

# The Relevance of Readmissions after Common IR Procedures: Readmission Rates and Association with Early Mortality

Ammar Sarwar, MD, Lujia Zhou, MPH, Nihara Chakrala, MD, Olga R. Brook, MD, Jeffrey L. Weinstein, MD, Max P. Rosen, MD, MPH, and Muneeb Ahmed, MD

## ABSTRACT

**Purpose:** To determine all-cause readmission rates for 12 IR procedures and association of time to readmission with risk-adjusted 90-day mortality.

**Materials and Methods:** Patients discharged after 12 inpatient IR procedures at a tertiary-care hospital between June 2008 and May 2013 ( $N = 4,163$ ) were categorized as no readmission ( $n = 1,479$ ; 40.5%) or readmission between 0 and 7 ( $n = 379$ ; 10.4%), 8 and 30 ( $n = 650$ ; 17.8%), 31 and 60 ( $n = 378$ ; 10.3%), 61 and 90 ( $n = 169$ ; 4.6%), or 91 and 180 days ( $n = 280$ ; 7.7%). Readmission rate  $\geq 15\%$  was considered high based on published national readmission rates for procedures. Risk-adjusted 90-day mortality for each interval was calculated for transjugular intrahepatic portosystemic shunt (TIPS), transjugular and percutaneous liver biopsy (TJLB, PLB), ports, inferior vena cava (IVC) filter, lower extremity angioplasty (LEA), arteriovenous fistulagrams, vascular embolization (VE), percutaneous cholecystostomy (PC), percutaneous transhepatic biliary drainage (PTBD), primary urinary drainage, and feeding tube placement. Covariates included age, sex, race, insurance status, and Charlson Comorbidity Index.

**Results:** All procedures had high 30-day readmission rates (15%–50.5%). Readmissions were highest for ports (50.5%), TJLB (43.4%), PTBD (38.5%), PC (31.9%), and TIPS (31.3%). Readmissions occurred most frequently 8–30 days after discharge for all procedures except VE (31–60 d; 10.6%), PC (31–60 d; 23.4%), and LEA (91–180 d; 15.1%). On multivariate analysis, 30-day readmissions for LEA (AOR 3.19; 95% CI, 1.2–8.2;  $P = .02$ ), VE (AOR 10.01; 95% CI, 3.1–32.9;  $P < .001$ ), IVC filter (AOR 2.98; 95% CI, 1.3–6.9;  $P = .01$ ), PLB (AOR 2.86; 95% CI, 1.71–4.79;  $P < .001$ ), and PCN (AOR 3.09; 95% CI, 1.29–7.37;  $P = .01$ ) were associated with 90-day mortality.

**Conclusions:** Inpatient IR procedures have high 30-day all-cause readmission rates, which can be associated with increased 90-day mortality. Further evaluation to determine preventable causes for readmission may impact 90-day mortality.

## ABBREVIATIONS

AOR = adjusted odds ratio, CCI = Charlson Comorbidity Index, CI = confidence interval, CPT = Current Procedural Terminology, IVC = inferior vena cava, PTBD = percutaneous transhepatic biliary drainage, TIPS = transjugular intrahepatic portosystemic shunt, TTR = time to readmission

From the Division of Vascular and Interventional Radiology (A.S., L.Z., N.C., O.R.B., J.L.W., M.A.), Department of Radiology, Beth Israel Deaconess Medical Center/Harvard Medical School, WCC 308-B, 1 Deaconess Road, Boston, MA 02215; and Department of Radiology (M.P.R.), University of Massachusetts Memorial Medical Center and University of Massachusetts Medical School (M.P.R.), Worcester, Massachusetts. Received August 29, 2016; final revision received and accepted January 14, 2017. Address correspondence to A.S.; E-mail: [asarwar@bidmc.harvard.edu](mailto:asarwar@bidmc.harvard.edu)

None of the authors have identified a conflict of interest.

© SIR, 2017

*J Vasc Interv Radiol* 2017; ■:1–8

<http://dx.doi.org/10.1016/j.jvir.2017.01.008>

Peer-reviewed data on readmission rates after interventional radiology (IR) procedures are limited. Although single-center 30-day readmission rates for chemoembolization, uterine fibroid embolization, and dialysis access procedures were recently reported at national meetings, baseline descriptive readmission data for the wider breadth of IR procedures performed in clinical practice are currently lacking (1–3). It is also unclear if definitions of metrics from non-IR procedures can be applied to IR procedures. Before considering 30-day readmission rates as relevant to IR care, additional study is required to determine the time period during which most readmissions after IR procedures occur, whether patients with early readmission represent an at-risk

population with early mortality, and what proportion of readmissions after IR procedures reflect poor quality of care and are preventable. Although causality of readmission is a complicated topic, determining the interval that patients are readmitted for some more common IR procedures and determining if being readmitted confers an increased 90-day mortality are valuable to provide a basis for focused research into the causes of IR readmissions and whether they are preventable, which may positively impact 90-day mortality.

