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CASE STUDY

Reducing Readmission Risk Through Whole-Person Design

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When considering readmission risk, each patient should be assessed on the basis of their own unique circumstances. In January 2021, the care coordination team at Spectrum Health (now part of Corewell Health) decided to predict which individuals faced a more difficult recovery after their hospitalization and to create a targeted and actionable plan to address barriers from the first day of discharge to the end of the first month. Leveraging artificial intelligence with clinician verification, the top two quintiles of patients at greatest risk for readmission were identified for more focused transition support. This support included communication across clinical teams as well as focused interventions designed to address three key elements of personal recovery: clinical challenges, behavioral health, and social determinants of health. An interdisciplinary team mapped layered interventions over the month of transition support. Task-oriented follow-up and proactive outreach promotes an intervention that meets each patient at the point of their personal needs. This combination — the upstream identification of complex patients followed by personalized support — has made an impact on delivery system performance metrics. Strong participation in this robust transition support effort has exceeded targeted goals for readmission reduction. In addition to the benefit in care delivery for individual patients, this initiative has had a beneficial impact in terms of performance on targeted U.S. Centers for Medicare & Medicaid Services readmissions and value-based contract arrangements. On the basis of Spectrum's 20-month experience, the authors believe this patient-centered intervention is scalable and sustainable.

- Readmission risk is well communicated with a summary score and understood by clinicians when they are afforded the ability to see detail regarding individual patient scoring.
- Acknowledging the strength of an ambulatory provider relationship was key to increasing the accuracy of scoring.
- By working in advance of recovery barriers and focusing on whole-person needs, real rates of readmission can be reduced to a low-risk baseline state, even for people at high risk for return to acute care.

The Challenge

Readmission-related care accounts for approximately $17 billion in U.S. health care costs annually.[1,2] Value-based care has changed the way integrated health systems approach patient transitions. Our design teams who studied this problem observe that some patients face a greater likelihood of readmission than do others. Within individuals in the highest risk groups, needs for recovery support and effective solutions differ. Given recent advances in predictive analytics and the expanded ability to incorporate behavioral and social health solutions into transition support, our care coordination leaders hypothesized that more readmissions could be reduced by focusing support on those with greater barriers to optimal health. This solution is pertinent to the U.S. Centers for Medicare & Medicaid Services (CMS) readmission programs because of the potential for reduced penalty assignment. More effective readmission reduction is important to value-based care design because it lowers the total cost of care. Readmission reduction is impactful to all patients who can recover smoothly with targeted support. Finally, given pandemic stresses on staff and facility resources in acute health, fewer hospital admissions relieves the stress on system resources and allows other patients to benefit from a greater amount of attention.

Spectrum Health and Beaumont Health merged in January 2022 to form the BHSH health system in Michigan; in October 2022, the system adopted the name Corewell Health. This $14 billion not-for-profit system has more than 300 ambulatory locations and more than 5,000 licensed beds across 22 hospitals and includes Priority Health, a provider-sponsored health plan serving more than 1.2 million members across the state of Michigan. The work discussed in this case study occurred at the acute locations now known as Corewell Health West Region. At Spectrum, traditional readmission prediction tools such as the LACE+ score (length of stay in hospital [L], acuity of admission [A], comorbidity [C], and ED utilization in the 6 months before admission [E]) were used historically in patient discharge planning, but these tools only accounted for some factors that created challenges to people recovering from acute illness. LACE+ accounted for factors such as clinical complexity, age, sex, and ED utilization.[3] By fall 2020, we recognized that this tool was no longer providing the amount of differentiation needed to decide which patients would benefit most from extra recovery support.[4] Specifically, the existing tools had limitations in their efforts to accurately predict social and behavioral health factors.[5]

To meet the goal of providing a reliable prediction of hospital readmission risk, we evaluated the challenges faced across outpatient and acute environments — the barriers that prevent clinical recovery from the perspective of a person or community.[6] After evaluating options for a more thorough assessment of discharge risk in November 2020, the team realized the need to adopt a more robust tool to assess and communicate transition risks that are relevant for both acute and transition support teams. An ideal tool would incorporate a future focus and would highlight the common root causes that create difficult recovery journeys. The needed tool would provide relevant information for use by the different teams who may play a role in supporting readmission prevention.

Our design team had a key breakthrough in realizing that not every patient has a working relationship with an office-based clinical provider who sees them regularly and is positioned to respond to health recovery needs. Lack of an ambulatory provider relationship was hypothesized to be a significant factor in readmission.[7,8] Although the ideal model for clinical providers is a primary care provider in a medical home model, we also theorized that some acutely ill patients can experience helpful follow-up care from specialists who can take functional responsibility for recovery — in specialties that often take the lead for advanced diseases in cardiology, nephrology, oncology, and gynecology. We did reduce the predictive weight given to these specialist relationships because a specialized provider may not be as prepared to address patient care needs outside of their specialty focus.[9]

For a list of the factors considered by the artificial intelligence (AI) tool, see Appendix Exhibit 1.

