Improving patient outcomes while reducing readmissions with data analytics

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Margie Latrella

VP, Clinical and Network Quality, Real Time Medical Systems, USA

Margie brings more than 30+ years' experience as an acute care registered nurse (RN) and cardiac advance practice nurse (APN) in both hospital and physician practices to Real Time. Previously, she applied her clinical experience to her administrative role at St. Joseph's Health, focusing on clinical programming, quality improvement interventions and reporting for value-based programmes. Margie demonstrated success in total cost of care savings in two-sided risk agreements, including Medicare Shared Savings Program Accountable Care Organization (MSSP ACO) and Centers for Medicare and Medicaid Services Bundled Payments for Care Improvement (CMS CMS BPCI-A) programmes, by developing collaborative workflows and comprehensive care coordination necessary for success. She also led technology implementation to monitor patients in skilled nursing facilities, which played a major role in reduced readmissions and decreased length of stay in post-acute care (PAC) facilities. Both physiological and social determinants of health were considered to ensure programming results in high-quality outcomes across the continuum of care, as patients transitioned from hospital to PAC and as they managed chronic and complex disease processes at home.

Tel: +1 888-546-9786

Lavana Baldasare

Manager — Clinical Transformation, St. Joseph's Health, USA

With a diverse background that includes registered respiratory therapist, certified asthma educator, COPD programme manager, and business manager of The Center for Burn and Wound Healing, Lavana brings more than 28 years of healthcare and management experience to her role at St. Joseph's Health. Recently named manager of clinical transformation in the Clinically Integrated Network, she utilises her past experiences working closely with both New Jersey Delivery System Reform Incentive Payment (NJ DSRIP) and CMS' BPCI-A programmes, to effectively oversee a team of RN navigators, case managers and community health workers focused on population health management. Responsible for developing collaborative workflows, overseeing quality of patient care in the post-acute arena and managing the high-performing post-acute skilled nursing facility network, Lavana looks forward to continuing the current successes St. Joseph's Health has had with increasing positive patient outcomes while reducing total cost of care for the hospital.

Tel: +1 201-403-4978

Abstract As post-acute care spend continues to rise and the Centers for Medicare and Medicaid Services (CMS) moves forward with promoting both value-based and risk-bearing models of care, it is essential for accountable care organisations (ACOs), payers and hospital providers to take proactive measures to find innovative and data-driven strategies to meet the future demands of healthcare. Yet disparate electronic health record (EHR) systems between acute and post-acute providers continue to pose challenges in the ability to access live patient data across care settings, which enables clinical line of sight to manage both patient and population-level quality outcomes. Utilisation of an EHR-agnostic platform, which mitigates interoperability issues, can improve care transitions, provide data analytics to manage the patient care journey, foster seamless implementation of standardised care pathways and ultimately reduce total costs within post-acute networks by decreasing readmissions and length of stay. St. Joseph's Health implemented such a data analytics platform and instituted a post-acute nurse navigator,

social worker and care manager roles to manage their value-based patients in the post-acute setting. As a result, their Medicare Shared Savings Plan ACO, Mission Health Coordinated Care, achieved a significant reduction in readmissions from 24 per cent to 17.8 per cent, as well as a total cost of care savings of US$1.6m in its first year. Currently, the readmission rate is down to 13.6 per cent, and there has also been a 3.2-day reduction in average length of stay. Owing to their successful post-acute strategy and programming, the project was scaled to include all patients in value-based contracts.

KEYWORDS: value-based care, post-acute care, skilled nursing facilities (SNFs), accountable care organisations (ACOs), data transparency, interventional analytics, high-performing network

BACKGROUND

Post-acute care's impact on value-based care

In a value-based care world, accountable care organisations (ACOs), as well as health systems and payers managing patients in risk-bearing contracts, are responsible for the entire patient journey, and, therefore, their long-term success and financial viability are inherently tied to the performance of their post-acute care partners.

