

Optimization of Patient Progression in a New Era

A Comprehensive Framework

Laura E. Smith, MD, Tracy Escobar, CMAC, MBA, Andrea McCabe, MHA, BSN, RN, James Grafton, MSN, MHA, RN, CCMd, Margaret Higgins, MSN, RN, Melissa Littlefield, MBA, Soumi Ray, PhD, MS, Peggy Leung, MS, Alexander Fiksdal, PhD, MA, Roaa M. Khinkar, PharmD, CPPS, CPHQ, Reg B. Wilcox III, DPT, MS, PT, Carolyn Yuse, DPT, Katie Fillipon, DNP, RN, NEA-BC, Thomas Walsh, MBA, Charles A. Morris, MD, MPH, Shelly Anderson, MPM, Madelyn Pearson, DNP, RN, NEA-BC, and Mallika L. Mendu, MD, MBA

ABSTRACT

Purpose/Objectives: The onset of the coronavirus disease 2019 pandemic increased the demand for inpatient services and led to widespread staffing shortages in the acute and post-acute setting, contributing to delayed inpatient throughput and leading to capacity crises. Novel strategies are needed to facilitate the efficient progression of hospitalized patients when medically ready for lower levels of care. The authors have developed a foundational strategic framework for patient progression to ensure capture of patient progression data, enhance efficiency, and optimal utilization of post-acute resources in increasingly complex and resource-constrained acute and post-acute environments.

Primary Practice Setting(s): Interventions were implemented, and metrics of success tracked as part of an overarching framework to test new models of care or optimize existing assets related to barriers to patient progression. Brigham and Women's Hospital (BWH) and Brigham and Women's Faulkner Hospital (BWFH) comprise an academic medical center and a community hospital, respectively, that are affiliated with Massachusetts General Brigham (MGB), a nonprofit health care system in Massachusetts. Key interventions include (1) screening to prioritize patients needing case management services through a modified early screening for discharge planning tool and process; (2) communicating, documenting, identifying patient progression status, barriers to discharge and post-acute needs through interdisciplinary care optimization rounds, a novel tool in the electronic health record, and an associated dashboard; (3) managing active high-risk patients through a novel complex care team and post-acute strategy development; (4) developing novel transportation and hospice pathways; and (5) establishing community hospital repatriation and a physical therapy "Why Not Home" campaign.

Findings: Key metrics of success were (1) modified discharge planning tool resulting in screening out low-risk patients (53%) and impacting length of stay (0.55-day reduction, $p = .083$) during a 3-month intervention versus control study; (2) documentation adherence in more than 98% of patients 10 months postimplementation; (3) complex care team achieving a 2.5% reduction in Case Mix Index-adjusted length of stay 6 months postimplementation; (4) use of care van offsetting ambulance/chair car in 10% of cases, and

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Address correspondence to Laura E. Smith, MD, Division of Hospital Medicine, Department of Medicine, Brigham and Women's Hospital, 15 Francis St, Boston, MA 02115 (lsmith41@bwh.harvard.edu).

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earlier discharge time/length of stay in 21% of cases 3 months postimplementation; and (5) implementation of community repatriation impacting delay days to discharge (10-month pilot, 40 patients accounting for 1,000 delay days).

Conclusions: Implementation of a novel comprehensive framework focusing on optimizing patient progression resulted in increased operational efficiency and positively impacted length of stay at our academic and community hospitals. Additional study is actively ongoing to understand long-term benefit of the innovations that the authors have developed. Further interventions are needed to wholly mitigate evolving capacity challenges in the acute and post-acute settings.

Implications for Case Management Practice: The authors' implementation of the Brigham framework for progression demonstrates that innovative approaches to case management can help address the evolving challenges in care transitions planning. Notable opportunities include approaches that empower case managers as multidisciplinary team leaders, improve workflow, utilize patient progression data, prioritize patients with complex care needs support key patient populations, and promote post-acute collaboration.

