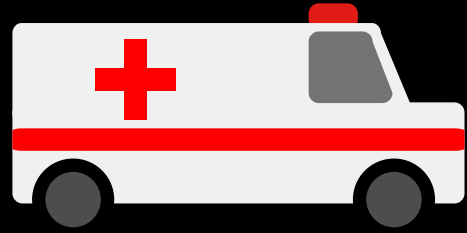


CABG Readmission Risk Calculator

A VHHA and VCSQI Initiative



Introduction:

This guide introduces the CABG Readmission Risk Calculator, a collaborative effort between Virginia Hospitals and Healthcare Association (VHHA) and Virginia Cardiac Services Quality Initiative (VCSQI). This tool is designed specifically for patients undergoing Coronary Artery Bypass Grafting (CABG) and integrates medical, organizational, and economic factors to accurately predict the likelihood of hospital readmission.

Purpose of the Tool:

The Readmission Risk Calculator aims to enhance patient care by identifying individuals at a higher risk of readmission post-CABG surgery. By considering a wide range of factors, from clinical to socioeconomic, it assists healthcare providers in making informed decisions and tailoring postoperative care plans.

How the Tool Works:

The calculator evaluates a set of specific variables related to the patient's health status and economic background. By inputting these variables, healthcare professionals can obtain a quantified risk score, indicating the patient's likelihood of readmission.

Questions Asked in the Calculator:

The calculator quantifies factors that are known to contribute to readmission, including clinical factors that have been found to be significantly associated with readmission after CABG, a hospital's overall tendency to readmission, and a patient's socioeconomic profile.

- Gender: Recognizes the differential impact of gender on CABG outcomes.
- COPD: Assesses the influence of existing Chronic Obstructive Pulmonary Disease.
- Age: Considers age as a critical factor in recovery and readmission rates.
- Postoperative Renal Failure: Evaluates the impact of renal complications following surgery.
- Pre-procedure Creatinine Level: Measures kidney function before surgery, indicating potential risk.
- Postoperative Length of Stay (LOS): Analyzes the duration of hospital stay as a predictor of readmission.
- Economic Distress Index: Incorporates socioeconomic factors that impact readmission risk.
- Overall Hospital Readmission Rate: Factors in each individual hospital's trends in readmission rates.

Using the Calculator:

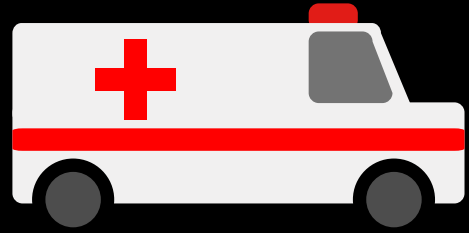
Users input data into each category, ensuring accuracy for reliable results. The tool's interface is designed for ease of use, with clear instructions provided at each step.

Interpreting the Results:

Upon entering all required data, the calculator presents a risk score. This score should be interpreted as a guide, with higher scores indicating greater risk. Healthcare providers can use this information to devise appropriate post-discharge plans and interventions.

The Readmission Risk Calculator is a significant advancement in personalized patient care for CABG patients. It stands as a testament to the power of combining medical and economic data in improving healthcare outcomes.

CABG Readmission Risk Calculator



A VHHA and VCSQI Initiative



GENDER

Biological factors, including hormonal differences, can influence how diseases progress and how the body responds to surgery and postoperative care.



COPD

Patients with COPD are more susceptible to postoperative pulmonary complications, such as pneumonia, bronchospasm, or exacerbation of their existing COPD.



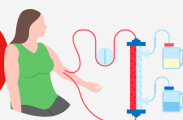
AGE

Older patients generally have a higher risk of postoperative complications.



POSTOP RENAL FAILURE

Renal failure after surgery is associated with an increased risk of other complications, such as electrolyte imbalances, fluid overload, and an increased susceptibility to infections.



PRE-PROCEDURE CREATININE

Patients with compromised kidney function are at a higher risk of developing acute kidney injury (AKI) postoperatively, which can lead to complications necessitating readmission.