The opportunity to increase quality and decrease total cost of care can be shown through the numbers:

- Nearly US$60bn, or 15 per cent of annual Medicare spending, is spent on post-acute care.[1]
- Medicare spend for skilled nursing facilities (SNFs) was US$27.6bn, or 48 per cent of post-acute spend in 2019.[2]
- Poorly coordinated care transitions from hospital to other care settings cost US$12–US$44bn per year.[3]

These cost metrics will inherently rise as the number of Medicare beneficiaries is projected to exceed 80 million by 2040:[4]

- 80 per cent will have one chronic condition, while 75 per cent will have two chronic conditions.[5]
- 75 per cent will require long-term care, while 40 per cent will require SNF stays.[6]
- Access to post-acute data improves care coordination to reduce readmissions and ensure appropriate length of stay, leading to better patient outcomes and reduced cost.

Although the financial effect of this effort may seem minimal, the data speaks for itself. The federal government has estimated that nearly 23 per cent of Medicare patients return to the hospital within 30 days.[7] Poor care transitions result in an enormous cost, exceeding US$26bn annually.[8] With the Medicare population projected to reach 80 million beneficiaries by 2040, this cost could rise to US$88bn–88.5bn.

Understanding the current and future effect that post-acute care would have on the care outcomes of their beneficiaries, New Jersey-based health system, St. Joseph's Health, began to identify solutions to improve the total cost of care. In order to achieve this, St. Joseph's Health realised patients became 'invisible' once they were discharged from acute care to a post-acute facility. This part of the patient's journey was not being managed or monitored and was determined to be a costly step, where interventions could increase quality care and reduce cost. These two components are fundamental to value-based care models, improving quality of care and patient outcomes, in addition to driving down costs.

St. Joseph's Health initially relied on all of the data that was available to manage this

population; however, the majority of it was outdated or potentially inaccurate owing to self-reporting.

Typical data looks back:

- Claims data — 3 to 9 months old.
- CMS Stars data — takes a year to change a star rating.
- Minimum Data Set (MDS) data — 30 to 90 days old.
- Post-acute care self-reported data (time consuming, hand collected and not based on reportable data).

Patient monitoring was accomplished with weekly utilisation review calls, which only yielded information the facility wanted to share. What was missing was real-time clinical information that a nurse could analyse to identify patients that may be deteriorating. Access to this type of 'interventional' analytics would allow nurses to communicate with their post-acute partners, so they could together prevent readmissions and improve patient outcomes. Standard data is no longer a viable solution for acute providers or ACOs in a value-based care world. Without the right data insights, ACOs can miss opportunities related to quality of care and oversight of their post-acute network performance, thereby losing potential earned shared savings dollars on post-acute patients.

ST. JOSEPH'S HEALTH

Overview

St. Joseph's Health is a world-class health system serving New Jersey and the New York Metropolitan area, with a total of 880 acute care beds on two campuses, a 151-bed nursing facility and rehab centre, visiting nurse service company and 30 community-based facilities. St. Joseph's Health serves over 421,000 patients per year and employs over 5,200 staff members, making it the largest employer in Passaic County, NJ. The emergency department (ED) is the fifth busiest in the USA, with 150,615 visits on its main Paterson campus.[9] In addition, it offers a certified geriatric ED for patients over 65 years of age. The health system was founded by the Sisters of Charity in 1867, and the mission continues today: 'We are committed to sustaining and improving individual and community health with a special concern for the poor, vulnerable and underserved.'[10]

St. Joseph's Health also has a clinically integrated network (CIN), St. Joseph's Health Partners, which is a multi-speciality provider network with more than 850 members. The CIN participates in multiple value-based programmes, including Mission Health Coordinated Care, a Medicare Shared Savings Plan ACO, multiple Medicare Advantage contracts, Comprehensive Care for Joint Replacement, Quality Improvement Plan–New Jersey and, previously, the Bundled Payment for Care Improvement Advanced Program. St. Joseph's Health Partners physicians share a vision to transform healthcare delivery through coordinated, patient-centred care of the highest quality and value.

