Can use of an administrative database improve accuracy of hospital-reported readmission rates?

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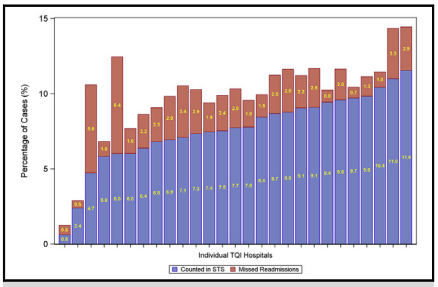
ABSTRACT

Objectives: Readmission rates after cardiac surgery are being used as a quality indicator; they are also being collected by Medicare and are tied to reimbursement. Accurate knowledge of readmission rates may be difficult to achieve because patients may be readmitted to different hospitals. In our area, 81 hospitals share administrative claims data; 28 of these hospitals (from 5 different hospital systems) do cardiac surgery and share Society of Thoracic Surgeons (STS) clinical data. We used these 2 sources to compare the readmissions data for accuracy.

Methods: A total of 45,539 STS records from January 2008 to December 2016 were matched with the hospital billing data records. Using the index visit as the start date, the billing records were queried for any subsequent in-patient visits for that patient. The billing records included date of readmission and hospital of readmission data and were compared with the data captured in the STS record.

Results: We found 1153 (2.5%) patients who had STS records that were marked "No" or "missing," but there were billing records that showed a readmission. The reported STS readmission rate of 4796 (10.5%) underreported the readmission rate by 2.5 actual percentage points. The true rate should have been 13.0%. Actual readmission rate was 23.8% higher than reported by the clinical database. Approximately 36% of readmissions were to a hospital that was a part of a different hospital system.

Conclusions: It is important to know accurate readmission rates for quality improvement processes and institutional financial planning. Matching patient records to an administrative database showed that the clinical database may fail to capture many readmissions. Combining data with an administrative database can enhance accuracy of reporting. (J Thorac Cardiovasc Surg 2017;■:1-5)



Increased readmission rates using data from administrative database.

Central Message

It is important to know accurate readmission rates for quality improvement processes and institutional financial planning. Matching patient records to an administrative database can enhance accuracy of reporting.

Perspective

An accurate assessment of readmission rate after cardiac surgery is critical, as it is a quality indicator and is important for financial planning. The Society of Thoracic Surgeons clinical database can fail to capture all readmissions. In a large, regional cooperative, we demonstrate that the use of an administrative database paired with the clinical database can improve accuracy of reporting. It is important to know accurate readmission rates for quality improvement processes and institutional financial planning. Matching patient records to an administrative database can enhance accuracy of reporting.

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Hospital readmission after heart surgery has become a quality indicator. In June 2007, the Medicare Payment Advisory Commission prepared the "Report to the Congress: Promoting Greater Efficiency in Medicine," in which they state that "hospital readmissions are sometimes indicators of poor care or missed opportunities to better coordinate

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Abbreviations and Acronyms

ACSD = Adult Cardiac Surgery Database
CABG = coronary artery bypass grafting
CMS = Center for Medicare and Medicaid Services
DFWHCF = Dallas–Fort Worth Hospital Council Foundation
REMPI = Regional Enterprise Master Patient Index
STS = Society of Thoracic Surgeons
TQI = Texas Quality Initiative

care.'' They go on to state that ''failure to adequately attend to care transition at discharge from the hospital results in additional Medicare spending; 17.6% of admissions result in readmissions within 30 days of discharge accounting for $15 billion in spending. Not all of these readmissions are avoidable, but some are.''[1] In a 2010 study of 10 US and Canadian hospital's[2] readmission rates ranged from 14.9% for coronary artery bypass grafting (CABG) to 25% for CABG and valve (CABG/valve). The most common causes were arrhythmia, infection, and volume overload. The Center for Medicare and Medicaid Services (CMS) had a report prepared by Yale New Haven Health Services Corporation and the Center for Outcomes Research and Evaluation (revised 2014). It indicated that in the Medicare population, readmissions after cardiac surgery were 16.8%, and 30-day mortality for readmitted patients was 2.8%, threefold higher than patients not readmitted. They identified the reasons for readmission as: complications of therapy, inadequate treatment, inadequate care coordination at discharge, and unexpected worsening of disease after discharge.

