

October 2011

A Regional Call to Action  
on Transitions of Care

Knoxville, TN



Qsource.

# A Regional Call to Action on Transitions of Care

## Project Description

Over the past several years, geographic analyses of healthcare claims data have demonstrated significant variations in utilization, cost and quality of hospital services. Pressure to reduce healthcare costs will continue to be a major focus of health reform. As purchasers and payers call for better integration of healthcare delivery, these same analyses also represent an opportunity to develop a systems-based approach to making healthcare service provision more coordinated, effective, and affordable. Regions that function together as a community are better able to deliver high value healthcare to residents, improving the health of the workforce and reducing healthcare costs to existing and potential employers.

Beginning in 2011, communities across the country will have the opportunity to form collaboratives to improve transitions of care. In response to these opportunities, Qsource, in its role as the Medicare Quality Improvement Organization (QIO) for Tennessee, is making proactive efforts to engage community stakeholders in identifying root causes of variations in care and sharing innovative approaches to improving care coordination.

### National Scope of the Readmissions Problem

- 1 in 5 Medicare patients discharged from a hospital has a readmission within 30 days
- 3/4 are preventable = \$12 billion in annual Medicare spending
- 2 in 3 Medicare (FFS) medical discharges are readmitted or dead within a year
- 1 in 2 Medicare (FFS) surgical discharges are readmitted or dead within a year

*Source: Medicare Payment Advisory Commission*

## Introduction

The breakdown in processes of care delivery that occur during a transition from hospital to the next source of care have major implications for health outcomes, cost of care and experience of the patient.

Under the concept of healthcare delivery system transformation, targets for improving transitions of care include: decreasing the deterioration of health conditions that can occur following discharge for all patients receiving hospital care, making sure that care delivery is responsive to both the clinical and social needs of all patients in a hospital service area, and reducing expenditures for unnecessary readmissions.

The problem of readmissions is not solely a hospital-based problem. It involves multiple providers across settings – primary care physicians and specialists, nursing home and home health staff, and non-clinical providers of supportive services in the community. In order to understand this complex problem, focus needs to be directed not only at what is going on within the four walls of the hospital but also what is going on after the patient re-enters the community that contributes to the readmission of the patients.

## Methods

In order to expand accountability for readmissions from the hospital to all providers within the community involved in care transitions, a community rate of readmissions was developed that captures all causes of readmission for any condition to any facility. Medicare hospital claims and beneficiary enrollment file information for CY 2009 were used. The methodology for calculating a community rate of readmissions addresses multiple measurement issues that arise during the transition from a hospital-based measure of readmissions to a community-based measure of readmissions. Major issues include consideration of unit of analysis, definition of numerator and denominator, risk adjustment, inclusion and exclusion criteria, event counting and geographic boundaries.

### Methodology Highlights:

<b>Unit of Analysis:</b>	Health Referral Region (HRR)
<b>Inclusion Criteria:</b>	All Medicare beneficiaries 65+ with at least one hospital admission in the HRR of residence
<b>Exclusion Criteria:</b>	Planned readmissions, same day transfers, death
<b>Numerator:</b>	All admissions within 30 days of discharge to any hospital
<b>Denominator:</b>	Event rate per 1,000 Medicare beneficiaries
<b>Risk Adjustment:</b>	None
<b>Geographic Boundaries:</b>	Includes cross-state data within the HRR

A rate per 1,000 Medicare beneficiaries begins to look more like a community health indicator (i.e., mortality rates) or more specifically, a community healthcare indicator. It should be noted that multiple events for an individual beneficiary can still be captured in the numerator.

In a typical measure of readmission, the hospital is the unit of analysis. While some methodologies use complex statistical procedures to attribute a readmission to the hospital in which it occurs and subsequently to a geographic community, a simpler approach is used for this project. A readmission is attributed to the zip code in which the beneficiary resides. Since zip codes can be coterminous (e.g., share boundaries) with a geographic community, the zip code level data are aggregated to the hospital service area (HSA) and subsequently to the health referral region (HRR). HRRs and HSAs are based on Dartmouth Atlas of Health Care Project geography and reflect natural utilization patterns of Medicare beneficiaries. Project rates of readmission are reported both at the HSA and HRR levels.

## Findings

Within the Knoxville HRR, 187,775 total Medicare beneficiaries over 65 reside. Of these beneficiaries, 14% (26,479) were admitted to the hospital during 2009. Approximately 20% (4,910) of all beneficiaries receiving inpatient care experienced one or more readmissions and accounted for a total of 7,385 readmissions. Within the Knoxville HRR, \$57 million was spent by Medicare on readmissions in 2009 alone.

