Hospital Readmission by Method of Data Collection

Elizabeth M Hechenbleikner, MD, Martin A Makary, MD, MPH, FACS, Daniel V Samarov, PhD, Jennifer L Bennett, BA, Susan L Gearhart, MD, FACS, Jonathan E Efron, MD, FACS, Elizabeth C Wick, MD, FACS

BACKGROUND: Hospital readmissions are increasingly used to pay hospitals differently. We hypothesized that readmission rates, readmissions related to index admission, and potentially unnecessary readmissions vary by data collection method for surgical patients.

STUDY DESIGN: Using 3 different data collection methods, we compared 30-day unplanned readmission rates and potentially unnecessary readmissions among colorectal surgery patients at a single institution between July 2009 and November 2011. We compared the NSQIP clinical reviewer method, the University HealthSystem Consortium (UHC) administrative billing data method, and physician medical record review.

RESULTS: Seven hundred and thirty-five colorectal surgery patients were identified with readmission rates as follows: NSQIP 14.6% (107 of 735) vs UHC 17.6% (129 of 735). The NSQIP method identified 9 readmissions not found in billing records because the readmission occurred at another hospital (n = 7) or due to a discrepancy in definition (n = 2). The UHC method identified 31 readmissions not identified by NSQIP because of a broader readmission definition (n = 20) or were missed by reviewers (n = 11). The NSQIP method identified 72% of readmissions as related to index admission and physician chart review identified 83%. The UHC method identified 51% of readmissions as related to index admission and physician chart review identified 86%. Sixty-six of 129 UHC readmissions (51%) were deemed potentially preventable; based on physician chart review, 112 of 129 readmissions (87%) were deemed clinically necessary at the time of presentation. Most readmissions were due to surgical site infections (46 of 129 [36%]) and dehydration (30 of 129 [23%]). With improved patient-care efforts, 41 of 129 (31.8%) complications might not have required readmission.

CONCLUSIONS: Readmission rates and unnecessary readmissions vary depending on data collection methodology. Reimbursements based on readmission should use standardized and fair methods to minimize perverse incentives that penalize hospitals for appropriate care of high-risk surgical patients. (J Am Coll Surg 2013;216:1150−1158. © 2013 by the American College of Surgeons)

The Medicare Payment Advisory Commission reported that 17.6% of index hospital admissions are associated with a readmission within 30 days of discharge. The Medicare Payment Advisory Commission has several definitions for potentially preventable readmissions, including those that could have been avoided with improved index hospitalization patient care, discharge planning, or outpatient care coordination.[1] Currently, there is no consensus on the best methodology for establishing potentially preventable readmissions and, by default, pay-for-performance incentives are beginning to use all-cause readmission rates. Starting in October 2012, two thirds of US hospitals were penalized for high all-cause readmission rates among patients with index admissions for acute myocardial infarction, heart failure, and pneumonia.[2] In total, it is predicted that hospitals will forfeit about $280 million in Medicare funds. This is likely to be extended to a hospital wide all-cause unplanned readmission measure starting in 2013.

Although measuring quality is an important goal, surgical patients can be different from medical patients. In a large study of Medicare beneficiaries, most 30-day

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Abbreviations and Acronyms

CMS = Centers for Medicare and Medicaid Services
OR = odds ratio
SSI = surgical site infection
UHC = University HealthSystem Consortium

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readmissions after surgery were related more to a patient's underlying medical condition than to the operation itself, with cardiac stent placement and gastrointestinal disorders being the leading diagnoses at readmission.[3] Although some surgical complications might be preventable, some are inherent risks associated with the procedure and might be intrinsically associated with a high readmission rate as a part of safe management. Therefore, defining preventable or unnecessary surgical readmissions is a challenge to ensure fair measurements of quality. We hypothesize that administrative data might not appropriately distinguish preventable readmissions from nonpreventable readmissions at a hospital level. To address this question, we designed a study comparing a clinical registry, an administrative database, and a clinical case review by a surgeon with the following major aims: to analyze the variation in readmission rates and readmission diagnoses by data collection method, to identify the subset of clinically unnecessary readmissions, and to determine which complications leading to readmission might have been prevented with improved patient-care efforts.

METHODS
Patient population
All patients who underwent colon or rectal resections between July 2009 and November 2011 were identified by Current Procedural Terminology codes: 44140-147, 44150-151, 44155-158, 44160, 44204-208, 44210-212, 44130, 44395, 44397, 44402, 44113, and 44550. The American College of Surgeons' NSQIP data were supplemented with additional data abstracted from patient charts.

National Surgical Quality Improvement Program
Johns Hopkins Hospital participates in the targeted procedure module of NSQIP with 100% capture of all colon and rectal cases. This program was initiated in 2009 and 30-day readmissions are tracked. All NSQIP data at our hospital are collected by 1 full-time nurse reviewer and 2 part-time nurse reviewers. All reviewers are experienced and have been audited by the NSQIP program in the past and found to be valid. Data are abstracted from hospital electronic medical records and patient follow-up phone calls. The NSQIP defines the 30-day readmission window as a readmission occurring within 30 days of the index surgical procedure date. Readmissions to our hospital or any other hospital are included. Planned readmissions are also included in NSQIP's registry. Principal readmission diagnosis and relationship between index operation and readmission are determined by the nurse reviewers (Table 1). Reviewers do not indicate if the readmission was considered potentially preventable at the time of presentation.

University HealthSystem Consortium
University HealthSystem Consortium (UHC) is an alliance of 116 academic medical centers and 275 affiliated hospitals that reports risk-adjusted performance metrics to its member institutions based on administrative data. The UHC defines the 30-day readmission window as a readmission occurring within 30 days of the index admission discharge date, similar to the proposed Medicare measure. The readmission is assigned a primary diagnosis code using the following algorithms: diagnosis-related group (Centers for Medicare and Medicaid Services [CMS]), all patient refined diagnosis-related group (3M), Clinical Classification System Category (Agency for Healthcare Research and Quality), and ICD-9 complication codes. If the readmission diagnosis code is any of the following it is considered planned and ultimately excluded: scheduled chemotherapy, radiation therapy, or dialysis treatment; same-day transfer to psychiatric facility, oncology ward, or inpatient rehabilitation; alcohol and

Table 1. 30-Day Readmission Criteria by Method

NSQIP criteria	University HealthSystem Consortium Criteria
Nurse reviewer medical record interpretation and/or patient interview	If any of the following criteria are met: Index hospitalization DRG = readmission DRG Index hospitalization APR-DRG = readmission APR-DRG Principal readmission diagnosis is a complication code (ICD-9 codes 996.00−999.9) Clinical classification system category of index hospitalization principal diagnosis = clinical classification system category of readmission principal diagnosis Clinical classification system category of index hospitalization primary procedure = clinical classification system category of readmission primary procedure

APR-DRG, all patient refined diagnosis-related group; DRG, diagnosis-related group.