POSTOP LOS

An extended postoperative LOS often indicates that the patient experienced complications or had a more complex surgical course.



ECONOMIC DISTRESS INDEX

Patients from economically distressed areas may have limited access to healthcare resources, including follow-up care, rehabilitation services, and primary care.

Utilize the Economic Innovation Group's Interaction Map to determine the quintile based on patient's home zip code. <https://eig.org/distressed-communities/2022-dci-interactive-map/?path=zip/44108&demo-view=zip>



OVERALL HOSPITAL READMISSION RATE

A high overall hospital readmission rate will impact the readmission rate after CABG.

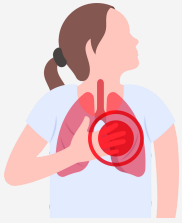


The impact of gender on hospital readmission rates, especially in the context of surgeries like Coronary Artery Bypass Grafting (CABG), is a subject of ongoing research and discussion in the medical community.

Here are some key points regarding how gender may influence readmission rates:

1. **Differences in Disease Presentation and Severity:** Women and men often exhibit different symptoms and disease patterns, especially in cardiac diseases. For example, women may present with more advanced stages of coronary artery disease at the time of CABG, potentially leading to a higher risk of complications and readmission.
2. **Biological Differences:** Biological factors, including hormonal differences, can influence how diseases progress and how the body responds to surgery and postoperative care. These differences can affect recovery times and readmission risks.
3. **Comorbidities and Age at Surgery:** Women undergoing CABG often have a higher burden of comorbidities (like hypertension, diabetes, and obesity) and tend to be older than their male counterparts at the time of surgery. These factors can increase postoperative complications and readmission rates.
4. **Socioeconomic and Psychological Factors:** Gender-related socioeconomic and psychological factors can also play a role. Women may face different social and psychological stresses post-surgery, which can impact their recovery and adherence to postoperative care instructions, potentially leading to higher readmission rates.
5. **Response to Treatment:** There may be gender-specific responses to surgical techniques and postoperative treatment, including differences in pain perception and response to pain management strategies, which can influence recovery and readmission rates.
6. **Differences in Healthcare Utilization:** Studies have shown that women and men may use healthcare services differently. Women might be more likely to seek follow-up care, which could lead to higher observed readmission rates, not necessarily due to poorer health outcomes but due to more proactive healthcare engagement.

It's important to note that while gender can be a factor in readmission rates, it interacts with a wide array of other variables, including the patient's overall health, postoperative care, and the healthcare system's structure and support. As such, gender is one of many factors considered in comprehensive risk assessment tools like the Readmission Risk Calculator for CABG patients.



COPD

Impact on Readmissions

Chronic Obstructive Pulmonary Disease (COPD) can significantly impact hospital readmission rates, especially in patients undergoing major surgeries like Coronary Artery Bypass Grafting (CABG). Here's how COPD influences readmission rates:

Definition: Indicate whether the patient has chronic lung disease, and the severity level according to the following classification:

- > No
- > Mild: FEV1 60% to 75% of predicted or on chronic inhaled or oral bronchodilator therapy.
- > Moderate: FEV1 50% to 59% of predicted or on chronic oral/systemic steroid therapy aimed at lung disease.
- > Severe: FEV1 < 50% or Room Air pO₂ < 60 or pCO₂ > 50.
- > CLD present, severity not documented.
- > Unknown

Time Frame: Do not use values obtained more than 12 months prior to the date of surgery.

-----> We are recoding this to a Yes/No field, so if any of the above are selected [Mild, Moderate, Severe, or CLD present / severity unknown] then it's counted as a "Yes"