In the new era of pay for performance, readmission rate has financial implications. In a follow-up to the 2007 Medicare Payment Advisory Commission report, in 2008 the Medicare Payment Advisory Commission prepared a ''Report to the Congress: Reforming the Delivery System'' in which they state, ''To encourage providers to collaborate and better coordinate, the Congress should direct the Secretary to reduce payments to hospitals with relatively high readmission rates.''[3] In Section 3205 of the Affordable Care Act of 2010, named the ''Hospital Readmissions Reduction Program (HRRP),'' the US Congress authorized CMS to reduce payments to hospitals with excess readmissions starting in 2012.[4] The legislation stated that hospital reimbursement for all its readmissions would be reduced if readmission rate for heart failure, acute myocardial infarction, and pneumonia exceeded predicted rates. The maximum reduction was 1% in 2013, increasing to 3% in 2015. In 2017, CABG was added to the diagnoses for which readmission rates are monitored. Furthermore, the coming CMS Episode Payment Model and Cardiac Rehab Incentive Program will reimburse for 90 days of care. This bundled payment care incentive will initially be only for isolated CABG, will be for 90 days of care, and will include Medicare Parts A and B, skilled nursing facility stay, home health care, and all care for a related readmission. The financial implications will likely be most pronounced for institutions with an elevated CABG readmission rate. This program was recently put on hold but signals CMS intent and possible future direction.

Thus, rate of readmission after cardiac surgery has important quality and financial implications. To improve quality and to plan for a changing reimbursement model, hospitals need to have accurate information on their readmission rates. Shahian and colleagues[5] have previously shown a discrepancy between readmission rates clinically recorded and those captured by CMS. However, this study was confined to the Medicare population, and limited to isolated CABG surgery. We sought to compare readmission rates recorded in the Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database (ACSD) to an administrative charge–based database to evaluate the accuracy of reported regional readmission rates for all patients undergoing cardiac surgery. Our hypothesis was that combining the two sources of data would improve the accuracy of the reported readmission data.

METHODS

The Texas Quality Initiative (TQI) is a regional quality improvement cooperative involving 28 hospitals in the Dallas–Fort Worth Metroplex with cardiac surgery programs. All the TQI hospitals participate in the STS ACSD, and twice a year submit a copy of their STS ACSD data to a central repository maintained by the Dallas–Fort Worth Hospital Council Foundation (DFWHCF). The DFWHCF is a 501(c)(3) not-for-profit charitable organization dedicated to improving the region's patient safety and quality of care.

The foundation also maintains a database of all administrative claims data submitted using an 837 Electronic Data Interchange format on a monthly basis to the DFWHCF Information and Quality Services Center, which oversees the data warehouse. Eighty-one hospitals participate in the administrative database, which also includes all the TQI participants. The TQI data consist of STS clinical data, whereas the administrative (claims) database covers financial billing data records. A Regional Enterprise Master Patient Index (REMPI) is then generated from the administrative claims database. Using selected fields (date of surgery, hospital, surgeon, patient age, length of stay, admit date, discharge date) from the STS data, we can match the TQI records (deidentified with regard to names and Social Security numbers) to the claims data records. All matching information returned for research analysis is also deidentified regarding patient name and Social Security number.

For STS surgery records before July 1, 2014, readmission was calculated for a 30-day window after surgery. After July 1, 2014 (ie, data version 2.81), the definition was changed to include the period of 30 days after discharge by CMS, with STS changing their definition for consistency. In both time frames, all-cause readmission was counted.

The protocol was reviewed by the North Texas Institutional Review Board at Medical City Dallas and classified as exempt status. A file of records from the TQI database was then matched to corresponding records from the administrative database and queried for any record of a hospital