**Figure 1. Rates of Readmissions Across Tennessee HRRs**

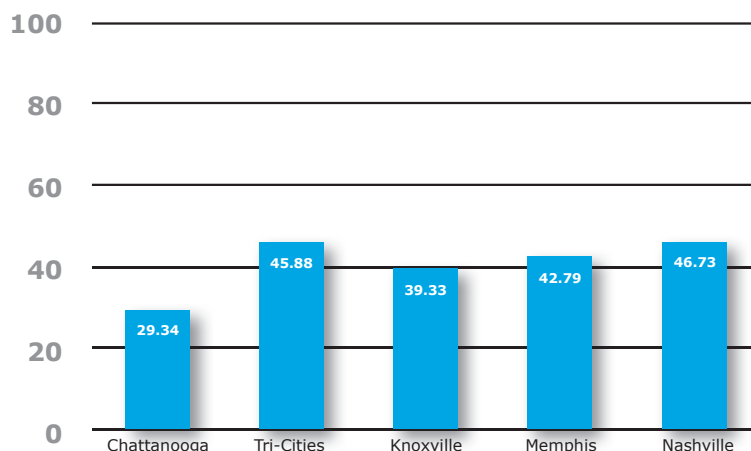


Figure 1 shows the community rates of readmission at the HRR level across the State. The rate is expressed per 1,000 Medicare beneficiaries based on enrollment file data in each region.

The lowest community rate of readmissions occurs in the Chattanooga area while the highest rate occurs in Nashville. In the Knoxville HRR, there are approximately 39 readmission events per 1,000 Medicare beneficiaries. Furthermore, approximately 23% of all readmission events in the Knoxville HRR involve subsequent admissions within 30 days to a different hospital than the index (first) admission occurred.

The top ten causes of readmissions account for 43% of all readmissions within the Knoxville HRR. Not surprisingly, heart failure is the leading cause of readmissions.

**Table 1. Top 10 Causes of Readmissions in the Knoxville HRR**

Condition by DRG	# Readmissions	% Total Readmissions
Heart failure & shock	760	9.7
Septicemia w/o MV 96+ hours	438	5.6
Chronic obstructive pulmonary disease	376	4.8
Respiratory infections & inflammations	328	4.2
Simple pneumonia & pleurisy	326	4.1
Pulmonary edema & respiratory failure	266	3.4
Renal failure	249	3.2
Kidney & urinary tract infections	228	2.9
Nutritional & misc. metabolic disorders	225	2.9
G.I. hemorrhage	172	2.2

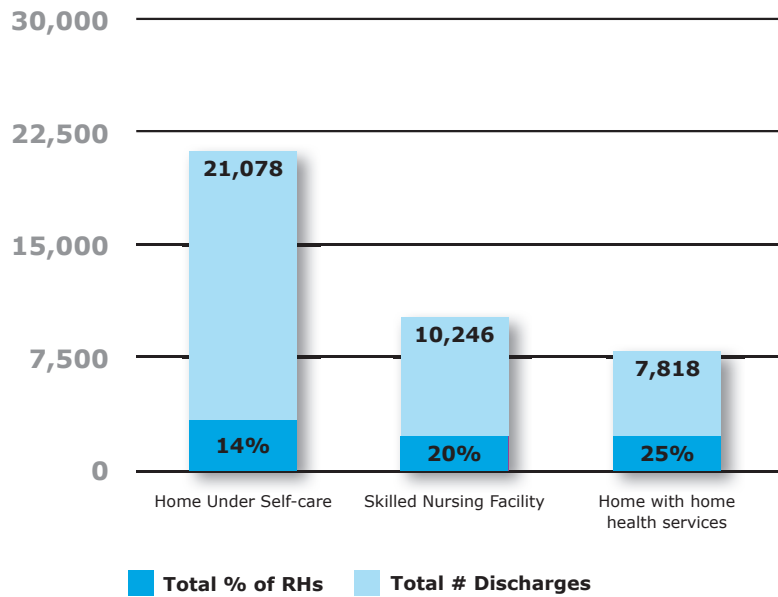
Figure 2 shows the proportion of readmissions to the total volume of discharges for the three locations accounting for the majority of discharges. The discharge location pertains to the discharge status from the index admission (e.g., admission prior to readmission). Of all discharge events 50% are discharged to home under self-care, 24% are discharged to a skilled nursing facility, and 18% are discharged home with home health services (not shown). The remaining 8% of admissions are discharged to a variety of less frequent locations (i.e., hospice, psychiatric hospital, etc.).