1. **Increased Postoperative Complications:** Patients with COPD are more susceptible to postoperative pulmonary complications, such as pneumonia, bronchospasm, or exacerbation of their existing COPD. These complications can lead to longer hospital stays and a higher likelihood of readmission.
2. **Impaired Respiratory Function:** COPD is characterized by reduced pulmonary function. This impairment can affect a patient's ability to recover from major surgery, as the body's reduced respiratory capacity can struggle to meet the increased demands during recovery.
3. **Higher Infection Risk:** The compromised lung function in COPD patients increases their risk of respiratory infections, which is a common reason for readmission after surgery.
4. **Challenges in Wound Healing:** COPD can also impact overall oxygenation in the body, which is crucial for healing. Poor oxygenation can slow down the healing process and increase the risk of surgical site infections, leading to potential readmissions.
5. **Cardiopulmonary Stress:** CABG is a major cardiac surgery that puts significant stress on the cardiopulmonary system. In patients with COPD, the already compromised lung function can exacerbate the stress on the heart and lungs, leading to complications that may require readmission.
6. **Co-existing Conditions:** Patients with COPD often have other comorbidities like cardiovascular disease, diabetes, or hypertension, which can complicate the postoperative course and increase the likelihood of readmission.
7. **Medication Management:** Managing COPD medications postoperatively can be challenging, especially if new medications are introduced or existing regimens are altered. Inadequate management can lead to exacerbation of COPD symptoms and subsequent readmission.
8. **Need for Specialized Care:** COPD patients may require more intensive postoperative care, including respiratory therapy and close monitoring. If adequate care is not provided after discharge, it can lead to deterioration of the patient's condition and readmission.

For these reasons, COPD is considered a significant factor in assessing the risk of hospital readmission, particularly in patients undergoing complex procedures like CABG. It emphasizes the need for careful preoperative assessment, meticulous intraoperative management, and comprehensive postoperative care, including respiratory support and close monitoring to reduce the risk of readmission.

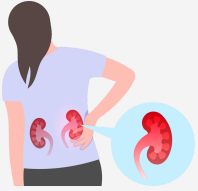


Definition: Indicate the patient's age in years, at time of surgery. This should be calculated from the date of birth and the date of surgery, according to the convention used in the USA (the number of birthdate anniversaries reached by the date of surgery).

Age is a critical factor influencing hospital readmission rates, particularly in patients undergoing major surgeries such as Coronary Artery Bypass Grafting (CABG). Here's how age impacts readmission rates:

1. **Increased Risk of Complications:** Older patients generally have a higher risk of postoperative complications. This is due to age-related physiological changes, such as reduced organ function and diminished physiological reserves, which can make recovery more challenging and increase the likelihood of readmission.
2. **Higher Prevalence of Comorbidities:** With advancing age, the prevalence of comorbid conditions like hypertension, diabetes, chronic kidney disease, and others tends to increase. These comorbidities can complicate the postoperative course and increase the risk of readmission.
3. **Slower Recovery Process:** Aging is often associated with a slower healing process and reduced capacity to recover from major surgeries. This slower recovery can increase the duration of hospital stay and the risk of readmission due to complications.
4. **Frailty and Reduced Mobility:** Older patients may experience frailty and reduced mobility, which are associated with an increased risk of falls, pressure ulcers, and functional decline post-surgery. These factors can lead to longer hospitalization or readmission for additional care.
5. **Polypharmacy:** Older adults are often on multiple medications (polypharmacy), which can complicate postoperative medication management. The risk of drug interactions and side effects is higher, potentially leading to complications that require readmission.
6. **Cognitive Impairment:** Age-related cognitive impairments, such as dementia or mild cognitive dysfunction, can affect a patient's ability to follow postoperative care instructions, manage medications, and recognize complications. This can lead to mismanagement of health post-discharge and increase readmission rates.
7. **Social Support and Caregiving Needs:** Older patients may have less social support and greater caregiving needs. Inadequate support at home can impact their ability to manage after discharge, leading to higher rates of readmission.
8. **Sensory Impairments:** Age-related sensory impairments (like hearing or vision loss) can affect communication and understanding of postoperative care instructions, potentially leading to complications and readmissions.

Due to these factors, age is an important consideration in predicting readmission risks. It underscores the need for age-specific care plans, comprehensive geriatric assessments, and tailored post-discharge support to minimize the risk of readmission in older patients undergoing surgeries like CABG.