Obtaining this information is also important because early readmission after acute hospitalizations has been deemed to be closely related to reduced quality of care in the index admission and results in significant additional health care costs (4–7). Readmission metrics are also being used to determine reimbursement in an effort to improve quality and reduce health care costs. For example, the US Hospital Readmission Reduction Program penalizes hospitals for excessive readmissions within 30 days of discharge (8). Although the program currently tracks only readmissions related to specific procedures and medical conditions (eg, pneumonia and total hip or knee arthroplasty), a rapid expansion to additional conditions and treatments including image-guided procedures is anticipated (9). All these issues have led to recent recommendations for more research in readmission rates pertinent to IR (10). Yet, uniform analyses of baseline readmission rates, peak times to readmission (TTRs) for quality improvement efforts, and consequences of readmissions after IR procedures are unavailable. Therefore, this study was performed to determine whether readmissions were common after hospitalizations in which IR procedures were performed, when readmissions occur, and whether readmitted patients have a higher risk for 90-day mortality.

## MATERIALS AND METHODS

### Experimental Overview

Consecutive hospitalized patients who underwent IR procedures at a single tertiary care academic medical center between June 2008 and May 2013 were included in the study. For patients discharged alive from the index hospitalization, procedure-specific readmission rates at different time points, readmissions within selected time intervals, and risk-adjusted association of readmissions with early mortality were investigated.

### Data Source, Procedure Selection, and Patient Population

This retrospective cohort analysis of administrative data was compliant with the Health Insurance Portability and Accountability Act and performed with institutional review board approval. Year-appropriate Current Procedural Terminology (CPT) codes were selected to help identify index hospitalizations in which 12 inpatient IR procedures (lower extremity angioplasty, arteriovenous fistulogram, port

catheter placement, transjugular intrahepatic portosystemic shunt [TIPS] placement, transjugular and percutaneous liver biopsy, vascular embolization [other than uterine fibroid embolization], inferior vena cava [IVC] filter placement, percutaneous cholecystostomy, percutaneous transhepatic biliary drainage [PTBD], percutaneous feeding tube placement, and primary urinary drainage) were performed during a 5-year period (June 2008 to May 2013) (Table 1). All selected procedures were subsequently verified by comparing administrative records with a departmental procedural database that prospectively records procedures performed in the IR department.

These procedures were chosen because they are used to treat conditions that may represent the cause for the index admission; they represent high-volume procedures at the authors' institution; and they can be categorized by CPT codes, which is the mode for procedure assessment by national quality metrics. Liver biopsy and nephrostomy procedures were specifically selected because a national assessment of procedure readmissions identified these procedures as having high readmission rates (11). Port catheter placement was included because it is a common central venous access procedure that is usually performed during nonemergent hospitalizations (compared with temporary central venous catheters or tunneled dialysis catheters). As inpatient fistulograms should rarely be performed for screening purposes, this single CPT code was used to identify all patients with dysfunctional dialysis access requiring IR procedures.

Outpatient procedures are not typically included in readmission analyses in current health services research literature (as the patient should be an inpatient before

**Table 1.** CPT Codes Used to Identify and Group Patients with IR Procedures

CPT Codes	Procedures
35470	Lower extremity angioplasty
35473	
35474	
36147	Arteriovenous fistulogram
36561	Port catheter placement
37182	TIPS
37200	Transjugular liver biopsy
37204	Vascular embolization
37620	IVC filter placement
47000	Percutaneous liver biopsy
47490	Cholecystostomy
47500	Primary biliary access
47511	
49440	Percutaneous feeding tube
49446	
50392	Primary urinary drainage
50393	

CPT = Current Procedural Terminology; IVC = inferior vena cava; TIPS = transjugular intrahepatic portosystemic shunt.

Download English Version:

<https://daneshyari.com/en/article/5727363>

Download Persian Version:

<https://daneshyari.com/article/5727363>

[Daneshyari.com](https://daneshyari.com)