As shown in Figure 2, one quarter of all discharges to home with home health services result in a readmission. Home under self-care has the lowest rate of readmissions (14%) among the most frequent discharge locations. Although the lowest proportion of readmissions come from home under self care, this setting accounts for the highest number of readmissions due to volume of discharges.

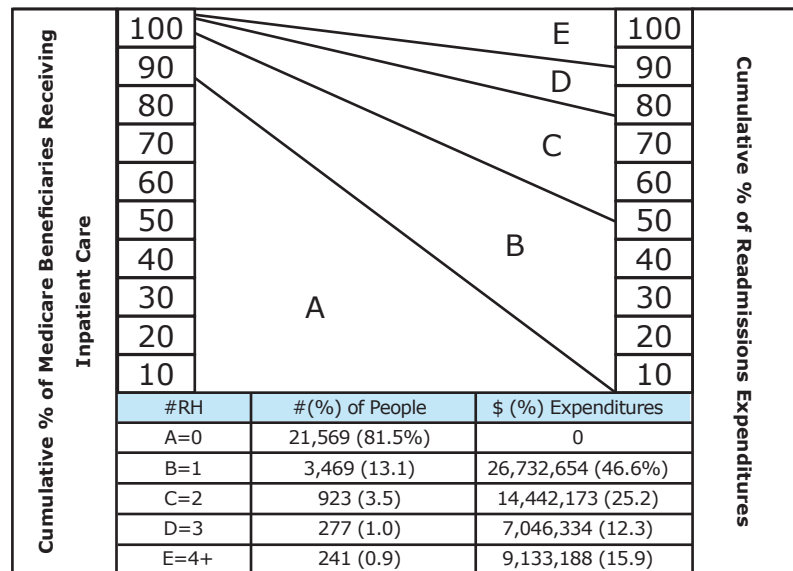
The distribution of expenditures shown in Figure 3 approximates the 80/20 principle of healthcare economics wherein the majority of expenditures are born by relatively few members of the population. Approximately 80% of beneficiaries receiving inpatient care had no readmissions (area 'A' on the chart), leaving 20 % of the population that accounts for all readmission expenses. Individuals with one readmission accounted for nearly half of the readmission spending (area 'B'). Of great interest is the fact that less than 1% (241 patients) of the total population of inpatient Medicare beneficiaries with four or more readmissions accounted for 16% of the total expenditures. Reaching out to these 241 patients has the potential to avoid nearly \$10 million in unnecessary spending. Casting the net a bit wider to those with 3 or more readmissions per year ( $\approx 2\%$  of the total population) has the potential to double the savings to nearly \$20 million.

One to three readmissions (areas B through D) represent opportunities for system level changes (i.e., electronic flow of information) that can impact all patients. Simultaneously allocating scarce resources toward individuals with 4+ readmissions (area E) targets high needs patients for whom the current delivery system works least well.