POST-OP RENAL FAILURE

Impact on Readmissions

Postoperative renal failure, also known as acute kidney injury, can significantly impact hospital readmission rates, especially in patients undergoing major surgeries like Coronary Artery Bypass Grafting (CABG). The impact of renal failure on readmission rates is multifaceted:

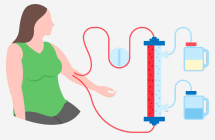
- 1. Increased Complication Risk:** Renal failure after surgery is associated with an increased risk of other complications, such as electrolyte imbalances, fluid overload, and an increased susceptibility to infections. These complications can necessitate readmission for additional treatment and management.
- 2. Longer Hospital Stay:** Patients who develop renal failure postoperatively often require extended hospital stays. Longer initial hospitalizations can be an indicator of more severe postoperative complications and a higher likelihood of readmission.
- 3. Need for Renal Replacement Therapy:** In cases where renal failure is severe, patients may require renal replacement therapies such as dialysis. This not only extends the hospital stay but also increases the complexity of post-discharge care, potentially leading to readmission if complications arise.
- 4. Impact on Other Organ Systems:** Renal failure can affect the function of other organ systems, such as the cardiovascular and pulmonary systems. This multi-organ impact can complicate the recovery process and increase the likelihood of readmission.
- 5. Delayed Recovery:** Patients with postoperative renal failure generally have a delayed recovery. This delay can increase their vulnerability to other health issues, including infections and deconditioning, which can lead to readmission.
- 6. Medication Management:** Renal failure can alter the pharmacokinetics of various drugs, necessitating careful adjustment and monitoring of medications post-surgery. Inappropriate medication management can lead to adverse effects and possible readmission.
- 7. Monitoring and Follow-up Needs:** Patients with postoperative renal failure require close monitoring for renal function recovery and fluid status, since these patients will tend to retain fluid, which is the most common cause leading to readmission after CABG. Inadequate follow-up or monitoring can lead to deterioration of the patient's condition and necessitate readmission for acute care.
- 8. Increased Healthcare Utilization:** Generally, patients with postoperative complications like renal failure tend to have higher rates of healthcare utilization, including readmissions, due to the need for ongoing medical care and management of complications.

Considering these factors, postoperative renal failure is a significant predictor of hospital readmission. It highlights the importance of careful perioperative management in patients at risk of renal complications, close monitoring of renal function post-surgery, and comprehensive planning for post-discharge care to minimize the risk of readmission.

Definition: Indicate whether the patient had acute renal failure or worsening renal function resulting in ONE OR BOTH of the following:

- Increase in serum creatinine level X 3.0
or
- Serum creatinine > mg/dL 4.0 with at least a 0.5 mg/dL rise.
or
- A new requirement for dialysis postoperatively.

Intent/Clarification: Baseline creatinine is the creatinine level closest to the date and time prior to surgery (SEQ 605) but prior to anesthetic management (induction area or operating room).



PRE-PROCEDURE CREATININE RATE

Impact on Readmissions

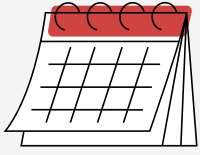
Definition: Indicate the creatinine level closest to the date and time prior surgery but prior to anesthetic management (induction area or operating room). A creatinine level should be collected on all patients, even if they have no prior history of renal disease. A creatinine value is a high predictor of a patient's outcome and is used in the predicted risk models.

Intent/Clarification: Creatinine (Cr) is a chemical waste molecule excreted by the kidneys that is generated from muscle metabolism. If the kidneys become impaired for any reason, the creatinine level in the blood will rise due to poor clearance by the kidneys. Abnormally high levels of creatinine thus warn of possible malfunction or failure of the kidneys. The unit of measurement for Creatinine is mg/dl or mg/100ml or mg%

A pre-procedure creatinine level greater than 1.3 mg/dL can be a significant indicator of potential risks and complications, impacting hospital readmission rates, particularly in patients undergoing major surgeries like Coronary Artery Bypass Grafting (CABG). Elevated creatinine levels before surgery suggest impaired kidney function, which has several implications:

1. **Increased Risk of Postoperative Renal Failure:** Elevated pre-procedure creatinine levels indicate pre-existing renal impairment. Patients with compromised kidney function are at a higher risk of developing acute kidney injury (AKI) postoperatively, which can lead to complications necessitating readmission.
2. **Potential for Other Complications:** Impaired renal function can affect the body's ability to process and eliminate medications, leading to an increased risk of drug toxicity. It also affects the fluid and electrolyte balance, which can complicate postoperative management and increase the likelihood of readmission.
3. **Indicator of Other Comorbid Conditions:** A high pre-procedure creatinine level often coexists with other comorbidities like hypertension, diabetes, and cardiovascular disease. These conditions can complicate the surgical and postoperative course, potentially leading to higher readmission rates.
4. **Longer Hospital Stays:** Patients with pre-existing renal impairment often require longer hospital stays for closer monitoring and management, which can be associated with a higher risk of hospital-acquired infections and other complications, leading to readmission.
5. **Challenges in Surgical Recovery:** Impaired renal function can slow the overall recovery process, as the kidneys play a crucial role in many physiological processes. This slower recovery can lead to prolonged hospitalization or increased likelihood of readmission for further care.
6. **Need for Careful Medication Management:** Renal impairment necessitates careful dosing and selection of medications, including anesthetics, pain relievers, and antibiotics used during and after surgery. Inappropriate medication management can exacerbate renal function and lead to complications that require readmission.
7. **Monitoring and Follow-up:** Patients with high pre-procedure creatinine levels require careful postoperative monitoring of renal function and overall health. Inadequate follow-up can lead to overlooked complications, potentially resulting in readmission.

In summary, a pre-procedure creatinine level greater than 1.3 mg/dL is a significant factor in assessing the risk of postoperative complications and hospital readmission. It underscores the need for thorough preoperative assessment, careful intraoperative management, and diligent postoperative care and monitoring to mitigate these risks.



LENGTH OF STAY

Impact on Readmissions

Definition: Time in days from the Date of Surgery to the Date of Discharge

The length of stay (LOS) after a surgical procedure, such as Coronary Artery Bypass Grafting (CABG), is a significant factor that can influence hospital readmission rates. Here's how postoperative length of stay impacts readmission:

1. **Indicator of Postoperative Complications:** An extended postoperative LOS may indicate a more complex surgical course. Such patients are generally at a higher risk for readmission due to unresolved or ongoing health issues.
2. **Risk of Hospital-Acquired Infections:** Longer hospital stays increase the risk of hospital-acquired infections (HAIs), such as pneumonia, urinary tract infections, or surgical site infections. These infections can lead to deterioration in the patient's condition and potentially result in readmission.
3. **Delayed Recovery:** A prolonged hospital stay may reflect a slower recovery process, possibly due to factors like advanced age, comorbidities, or complications during surgery. Patients with delayed recovery are more susceptible to additional health issues that could necessitate readmission.
4. **Psychological Impact:** Extended hospitalization can have psychological effects, such as increased anxiety or depression, which can affect a patient's overall recovery and adherence to post-discharge care plans, or reflect a patient's and family's feeling sense that a longer hospitalization is needed, potentially leading to a lower threshold for presenting to the ED with concerns and subsequently readmission.
5. **Physical Deconditioning:** Longer stays in the hospital can lead to physical deconditioning, especially in elderly patients or those with pre-existing mobility issues. This deconditioning can increase the risk of falls, functional decline, and readmission for rehabilitative care.
6. **Transition of Care Challenges:** Patients with longer hospital stays may face challenges in the transition from hospital to home or another care facility. Inadequate discharge planning, poor communication, or lack of appropriate follow-up care can lead to issues that require readmission.
7. **Resource Utilization and Cost Implications:** Longer LOS is associated with higher healthcare costs and resource utilization. This can indirectly impact patient care, as resource-strained settings might expedite discharges, potentially leading to insufficient recovery time and higher readmission rates.
8. **Medication Management:** Extended hospital stays often involve complex medication regimens. The transition to home medication management can be challenging, and errors or non-adherence can lead to complications requiring readmission.