Key words: case management, length of stay, patient progression, post-acute care

The coronavirus disease 2019 (COVID-19) pandemic led to shifts in inpatient and post-acute demand, staffing crises, and transportation challenges, negatively impacting inpatient progression nationwide (Bains et al., 2020; Cantor et al., 2022; Gale et al., 2021; Kazakova et al., 2022; Moore, 2022; Rosenberg, 2022; Surek et al., 2021). These challenges extend beyond the acute care setting, with skilled nursing facilities (SNFs) disproportionately affected: 87% reported moderate-to-severe staffing shortages in 2022 (American Health Care Association, 2022; Cantor et al., 2022). Post-acute staffing shortages led to capacity reductions, subsequently constraining inpatient throughput causing circular and compounding factors: (1) reduced inpatient availability; (2) greater deferred care; (3) further demand for inpatient and post-acute care; and (4) further throughput constraints. Given the current landscape, novel care continuum management approaches are required to optimize patient progression.

Delayed inpatient progression occurs when patients are hospitalized longer than medically indicated before transitioning to a lower level of care and can contribute to increased mortality, in-hospital complications, and decreased activities of daily living (Meo et al., 2020; Rojas-García et al., 2018). Patient-centered discharge planning can reduce inpatient length of stay (LOS), decrease readmissions, and improve patient and health care worker satisfaction (Gonçalves-Bradley et al., 2016; Terra, 2007). The authors' institution faced pandemic-induced capacity constraints, compounded by escalating patient complexity and increased staff

turnover. Brigham and Women's Hospital (BWH) and Brigham and Women's Faulkner Hospital (BWFH) are a quaternary academic and a community hospital, respectively, part of the nonprofit Massachusetts General Brigham (MGB) health system in Massachusetts. In 2016, BWH implemented an Active Asset Management program, approaching the care continuum as a series of assets and focusing on how to utilize those assets most efficiently; expanded across MGB as the Enterprise Asset Management (EAM) program in 2021. In alignment with EAM, the authors developed a strategic patient progression framework, and in this article, the authors outline key elements and associated metrics of success, including identification, screening, communication, documentation, complex care management, post-acute strategy, hospice care, and transportation.

METHODS

Care Progression Challenges, Optimal State, and the Brigham Framework

To meet the complex, dynamic care needs of our patients related to progression, the authors created a framework that would have resiliency in a resource-limited environment (see Table 1). The authors reimaged how to (1) communicate about progression; (2) leverage the electronic health record (EHR) for case manager (CM) workflow; (3) identify patients' progression status and care needs; (4) ensure proactive management of patients at high risk for delays; and (5) improve high-value care in key populations. The Brigham framework utilizes interdisciplinary care

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TABLE 1
Care Progression Challenges and Optimal State

Care Progression Domain	Challenges and Opportunities	Optimal State
Patient Identification	Timely identification of patients medically ready for discharge and barriers to discharge Standardized, updated data integrated into EHR	EHR-based dashboard demonstrating percentage medically ready, discharge barriers
Patient Screening	Screening patients with a low likelihood of needing discharge planning support, to prioritize patients with greatest need and increase CM efficiency	Early screening tool that would allow for prioritization at patient admission
Interdisciplinary Communication	Interdisciplinary communication to ensure daily, closed-loop communication and data capture	Standardized interdisciplinary huddle process across all services
Complex Care Team	Escalation of patients with the most complex of discharge needs Engagement with financial services, general counsel, state agencies	Central team providing additional support for complex patients, engaging with relevant partners
Post-Acute Relationships	Development of relationships with post-acute partner institutions to leverage for complex discharges	DME, home care, post-acute relationship network development
Hospice	Contractual relationships with hospice vendors, with performance measures to ensure timely transition to hospice	Hospice/hospital partnership to ensure appropriate, timely use
Transportation	Effective, efficient use of ambulance services and establishing safe alternatives to ambulance utilization when appropriate	Hospital-based care van for patients with limited assistance need

Note. CM = case manager; DME = durable medical equipment; EHR = electronic health record.

optimization, illustrated in Figure 1 as an “arch” that serves to support efficient progression along the care continuum. The arch includes a “foundation” of early screening, “cornerstones” encompassing communication and documentation, “strategic assets” related to complex care, post-acute strategy, transportation and hospice, physical therapy (PT) integration, repatriation, and a “core” of interdisciplinary care optimization rounds (ICORs) reflecting working across disciplines. Central facets are minimizing low-value tasks, ensuring prioritization of complex care, tracking progression,

identifying discharge barriers, and developing strategic programs to support vulnerable patient groups.