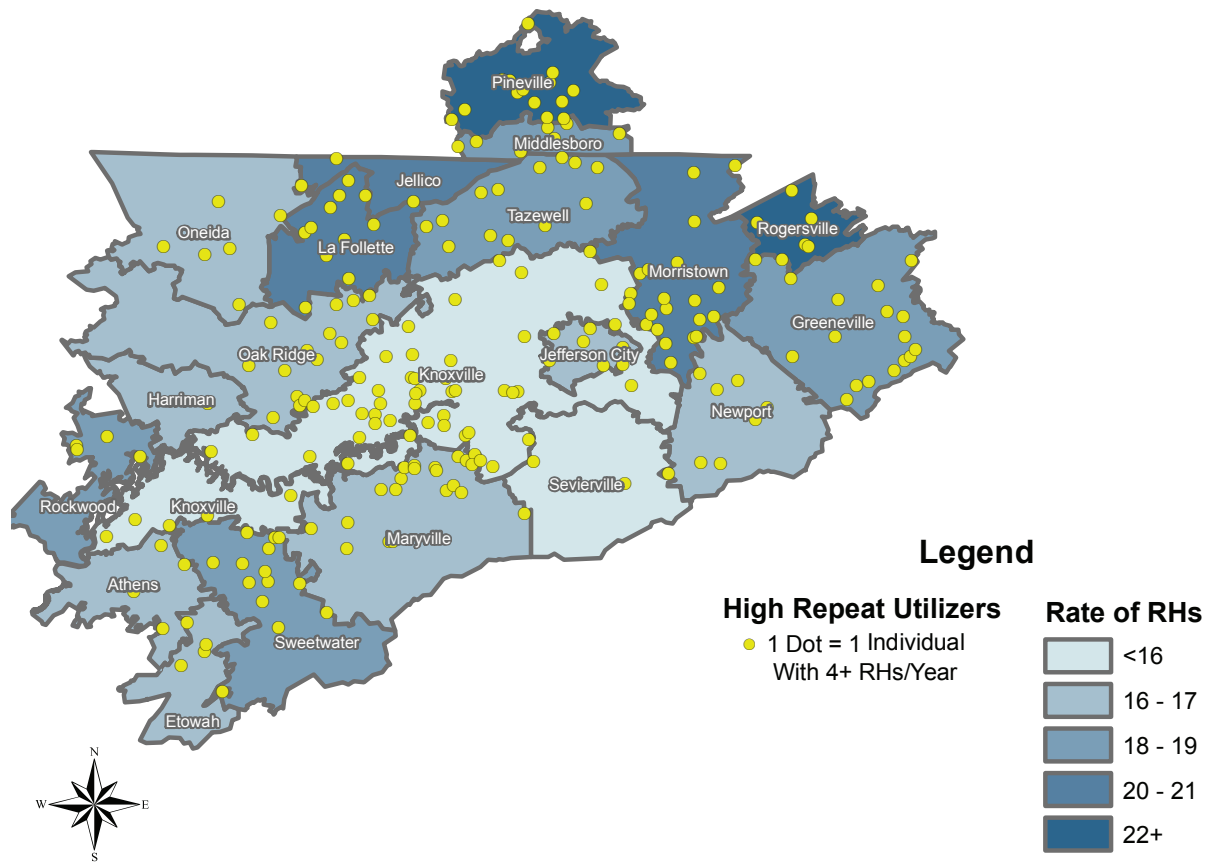
**Figure 2. Proportion of discharges and associated percentage readmitted by common discharge locations across the Knoxville HRR**



**Figure 3. Readmissions Expenditures within the Knoxville HRR**



**Figure 4. Distribution of High Repeat Utilizers by Hospital Service Area**



In the above map of geographic variation in readmission rate among hospital service areas, the community readmission rate expression is similar to more familiar rates of hospital readmissions. Color shading shows variation in rates between hospital service areas within the Knoxville HRR. A pattern of elevated readmission rates are shown in hospital service areas in the northern eastern portion of the Knoxville health referral region. In addition, a dot density overlay shows the location by zip code of high repeat utilizers, or individuals with four or more readmissions in one year. The distribution of high repeat utilizers is dispersed with greater impact on communities peripheral to the Knoxville HSA.

**Table 2. Top Ten Knoxville Zip Codes for Readmission Expenditures**

	Readmission Expenditures	# High Repeat Utilizers	# Readmissions	Inpatient Expenditures	# Admissions
37814 (Morristown)	\$ 1,774,669	<5	230	\$ 8,486,159	1,226
37920 (Knoxville)	\$ 1,626,183	5	160	\$ 8,781,222	1,015
37830 (Oak Ridge)	\$ 1,608,345	6	222	\$ 10,557,078	1,353
37766 (La Follette)	\$ 1,464,192	9	194	\$ 6,125,508	900
37803 (Maryville)	\$ 1,426,730	<5	179	\$ 7,834,915	1,124
37743 (Greeneville)	\$ 1,409,408	9	190	\$ 6,984,455	964
37804 (Maryville)	\$ 1,284,643	6	164	\$ 6,334,447	869
37813 (Morristown)	\$ 1,200,194	9	161	\$ 4,470,755	665
37918 (Knoxville)	\$ 1,177,520	<5	148	\$ 7,912,942	1,068
40977 (Pineville)	\$ 1,150,772	11	151	\$ 3,540,945	598
<b>Totals</b>	<b>\$14,122,656</b>	<b>63</b>	<b>1,799</b>	<b>\$71,028,426</b>	<b>9,782</b>

Table 2 shows zip codes within the Knoxville HRR that have the highest readmission expenditures and the hospital service areas in which the zip codes are contained. Of these ten zip codes, six are also zip codes associated with the highest number of high repeat utilizers (highlighted in blue).

