Outpatient follow-up versus 30-day readmission among general and vascular surgery patients: A case for redesigning transitional care

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Background. *The association between early outpatient follow-up and 30-day readmission has not been evaluated in any surgical population. Our study characterizes the relationship between outpatient follow-up and early readmissions among surgical patients.*

Methods. *We queried the medical record at a large, tertiary care institution (July 2008–December 2012) to determine rates of 30-day outpatient follow-up and readmission for general or vascular operative procedures.*

Results. *The majority of discharges for general (84% of 7,552) and vascular (75% of 2,362) surgery had a follow-up visit before readmission or within 30 days of discharge. General surgery patients who were not readmitted had high rates of follow-up (88%) and received follow-up at approximately 2 weeks postdischarge (median, 11 days after discharge). In contrast, readmitted general surgery patients received first follow-up at 1 week (median, 8 days); 49% had follow-up. Vascular surgery patients showed a similar trend. More than one half of patients readmitted after follow-up were readmitted within 24 hours of their most recent outpatient visit.*

Conclusion. *Current routine follow-up does not occur early enough to detect adverse events and prevent readmission. Early outpatient care may prevent readmission in some patients, but often serves as a conduit for readmission among patients already experiencing complications. (Surgery 2014;156:949-58.)*

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Outpatient follow-up is a routine part of the postoperative process intended to evaluate and monitor recovery from surgery. Ideally, the follow-up visit should allow detection of any anomalies in the patient's recovery. If follow-up visits are timed appropriately, they may allow early treatment of complications and preclude costly and morbid hospital readmissions. The objective of this study was to determine whether current outpatient follow-up patterns are adequate to allow the timely diagnosis and treatment of postdischarge complications after general or vascular operative procedures, thus preventing the need for hospital readmission.

Unplanned readmission within 30 days of a surgical discharge has been established as a quality of care indicator.[1] Medicare is increasingly instituting financial penalties for higher than expected readmissions rates as part of the Readmissions Reduction Program created by the Affordable Care Act of 2010.[2] Consequently, both hospital administrators and health care providers have

prioritized reducing 30-day hospital readmission rates. Several interventions have been designed to reduce readmissions, including improved discharge planning, patient education, and medication reconciliation.[3] These interventions are broadly classified into predischarge, postdischarge, and bridging/coordinating interventions.[3]

Timely outpatient follow-up has been evaluated and is inconsistently associated with readmission. This has been studied for the most part in patients with medical illnesses. Several investigators have demonstrated a decreased risk of readmission for patients with timely follow-up with their primary care physician.[4,5] For example, early outpatient follow-up led to lower readmission rates for patients with congestive heart failure and atrial fibrillation.[6,7] In contrast, in patients treated for myocardial infarction, aggressive follow-up did not lower rates of readmission.[8]

The importance of early outpatient follow-up in preventing readmission has not been evaluated in a surgical population. One possible reason for this is that outpatient follow-up after surgery is not captured by traditional claims databases, such as Medicare. This is because global billing for most open operative procedures, which is 90 days, is inclusive of the payment for outpatient visits during that interval. Thus, there are no registered or paid claims for these visits. To overcome this limitation, we utilized data from the electronic medical record from a large, tertiary care institution and evaluated follow-up visits and compared these to readmission rates for patients undergoing general or vascular operative procedures. Our study provides a description of the relationship between outpatient follow-up and 30-day readmissions among surgery patients.

METHODS

We used data derived from a review of the electronic medical record at a single tertiary care institution from July 2008 through December 2012 for all general and vascular surgical procedures performed as part of an inpatient hospitalization as previously described.[9] The hospital business planning and analysis office created the dataset by querying the institutional medical record. This study was approved by the University of Wisconsin, Madison, Health Sciences Institutional Review Board.

Study cohort inclusion required an inpatient operative procedure performed by a surgeon on the general or vascular surgery service. Patients excluded from this analysis were pediatric patients (<18 years old at time of procedure), those who died during the initial hospitalization, patients discharged against medical advice, and patients with a scheduled readmission within 30 days of initial discharge. Qualifying admissions >30 days after discharge were treated as separate primary admission; only 1 admission/readmission pair per patient was allowed within a given 30-day period. Outpatient encounters within the single-hospital system were linked to inpatient hospitalizations using the patient identification number. For readmitted patients, outpatient visits were excluded from the analysis if they occurred after readmission. For patients without a subsequent readmission, outpatient visits occurring within 30 days of initial discharge were included. We excluded outpatient visits if they were for a specific test, study, or service involving a limited aspect of care (eg, laboratory tests, radiology studies, rehabilitation services). These visits were excluded to ensure that the outpatient follow-up was a meaningful visit with a surgeon, primary care provider, or another medical specialist.

Sociodemographic characteristics obtained from the medical record included age (years), race (white or non-white), gender, proximity to primary hospital (in-county versus remote residence), and insurance type (fee for service, health maintenance organization, Medicare, Medicaid, and other/self-pay). Additional statistical descriptions of the initial hospitalization included the length of stay (days), severity of illness (3M All Patient Refined Diagnosis Related Groups classification),[10] discharge destination (home, home with home health care, skilled nursing facility, rehabilitation, and other facility), and whether the hospitalization included time spent in an intensive care unit.

Our level of analysis is the hospitalization rather than the patient. Descriptive analyses, including frequencies, medians, and percentages, were performed using STATA 12 software (StataCorp LP, College Station, TX) and R statistical software.[11] Descriptive characteristics are summarized with percentages or median with associated interquartile range where appropriate. Graphics depicting follow-up and readmission timelines were generated using the ggplot2 package in R.[12]

RESULTS

Sociodemographic and clinical characteristics associated with follow-up. There were 7,552 discharges (6,620 unique patients) from the general surgery service during the study period, and