FINDINGS AND DISCUSSION

Foundation: Screening

The Modified Early Screening for Discharge Planning Tool

At the authors’ institution, increased inpatient capacity concomitantly increased CM workload, impeding

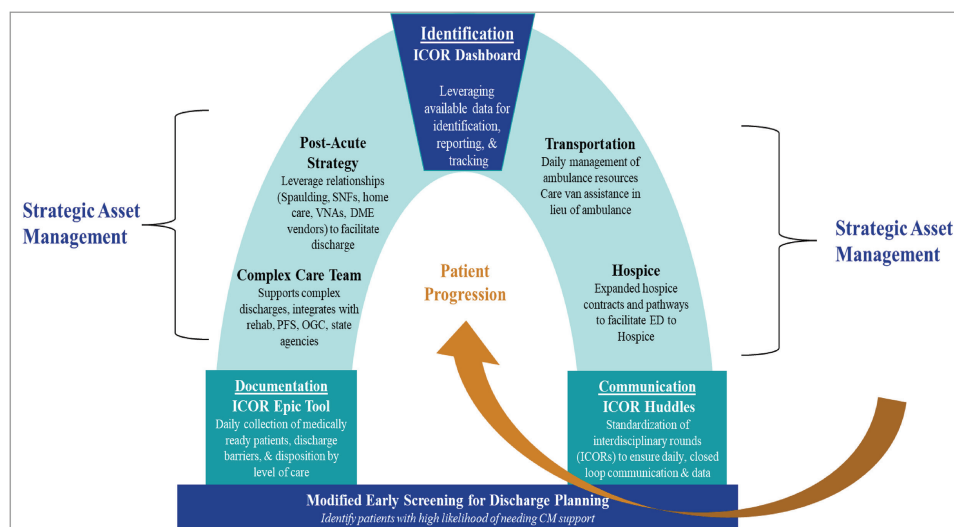


FIGURE 1

Brigham framework to optimize care progression. *Note.* CM = case manager; DME = durable medical equipment; ED = emergency department; ICOR = interdisciplinary care optimization round; OGC = office of general council; PFS = patient financial services; SNFs = skilled nursing facilities; VNAs = visiting nurse associations. The tool is owned by Brigham and Women’s Hospital and used with permission. The tool will not be included in the publisher’s ownership and overall copyright of the article.

FIGURE 2

Modified Early Screening for Discharge Planning (ESDP) tool. *Note.* CM = case manager; ESDP = early screen for discharge planning. The tool is owned by Brigham and Women's Faulkner Hospital and used with permission. The tool will not be included in the publisher's ownership and overall copyright of the article.

prioritization of patients at greatest need for discharge support. The early screening for discharge planning (ESDP) tool, traditionally based on age, living status, self-rated walking limitation, and the Rankin disability scale, has been shown to be successful in early identification of patients who require CM support and discharge planning (Holland et al., 2006, 2017; Socwell et al., 2018). The authors adopted the ESDP tool to integrate with the institution's EHR, replacing the Rankin scale with a Mobility Level of Assist scale, creating a modified ESDP tool (see Figure 2). The authors piloted implementation of the modified ESDP tool over a 3-month period in a 36-bed medical/surgical unit (intervention cohort) comparing impact on CM efficiency and LOS with a control unit (Grafton et al., 2023).

Patients with an ESDP score of more than 10 were prioritized to receive CM evaluation, whereas those with ESDP score of less than 10 were not actively followed if confirmed low risk by chart review and attendance of multidisciplinary rounds. Over a 3-month period, 53.4% ($n = 201$) of patients on the intervention unit had an ESDP score of less than 10 and screened out for CM services. CMs surveyed reported increased percentage of time allocated to patients with complex discharge needs. Case Mix Index (CMI)-adjusted LOS decreased when compared with the control unit (CMI-adjusted LOS 3.91 vs. 4.46), with a trend toward statistical significance ($p = .083$; Grafton et al., 2023). Based on the pilot results, the modified ESDP tool is now standard practice at our community hospital and was recently incorporated at our quaternary hospital.

Cornerstones and Core: Communication, Documentation, and Identification

The cornerstones of the Brigham progression framework are based on interdisciplinary communication, engagement, and data capture (Kutz et al., 2022; Meo et al., 2020; Rojas-García et al., 2018). In creating processes to facilitate communication and ease documentation burden, data can be leveraged to identify progression status and barriers at the patient and system level.