For years, our system has provided transition-of-care support after patients are discharged from an acute care episode, but this support had been a single transition-of-care phone call from a registered nurse care manager (NCM). Unstructured feedback from these calls suggested that complex patient needs varied on the basis of multiple factors, and the barriers experienced in the community during recovery were not limited to clinical or medical issues. Many of our patients were experiencing social determinants of health (SDOH) barriers and co-occurring behavioral health conditions. Furthermore, the intensity of our patients' needs was linked to their risk of readmission, and a single interaction with the patient was not sufficient to mitigate the complexity of our most vulnerable patients.[10] Most American hospitals do a thorough job of discharge planning, yet in-hospital support is not enough to move the needle on readmission reduction.

> *"Not every patient has a working relationship with an office-based clinical provider who sees them regularly and is positioned to respond to health recovery needs. Lack of an ambulatory provider relationship was hypothesized to be a significant factor in readmission."*

The Goal

Our journey to provide differentiated transition support relied heavily on our growing experience that patients would benefit from a more comprehensive experience that prioritized a *whole-person* approach, assessing for clinical health, behavioral health, and SDOH, and intervening appropriately. We believed the success of the program would not be attributed to a single intervention but to the aggregate of solutions delivered by the right skill set within the context of a 30-day transition period. Our intention was to move away from a one-size-fits-all approach to readmission prevention.[2,11] The team developed a 30-day program that allowed us to focus not only on the agenda of the care team, but also on that which is important to the patient. The aim was to encompass assessment elements that captured a patient's clinical burden, screening for depression and anxiety and identifying SDOH. We wanted to provide our team members with a road map of interventions that would be applied at standardized intervals. Finally, we wanted to design a workflow with metrics in mind, measuring both process and clinical outcomes.

The Execution

The execution of this initiative involved two key aspects: developing an accurate and personalized prediction of patient readmission risk and deploying a meaningful intervention that would prevent readmission.

Accurate Patient Identification

With personalized care in mind, the team acknowledged that not all patients need the same level of transition support. The target of this work was to highlight a subgroup of patients with a higher probability of struggling in their recovery. As a result of insights from literature searches and design workshops that we conducted between April and October 2021, we added the consideration of patient relationship with a primary care provider to predictive scoring. The predictive model of individual readmission risk was incorporated into the electronic medical record (EMR), with clear summary formatting to facilitate quick interpretation by the interdisciplinary team and those following the patient's transition out of the acute setting.

The scoring created three categories for transition failure: low risk, rising risk, and high risk. The low-risk patient cohort would continue to receive printed after-visit instructions and one discharge support phone call, as described above. The rising-risk cohort would contain a group of patients who gave the interdisciplinary team a moderate amount of concern about transition success. (When we used the term *moderate risk*, clinicians recognized this as a lesser risk than the *high-risk* group and were not highly motivated to take preventive measures. When we called this moderate-risk group *rising risk*, the clinicians recognized a sense of urgency in daily work.) The high-risk cohort consisted of patients who gave the team a high degree of concern regarding successful recovery. Prior experience taught us that a fully automated score led to some provider skepticism. To address that concern, in addition to a validation process during development of the algorithm, each patient's transition scoring had to be affirmed or modified by an NCM

before it became visible to the rest of the team. This step takes about 30 seconds and reinforces the validity of the response; in about 5% of cases, the NCM will modify the automated score.

C-statistic scores were used to measure the reliability of the score to determine how adept this tool was at stratifying the readmission risk level of patients compared with the validated LACE+ and our EMR readmission predictors. In May 2021, our preliminary findings indicated that this approach improved the predictive capability for the readmission risk, from a preintervention C-statistic range of 0.63–0.74 to a range of 0.80–0.85 for combined hospital utilization and as high as 0.91 and 0.92 for inpatient and ED utilization, respectively (Table 1). Follow-up findings confirm stable performance in this population.

Clinician adoption of the Spectrum Health whole-person readmission prediction tool gained momentum and use with the support of the NCM verification process noted above. The NCM had to validate each score before it became visible to clinical teams. We found that our clinicians modified the score in less than 10% of the cases, with less than 7% category variation month to month (Figure 1).

Because of the strong correlation between score and clinical concern, other system departments began adopting the score in their workflows. Hospitalists, orthopedic care pathways, and postacute providers added visibility of this scoring to their daily data inputs between June 2021 and March 2022.

Meaningful Intervention to Prevent Readmission

Measurement of program impact begins with classification of patient engagement (Table 2).

The 30-day program includes four weekly stages of activity to address whole-person matters that may affect the patient's successful discharge (Table 3).