Post-acute care management prior to live post-acute data transparency

Success in value-based models is contingent on improving the quality and coordination of patient care along the healthcare continuum, while also reducing the total cost of care. Participation in these value-based care programmes drives the need for St. Joseph's Health to reduce readmissions from their growing SNF network and ensure appropriate average length of stay.

Historically, St. Joseph's Health had no way to track their patients' day-to-day care and outcomes once they moved from acute to post-acute setting. They were limited to reacting to data gleaned from Admission, Discharge, and Transfer (ADT) feeds and claims data. In general, ADT data includes minimal patient information aside from dates

and locations, and claims data is generally 3 to 6 months old on receipt. CMS Stars data and MDS data were two other avenues of information that were considered, but, again, by the time this data is received or updated, it is too old to have any effect on the outcomes of the post-acute patient. *Current, actionable information* to improve care collaboration with post-acute partners, reduce readmissions and monitor average length of stay was needed.

St. Joseph's Health worked hard to keep tabs on the patients who moved to skilled nursing partners, as well as those who were readmitted for acute care, capturing readmissions and length of stay data on lists and spreadsheets. This process was very tedious and time consuming, pulling the clinical teams away from managing the post-acute patient. In addition, it was not possible to determine whether trends were developing or when patient diagnoses were being made. Without timely information on patient vitals or care events, St. Joseph's Health could not see whether patients were progressing positively towards their next transition or showing signs of a backward slide. The bottom line was that St. Joseph's Health could not accurately determine which patients were at the highest risk on any given day. In the meantime, readmissions were on the rise.

A direct line of sight into the nursing facilities' EHR would be the answer. Without this type of access, it is impossible to coordinate care for the population being transferred to a post-acute facility. Manual processes, including patient tracking on spreadsheets and phone calls to SNFs for updates on patient status, were time consuming and often ineffective. No common data was available to both the clinical network care teams trying to manage the patient and the SNF team to review and discuss. Lastly, outcomes regarding quality, readmissions and average length of stay were unknown until reported through claims or other data sources.

Outcomes prior to data transparency

St. Joseph's Health had a high-performing network of nine SNFs and three home health providers, created by the Care Management Department based on Medicare 5-Star score and claims data. This network was only monitored by those metrics and did not change much according to real-time performance. By the time data was received and corrective action and performance improvement plans were in place, St. Joseph's Health would have to wait for the next release of results before making network participation decisions. This waiting game did not allow time for changes to their high-performing network based on current performance and collaboration efforts.

Initially, quarterly meetings were held with the network where older claims and performance data were reviewed. Strategies for patient management and education regarding chronic conditions and surveillance tips for patient deterioration were provided as well. The engagement and participation of the SNFs in the network was poor. Nurse navigation of the ACO patients in the nursing facility setting was minimal owing to lack of information. The St. Joseph's Health Care Management Department arranged SNF transfers, and utilisation of the high-performing network was not monitored. A clinical network navigator would attempt to manage these patients by attending weekly utilisation management calls. Unfortunately, these calls were not always effective as many patients were reviewed, and there was little time for questions and in-depth discussions regarding plan of care, patient progress and ultimate discharge plan.

The baseline readmission rate for the Medicare Shared Savings Plan ACO population was 24 per cent, and the average length of stay was 24.8 days. A new strategy needed to be implemented to improve the quality metrics and patient outcomes in the ACO, while also lowering the total cost of care.