Communication

Interdisciplinary Care Optimization Rounds

Multidisciplinary rounds have been shown to reduce hospital LOS, improve care transition safety, reduce readmissions, and increase multidisciplinary team satisfaction (Chan & Vadera, 2018; O'Mahony et al., 2007; Patel et al., 2019; Terra, 2015). The authors developed multidisciplinary rounds emphasizing the CM as leader to minimize multidisciplinary communication gaps (Terra, 2015). Termed "interdisciplinary care optimization rounds (ICORs)," the format employs a standardized template (see Figure 3), with each participant having a clear understanding of the information they provide and receive, and action steps. The standard process ensures steps to medical readiness are clear, along with steps for an executed discharge plan, targeting discharge on the medically ready date. The first phase of implementation included team member education and implementation on General Medicine. The second phase took place over 3 months, involving auditing of process adherence. The authors found that teams were able to consistently follow the process, with adherence of 63%, 91%, and 96% at Months 1, 2, and 3 postimplementation, respectively. The authors plan to implement ICORs across all inpatient services and monitor impacts on clinical outcomes, including LOS.

Documentation

Interdisciplinary Care Optimization (ICOR) EHR Tool

Hospitals rely on metrics including estimated date of discharge (EDD) to understand when patients may be discharged, but accuracy varies (Henry et al., 2021; Rohatgi et al., 2018; Tyler et al., 2014). The Brigham

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Interdisciplinary Care Optimization Rounds (ICOR) Template			
Goal: systematic approach to transfer of key information and local problem solving to enhance the <u>quality</u> & efficiency of care progression			
#	Topic	Time	Speaker
1	State patient name and bed number	≤ 5s	RNCC
2	Introduce patient with brief synopsis (1-liner: "patient X, here with Y") Key question: <i>Why was the patient admitted?</i>	≤ 5s	Provider
3	Brief medical plan for day or care progression status (outstanding tests or procedures)	≤ 15s	Provider
4	Needs requiring inpatient care, estimation of medical readiness, & needs after discharge: Key question: <i>What's keeping the patient hospitalized?</i>	≤ 10s	RNCC & Provider
5	State any nursing considerations as it relates to progression	≤ 10s	Charge RN/ND
6	Identify & discuss psychosocial elements related to patient care and progression.	≤ 15s	SW
7	CTS involvement	≤ 10s	CTS/RNCC
8	Share expected discharge plan (completed & next steps) and identify barriers (post-acute, home & community-based options).	≤ 10s	RNCC
9	Invite any additional input from team, including any other barriers to progression or specific concerns from patient / family. *Identify patients to escalate to CCT/or Safety Huddle	≤ 15s	RNCC invites team input
10	Summarize action plan , including next steps for both clinical and care progression. Assign tasks and provide education to team.	≤ 15s	RNCC
Target 1-2 min/patient			

FIGURE 3
Interdisciplinary care optimization rounds (ICOR) template. *Note.* CCT = complex care team; CTS = care transition specialist; ND = nurse director; RNCC = registered nurse care coordinator (case manager); SW = social worker. The tool is owned by Brigham and Women's Hospital and used with permission. The tool will not be included in the publisher's ownership and overall copyright of the article.

progression framework uniquely focuses on medical readiness and discharge barriers to best assess progression challenges. The authors designed a novel EHR-based tool and workflow supporting daily CM documentation of medical readiness, discharge barriers, and anticipated disposition daily. These elements were incorporated into CM documentation,

eliminating redundancy and allowing for systematic data capture. Use of the ICOR EHR tool has been implemented across all inpatient service lines at our quaternary hospital. Within 2 weeks of implementation, all data targets were more than 93% complete and have remained more than 98% complete 10 months postimplementation (see Figure 4). Initial

