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Readmissions in Isolated Coronary Artery Bypass Graft Patients

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Background Information & Objective

➤ Coronary artery bypass graft (CABG) is a surgical procedure used to treat coronary artery disease. CABG procedures create a bypass from the aorta to the coronary artery, either above or below the blockage. Grafts may be pieces of a vein from the lower extremity, internal mammary artery, or radial artery.

➤ Medicare defines all-cause readmission as any unplanned readmission patients experience for any reason within 30 days after discharge. Hospitals are financially penalized for any patient that falls within this readmission.

Objective is to analyze all-cause readmissions in CABG patients, determine patterns of diagnoses and correlations between history of present illness (HPI), admitted diagnosis, and principal discharge diagnosis.

Methods

1. Define all-cause readmission and CABG procedures. Understand readmission impact on hospital networks. Establish data points and specific criteria to examine.

2. Create a database using REDCap using established data points with focus on patient demographics, discharge, and readmission information.

3. Compile data from patients who underwent CABG from 2018-2021: out of approx. 800 overall procedures, 95 readmits. Utilize Epic to read patient medical notes. Establish if cardiac relation and inpatient care were related to readmission.

4. Analyze findings from the database, interpret patterns based on results using Excel. Determine if correlations are present between readmitted reason and actual diagnosis.
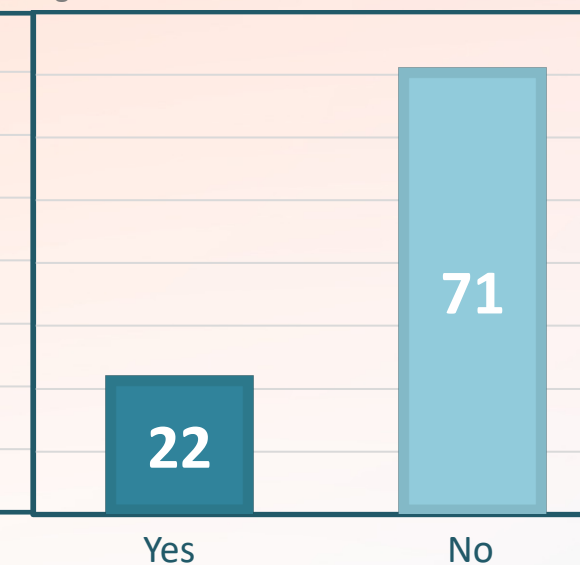
Results

Was readmission cardiac related?
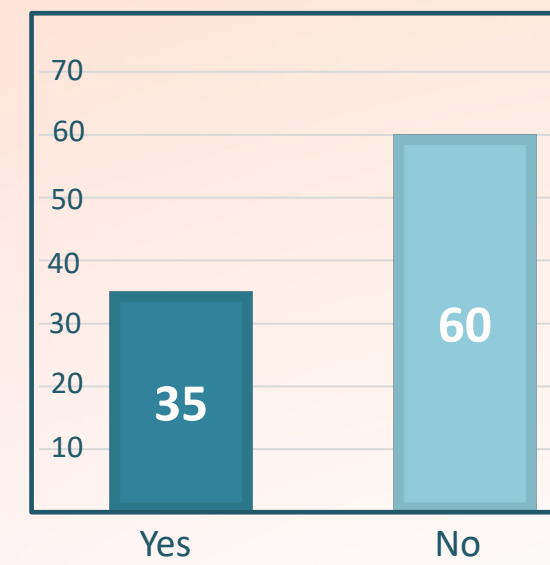
Was readmission due to post-op care/surgical complications?

Does admission match discharge diagnosis in patient readmission?

Fig. 1 Barner — Yes 35, No 60
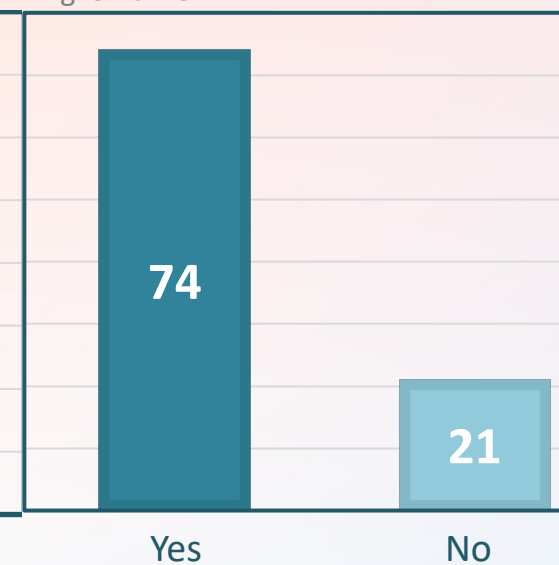
Fig. 2 Barner — Yes 22, No 71

Fig. 3 Barner — Yes 74, No 21

Figure 4 Barner

Reason for Readmission	Actual Diagnosis
Chest pain	Hypertensive heart and chronic kidney disease with heart failure
Altered Mental Status	Hypertension due to drugs
Shortness of breath	Acute respiratory failure with hypoxia
Wound in right leg	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene
Black/bloody	Melena
Shortness of	Fluid overload
Left-sided weakness, stroke	Cerebral infarction due to embolism of right middle cerebral artery

Figure 5 Barner

Top Readmission ICD-10 Diagnosis Codes	
Readmission Diagnosis (ICD-10 Code)	Count
Hypertensive heart with chronic kidney disease (CKD) and stage1 to stage 4 chronic kidney disease (I13.0)	**11**
Hypertensive heart with heart failure (I11.0)	7
Pleural effusion (J90)	7
Unspecified atrial fibrillation (I48.91)	3
Paroxysmal atrial fibrillation (I48.0)	2
Acute kidney failure (N17.9)	2
Melena (K92.1)	2
Other pulmonary embolism without cor pulmonate (I26.99)	2
Infection following a procedure, other surgical site, initial encounter (T81.49XA)	2
Pericardial effusion (I31.3)	2
Other hemorrhoids (K64.8)	2

Conclusions

➤ Majority of readmissions are not cardiac related nor due to quality of post-operation care/surgical complications. (Fig. 1 & Fig. 2)

➤ However, there is a correlation between reason for admission and actual diagnosis with patient readmission, with 78% of readmitted reasons matching the principal problem in discharge diagnosis. (Fig. 3)

➤ The most common readmission diagnosis was Hypertensive heart and CKD with heart failure and stage 1 to stage 4 chronic kidney disease (11 patients). The next common readmission diagnoses were hypertensive heart with heart failure (7 patients) and pleural effusion (7 patients). The most common presenting symptom for readmission was shortness of breath. (Fig.5)

➤ Readmissions are not correlated to inpatient quality of care, and data depicts that majority of patients are readmitted due to conditions largely outside of our control while inpatient

  ➤ Patients frequently have other health conditions that cannot be addressed while inpatient after CABG

  ➤ Many patients had seen their cardiologists or were already admitted to other health facilities prior to readmission, and were recommended to be readmitted by other health providers

References

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