Multidisciplinary Bedside Huddles Reduce Readmissions in High-Risk Patients

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ABSTRACT

Introduction: Readmission rates have a significant impact on hospital systems, from financial performance to patient satisfaction. Determining efficient, effective interventions to reduce readmission rates is imperative to improving hospital and patient outcomes.

Objectives: To develop and evaluate a multidisciplinary discharge process for high-risk patients that is cost-effective, achieves high uptake in a large academic health center, and decreases readmissions.

Methods: A multiphase intervention was implemented at a large academic hospital. The Phase 1 pilot, performed on a single inpatient unit, implemented a multidisciplinary bedside huddle 24 to 48 hours prior to discharge for patients at high risk for readmission based on a previously validated risk score.

Results: Phase 1 showed a reduction in readmission rates for high-risk patients from 36% (preintervention) to 20% (post-intervention). In Phase 2, the huddle was expanded to 2 units: 1 "opt-in" and 1 "opt-out." Huddle uptake was higher on the opt-out unit (89% vs 4%) and associated with lower readmission rates for patients receiving huddles (20.9% vs 40%) and for those on the opt-out unit (28.3% vs 38.7%). In Phase 3, the huddle was expanded to all units and showed a sustained lower readmission rate for those receiving a predischarge huddle than those who did not (26.13% vs 33.78%).

Conclusions: For patients at high risk of readmission, a predischarge multidisciplinary bedside huddle utilizing an opt-out implementation model reduces readmissions.

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INTRODUCTION

Readmission rates and efforts to decrease them have been persistent challenges for medical institutions for decades. With the initiation of Hospital Readmissions Reduction Program (HRRP) penalties for excess 30-day readmissions in 2010, hospital systems have focused increasingly on decreasing these rates. In a retrospective financial analysis at our institution for 2017, preventing a readmission was found to save an average of $9396 per patient. Baldwin et al[1] found that over $9 million was spent on 153 patients with 4 or more nonelective or nonplanned admissions over a 6-month period. In that study, readmission rates significantly decreased within this high-utilization group following implementation of a post-discharge, multidisciplinary care team program focused on improving patient communication, medication reconciliation, and outpatient follow-up. This discharge clinic translated to a savings of more than $330,000 per patient.

Not only is there a negative financial impact on health systems for readmissions deemed avoidable, unplanned readmissions also signal poor quality of care and have been associated with lower patient satisfaction scores, longer length of stay, higher mortality, and increased resource use.[2-4] Studies have found that readmission causes are highly variable and include lack of scheduled follow-up, lack of awareness of post-discharge contact points, and a higher number of comorbidities.[5,6] It can be postulated that an interdisciplinary care conference focusing on these items prior to discharge may help these risks.

Just as the causes of readmissions are highly variable, so are the strategies to decrease readmissions. Examples include predischarge patient education, pharmacy-led medication reconciliation and education, transitional programs bridging the pre- and post-discharge gap, and post-discharge tools such as follow-up phone calls and in-person transitional care clinics. In a review by Braet et al,[7] the most successful intervention models incorporated both pre-discharge and post-discharge elements and patient activation. Coffey et al[8] also found that programs beginning before discharge were most successful. In a 2-phase multidisciplinary care coordination intervention incorporating daily inpatient evaluation with subsequent outpatient care coordination until the first follow-up, Labrada et al[9] found a 50% decrease in 30-day readmissions (from 23% to 11%). Often these successful interventions are intensive; Goodwin et al[10] found that while programs showed short-term success, many demonstrated regression to the mean over time.

Evidence suggests that the most effective methods of decreasing readmissions in high-risk populations include a multidisciplinary group to bridge the discharge gap. Multidisciplinary huddles have been used in the inpatient setting to improve quality outcomes – including length of stay, patient safety, and team communication[11-19] – but not specifically to reduce readmissions.

This report describes the phased development of a predischarge huddle process at an academic institution and its impact on 30-day readmission rates among high-risk patients.

METHODS

Setting

The facility is a 550-bed academic medical center with 3 dedicated general internal medicine units. Overall readmission rates for internal medicine teams ranged from 15% to 23% from September 2015 through December 2019.