In summary, the length of postoperative stay is a multifaceted factor that reflects various aspects of a patient's health status, recovery process, and the quality of care received. It is a critical element in predicting the risk of hospital readmission, emphasizing the need for tailored care, effective discharge planning, and appropriate post-discharge support, especially for patients with longer hospital stays.



ECONOMIC DISTRESS INDEXs

Impact on Readmissions

The Economic Distress Index (EDI) is a measure used to assess the financial well-being or economic hardships faced by an individual or a community. In the context of healthcare, particularly for patients undergoing major surgeries like Coronary Artery Bypass Grafting (CABG), the Economic Distress Index can significantly impact hospital readmission rates in several ways:

- 1. Access to Healthcare Resources:** Patients from economically distressed areas may have limited access to healthcare resources, including follow-up care, rehabilitation services, and primary care. This limited access can lead to complications or unaddressed health issues, increasing the likelihood of readmission.
- 2. Medication Adherence:** Economic distress often affects a patient's ability to afford medications. Non-adherence to prescribed medication regimens due to financial constraints can lead to poor health outcomes and higher readmission rates.
- 3. Nutrition and Lifestyle Factors:** Economic hardship can impact a patient's ability to maintain a healthy lifestyle, including proper nutrition, which is crucial for recovery post-surgery. Poor nutrition can delay healing and increase the risk of complications, leading to readmission.
- 4. Transportation and Follow-up Care:** Patients experiencing economic distress may have difficulties with transportation to and from medical appointments, leading to missed follow-up visits and inadequate postoperative care, which can result in readmission.
- 5. Stress and Mental Health:** Economic hardship is a significant source of stress, which can negatively impact mental health. The stress and potential mental health issues associated with economic distress can impede a patient's recovery and adherence to treatment plans, increasing the risk of readmission.
- 6. Home Care and Support:** Economic distress can affect the availability of adequate home care and support post-discharge. Patients who lack proper care and support at home are at a higher risk for complications and readmission.
- 7. Insurance Coverage and Healthcare Utilization:** Patients from economically distressed backgrounds may have limited or no health insurance, affecting their ability to seek necessary healthcare services, including preventive care and management of comorbidities, which are essential in reducing readmission risks.
- 8. Health Literacy:** Economic distress is often correlated with lower levels of education and health literacy. Patients with lower health literacy may have difficulties understanding discharge instructions and the importance of follow-up care, leading to higher rates of readmission.

Incorporating the Economic Distress Index into risk assessment tools like the Readmission Risk Calculator for CABG patients helps in identifying individuals who may need additional support and resources to reduce the likelihood of readmission. This approach emphasizes the need for a holistic view of patient care, taking into account not just medical factors, but also socioeconomic determinants of health.



OVERALL HOSPITAL READMISSION RATES

Impact on Readmissions

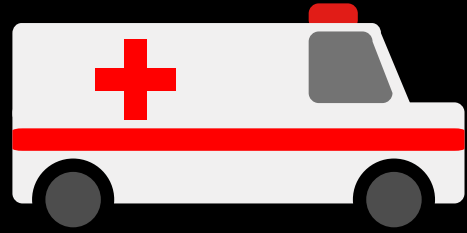
The overall hospital readmission rate refers to the frequency at which all patients are readmitted to a hospital after being discharged, not just CABG patients. This rate can impact individual patient readmission risks in several ways:

1. A high OVERALL hospital readmission rate may reflect challenges with organizational transitions of care and discharge planning, accessibility of high-quality rehab centers and skilled nursing facilities, and thresholds for readmission once a patient presents to the ED, all of which can directly impact a patient's likelihood of being readmitted."
2. Hospital-Acquired Conditions: Higher readmission rates might be associated with a greater prevalence of hospital-acquired conditions, such as infections or complications arising from the hospital stay. This could increase the risk of readmission for individual patients.
3. Resource and Staffing Constraints: Hospitals with high readmission rates may be facing resource or staffing constraints. These limitations can affect patient care quality, from the surgery itself to postoperative monitoring and discharge planning, leading to increased readmission risks.
4. Patient Population Characteristics: Hospitals with certain patient demographics, like those serving older populations or communities with higher rates of chronic conditions, might inherently have higher readmission rates. This could reflect more on the patient population than the hospital's quality of care.
5. Effectiveness of Follow-up Care Coordination: Hospitals with high readmission rates may have less effective coordination of follow-up care. This includes scheduling follow-up appointments, coordinating with primary care providers, and ensuring the patient understands their post-discharge care plan.
6. Patient Education and Engagement: Hospitals with higher readmission rates may need to improve in areas like patient education and engagement. Patients who are better educated about their conditions, treatment plans, and post-discharge care are less likely to be readmitted.
7. Reputation and Patient Trust: A hospital's readmission rate can impact its reputation and the level of trust patients place in it. This can indirectly affect patient outcomes, as trust and confidence in healthcare providers are essential for effective care and recovery.
8. Impact on Healthcare Policies: High readmission rates often lead hospitals to implement new policies or strategies to improve patient care and reduce readmissions, which can positively or negatively affect patients depending on how well these changes are executed.

In summary, the hospital readmission rate can be a valuable metric for gauging the quality and effectiveness of hospital care. While it is not the sole determinant of a patient's risk of readmission, it provides useful context for understanding potential challenges and areas for improvement in patient care.

CABG Readmission Risk Calculator

A VHHA and VCSQI Initiative



Introducing Targeted Strategies to Minimize Hospital Readmissions

Building on the insights provided by our CABG Readmission Risk Calculator, we are pleased to introduce a comprehensive suite of strategies designed to significantly reduce hospital readmissions. Our recommendations are meticulously tailored to enhance patient outcomes and streamline healthcare practices.

This collection of strategies is categorized into two key segments:

1. Low Risk for Readmission ([pg. 12](#))
2. Intermediate Risk for Readmission ([pg. 17](#))
3. High Risk for Readmission ([pg. 18](#))

Standard Practices: These are essential strategies recommended for implementation across all healthcare practices. Rooted in evidence-based medicine and best care practices, they are designed to be seamlessly integrated into existing care models, enhancing the efficiency and quality of patient care without demanding substantial additional resources.

Resource-Intensive Recommendations: Recognizing the diverse capabilities of different healthcare settings, we also offer a set of advanced recommendations. While these strategies hold great potential in further reducing readmissions, they require careful consideration of resource allocation, including full-time employees (FTEs) and funding. These recommendations are particularly suited for practices ready to invest in more intensive, resource-driven approaches to patient care.

Our goal is to provide healthcare providers with a versatile toolkit, empowering them to choose and implement strategies that align best with their specific practice needs and resource availability. Embrace these recommendations to transform patient care and significantly reduce the likelihood of hospital readmissions.

Robert Lancey, MD
Sentara Rockingham
VCSQI

Andre Tolleris
Director of Data Analytics
VHHA

Eddie Fonner
Executive Director
VCSQI

Have questions? Please contact the developers of this tool as described below:

VHHA and VCSQI recognizes and owes thanks to the members of the VHHA/VCSQI Readmission Workgroup for their help in providing insight and direction in the development of these tools.

Intervention Strategies

The following strategies are recommended for patients who are at a low risk for readmission:




**READMISSION
RISK:
LOW**



BEFORE SURGERY

Evaluation by Cardiac Surgical Team	
Risk factor identification	female gender
	frail/Elderly
	multiple co-morbidities
	diabetes
	COPD
	congestive heart failure
	peripheral vascular disease
	renal failure
	current smoker
	MI within one (1) week of surgery/procedure
	anticipated D/C on anticoagulation meds
	lack of social or financial support
Optimize pre-existing conditions	COPD (FEV-1 < 50%)
	chronic renal insufficiency (creatinine > 1.8)
Complete planned treatments	antibiotics
	steroid tapering
	dental clearance
	diuretics
Discontinue meds pre-op	NSAIDS
	NOACs
	antiplatelet
	ACE/ARBs
	oral hypoglycemics

 High Yield ROI

Intervention Strategies



READMISSION
RISK:
LOW

BEFORE SURGERY, CONT'D.