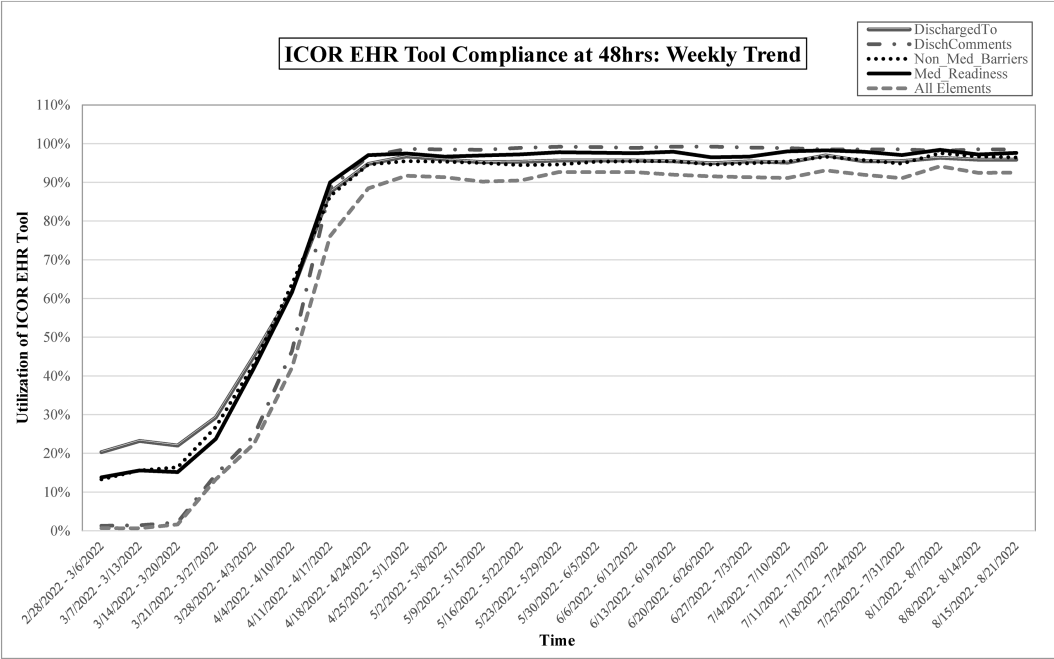


FIGURE 4
Utilization rate of interdisciplinary care optimization (ICOR) EHR tool. *Note.* EHR = electronic health record; ICOR = interdisciplinary care optimization round; Med_Barriers = medical barriers; Non_Med_Barriers = nonmedical barriers.