## Summary & Call to Action

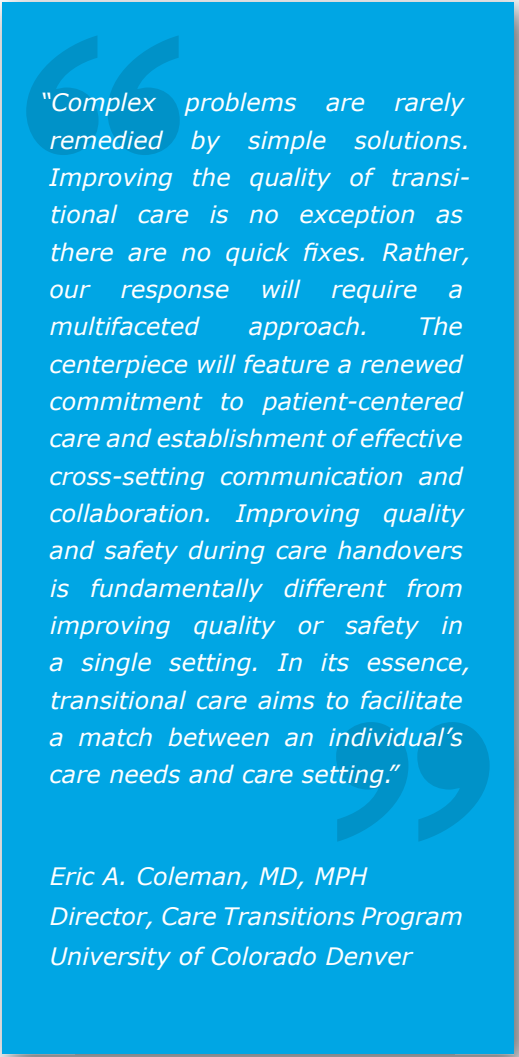
The movement toward integrated healthcare delivery will necessitate improving care transitions across multiple providers and settings. Refocusing the problem of readmissions to be inclusive of not only hospital care processes but also care provided in the community is a first step toward integration. This approach provides the potential for payment reform that can support needed changes to the healthcare delivery system.

This project supports accountability for health outcomes and expenditures at a system level through community-based measurement of readmissions. Project data demonstrates a potential to recapture \$57 million annually in Medicare spending on readmissions within the Knoxville HRR. While only 20% of the Medicare patient population accounts for all readmission expenditures, a mere handful of the entire patient population (< 500 individuals) account for a third of this spending. In order to optimize impact on spending, system level interventions that improve care transitions for all patients can be coupled with allocation of resources targeted toward needs of those who account for disproportionate spending.

The data presented in this report is merely the tip of the iceberg in understanding a multi-faceted, complex problem. Further exploration of the local healthcare delivery system and patient needs is warranted. Community stakeholders with multiple perspectives of the problem of readmissions are uniquely positioned to identify opportunities for improvement that responds to local needs for healthcare delivery change. As a crucial part of the community, the value of patient perspective on breakdowns in care should not be underestimated. Particularly within the high-cost/high-need patient population, identifying barriers to care is essential to integrating appropriate mental health, social and other supportive services into care delivery.

As a partner for healthcare quality, Qsource will support community efforts to improve care transitions. Although regional information relating to the magnitude and scope of the readmissions is presented, community stakeholders are encouraged to further identify local challenges and opportunities for improvement. Additional support to communities may include identifying evidence-based models for improved care delivery that can be implemented to meet local challenges, assistance in seeking funding to support quality improvement initiatives and ongoing provision of data to assess community change. Finally, leveraging common resources for health information exchange and learning and action networks (LANs) will be part of the ongoing project efforts.

This presentation and related material was prepared by Qsource under a contract with the Centers for Medicare and Medicaid Services (CMS). Contents do not necessarily reflect CMS policy. QSource-TN-PS-2011-13



*"Complex problems are rarely remedied by simple solutions. Improving the quality of transitional care is no exception as there are no quick fixes. Rather, our response will require a multifaceted approach. The centerpiece will feature a renewed commitment to patient-centered care and establishment of effective cross-setting communication and collaboration. Improving quality and safety during care handovers is fundamentally different from improving quality or safety in a single setting. In its essence, transitional care aims to facilitate a match between an individual's care needs and care setting."*

*Eric A. Coleman, MD, MPH  
Director, Care Transitions Program  
University of Colorado Denver*



Qsource, is a nonprofit healthcare quality improvement and information technology consultancy headquartered in Tennessee, with offices in Memphis, Nashville, Knoxville and in Little Rock, AR.

Under a contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services, the organization focuses on three primary aims: better patient care, better population health, and lower healthcare costs through improvement.

This project was produced in collaboration with The University of Tennessee Health Science Center.



*The methodology used to calculate the readmissions rates in this report is based on a compilation of methodologies with adjustments made to address issues that affect healthcare delivery in Tennessee. The results are not intended to reproduce rates previously reported on Tennessee hospitals on CMS's Hospital Compare website.*