. Since the program's full launch in 2016, BCBSNM estimates that it saved \$1.7 million after taking into account the cost of the program itself. Among the 1,100 participating members, there was a 62 percent reduction in ED utilization and a 63 percent reduction in ambulance usage. Other states like Minnesota and New Jersey also have CP programs. The North Memorial Health system in Minneapolis started a program in 2012 that used community paramedics to conduct home visits with patients who visited the ED nine or more times in a year. Similarly, the Valley Hospital in Ridgewood, New Jersey, launched a program in 2014 to provide proactive post-discharge home checkups to certain patients with cardiopulmonary disease who are at high risk for readmission.

The critical components of implementing the CP program model are identifying the health care needs of a community, the community services available to patients to address social needs and forging relationships between community stakeholders and EMS. Payment for this model is also critical. For Texas, some hospitals will reimburse EMS services under a contracted fee; however, this arrangement may not prove sustainable, lending to the need for other payment models. Other CP programs either partner with or are licensed as home health agencies and are paid under the home health care model. For ultimate sustainability, it is the hope that CMS will eventually recognize the evolving outcomes of CP programs and develop a unique reimbursement model for CP care extension programs.