Case Study:
Decreasing Costs and Improving Outcomes Through Community-Based Care Transitions and Care Coordination Technology

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The Affordable Care Act (ACA) includes multiple provisions that spur delivery innovation in order to curb preventable readmissions. One of these provisions from section 3025 of the ACA is the Hospital Readmission Reduction Program which introduces financial penalties to hospitals for certain 30-day readmissions. These penalties included Medicare withholding up to 1% of reimbursement to hospitals in 2013 increasing to as high as 3% in 2015.¹

In response to the growing demand from hospitals, payers, and Accountable Care Organizations (ACOs), there are emerging delivery models aimed at reducing readmissions. One such approach is improving care transitions from the hospital to the home by using existing community resources such as area agencies on aging (AAAs).

A Massachusetts-based AAA, Elder Services of Merrimack Valley (ESMV), has expanded their service offering beyond traditional home and community based services to also include a care transition program. ESMV provides its care transition service to local hospitals and insurers with the goal of reducing readmissions through the process described in Figure 1.

**mValue Executive Summary**

HIMSS mHealth Community, powered by mHIMSS, provides stories of mValue, successes and lessons learned from implementation and use of mHealth. The mValue Case Study Submission program has cross walked the HIMSS Health IT Value Suite program, a comprehensive knowledge repository that classifies, quantifies and articulates the clinical, financial and business impact of health IT investments with the mHIMSS Roadmap, a strategic framework for providers to implement mobile and wireless technologies. The Roadmap highlights six key areas of focus; Technology, New Care Models, Standards, Policy, Privacy/Security, and ROI/Payment. The intent is to leverage these examples to assist in supporting decision-making and deployment for any hospital, Health System or Provider group looking to deploy mobile and wireless technologies.

**mHealth Technology**

Tablet-based Point of Care Surveys with Real-Time Triage Support

**Goals Achieved**

1. 39.6% reduction in readmissions
2. $370,721 in net savings over 6 months
3. 257% ROI in technology

**Setting**

Elder Services Merrimack Valley
Lawrence, MA

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**Figure 1: Elder Services Merrimack Valley community-based care transitions**

- **Patient discharged from hospital and enrolled**
- **Patient assigned to health coach if they are medium to high risk**
- **Health coach performs 1 in person visit and 3 follow up phone calls over 1 month**
- **Nurse coordinator notified if health coach is concerned about a patient**
- **Nurse coordinator helps triage the patient to VNA, PCP, or other community resources**
Case Study Snapshot

Despite already achieving successful reductions in readmissions with its care transition program, ESMV invested in using an emerging technology to further bolster its impact on readmissions. The patent-pending technology used by ESMV was created by Care at Hand, a company highlighted in a recent TIME Magazine article about a group of digital health startups that have the potential to catalyze delivery innovation and bolster the programs emerging out of ACA. Although there is growing media and investor interest in the digital health space, little data exists showing the impact of these emerging technologies on achieving Triple Aim.

This case study outlines a quality improvement intervention in which a mobile care coordination technology augmented best-practice care transitions efforts to help a AAA achieve better outcomes and decrease cost of care for a vulnerable elderly population.

mHealth Purpose

The ESMV program was based on best-practice care transition models and relied on health coaches with limited clinical scope of practice. Health coaches are not trained to perform the same in-depth level of assessment as a nurse. And since most of the patient contact was through health coaches, there were likely instances of health decline whereby patients had readmissions that could have been prevented if a nurse were aware of the patients’ symptoms (Fig 2).

To better utilize their health coaches and improve in the care transitions process, ESMV invested in using a mobile care coordination platform. The technology prompted health coaches to fill out simple surveys on a tablet at each encounter with the patient. The surveys were in layman’s terms and intelligible to the non-clinical health coaches. Survey questions automatically adapted to each patient’s health condition to ensure the questions pertained to the most active health issue at that time.

If completed surveys met a critical threshold determined by the technology’s intrinsic algorithms, a text and email alert was automatically and immediately transmitted to the care manager.

Methods & Metrics

After introduction of the care coordination technology into ESMV’s care transitions workflow, health coaches were able to detect health decline that was previously outside of their scope of practice.

Figure 3: Care coordination with technology

Furthermore, nurse care managers were able to receive real-time information about health decline and perform immediate triage while the health coach...
was still in the patient’s home.