We noted consistent enrollment rates, with 75% of eligible patients enrolling in the program, 80% of enrollees graduating, and final readmission rates for the graduated group 65% lower

Table 1. C-Statistic Score Comparison

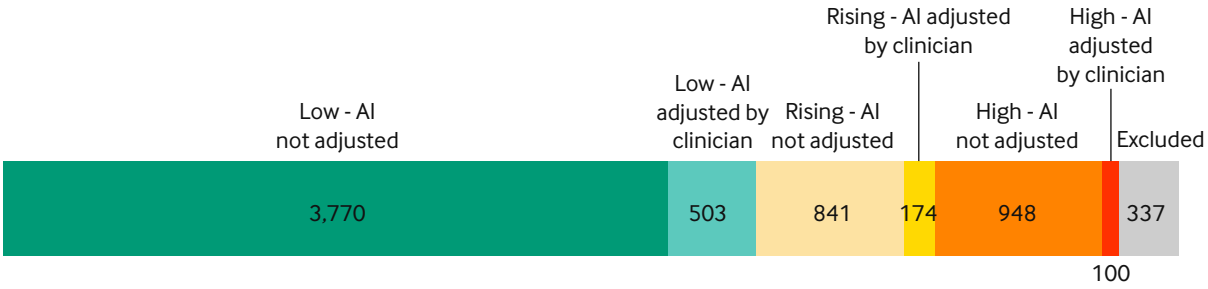
	Model	C-statistic Score
	LACE+	0.63–0.69
	Epic readmission model	0.69–0.74
Intervention: Spectrum Transition-of-Care Risk Score	Hospital **inpatient** utilization	0.86–0.91
	Hospital **ED** utilization	0.87–0.92
	Hospital **combined** (inpatient and ED) utilization	0.80–0.85

LACE+ = length of stay in hospital [L], acuity of admission [A], comorbidity [C], and ED utilization in the 6 months before admission [E]. The table shows the C-statistic (C-stat) scores for the different readmission risk prediction models when assessed in the first quarter of 2021. Generally, a value below 0.5 indicates a poor model; 0.5 is no better than random chance; 0.7 is a good model; 0.8 is strong; and 1.0 represents a perfect prediction of the outcome. The LACE+ was the baseline standard for readmission prediction for ED and observation status patients prior to this whole-person transition-of-care intervention. The Epic second-generation artificial intelligence model was used as the baseline standard readmission score for the patients with inpatient status. With the addition of primary care relationships, the average C-stat score rose to 0.89 for hospital inpatient utilization. The average C-stat score rose to 0.89 for ED utilization. The average C-stat score rose to 0.82 for predicting both inpatient and ED utilization. Source: The authors, using Epic C-stat scores and locally generated data

FIGURE 1

Clinician Validation and Revision of the Predictive Analytic Risk Score, August 2022

Total, N=6,673; low, n=4,273; rising, n=1,015; and high, n=1,048. These scores reflect the final numbers for each risk category and show the share that involved adjustment by clinicians — 503 low-risk patients, 174 rising-risk patients, and 100 high-risk patients. The gray area indicates patients who have died, left against medical advice, or were admitted for less than 48 hours; in August 2022, 337 patients fell into this category.



AI = artificial intelligence.
Source: The authors, based on Epic electronic medical record data
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than for other high-risk patients who were not offered the intervention. This consistently improved readmission outcome gave us the confidence to continue expand the intervention from Centers for Medicare & Medicaid Services (CMS) Hospital Readmission Reduction Program (HRRP) patients to another cohort of patients, those enrolled in value-based risk contract arrangements.

Table 2. Classification of Patient Engagement in Transition-of-Care Initiative

Designation	Description	Number of Patients	Percentage of Total Enrolled	Readmission Rate (% of total enrolled)
All Enrolled Patients	Patients who agreed to participate in the program	2,681	100.00	12.98
Disenrolled Patients	Patients who received a partial intervention (generally patients who started the program but declined to continue at some point in the 30 days after discharge)	455	16.97	38.02
Graduated Patients	Patients who completed the full 30-day program without experiencing a hospital readmission	2,226	83.03	7.8

The table shows the readmission outcomes by designation group for patients enrolled in the Transition-of-Care program between March 1, 2021, and September 30, 2022. The baseline readmission rate for this high-risk group of patients is 23%. Patients who graduate have a far lower readmission rate than do those who did not complete the program. Source: The authors

Table 3. Key Weekly Activities During the 30-Day Transition-of-Care Program

Week	Activity
1	Review discharge instructions, confirm discharge appointments, medication reconciliation, screening for depression and anxiety, identify social determinants of health barriers, symptom review, and establish a transition-of-care plan.
2	Follow up on barrier solutions provided in week 1; confirm follow-up appointments were attended; referral to pharmacy, social work, community health worker as appropriate; care coordination; and symptom review.
3	Identify long-term follow-up needs; care coordination/follow-up on barrier resolution.
4	Provide warm handover to the next level of care (i.e., primary care provider, ambulatory care management, or community-based resources).