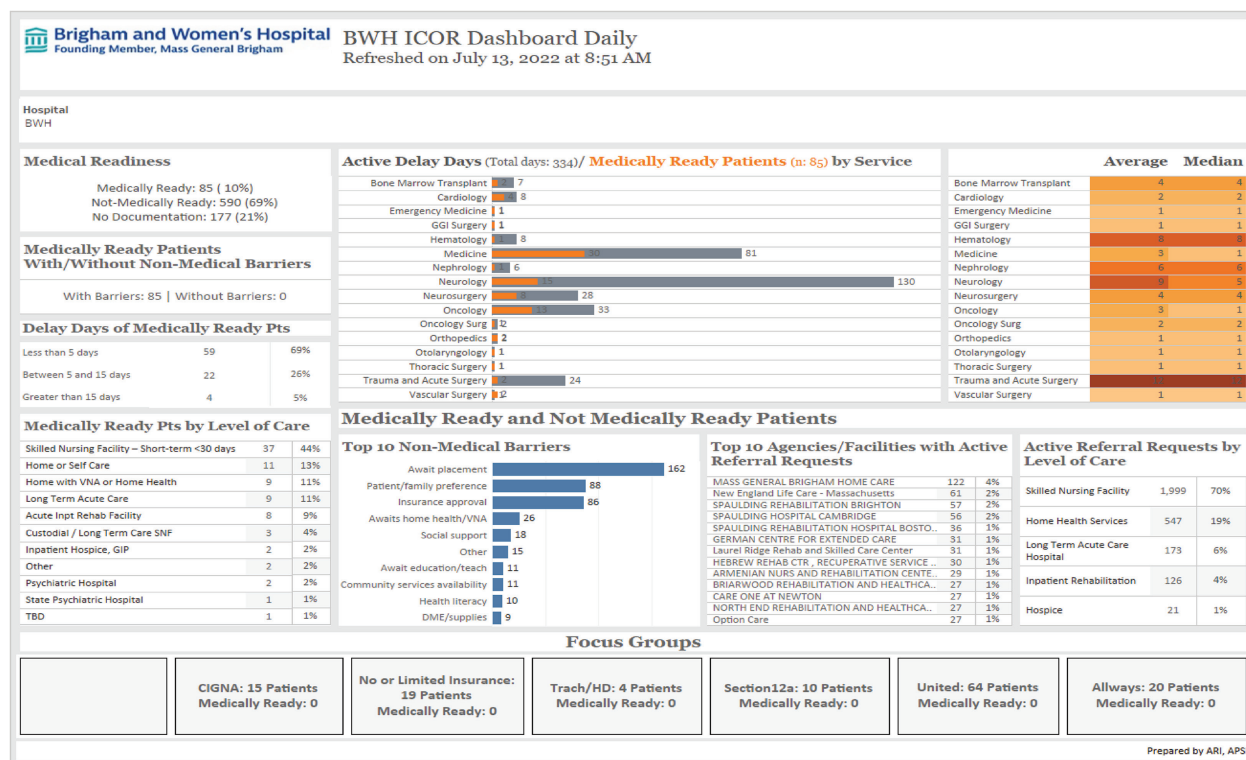


FIGURE 5
Interdisciplinary care optimization (ICOR) dashboard. *Note.* ICOR = interdisciplinary care optimization round. The tool is owned by Brigham and Women's Hospital and used with permission. The tool will not be included in the publisher's ownership and overall copyright of the article.

content validation consisted of a random chart review (6.7% of inpatients) performed by an audit team. Percent agreement and Cohen's kappa statistic were determined for each metric, indicating high agreement for anticipated discharge plan (99% agreement, $\kappa = 0.915$), medical readiness (97% agreement, $\kappa = 0.87$), and presence or absence of nonmedical barriers (94%, $\kappa = 0.89$).

Identification

Interdisciplinary Care Optimization (ICOR) Dashboard

Defining, quantifying, and tracking delays in patient progression are challenges for hospitals (Jerath et al., 2020; Micallef et al., 2022). The creation of an ICOR dashboard has allowed for quantification and reporting on medically ready patients, medically ready days awaiting discharge (delay days), and discharge barriers at the patient, unit, service, and hospital levels (see Figure 5). The dashboard also integrates EHR-based data related to disposition location, insurance, and clinical conditions relevant to discharge planning (i.e., hemodialysis, tracheostomy, enteral feeding, etc.). The dashboard has been utilized to identify patients at risk of or currently experiencing discharge delays: Patient-level data reported daily allow proactive identification of those needing additional support and facilitate actions to mitigate prolonged LOS,

whereas service-level data enable review of trends impacting patient cohorts (i.e., patients with stroke awaiting discharge to specific facilities).

At a hospital level, percentages of medically ready patients, delay days, barriers based on service, and disposition location are presented on a weekly basis and integrated with overall LOS. During this time of significant challenges in the post-acute space, these data have supported our hospital's projections regarding post-acute care needs.

Strategic Assessment Management: Active High-Risk Patient Management and Ensuring High-Value Care in Strategic Areas

Complex Care Team

The authors developed a multidisciplinary complex care team (CCT) tasked with identifying and supporting patients at high risk of or experiencing major discharge barriers. This team consists of nursing, a licensed rehab counselor, social work, and nonclinical CMs, with deep expertise in complex care management and established relationships with post-acute leadership. The team intervenes to resolve barriers and operates as a consultant team to frontline CMs. A standardized operating procedure manual was developed to delineate (1) roles and responsibilities

Limited ambulance availability is a result of unremitting regional emergency medical technician (EMT) shortages (Moore, 2022; Rosenberg, 2022). The authors' health system has leveraged alternative strategies: taxicab, ride shares, and a "care van," the latter enabling support for patients requiring minimal assistance door-to-door and/or needing long-distance travel. Over a 3-month pilot period, 89 patients utilized the care van, enabling substitution of ambulance/chair car in 10% of cases.

between frontline CMs and the CCT; and (2) guidelines for escalation. The authors created collaborative touch points with the institutions' patient financial services, rehabilitation services, and office of general counsel to ensure standardized, proactive engagement related to insurance, mobility, and legal barriers. The initial target for this team was a 2.5% CMI-adjusted LOS reduction across the hospital. Over a 6-month period, after full staffing of the CCT, the authors achieved a 2.5% reduction in CMI-adjusted LOS.