Readmission Risk Tool

The Hospital Admission Readmission Risk Discriminator (HARRD) score was developed internally to identify patients at high risk of readmission. The score incorporates multiple measures easily extracted from the electronic health record and based on determinants of readmission risk (Table). Scores ranged from 0 to 5; higher scores indicated higher risk. The area under the receiver operating characteristic curve (ROC) of the HARRD score was 0.86. For patients with a score of 4 or 5, readmission risk was 36%. It was this high-risk population that was targeted for intervention.

Phase 1: Single Unit Pilot

In Phase 1, a small pilot study was conducted on 1 inpatient unit as a proof of concept. A bedside huddle was convened 24 to 48 hours prior to discharge for patients with a HARRD score of 4 or 5. The multidisciplinary bedside huddle team consisted of the patient's primary inpatient clinician (attending physician, advanced practice provider, or internal medicine resident), bedside nurse, charge nurse, pharmacist, case manager or social worker, and physical or occupational therapist. Charge nurses led the huddle.

Table. Components of the Hospital Admission Readmission Risk Discriminator Score

Component	Weight
Emergency department visits ≥ 3 in past 6 months or ≥ 1 inpatient readmission(s) within the last 90 days	2 points
≥ 2 chronic diseases: diabetes, congestive heart failure, COPD, liver disease, dementia, connective tissue disease, HIV, stroke, peripheral vascular disease, cancer, psychiatric diagnosis (bipolar, schizophrenia, depression)	1 point
Age > 65	1 point
>10 medications	1 point

Abbreviations: COPD, chronic obstructive pulmonary disease.

A standardized questionnaire assessing patient and family concerns about the discharge process was completed. Concerns were addressed on a priority basis, followed by education on expected disease course, symptoms and management, medication management, hospital follow-up, and the role of family and caregivers. Following the huddle, the charge nurse documented completion and attendance in the electronic medical record (Figure 1). Patients discharged to a facility were excluded. This pilot occurred from July through September 2017.

Phase 2: Two Units

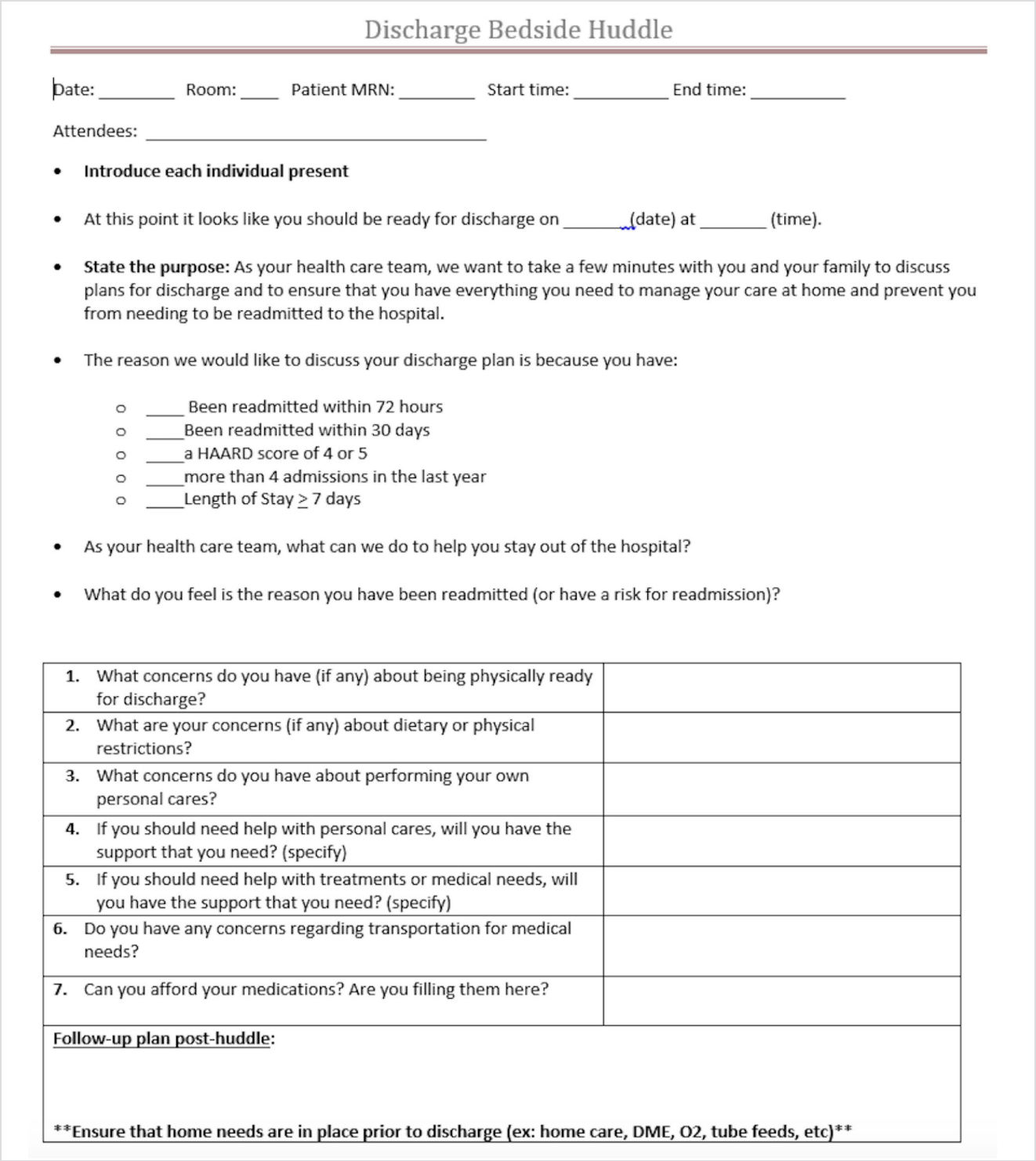
The time needed for the charge nurse to coordinate all multidisciplinary team members for huddle attendance was a challenge in Phase 1. To target patients most likely to benefit from the huddle, the team implemented an opt-in model when expanding to a second unit during Phase 2 (September 2017 to January 2018).