In a pre-post analysis, 561 Medicare patients were monitored over 6 months. The 30-day readmission rate for this cohort was compared before and after introduction of the care coordination technology into the workflow of ESMV.

For the first four months, ESMV only enrolled frequent flyers defined as patients with three or more admissions over the prior year. Due to the success of the program with frequent flyers, ESMV expanded the use of the care coordination technology to all patients enrolled into their care transitions program starting at month five.

Outcomes

Prior to the introduction of the care coordination technology, ESMV had a 24% (314/1331) 30-day readmission rate. After introduction of the Care at Hand technology, the 30-day readmission rate dropped to 14% (80/561). This was a statistically significant **39.6% reduction in 30-day readmissions** (p < 0.0001, Fisher exact test). (Fig 4)

Financial Considerations

The reduction in 30-day readmissions translated into meaningful cost savings. Over 6 months, the technology intervention contributed to a gross cost savings of $567,071 due to prevented readmissions.

The cost savings did not come without a price. Deployment of the technology was associated with an investment in hardware and software, as well as an increase in care coordination activities. Altogether, the increase in outpatient healthcare utilization and the technology investment resulted in an overall cost increase of $8,893 over 6 months above the baseline cost of the care transitions program at ESMV. With the baseline costs of the care transitions program included, the gross cost of care coordination with technology was $205,243.

Figure 5 Approximate Gross Savings

Figure 6 Approximate increase in care coordination cost attributable to introduction of technology
Of the 1,906 surveys submitted through the care coordination technology, 22% (492) resulted in alerts being triggered to the nurse care manager. Of those alerts, 98% led to phone-based care coordination, 9% led to a nurse visit, and 3% led to an outpatient physician visit. Despite the increased utilization of outpatient resources, the cost savings from reduced readmissions far outweighed the increased cost of care coordination and technology investment.

Figure 7 Estimated net cost savings

The net savings were $370,721 which translates into a return on investment (ROI) of 257%. The striking ROI is due to the large cost difference between expensive hospital admissions and the low cost health coaches that contributed to the reduction in readmissions.

Limitations and Future Work

Although the use of care coordination technology to augment community-based care transitions shows promise to reduce admissions and achieve savings, challenges remain. One obstacle facing AAAs and Quality Improvement Organizations (QIOs) that provide care transitions services is achieving sufficiently large enough reductions in readmissions to warrant systematic reimbursement by Medicare.

Even though the data from ESMV suggests a substantial impact on readmissions for the patients enrolled in the care transitions program, this impact may not be reflected in the all-cause all-condition 30-day readmission rate for the entire Medicare population in ESMV’s 6-hospital geographic region. Moving the needle on all-cause all-condition 30-day readmission rates requires either enormous enrollment with moderate reductions in admissions or profound reductions in readmissions and moderate enrollment in a successful care transition program. Despite the promising data for patients enrolled ESMV’s care transitions program, the AAA still struggles to achieve meaningful reductions in all-cause all-condition 30-day readmissions.

Another limitation of the approach described in this case study is the scalability of care transitions programs to other AAAs. Operating a successful care transitions program requires at least two conditions: 1) That a AAA have the processes and personnel to operate cost-effectively and with high clinical impact and 2) An ecosystem of hospitals and payers willing to invest in value-based rather than volume-based services.

In order to build thriving care transitions programs, best practices should be shared by leading community-based providers and curated by objective organizations, such as HIMSS, Medicaid Managed Care Conference, or the National Transitions of Care Coalition for broader consumption by interested AAAs and QIOs. As the capacity to deliver effective care transitions services grows within the AAA and QIO community, hospitals and payers may consider looking beyond nursing facilities to less-clinically skilled yet more cost-effective home and community based services as an alternative to reducing readmissions.

Conclusions

The care transitions program at ESMV is a promising delivery innovation catalyzed by the readmission reduction pressures of the ACA that may contribute to achievement of at least part of the Triple Aim, namely improving outcomes and decreasing per capita cost of healthcare. With the introduction of technology, ESMV was better able to empower low-
cost providers to deliver the right care at the right time in the most cost-effective manner. Enabling health coaches and nurse care managers to practice to the top of their license led to more efficient achievement of the Triple Aim and may help AAAs and QIOs achieve self-sustaining and scalable business models.

References


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