The table summarizes the main activities by week during the 30-day Transition-of-Care program. Source: The authors

As anticipated, our high-risk patients often had complex needs that required coordination across the enterprise and within the community. Asking the right questions was important, but even more critical was being able to offer meaningful solutions. Building trust with patients and maintaining engagement from week to week was dependent on our ability to provide value from the perspective of the patient. It was also important to establish a network of community-based partnerships and resources to connect patients with ongoing support in addressing social needs as well as medical and behavioral health.

The Hurdles

We encountered a number of obstacles throughout the process and developed solutions and other crucial components to overcome the hurdles.

Patient Identification

The CMS HRRP uses nationwide inclusion criteria that rely on the final coding of the inpatient episode. To identify potential patients prior to discharge, foundational work occurred between February and August 2021 to build presumptive coding to accurately predict HRRP inclusion. Accepting a lower specificity in the identification ensured adequate sensitivity. In the 20 months of readmission prevention for CMS HRRP patients, the intervention graduated more than 1,700 patients from readmission prevention, enrolling 91% of eligible patients, between February 1, 2021, and October 1, 2022. Of the HRRP-related patients enrolled, 84% graduated from the full month of support (more than 1,000 patients).

Expanding the Successful Model

Building on the HRRP-associated enrollees, a second cohort involved patients in a value-based risk contract. All diagnoses in this group were eligible for inclusion. Since the inception of this value-based cohort in August 2021, 804 patients have graduated from the program as of September 2022. Our team enrolls 75% of eligible patients, and more than 80% of those enrolled graduate the full month. Staff fidelity to the model is 86%; this is based on completion-related tasks within the time allotted, as measured in the electronic health record. We had set a goal of 80% fidelity,

recognizing that some interventions may take longer than anticipated or that patients may have emergent needs that arise.

> *"We noted consistent enrollment rates, with 75% of eligible patients enrolling in the program, 80% of enrollees graduating, and final readmission rates for the graduated group 65% lower than for other high-risk patients who were not offered the intervention."*

Whole-Person Design

It is important to develop a standardized, whole-person approach that offers interventions to address barriers to clinical concerns, behavioral health, and SDOH. Caring for patients within the context of their community, family, health behaviors, and social network has helped us partner with patients on the needs that drive their recovery journey. We do not consider one intervention more impactful than another. Our observational experience suggests that it is the entirety of the intervention that makes a difference with our most vulnerable patients.

Timely Outreach

Our first outreach to the patient is the next business day after discharge. Patients leaving the hospital are often overwhelmed by the volume and the nature of the discharge information. We attribute our engagement rates to timely outreach. In addition, the readiness to help patients during and after the disruptions associated with hospitalization, when they may be especially vulnerable, is crucial to building relationships. The ability to proactively identify who needs help before a readmission can occur also helps us work upstream of crisis points. Finding solutions early prevents compounding barriers and fosters resiliency.

Information Display

The readmission risk score was added to the patient storyboard for quick reference with an added electronic *hover to discover* feature that allows clinicians to see the breakdown of that patient's scoring factors. The score categories have been given corresponding colors: green for low risk, yellow for rising risk, and red for high risk.

Was the Outcome a Result of Intervention?

The easiest way to construct proactive risk identification was to score all inpatient discharges. This process provided a natural control group to define baseline readmission rates in populations with a high risk of readmission and no intervention. In addition, intermittent Covid-19 pandemic surges caused stress tests to the transition intervention. Notably, these stresses did not appreciably affect outcomes. Winter holidays did decrease engagement and the compliance that leads to program success. No other contributing factors notably affected outcomes.

Supporting Equitable Care

Throughout the program implementation, the team noted a high incidence of services provided to individuals traditionally challenged in obtaining equitable health care. Even though the intervention was not designed with an equity lens, enabling inclusive access is a notable theme in this work. The power of timely problem-solving creates new synergies in the tasks of caring for patients within the context of their community, family, health behaviors, and social network. Finally, the power of whole-person solution-finding facilitates a trusting relationship with patients. This trust is particularly valuable for complex patients with multiple challenges to recovery. Our most vulnerable patients benefit from an increased sense of control over their own health and the consequences of their decisions.

Assessing Patient Satisfaction

Given competing pandemic-related demands, the execution relied on subjective/anecdotal evidence of patient satisfaction with the program. Informally, we learned that some patients who declined enrollment or dropped out before completion either did not see a need (recovery resolved) or found the continuation impractical (back at work and unable to take calls). Still, for this cohort of complex patients, the 30-day program completion rate of about 80% can be considered a proxy for satisfaction.

Resources

A significant hurdle to the program is the lack of a direct revenue source. This, combined with competing demands for resources, limits its expansion. As of November 2022, although all of our adult inpatients are targeted for readmission risk scoring, the whole-person discharge program is offered to less than 1% of the total adult inpatients. Still, through the first 12 months of the program, HRRP readmission penalties fell by about 90%, to $200,000 from $2.1 million. The program work is largely driven by two nurse full-time equivalents, suggesting a potential financial net benefit. As our system continues the journey of value-based care, ROI analysis is being completed on the first year of outcomes.