Post-Acute Strategy

The authors' health system's accountable care organization (ACO) has a long-established post-acute collaborative network with high-quality post-acute partners (Lage et al., 2015). To strengthen connections, the authors began regular touch points between the CCT and post-acute networks and established a schedule of in-person, on-site visits. The CCT has supported further transitions along the continuum (e.g., transitions from long-term acute care hospitals to SNFs or long-term care) and continues to support families completing insurance applications, crucial to enhancing trust with post-acute providers. The authors similarly sought to strengthen connections to home care providers and durable medical equipment (DME) suppliers. Finally, ICOR data have enabled the organization to identify post-acute bed needs, partner with local facilities to expand access, and monitor post-acute LOS to ensure care transitions are appropriate and efficient.

Transportation

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(EMT) shortages (Moore, 2022; Rosenberg, 2022). The authors' health system has leveraged alternative strategies: taxicab, ride shares, and a "care van," the latter enabling support for patients requiring minimal assistance door-to-door and/or needing long-distance travel. Over a 3-month pilot period, 89 patients utilized the care van, enabling substitution of ambulance/chair car in 10% of cases. The care van also has been leveraged to facilitate long-distance travel (>50 miles), and in 21% of cases, utilization has led to earlier discharge time and/or shorter LOS.

Hospice

Guideline-based care, clinical outcomes, and patient preference support the use of hospice at the end of life (Campion et al., 2011). The authors' institution faced challenges transitioning patients to hospice in a timely manner after presentation to the emergency department (ED) including (1) appropriate identification; (2) lack of goals of care clarity; (3) hospice availability; and (4) engagement and education of ED and inpatient providers about hospice. The authors implemented an ED care transitions program seeking to improve access and timeliness of goal-concordant hospice care for end-of-life patients. This program consists of the screening of potential candidates via email alerts to ED care facilitators, engagement and education of ED and inpatient clinicians, and expansion of inpatient hospice availability through addition of a new hospice partner and establishment of hospice performance metrics. Since program launch in February 2021, a total of 126 patients have entered the pathway and an analysis on impact to CMI-adjusted LOS is currently ongoing. Importantly, when other

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post-acute availability is constrained, patients receive appropriate care and support at end of life.

“Why Not Home” and Physical Therapy Integration

“Why Not Home” initiatives have been previously described with primary outcomes related to SNF utilization and cost of care; an ACO-based interprofessional team member education effort resulted in a decrease rate from 73 to 70 SNF discharges per 1,000 patients (Chovanec et al., 2022). A community hospital in our health system (Newton Wellesley Hospital) launched a “Why Not Home” campaign leveraging multidisciplinary education about home discharge and the Activity Measure for Post-Acute Care (AMPAC) score by PT to recommend home discharge. The AMPAC is an assessment of basic mobility and has been shown to predict the likelihood of discharge to home (Harry et al., 2021; Jette et al., 2014, 2015). The authors created a similar campaign based on lessons learned from other programs, guided by PT and rehabilitation leadership. The main objectives of the Brigham “Why Not Home” campaign are to promote a broad interdisciplinary understanding of home discharge benefits and utilization of the AMPAC score by PT to inform disposition recommendations; for AMPAC score of 13 or more, PT recommends discharge home unless nonmobility barriers exist. This initiative has just started at the authors’ organization, with a goal of increasing discharge home by 5% among patients with an AMPAC score of 13 or more (one to two patients per day impacted).

Repatriation

To serve the needs of the most complex patients, the authors’ quaternary hospital accepts transfers from hospitals within and outside of the system, and often patients are medically ready for discharge but experience delays in post-acute placement, particularly if they are from out of state. Massachusetts General Hospital (MGH) developed a repatriation program, in which transferred patients are actively reviewed to identify opportunities to repatriate patients who no longer require quaternary care. Over a 1-year period, the MGH program repatriated 215 patients, creating capacity for 430 admissions. As a result of this success, our institution has mirrored this program and over a 10-month pilot, repatriated 40 patients, mitigating 1,000 potential delay days (25 days per patient on average).

