Systematic identification and management of barriers to vascular surgery patient discharge time of day

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ABSTRACT

Objective: Length of stay fails to completely capture the clinical and economic effects of patient progression through the phases of inpatient care, such as admission, room placement, procedures, and discharge. Delayed hospital throughput has been linked to increased time spent in the emergency department and postanesthesia care unit, delayed time to treatment, increased in-hospital mortality, decreased patient satisfaction, and lost hospital revenue. We identified barriers to vascular surgery inpatient care progression and instituted defined measures to positively impact standardized metrics.

Methods: The study was divided into three periods: preintervention, “wash-in,” and postintervention. During the preintervention phase, barriers to patient flow were quantified by an interdisciplinary team. Suboptimal provider communication emerged as the key barrier. An enhanced communication intervention consisting of face-to-face and mobile application-based education on key patient flow metrics, explicit discussion of individual patient barriers to progression at rounds and interdisciplinary huddles, and communication of projected discharge and potential barriers via e-mail was developed with input from all stakeholders. Following a 4-week wash-in implementation phase, data collection was repeated.

Results: The pre- and postintervention patient cohorts accounted for 244.3 and 238.1 inpatient days, respectively. Both groups had similar baseline demographic, clinical characteristics, and procedures performed during hospitalization. The postintervention group was discharged 78 minutes earlier (14:00:32 vs 15:18:37; \( P = .03 \)) with a trend toward increased discharge by noon (94% vs 88%; \( P = .09 \)). Readmission rates did not differ \( (P = .44) \).

Conclusions: Implementation of a focused, interdisciplinary, frontline provider-driven, enhanced communication program can be feasibly incorporated into existing specialty surgical workflow. The program resulted in improved timeliness of discharge and projected cost savings, without increasing readmission rates. (J Vasc Surg 2016;□:1-7.)

A key concept in health systems management is “throughput,” or the number of patients served per unit of time.1 For over 2 decades, length of stay (LOS) has been one of the primary target metrics to optimize throughput.2,3 However, further gains in LOS reduction may be challenging to achieve given (1) intense reduction efforts to date, as well as (2) penalties for avoidable hospital readmissions that may result from premature discharge.4,5 LOS also lacks the granularity to capture nuances of inpatient hospital admission patient flow, which have implications for patient outcomes and staff work burden.5,7 For example, a delay in discharge time from 11:00 AM to 7:00 PM does not cause an appreciable increase in the LOS. However, by decreasing bed availability, delays of this nature increase postanesthesia care unit and emergency department boarding times.8,9 There is now an extensive body of literature demonstrating the negative consequences of suboptimal patient flow. Outcomes that have been tied to impaired patient flow include delays in receipt of essential therapies,10-14 increased adverse events and medical errors,15-17 increased in-hospital mortality,6,18-20 and reduced patient satisfaction.21,22 In addition, compromised patient flow contributes to broader societal concerns regarding access to care and emergency preparedness.5,23 Finally, suboptimal throughput is associated with increased healthcare system costs and lost hospital revenue.24-28 Interest in optimizing patient flow processes is expected to intensify because of the financial impacts of impaired throughput in conjunction with (1) the increasing number of Americans who will obtain access to health insurance through the Affordable Care Act, (2) efforts to link traditional clinical and patient-centered outcomes with payment, and (3) impending constraints on hospital reimbursement and expansion of capacity.5 Hospitals are likely to pass these pressures off to surgical service lines. Elective procedures have been shown to be a major contributor to unpredictable and inefficient patient flow.5 This, in turn, has been

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Table I. Components of enhanced care team communication program

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<th>Intervention</th>
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<td>1. Face-to-face meetings with all care providers to educate them on key patient flow metrics</td>
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<td>2. Development of a mobile application-based reference book outlining patient flow metrics and procedures</td>
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<td>3. Explicit discussion of each individual patient’s barriers to care progression and discharge at twice daily house officer rounds</td>
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<tr>
<td>4. Explicit discussion of each individual patient’s barriers to care progression and discharge at once daily attending surgeon rounds</td>
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<tr>
<td>5. Explicit discussion of each individual patient’s barriers to care progression and discharge at once daily interdisciplinary huddles</td>
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<td>6. Identification of admission and postprocedure barriers to care progression by group emails</td>
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<td>7. Reporting of anticipated discharge dates to unit coordinators to facilitate bed utilization planning daily</td>
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associated with ineffective healthcare resource allocation, manifested by both waste from low overall hospital bed occupancy and insufficient access to essential services.5,29,30

In 2015, our institution launched a frontline provider-driven pilot program as a broader hospital-wide initiative to optimize bed utilization by streamlining patient flow and improving timeliness of discharge. This initiative focused on newer metrics of throughput, such as specific time of discharge and discharge by noon.7,31,32 Here we discuss how the vascular surgery division at our academic medical center used a systematic approach to identify barriers to efficient patient throughput and successfully implemented a patient flow intervention.

METHODS

Study participants. The study included all patients discharged from the vascular surgery service (no hospitalists) at a single academic, tertiary care medical center during pre- and postintervention periods, each spanning 3 weeks. The study protocol was approved by the Partners Human Research Committee Institutional Review Board, who determined that patients’ informed consent to participate was not required.

Identification of barriers to patient flow and timely discharge. During the preintervention phase, daily, 15- to 30-minute interdisciplinary “huddle” meetings consisting of house officers, nurses, allied health professionals, social workers, as well as a care coordinator and utilization review nurse assigned to the regionalized vascular surgery inpatient ward were held to discuss barriers to patient flow and discharge. The vascular nurse manager ran the meeting. Furthermore, because the focus of these weekday huddles was patient progression and not medical issues, the group was able to hold discussion on each patient to 1-2 minutes, minimizing impact on the stakeholders’ workdays. The group identified modifiable barriers and classified them in the following categories: (1) “primary team communication” for gaps in patient progression and discharge plan related to communication among members of the vascular surgery physician and physician extender team, as well as with other care providers, (2) “awaiting consultant recommendations” for clinical recommendations or interventions by medical, surgical, and allied health consulting services, (3) “laboratory/imaging diagnostics pending” for pending studies excluding those falling into the subsequent category, (4) “weekend-related” for barriers specifically related to weekend resource availability (eg, diagnostic testing or interventions not performed on weekends because of lack of availability of specialized personnel), (5) “patient/family social” for those driven by patient or family member concerns with the proposed care plan or inability to provide transport or housing at the planned time of discharge, (6) “payer” for barriers related to insurance authorization and related issues, and (7) “postacute care facility” for barriers, such as lack of availability of beds at postacute care facilities or pending acceptance of patients to such facilities. The care coordinator and utilization review nurse recorded the daily barriers identified for each patient by the multidisciplinary team. The utilization review nurse played an observational role and determined which barriers constituted delays in discharge (same individual pre- and postintervention). In keeping with the key features of patient safety and quality improvement culture endorsed by the Agency for Healthcare Research and Quality and others.33-35 the interdisciplinary meetings were set out as blame-free reporting environments. There were no punitive measures associated with identification of barriers. The focus was to identify processes, not individuals, which might require improvement.

Development of quality improvement interventions to address barriers. Based on the identification of suboptimal communication among members of the primary surgical team (Fig and Results section), a meeting of all involved stakeholders was convened to devise a strategic approach. An enhanced communication package consisting of several interventions was developed (Table I). In each case, communication processes were mapped and the stakeholders accountable for execution of each intervention were clearly identified to ensure loop closure. A senior attending vascular surgeon and a vascular nurse administrator worked in conjunction to
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