> *“Asking the right questions was important, but even more critical was being able to offer meaningful solutions.”*

The Team

Our care coordination team includes a registered NCM, master’s-prepared social workers (MSW), and community health workers (CHW). We also have a partnership with our ambulatory pharmacy team to assist patients with complex medication concerns. Each contact with the patient allows time for symptom review, education, and addressing questions/concerns. It is important to us that the team working with patients is representative of the communities we serve. We strive to match staff who live in or have experience in the hospital market they support. We sought bilingual staff

to ensure that we could provide services to patients in their language of origin whenever possible. Our CHWs often have lived experience and provide the credibility that our licensed staff sometimes cannot. CHWs can be instrumental in bridging trust with our care teams.

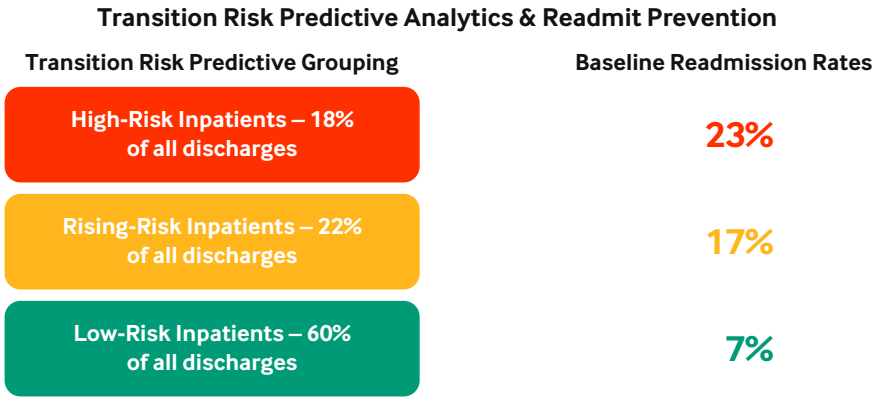
Metrics

Between February 2021 and October 2022, the team was able to consistently identify patients in the highest quintiles of readmission risk; these cohorts had consistently higher native readmission rates than did the low-risk patients in the lowest three quintiles (Figure 2). This meaningful differentiation of future clinical outcomes served to isolate groups for intervention. For example, the AI tool identified 18% of all hospital inpatients as high risk for readmission, and, indeed, 23% of this group was readmitted within 30 days; this group accounts for 30% of all readmissions. Another 22% of patients were designated in the middle-risk group; 17% of these patients were readmitted, but only received the one follow-up call traditionally delivered; this group represents 29% of all readmissions. By contrast, of the 60% of patients identified as low risk, who also received only the traditional support of discharge instructions and one follow-up phone call, only 7% were readmitted; this group accounts for 40% of all readmissions.

FIGURE 2

Readmission Rates Among Patients Projected to Be at Risk by Predictive Analytic Tool

Application of this predictive analytic tool accomplished several goals. First, it differentiated the first and second quintile of inpatient discharges so that patients at the highest future risk for readmission were identified separately from the majority of patients who were likely to recover successfully with the usual amount of transition support. After the design team affirmed the stability of the volume of patients identified in these groups, data analysis was able to establish a baseline rate of readmission for each group. Affirming these natural readmission rates stimulated clinical teams to engage more deeply with higher-risk patients because their real incidence of return was markedly higher. Finally, the stability of volume and risk in these differentiated populations provided a baseline for comparison with the intervention outcome groups.



