Decreasing Hospital Readmission in Ileostomy Patients: Results of Novel Pilot Program

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BACKGROUND: Nearly 30% of patients with newly formed ileostomies require hospital readmission from severe dehydration or associated complications. This contributes to significant morbidity and rising healthcare costs associated with this procedure. Our aim was to design and pilot a novel program to decrease readmissions in this patient population.

STUDY DESIGN: An agreement was established with Visiting Nurse Health System (VNHS) in March 2015 that incorporated regular home visits with clinical triggers to institute surgeon-supervised corrective measures aimed at preventing patient decompensation associated with hospital readmissions. Thirty-day readmission data for patients managed with and without VNHS support for 10.5 months before and after implementation of this new program were collected.

RESULTS: Of 833 patients with small bowel procedures, 162 were ileostomies with 47 in the VNHS and 115 in the non-VNHS group. Before program implementation, VNHS (n = 24) and non-VNHS patients (n = 54) had similar readmission rates (20.8% vs 16.7%). After implementation, VNHS patients (n = 23) had a 58% reduction in hospital readmission (8.7%) and non-VNHS patient hospital readmissions (n = 61) increased slightly (24.5%). Total cost of readmissions per patient in the cohort decreased by >80% in the pilot VNHS group.

CONCLUSIONS: Implementation of a novel program reduced the 30-day readmission rate by 58% and cost of readmissions per patient by >80% in a high risk for readmission patient population with newly created ileostomies. Future efforts will expand this program to a greater number of patients, both institutionally and systemically, to reduce the readmission-rate and healthcare costs for this high-risk patient population. (J Am Coll Surg 2017;224:425−430. © 2017 by the American College of Surgeons. Published by Elsevier Inc. All rights reserved.)

Hospital readmissions place undue cost burdens on the healthcare system, put patients at additional risk for morbidity such as nosocomial infections, and are highly disruptive to patients and families.[1,2] Studies have shown that 1 in 5 Medicare patients is readmitted within 30 days of discharge at a cost of at least $26 billion annually.[3,4] In attempts to mitigate this burden, the Affordable Care Act established the Hospital Readmissions Reduction Program, which requires the Centers for Medicare and Medicaid Services to reduce payments to hospitals with excess readmissions. The National Quality Forum has also been interested in decreasing readmissions as a quality measure. Several studies have demonstrated that variation in care and increased expenditures do not increase quality of care and can actually be detrimental.[5] Miller and colleagues[6] found that for colectomies, 35.5% of the cost variation was due to readmission. The implications of readmission are far reaching, not only from a patient care quality perspective, but also from a cost one.

In colorectal surgery, fecal diversion can mitigate the consequences of an anastomotic leak, but can have other untoward consequences. Ileostomy creation is known to cause problems with electrolyte imbalances and dehydration.[7,8] One of the earliest reports of ileostomies causing electrolyte disturbances and dehydration was reported in 1994 as a case

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report.[9] There is evidence that ileostomies can contribute to significant morbidity; readmission rates after colorectal surgery and fecal diversion can be as high as 16.9%.[7] In one study, 64.2% of patients has 1 or more minor or major ileostomy-related complications develop.[10] High output (>2 L/d) delayed discharge for more than 3 days or required central-line catheter access for outpatient hydration in 10.6% of patients, and an additional 13% required outpatient fluid therapy for dehydration.[10] A recent study found readmission rates for ileostomies to range from 21.4% to 35.4%, with 15.5% specifically from dehydration.[11]

Studies have shown that in patients with normal preoperative glomerular filtration rates approximately 20% show significant decreases in glomerular filtration rates after ileostomy creation, and one-third of those required hospitalization for IV fluid hydration or earlier than planned stoma closure.[12] A recent study found colectomy patients to have an 11% readmission rate[13]; colectomy patients with an ileostomy are the group with second highest readmission rate at our institution.[14] Because this cohort of patients is at increased risk for readmission, we aimed to first implement a quality-improvement pilot program with standardized discharge orders in partnership with a home health agency. We then aimed to retrospectively study whether this intervention reduced the Vizient (formerly University HealthSystem Consortium) 30-day hospital readmission rate.

METHODS

Pilot program

This pilot program was supported by the Value Acceleration Program initiative, and an interdisciplinary team of registered nurses, physicians, social workers, quality-improvement specialists, statisticians, and hospital administrators oversaw the implementation and compliance. The Value Acceleration Program at our institution oversees service line redesign throughout the organization, and teams rely on measurement of multiple metrics that inform the process improvement cycle.

The intervention was a dedicated test of change for one institution; the preferred home health provider was Visiting Nurse Health System (VNHS). Institutional Review Board submission was performed and waived. Patients undergoing an ileostomy for any reason were eligible for the study from March 15, 2015 to January 31, 2016. Eligibility was further determined by insurance status and coverage by VNHS.

Intervention

Social workers and onsite liaisons from the agency assessed patients on arrival to medical/surgical nursing units on day 0 or day 1 after the procedure. Wound and stoma care instructions for infection prevention, diet, and monitoring of inputs and outputs were provided by the clinical team and nurses on the nursing units. Eligibility for home health services was reconfirmed with patients' payors immediately before discharge.

Intervention participants were provided with standing orders for at least a 4-week step-down monitoring and education protocol after discharge from the hospital. The education provided in the hospital included increased ownership of the patient and family for taking care of the ileostomy. This included keeping daily records of ins and outs that would continue post discharge from the hospital. Instructions and education on pouching the stoma were provided by our wound, ostomy, and continence nurses. All ileostomy patients received the same education regardless of pilot enrollment. The pilot intervention proceeded as follows: week 1: 3 to 5 skilled nursing visits in the patient's home; week 2: 3 skilled nursing visits in the patient's home and 2 phone call check-ins by the agency nursing staff; week 3: 2 skilled nursing visits in the patient's home and 2 phone call check-ins by the agency nursing staff; and week 4: 1 skilled nursing visits in the patient's home. The home health nursing staff was instructed to look for signs of clinical dehydration and pouching issues, as well as reinforce wound care and dietary instructions. The surgical team was to be contacted immediately if patients presented with any symptoms of infection, dehydration, malnutrition, or required additional wound care. The VNHS team called one phone number in the surgery clinic for any concerns during business hours, and the on-call surgeon for after-hours concerns. Triggers for escalation included heart rate >100 beats/min, ileostomy output >1.2 L in 24 hours, fever, low oral intake, and nausea (Fig. 1). Patients receiving the intervention had to graduate to each step without the symptoms mentioned before being considered eligible for discharge from the care of the agency. Three key personnel from VNHS were instructed on the protocol, and they were then responsible for the teaching and education of the protocol to the field nurses.

Weekly administrative teleconferences with representatives from the Value Acceleration Program team, surgical team, home health nursing agency, quality improvement, social work, and administration were held to review the progress of patients on the order set as well as make modifications to the order set as necessary. The surgical team received a weekly update directly from the agency on the clinical progress of patients. This served as a weekly touchpoint for an iterative process improvement cycle.