CONCLUSIONS AND NEXT STEPS

Interprofessional collaboration and EHR integration can support patient progression across the care continuum. However, the complexity of patient care and fragmentation of our health care have made achieving

Interprofessional collaboration and EHR integration can support patient progression across the care continuum.

that goal difficult, and new challenges because of the COVID-19 pandemic have further strained health care systems.

Although some of the described initiatives are in nascent phases, the authors believe that the implementation of a novel care progression framework has been essential to the organization’s efforts to support patient progression. Next steps include scaling of interventions across multiple sites and examining the impact on clinical outcomes including LOS. Further multifaceted interventions are needed to mitigate evolving capacity challenges in the acute and post-acute settings.

IMPLICATIONS FOR CASE MANAGEMENT PRACTICE

Innovative approaches to case management are needed to adapt to evolving challenges in patient progression that impact hospital throughput. Based on the authors’ implementation of the Brigham framework for progression, efforts in this area can have positive impact on patients, frontline CMs, and hospital systems. Opportunities of note include methods that support CM prioritization of patients and improved workflows, establishing CM leadership of interdisciplinary rounds, utilization of patient progression data, strengthening post-acute collaboration, and structured resources that support vulnerable, complex patient populations.

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Laura E. Smith, MD, is Senior Medical Director of Clinical Operations, Department of Care Continuum Management, Office of the Chief Operating Officer, Brigham and Women's Hospital (BWH), Boston, MA.

Trancy Escobar, CMAC, MBA, is Executive Director, Complex Care and Post Acute Strategy, Department of Care Continuum Management, BWH, Boston, MA.

Andrea McCabe, MHA, BSN, RN, is Nurse Director, Department of Care Continuum Management, BWH, Boston, MA.

James Grafton, MSN, MHA, RN, CCM, is Director of Care Continuum Management, Department of Care Continuum Management, Brigham and Women's Faulkner Hospital, Boston, MA.

Margaret Higgins, MSN, RN, is Associate Chief Nursing Officer, Department of Care Continuum Management, BWH, Boston, MA.

Melissa Littlefield, MBA, is Senior Administrative Director of Care Continuum Management, Department of Care Continuum Management, BWH, Boston, MA.

Soumi Ray, PhD, MS, is Senior Data Analyst, Department of Analytics, Planning, Strategy and Improvement, BWH, Boston, MA.

Peggy Leung, MS, is Director, Analytics and Reporting, Department of Analytics, Planning, Strategy and Improvement, BWH, Boston, MA.

Alexander Fiksdal, PhD, MA, is Lead Clinical Data Scientist, Department of Analytics, Planning, Strategy and Improvement, BWH, Boston, MA.

Roaa M. Khinkar, PharmD, CPPS, CPHQ, is Assistant Professor, Department of Pharmacy Practice, Quality Improvement and Patient Safety Specialist, King Abdulaziz University, Jeddah, Saudi Arabia.

Reg B. Wilcox III, DPT, MS, PT, is Executive Director of Rehabilitation Services, Department of Rehabilitation Services, BWH, MA.

Carolyn Yuse, DPT, is Clinical Supervisor of Rehabilitation Services, Department of Rehabilitation Services, BWH, MA.

Katie Fillipon, DNP, RN, NEA-BC, is Deputy Chief Nursing Officer; Associate Chief Nursing Officer for Oncology and Medicine, Office of the Chief Nursing Officer, BWH, Boston, MA.

Thomas Walsh, MBA, is Vice President, Inpatient Operations and Analytics, Planning, Strategy and Improvement, Department of Analytics, Planning, Strategy and Improvement, BWH, Boston, MA.

Charles A. Morris, MD, MPH, is Chief Medical Officer and Vice President of Medical Affairs, Office of the Chief Medical Officer, BWH, Boston, MA.

Shelly Anderson, MPM, is Executive Vice President and Chief Operating Officer, Department of Care Continuum Management, Office of the Chief Operating Officer, BWH, Boston, MA.

Madelyn Pearson, DNP, RN, NEA-BC, is Senior Vice President of Patient Care Services and Chief Nursing Officer, Department of Care Continuum Management, Office of the Chief Operating Officer, BWH, Boston, MA.

Mallika L. Mendu, MD, MBA, is Vice President of Clinical Operations and Care Continuum Management, Department of Care Continuum Management, Office of the Chief Operating Officer, BWH, Boston, MA.

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