Phase 3: Expansion to All Medicine Units

In Phase 3, huddles were extended to all medicine units using an opt-out approach due to low engagement in the opt-in pilot. To capture the maximum number of patients at high risk of readmission, the following criteria for huddles were added: patients readmitted within 30 days, patients with 4 or more readmissions within 30 days, unanticipated length of stay greater than 7 days, and patients refusing recommended discharge disposition. These criteria were chosen based on institutional data demonstrating high readmission risk. Conversely, certain specialty populations who already had excellent post-discharge follow-up, such as those followed by the sickle cell team, were excluded (see Supplemental Figure).

The care team could also include patients who did not meet inclusion criteria if a team member was concerned about readmission risk. We modified the standardized questionnaire based on team input, adding new questions specifically exploring the patient's discharge needs and eliminating questions related to the

Figure 1. Modified Checklist Used for Bedside Huddles for Phase 3



Discharge Bedside Huddle

Date: _____ Room: ____ Patient MRN: _____ Start time: _____ End time: _____

Attendees: _____

- **Introduce each individual present**
- At this point it looks like you should be ready for discharge on _____(date) at _____ (time).
- **State the purpose:** As your health care team, we want to take a few minutes with you and your family to discuss plans for discharge and to ensure that you have everything you need to manage your care at home and prevent you from needing to be readmitted to the hospital.
- The reason we would like to discuss your discharge plan is because you have:
  - ____ Been readmitted within 72 hours
  - ____Been readmitted within 30 days
  - ____a HAARD score of 4 or 5
  - ____more than 4 admissions in the last year
  - ____Length of Stay ≥ 7 days
- As your health care team, what can we do to help you stay out of the hospital?
- What do you feel is the reason you have been readmitted (or have a risk for readmission)?