ST. JOSEPH'S HEALTH JOURNEY

Implementation of specific value-based care staff and a data analytics platform

Active management of patients in the nursing facility provides multiple opportunities to influence quality and total cost of care and improve patient outcomes and satisfaction. St. Joseph's Health's ACO, Mission Health Coordinated Care, implemented both an innovative process and a data analytics platform to achieve these desired outcomes. First, a post-acute care nurse navigator position was created for the sole purpose of monitoring patients transitioning to an SNF as their next site of care. The post-acute care navigator is responsible for working collaboratively with the nursing facility care teams to determine anticipated discharge date, participate in utilisation reviews to track the patients' progress during their stay, monitor the medical condition of the patients while in the facility, and assist with planning for transition home. The nurse navigator also monitors the length of stay in the facility, confirming there is a skilled need for the duration of the patient's stay. Discharge planning duties include the following:

- Arranging visiting nurse services for the ACO patients together with the nursing facility social worker.
- Arranging the follow-up visit with the primary care physician within one week of discharge.
- Supplying the patient with the discharge summary from the nursing facility and reviewing the plan of care with the patient and family.
- Providing the patient and family with the post-acute care nurse navigator contact information in case questions or issues arise post-discharge home.

The patient is then followed for a total of one month after the initial hospital discharge by the post-acute nurse navigator to ensure a successful transition home. Patients feel safer knowing there is a nurse just a call away. One intervention or question answered by the care navigator can mitigate an admission or ED visit.

For this role to be successful, access to the patients' medical records in the nursing facility is necessary. This need led to Mission Health Coordinated Care's implementation of an innovative data analytics platform. The monitoring and reporting capabilities of this platform allow for close management of the SNF population. A report, which risk stratifies patients for risk for readmission, is provided daily. Over 400 clinical indicators are evaluated by the system, which continuously provides the list of patients falling into red (high risk), yellow (moderate risk) and green (low risk) categories, depending on their readmission risk. This report alerts the post-acute care coordinator to patients that may need immediate medical plan of care changes to prevent a potentially unnecessary or avoidable readmission. The shared data led to an open dialogue between the post-acute navigator and the care teams at the SNFs, which drove quality outcomes, prevented readmission and positively affected the total cost of care.

In addition to a post-acute nurse coordinator, a dedicated social worker and case manager were added to the team. This addition resulted in increasing transfers to SNFs in the high-performing network, all of which shared data with St. Joseph's Health. The social worker is tasked with arranging the transfers to SNFs post discharge and was able to focus on educating patients about the value of going to an in-network partner for post-acute care, specifically related to the quality outcomes being achieved. Utilisation of the high-performing network increased from 57 per cent to 82 per cent. The case manager role was instituted to assist value-based patients being discharged home. The goal was to have all value-based care patients receive visiting nurse services, even

if it was only one or two visits. Medication reconciliation, confirmation of a follow-up appointment with a provider and evaluation of the patient status once home are crucial to prevent readmissions.

The analytics platform utilised also generated financial data, enabling St. Joseph's Health to easily know which facilities are billing Medicare for the patient stays. This report helps manage average length of stay. If there is not an ongoing skilled need for a patient to continue in their Medicare A stay in the SNF, concerns are escalated in both the facility and clinically integrated network for further evaluation.

The implementation of the data analytics solution provided St. Joseph's Health with access to the following features:

- Post-Acute Care Network Management.
- Clinical Outcomes Improvement.
- Care Coordination/Care Transitions Monitoring.
- Live Readmission Risk Scoring.
- Managing Length of Stay by Diagnosis.
- Infection Control Management.

Building, engaging and evaluating a high-performing SNF network

The first step in building a high-performing network is gathering as much performance data as possible. When starting from scratch, without a data analytics platform, gathering claims data, Medicare 5-Star data, MDS data and SNF self-reported data was the only option. Information from the nursing facility can include staffing ratio, citations within the last year, corrective action plans related to citations and speciality programmes that are offered, such as cardiac or pulmonary rehab, memory care, etc. The more information that was gleaned, the more educated was the choice to those accepted to participate in the network. If an analytics platform is already in place, data can easily be pulled to analyse the following:

- Population-based outcomes, including quality metrics by case types.
- Readmissions rates as well as performance on high-risk patients.
- Timing of readmissions — early, mid or late post-acute care stay.
- Specific causes of readmission.
- Average length of stay for post-acute patients.
- Infection rates.

