Decision support tool use in colorectal surgery: what is the role?

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ABSTRACT

Background: Decision support tools prioritizing transitional care can help decrease medical readmissions but little evidence exists within surgical specialties.

Materials and methods: This study evaluated the use of early screen for discharge planning and discharge decision support system screening tools or selective multidisciplinary clinical evaluation for targeting post-acute care interventions among higher risk colorectal surgery patients based on 30-d readmission status. Patients with positive screening tool scores underwent standard discharge planning education and evaluation during index operation hospitalization and were referred for targeted post-acute interventions; patients with negative screening tool scores were further clinically evaluated for selective referral for post-acute interventions.

Results: We identified 300 colorectal surgery patients; 30.3% ($n = 91$) of patients had a positive screening score (early screen for discharge planning and/or discharge decision support system). Positive screening scores did not correlate with hospital readmission (35% of readmitted patients versus 29% of non-readmitted had a positive screen; $P = 0.424$). After negative screening scores, selective referral based on clinical assessment for post-discharge interventions helped to concentrate resources in patients who were later readmitted. Index hospitalization complications were significantly associated with positive screening tool scores whereas postdischarge complications were most predictive of readmission.

Conclusions: Among colorectal surgery patients, selective clinical referrals appeared to be the best method for targeting post-acute interventions in patients at higher risk for

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readmission. Future research should focus on improving existing processes of care to reduce postoperative complications and constructing better tools to assess individual patients' needs for targeted interventions in the post-acute setting.

1. Introduction

Reducing preventable hospital readmissions is an important goal for improving the quality of patient care and limiting costs. Unplanned hospital readmissions can be the result of inadequate follow-up or poor communication between physicians about patient care after an index hospitalization [1]. Interventions to prevent these readmissions include accurate identification of high-risk patients during index hospitalization, post-acute care services such as home health care, and improved outpatient care coordination. Multiple studies have demonstrated effective strategies for reducing 30-d readmissions including comprehensive discharge planning, postdischarge physician follow-up, and post-acute interventions [2–7].

One important strategy during index hospital stay is the use of decision support tools including the early screen for discharge planning (ESDP) and the discharge decision support system (D2S2) screening questionnaires. The ESDP and D2S2 questionnaires were developed to determine which patients need complex discharge planning and post-acute care services after index hospitalization, respectively; these screening tools have been successfully implemented in medical patients during index hospitalization with emerging evidence that outcomes such as length of stay [8,9] and 30-d readmission [10] improve when such tools are introduced into discharge planning practices. Given the ability of these tools to establish potentially high-risk patients who need post-acute care services and decrease 30-d readmissions, they warrant further investigation in other populations like surgery patients.

Surgical patients have different characteristics and complications (e.g., surgical site infection [SSI]) compared with medical patients that contribute to their post-acute care needs and risk of readmission after an index operation. Accurate identification of surgical patients at high risk for readmission during index hospitalization is of paramount importance to better understand how to prioritize post-acute services. Given the need for transitional care services after an index hospitalization and the risk of readmission, we hypothesized that the use of ESDP and D2S2 screening tools during index hospitalization may help target post-acute care services after hospital discharge among higher risk colorectal surgery patients based on their 30-d readmission status. We also aimed to evaluate how the timing of postoperative complications affected 30-d readmission.

2. Materials and methods

2.1. Decision support tools

The ESDP tool is a 4-part screening questionnaire that assesses age, walking limitation, disability, and living alone; based on a cutoff score, the tool identifies patients who need comprehensive discharge planning to evaluate present and ongoing post-acute care needs [11]. The D2S2 tool is an evidence-based 7-part screening questionnaire that assesses cognition, age or caregiver availability, walking limitation, self-rated health, length of stay, number of comorbidities, and depression or income; based on a cutoff score, the tool alerts discharge planners to patients who need post-acute care services [12]. ESDP and/or D2S2 questionnaires were administered and completed by one front-line nurse provider by interviewing colorectal surgery patients during index operation hospitalization at a large academic medical center. All screening questionnaires were completed during the postoperative period.

2.2. Patient population and study variables

All adults patients who underwent colon or rectal resections (current procedural terminology codes: colon—44: 140–1, 143–5, 150–1, 155, 158, 160, 204–8, and 210–12; rectal—45: 110–13, 119, 126, 130, 395, 397, 402, and 550) between June 2011 and November 2012 and received screening questionnaires (ESDP and/or D2S2) postoperatively were identified. An effort was made to apply screening tools to all eligible patients consecutively. ESDP and D2S2 questionnaire scores above their respective designated cutoff values were considered positive screening scores. All patients with positive screening scores during index hospitalization were referred for targeted post-acute services after hospital discharge. Patients with negative screening questionnaire scores below designated cutoff values were further evaluated by a separate multidisciplinary team to determine whether these patients should be referred for post-acute services based on clinical judgment. The multidisciplinary clinical team (surgeons, nurses, case managers, and so forth) met daily to weekly to assess patients' needs for post-acute care services; this assessment was based on clinician knowledge and experience with no predefined algorithm or criteria for referral. Patients with negative screening scores and a negative clinical evaluation were not referred for targeted post-acute services and received standard discharge planning evaluation and education per unit or surgical ward protocol. Targeted post-acute services included the following: (1) phone call from a registered nurse, (2) home visit from a registered nurse, (3) home health care, and (4) discharge to an outside facility (i.e., acute rehabilitation) (Figure).

Patients who died within 30 d of index operation were excluded. Patient demographics, ESDP and D2S2 screening scores, multidisciplinary clinical evaluation results (after negative screening scores), patients who received targeted post-acute services, and 30-d readmissions were prospectively collected. Additional patient characteristics and postoperative complications were supplemented from the targeted colectomy and proctectomy procedure module of the American College of Surgeons National Surgical Quality Improvement Program. All National Surgical Quality