1. What concerns do you have (if any) about being physically ready for discharge?	
2. What are your concerns (if any) about dietary or physical restrictions?	
3. What concerns do you have about performing your own personal cares?	
4. If you should need help with personal cares, will you have the support that you need? (specify)	
5. If you should need help with treatments or medical needs, will you have the support that you need? (specify)	
6. Do you have any concerns regarding transportation for medical needs?	
7. Can you afford your medications? Are you filling them here?	
Follow-up plan post-huddle:	
****Ensure that home needs are in place prior to discharge (ex: home care, DME, O2, tube feeds, etc)****	

expected medical course (Figure 1). Patients discharged to a facility who otherwise met huddle criteria were no longer excluded to reduce the likelihood of readmission. So that any team member could lead a huddle, we developed scripting as part of the education process. Finally, the charge nurse and clinician were given flexibility to hold a modified huddle with fewer team members for patients with limited discharge needs (eg, excusing social workers or case managers for patients being discharged home without support services). The overall process is shown in the Supplemental Figure.

Data Analysis

Readmission was defined as an unplanned admission within 30 days of discharge. Patients discharged to hospice were excluded. Comparison populations differed by phase: Phase 1 used histori-

cal controls; Phases 2 and 3 prospectively compared patients who received a huddle with those on the same units who did not.

Ethical Approval

The host institution's institutional review board considered the study exempt, as it was a quality improvement project rather than research.

RESULTS

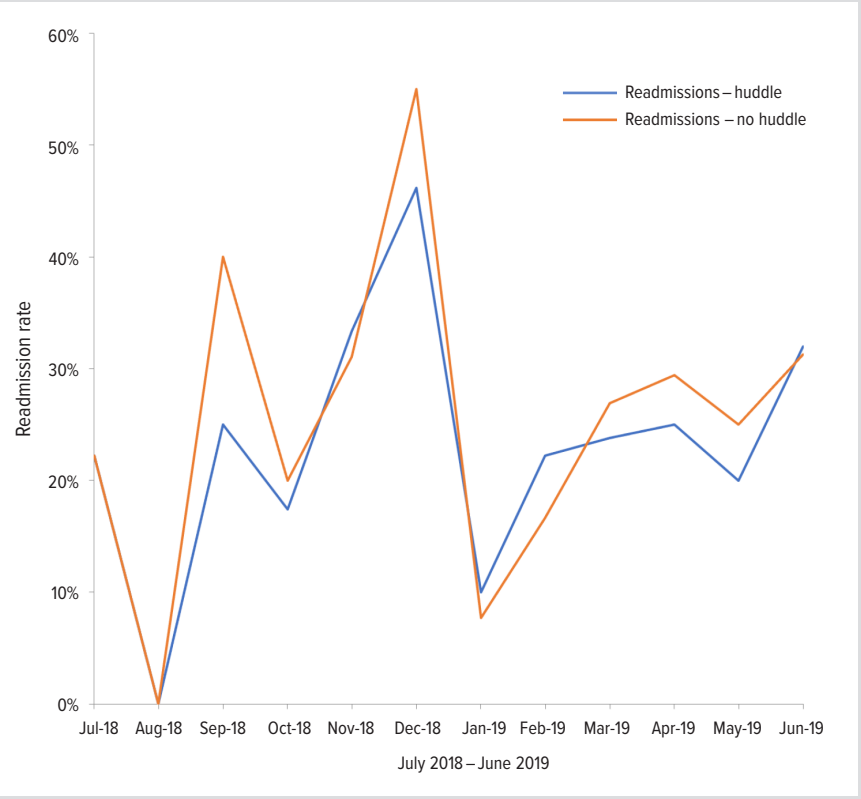
Phase 1

Thirty-four huddles were conducted over 2 months. The 30-day readmission rate for patients receiving a huddle was 20%, compared with the historical 36% readmission rate for patients with a HAARD score of 4 or 5 at our institution.

Phase 2

In Phase 2, readmission rates were compared between patients who were eligible for and received a huddle and those who were eligible but did not receive one. A total of 43 huddles were performed across both units over 5 months. The overall readmission rate was lower among high-risk patients who received a bedside huddle versus those who did not (20.9% vs 41%). Significantly fewer huddles were held on the opt-in unit (4% vs 89% of eligible patients). The 30-day readmission rate for high-risk patients on the opt-in unit was 38.7%, compared with 28.3% on the opt-out unit.