Source: The authors

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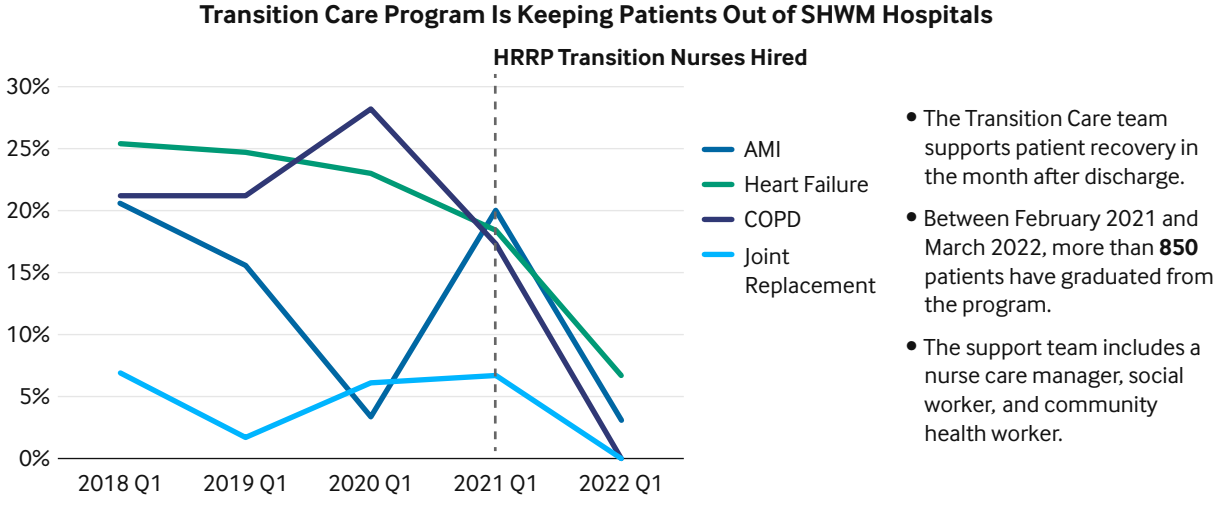
In February 2021, this intervention was launched to improve CMS HRRP performance. We started identifying HRRP patients at highest risk for readmission, using a modified predictive analytic tool provided in the Epic system. We sent a transition-care coordinator to overcome barriers and support the recovery of these patients. Since the launch, more than 1,000 patients have successfully completed the 30-day period without readmission. Readmissions have been declining since the transition program started. Chronic obstructive pulmonary disease (COPD) readmissions, for example, have been reduced by 13%. Enrolled patients receive support from a care manager (registered nurse), MSW, and a CHW to address clinical, social, and behavioral health needs. Patients receive a minimum of one outreach per week, with most patients averaging seven to eight encounters with staff over the course of 30 days. At the end of 30 days, patients who need more care coordination are transitioned to ongoing allied health teams. Two of the conditions of the HRRP program were not included: coronary artery bypass graft surgery has always been well managed and therefore was not pulled into this program; pneumonia was suppressed because Covid-19 exclusion had not been completed on the data, but we did see improvement (Figure 3).

FIGURE 3

Centers for Medicare & Medicaid Services Hospital Readmission Reduction Program Outcomes, 5-Year Trend

This graph represents readmissions for the Centers for Medicare & Medicaid Services Hospital Readmission Reduction Program (HRRP) from the first quarter of the calendar year over the past 5 years. The dotted line represents the start of the 30-day intervention program. Quarter 1 of 2022 demonstrates a sharp decline in readmissions compared with the previous years. This represents a whole program effect that is the result of a focus on only readmission for patients at high risk for return.



AMI = acute myocardial infarction, COPD = chronic obstructive pulmonary disease, Joint Replacement = total joint hip/knee arthroplasty, Q = quarter, SHWM = Spectrum Health West Michigan.
Source: The authors

The value-based contract cohorts consist of traditional Medicare patients in an accountable care organization, members of the payer in our integrated delivery system, and one additional national payer with 40,000 Medicare Advantage members in our care. The readmission rate for high-risk patients in this value-based cohort is 7% compared with 23% for high-risk patients not receiving the intervention. This is a 70% reduction in readmission rates. Beginning in August 2021, the readmission intervention was applied to a cohort of patients in value-based contracts. As clinical resources were added, additional offices were brought into the intervention, notably eight offices joining in February 2022, which led to a sharp increase in eligible patients in March 2022. This occurred as local teams worked to schedule a backlog of elective cases that had been paused from November 2021 to February 2022 because of Covid-19 conditions.

> *"Complex medication regimens and recovery journeys are more successful with personalized transition support and a scope of solutions empowered to address interrelated clinical, behavioral, and social health issues."*