The quality, detail and amount of data available are extremely valuable in managing patients, populations and networks. Once compiled and analysed, a review was set up with each facility. The review focused on performance, readmission rates and length of stay. This facilitated an open discussion about the positive and the negative findings with both partners.

Once the high-performing network was established, it was important to convey the expectations of the health system, ACO or payer. Ensure all requirements are included when communicating to the post-acute network:

- Set clear goals or metrics that the nursing facilities are expected to achieve. Some examples include readmission rates, ED utilisation, average length of stay, weekly calls to discuss patients past their target discharge date, processes to transition the patient back to the community — arrangement of home services, primary care follow-up appointments and transfer of discharge summaries.
- Discuss attendance at monthly meetings and review unblinded performance data, so all can see their current performance on the metrics, as well as their performance in comparison with other SNFs.
- Discuss participation in a monthly case-study review (during the monthly performance meeting), generally a deidentified case with a readmission,

length of stay issue and poor outcome. Encourage all to participate in analysis and discussion. This practice can result in the sharing of best practices, learning about processes that might need adjusting on both the acute or subacute side, the creation of standards for the future and the avoidance of the same scenario occurring repeatedly.
- Explain the re-evaluation process — choose a cadence to review performance metrics to ensure the high-performing network is meeting expectations. Annual or biannual review is necessary to maintain a network of the highest performers. The network may lose or add facilities following each re-evaluation.
- Determine incentives to maintain optimal engagement of the network.

Expectations should always include readmission and length of stay goals. Additional expectations and/or requirements can be specific to the health system, ACO or payer. For example, owing to the tremendous outcomes realised by implementing the interventional analytics tool, St. Joseph's Health requested their post-acute partners to use the data analytics platform and share patient-level information to be considered for participation in their high-performing network.

Since post-acute facilities are fairly new to value-based care, it is important to provide incentives for engagement and collaboration. The common thought process is to keep beds filled with Medicare patients in order to be profitable. It is important to educate them regarding the principles of value-based models and how meeting metrics will be beneficial. The following are potential SNF benefits as a participant in the high-performing network:

- Improved performance and collaboration will lead to increased referrals from the health system, ACO or payer = HIGHER VOLUME!
- Appropriately discharging patients and receiving new complex post-acute patients, their patient-driven payment model reimbursement rate may be higher compared with patients ready for discharge.
- Improved 5-Star ratings.
- Improved patient satisfaction, which can increase referrals from past patients.
- Improved quality of life for the patient, less time away from home.
- Improved patient clinical outcomes.
- Potential shared savings opportunity, lower post-acute spend increase shared savings.

Once an SNF high-performing network is established and engaged, the resulting collegial relationship is beneficial for both the acute and subacute arenas, but the greatest benefit is the improved quality of care and outcomes for the patient.

ST. JOSEPH'S HEALTH RESULTS

First-year results following the implementation of the interventional analytics platform and value-based care specific staff included US$1.6m saved in the post-acute network spend. Readmission rates decreased from 24 per cent to 17.8 per cent and have continued to decrease over the last several years. The return on investment far exceeded the implementation cost of the value-based care programming (Figure 1).

The readmission rate for 2022 was 15.3 per cent and is currently 13.6 per cent YTD 2023. In addition, St. Joseph's Health (Mission Health Coordinated Care ACO) recorded its best readmission rate to date in June 2023 of 4.3 per cent, and St. Joseph's Health value-based readmission rate for all contracts was 3.2 per cent. Overall, St. Joseph's Health realised a 43.3 per cent reduction in readmissions since the inception of this programme. Baseline average length of stay was initially 24.8 days in 2019 and remained in that range until a strong