Figure 2. Comparison of Readmission Rates Over Time for Huddled vs Not Huddled Patients



Phase 3

In Phase 3, 79.5% of eligible patients (287/361) received a huddle. The 30-day readmission rate in high-risk patients who received a huddle was ` among those who did not (Figure 2).

DISCUSSION

This phased, purposeful deployment demonstrates that multidisciplinary bedside huddles prior to discharge can achieve high uptake and measurable reductions in readmissions for high-risk patients.

Given the complexities of an academic health center – including multiple co-occurring readmission reduction tactics and competing priorities – the 79% uptake is impressive. This likely resulted from the intervention's slow, purposeful, and human-centered deployment. Multiple stakeholders were involved in the project's initial design, and weekly input from all members of the multidisciplinary team was sought during the implementation of each phase. Key changes included allowing more flexibility regarding team attendance and questionnaire content. Incorporating staff and provider input on patient selection was important to improve uptake. Furthermore, automating this process with clear inclusion and exclusion criteria was important. Support and buy-in from hospital leadership was essential, as was support from hospital leadership. The chief quality officer and chief nursing officer sponsored the project and leveraged necessary institutional resources, while the medical director of nursing and hospitalist directors co-led the project and helped maintain frontline staff engagement.

Phase 2 highlighted the impact of opt-in versus opt-out strategies on uptake and readmissions. An opt-in strategy led to significantly lower huddle uptake and a subsequent increase in readmission rates. Our findings align with previous studies showing higher uptake with opt-out versus opt-in approaches in outpatient settings. While both approaches honor participant autonomy, decision-makers often prefer the default plan of care over interventions offered as a choice. This status quo bias[20] has been observed in a variety of settings ranging from organ donation[21] to retirement savings.[22] In addition to improving patient engagement, the opt-out approach is preferred by clinicians in the outpatient setting as it reduces task load and saves time.[23] Our study shows that an opt-out strategy is a more robust method for deploying interventions in a complex inpatient environment as well.

Our intervention has opportunities for improvement as we grow this process. Expansion to nonmedicine units will be important, as other specialties face different barriers and needs. For instance, addressing postoperative wound care, diet, and activity instructions will be important for surgical units. Streamlining this process with other health system interventions is also necessary; for example, understanding how huddle findings can be communicated to outpatient clinics and care coordination teams will be essential. Furthermore, while our huddle process showed success, existing literature suggests that measurable and sustained reductions in readmissions often require a comprehensive "bundle' of multiple interventions rather than a single process change.[25,26] Additionally, understanding why patients opt out of the intervention may reveal how we can better engage and support them.

Limitations

This study has limitations, including its retrospective, observational nature, which introduces selection bias. Furthermore, multiple concurrent readmission reduction tactics—including increased outpatient follow-up scheduling, care coordination telephonic outreach post-discharge for select populations under risk-based contracts, and care coordination rounds on all units—may confound our analysis. Exposure to multiple concurrent interventions is a known challenge in interpreting the results of process improvement studies.[24]

We deployed several strategies to address this challenge. Our comparison of opt-in and opt-out groups in Phase 2 involved 2 medicine units equally exposed to these confounders. While we could not statistically adjust for all confounders, our intervention targeted a unique patient population, ie, high-risk patients, whereas other prevailing readmission reduction tactics were deployed more broadly. The consistent reduction in readmission rates across all 3 phases supports the validity of our conclusions.

CONCLUSIONS

Our intervention demonstrates that a systematic, iterative, and data-driven quality improvement initiative can improve the process and uptake of multidisciplinary bedside huddle communication at discharge. Our stepwise approach led to a system-wide intervention that reduced high-risk readmissions. While our findings underscore the value of predischarge communication, achieving sustained improvements in readmission rates likely requires integrating these huddles into a broader bundle of transitional care interventions. Future studies should evaluate the best methods to synchronize bedside huddles with other system-wide tactics. It will be important to study the impact of our intervention on surgical units before hospital-wide implementation. Finally, a qualitative approach could yield deeper insights into why high-risk patients elect to opt out of predischarge huddles.

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Supplemental Figure: Available at www.wmjonline.org in the Appendix.

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