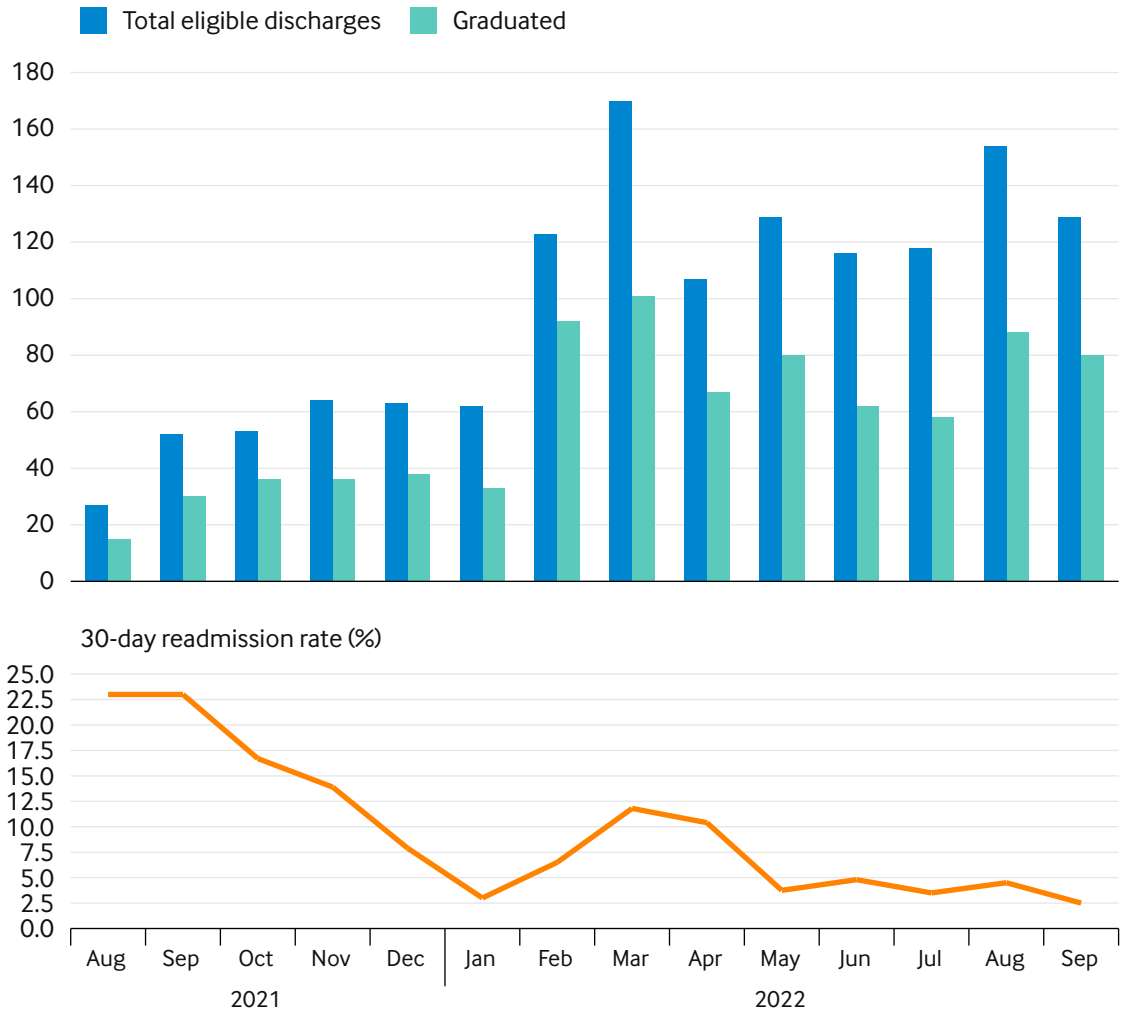
Further investigation revealed an increased number of patients who displayed a high risk for readmission combined with a clinical journey that naturally connected them to a clinical pathway for their episode of care. Examples include active oncology treatment and bariatric surgery. Starting in April 2022, program eligibility review returned these cases to the traditional discharge transition program that provided one follow-up phone call to affirm strong patient support for these cases. The April episode volumes reflect this adjusted program scoping. Further observation of program intent, in combination with clinical case profiles, will ensure ongoing matching of the clinical scenario and designed intervention. This special cause variation demonstrates the importance of matching designed interventions with data identification. With the April/May 2022 work to restore a match between identified patients and transition support intervention, engagement rates improved and readmission results stabilized. The special cause was health system work to complete a backlog of elective surgery cases, which was associated with the Covid-19 backlog and resumption.

This is an active data collection based on patient-reported barriers and outcomes. In addition, the graduation rate for a given month cannot be determined until we finish the succeeding month and can confirm that no 30-day readmission occurred, which marks successful graduation. Because of the new baseline readmission rate established in the HRRP pilot running since February 2021, we confidently predict that the same intervention will take this cohort from a 23% native readmission rate to an intervention readmission rate of 7%. In Figure 4, we can see that a 7% readmission rate starting to form in December 2021 through February 2022, with rates of 7.9%, 3.0%, and 6.5%, respectively. After corrections to the program inclusions in April 2022, as mentioned above, we expect the intervention readmission rate to continue its trend to the targeted 7%. Indeed, between May 2022 and September 2022, 30-day readmission rates were less than 5%. Since inception in August 2021 through September 2022, 816 patients have graduated from the program. On average, our team enrolls 75% of eligible patients, and more than 80% of those enrolled complete the 30-day program to graduate without readmission.

FIGURE 4

Intervention Readmission Rates Associated with Select Value-Based Programs

This graphic represents an incremental go-live for high-risk readmission prevention in value-based contracts. We started with six offices in August 2021, with nine more offices added throughout the spring of 2022. The work is inclusive of 15 offices as of August 2022. Special-cause variation in volumes and outcomes due to a local Covid-19 pandemic surge are noted from January to April 2022.



Source: The authors

Where to Start

Adding programs to address barriers to behavioral health and SDOH can support a complex clinical picture and create a powerful synergy to prevent unwanted returns to acute care. The classic

care-coordination principles of meeting people where they are and making space for difficult journeys supports the design, the execution, and the results.