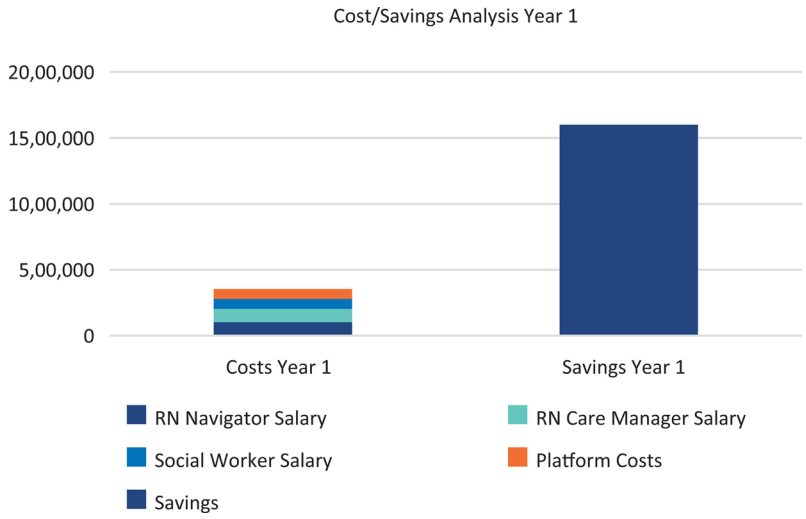

Figure 1 St. Joseph's Health cost/savings analysis year 1

concentration was placed on an appropriate length of stay initiative beginning in 2022. The current 2023 YTD average length of stay is 21.6 days.

In addition to superior performance on identified quality metric goals and financial savings, the relationship between St. Joseph's Health and their high-performing network has strengthened into a collegial and collaborative partnership. The availability of current information fosters discussion around trends, case types, readmission, length of stay issues, post-discharge barriers and any topic that can affect patient care. Both the acute and the subacute systems take responsibility for the ultimate care and outcomes of the patient. For example, when a transfer back to the acute facility is required, the communication from the nursing facility staff to the post-acute care nurse navigator allows a team to intervene before an admission occurs. The care team is notified if a patient is attributed to the ACO, and, if appropriate, the patient is treated and released, or held in the observation unit and returned to the SNF when stable, preventing a readmission.

Since the inception of this programme, St. Joseph's Health continues to scale this project and has added two additional nurse navigators and three nursing facilities not currently in their high-performing network to assist with the care coordination of their value-based population.

Finally, Mission Health Coordinated Care ACO was one of three ACOs nationally awarded the 2022 NAACOS Leaders in Quality Excellence Awards. This strategic programme was created to manage the post-acute population with an essential data analytics platform. By bridging the interoperability gap between acute and post-acute EHRs, as well as dedicated staff to focus specifically on the value-based population, utilisation of this tool produced outcomes that earned this award.

CONCLUSION

St. Joseph's Health Clinically Integrated Network continually evaluates innovative concepts, workflows and technologies which have the potential for leading to improvements in patient outcomes, patient satisfaction, quality scores and total cost of care savings. The implementation of a data analytics platform has transformed the care processes in the high-performing network. Data transparency enabled clear

communication between care providers, identified high-risk patients and improved patient and financial outcomes for the ACO and post-acute partners by reducing readmissions, improving length of stay and driving patients to their high-performing network. In today's healthcare environment, to achieve the primary goal of value-based care — high-quality and cost-effective care — it is essential to deploy strategies that improve the process of care by utilising data effectively.

By utilising a cloud-based interventional analytics platform that provides direct line of sight into the EHR of nursing facility patients and draws attention to high-risk patients, along with a post-acute nurse navigator to review the data on a daily basis and communicate changes in patients' clinical status with nursing facility staff, it is possible to proactively prevent readmissions and manage length of stay challenges. This live data analytics also allows for the creation of clinical pathways for chronic conditions that post-acute care facilities often encounter. Management of patients in the post-acute setting provides multiple opportunities to influence quality and total cost of care and improve patient outcomes and satisfaction.

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