For organizations looking to undertake or enhance such a whole-person readmission reduction effort, note that complex medication regimens and recovery journeys are more successful with personalized transition support and a scope of solutions empowered to address interrelated clinical, behavioral, and social health issues. The readmission risk score has seen natural adoption by clinical collaborators who found it useful. Because of previous trials of risk score implementation, intentional effort was expended to introduce the methodology for the risk score and invest extra time with clinical informaticists and physician influencers, actively seeking concerns about the approach. Change management was also aided by a health system culture that positions most clinical leaders and medical directors with split administrative and clinical duties — planned changes were tested, improved, and championed by leaders still active in bedside care. The transition intervention has been popular with clinicians who note increased patient self-efficacy and improvement in clinician joy in the work. The patients' appreciation of the support is evident from their high engagement and graduation rates, in addition to many spontaneous comments indicating new disease management insights, increased confidence in self-management, and gratitude for the transition partnership. The only threat to sustainability is staff shortages that may cause pressure to borrow these clinicians.

There are several opportunities to expand this work. As staffing allows, we will continue to broaden this work to all high-risk patients in value contracts. Knowing that the intervention reduced high-risk readmission rates to baseline low-risk rates, there is confidence that a rising-risk intervention could also reduce a 17% rate to close to 7%, — which would represent a significant improvement for our rising-risk patients. We continue to see unique needs and successful solutions in our rural hospitals compared with those in urban neighborhoods. Designing solutions to address localized challenges may enhance program success rates.

Finally, for organizations (such as ours) on a journey to increase the collection of accurate demographic data detailing race, ethnicity, language, sexual orientation, and gender identity, you may expect to observe (as we do) a remarkable number of patients from historically marginalized racial groups in this intervention. More data detailing populations that traditionally encounter inequitable treatment would support opportunities to develop customized programs for unique populations.

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Appendix

Factors Considered by the AI Tool

Disclosures: Tricia Baird, Lindsey Eastman, Erica Auger, James M. Moses, and Alejandro Quiroga Chand have nothing to disclose.

References

1. Glans M, Kragh Ekstam A, Jakobsson U, Bondesson Å, Midlöv P. Risk factors for hospital readmission in older adults within 30 days of discharge — a comparative retrospective study. BMC Geriatr 2020;20:467 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7659222/ https://doi.org/10.1186/s12877-020-01867-3.

2. Obuobi S, Chua RFM, Besser SA, Tabit CE. Social determinants of health and hospital readmissions: can the HOSPITAL risk score be improved by the inclusion of social factors? BMC Health Serv Res 2021;21:5 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7780407 https://doi.org/10.1186/s12913-020-05989-7.

3. Van Walraven C, Wong J, Forster AJ. LACE+ index: extension of a validated index to predict early death or urgent readmission after hospital discharge using administrative data. Open Med 2012;6: e80-90 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3659212/.

4. Mahmoudi E, Kamdar N, Kim N, Gonzales G, Singh K, Waljee AK. Use of electronic medical records in development and validation of risk prediction models of hospital readmission: systematic review. BMJ 2020;369:m958 https://www.bmj.com/content/369/bmj.m958 https://doi.org/10.1136/bmj.m958.

5. Baker MC, Alberti PM, Tsao T-Y, Fluegge K, Howland RE, Haberman M. Social determinants matter for hospital readmission policy: insights from New York City. Health Aff (Millwood) 2021;40:645-54 https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.01742 https://doi.org/10.1377/hlthaff.2020.01742.

6. Weber LAF. Lima MADdS, Marques Acosta A. Quality of care transition and its association with hospital readmission. Aquichan 2019;19:1-11 https://aquichan.unisabana.edu.co/index.php/aquichan/article/view/11963 https://doi.org/10.5294/aqui.2019.19.4.5.

7. Barr ML, Welberry H, Hall J, et al. General practitioner follow-up after hospitalisation in Central and Eastern Sydney, Australia: access and impact on health services. Aust Health Rev 2021;45:247-54 https://www.publish.csiro.au/ah/AH19285 https://doi.org/10.1071/AH19285.

8. Levine DM, Linder JA, Landon BE. Characteristics of Americans with primary care and changes over time, 2002–2015. JAMA Intern Med 2020;180:463-6 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6990950/ https://doi.org/10.1001/jamainternmed.2019.6282.

9. Wang X, Song K, Chen L, Huang Y, Birch S. Eliciting preferences of providers in primary care settings for post hospital discharge patient follow-up. Int J Environ Res Public Health 2021;18:8317 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8391536/ https://doi.org/10.3390/ijerph18168317.

10. Flaks-Manov N, Srulovici E, Yahalom R, Perry-Mezre H, Balicer R, Shadmi E. Preventing hospital readmissions: healthcare providers' perspectives on "impactibility" beyond EH 30-day readmission risk prediction. J Gen Int Med 2020;35:1484-9 https://link.springer.com/article/10.1007/s11606-020-05739-9 https://doi.org/10.1007/s11606-020-05739-9.

11. Nguyen HQ, Baecker A, Ho T, et al. Association between post-hospital clinic and telephone follow-up provider visits with 30-day readmission risk in an integrated health system. BMC Health Serv Res 2021;21:826 https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06848-9#citeas https://doi.org/10.1186/s12913-021-06848-9.