Administrative visit	
Patient and family education: to align expectations with reality using teach-back method	pathophysiology of coronary artery disease and details of operation (pictures, diagrams)
	what to expect day of surgery pre-op, intraoperatively, postoperatively
	what to expect in hospital stay
	what to expect at discharge
Case Managers evaluate patients preoperatively	What DMEs will be needed post-discharge
	Check for prescription coverage
	Physical barriers to discharge (stairs, location of bedroom)
	Check on insurance coverage (home health, rehab facility)
	Who will be home upon discharge



High Yield ROI



Intervention Strategies




**READMISSION
RISK:
LOW**



INPATIENT

Clinical	
Identify risk factors during hospitalization	> 48hrs of ICU stay
	post-operative complications
	LOS > 7-10 days
	discharge to rehabilitation facility
Arrhythmias	Afib prophylaxis protocol that extends into post-op period
Administrative	
Communication	communicate the anticipated discharge date to consulting teams
	discharge summary or note forwarded to PCP, consultants' offices, and rehab facility
	set all follow-up appointments before discharge
Follow-up	appointment in CT Surgery clinic within one week with CT clinic, 2 weeks with PCP, 3-4 weeks with cardiologist
	appointment with PCP in two weeks
	appointment with Cardiologist in 3-4 weeks
	if anticoagulation clinic: schedule appointment and communicate target INR
	home health care for all
	confirm contact information / phone number where they will be postoperatively
Delay discharge if appropriate arrangements are not complete	

 High Yield ROI

Intervention Strategies




READMISSION
RISK:
LOW



INPATIENT, CONT'D

Education	
Provide written instructions in simple and clear language, use teach-back methods, and reinforce frequently	how to contact the CT surgery office (provide contact information for 24/7 access)
	incision care
	activity (progressive, not overdoing it, not sedentary)
	pain medications and appropriate use
	record daily weights, BP, HR, temps
	use the ED for only true emergencies
	'Surgical Home' concept as primary care team for 30 days
	what to watch for and when to call: <ul style="list-style-type: none">• symptoms and signs of infection• excessive weight gain• progressive / worsening shortness of breath• fevers, chills
Medications	
	Accurate and concise medication reconciliation
	30-day supply of medications unless not indicated
	Evaluate for acceptable affordable alternatives

 High Yield ROI

Intervention Strategies




READMISSION
RISK:
LOW



POST DISCHARGE

Clinical follow-up	
Daily calls for patients identified as high-risk for readmission	
Cardiac surgical clinic visit within 7 days after discharge	
Coordinator calls 2-3 days after discharge when Home Health RN is present to review checklist (meds, wounds, weights, bowels, pedal edema, stockings, etc.)	
Ensure enrollment in cardiac rehab	
CTS team embraces patient ownership for 30 days: 'Surgical Home' concept	
Same day access to CT surgical clinic	
Call rehab center /SNF's 24-48 hours after discharge	confirm adequacy of handoff went well
	provide contact information
	review anything special to watch for (fluid status, wounds, etc.)

 High Yield ROI

Intervention Strategies



**READMISSION
INTERMEDIATE
RISK**

The following strategies are recommended for patients with a Intermediate Risk for readmission.

Note: Strategies for Low risk patients are also recommended for this patient population.



ADVANCED INTERVENTIONS:

Education	
Patients and families	develop a short, understandable Education Manual for patients including instructions of what to look for and when to call
	call CT Surgical Office before going to the ED except in emergency
	Perform medication reconciliation at the first post-discharge visit
Home Health Nursing / Rehab / SNFs	establish guidelines with Home Health agencies to call CT Surgical Office prior to sending patient to the ED



High Yield ROI

Intervention Strategies



**READMISSION RISK:
HIGH**

The following strategies are recommended for patients with a High Risk for readmission.

Note: Strategies for Low and Intermediate risk patients are also recommended for this patient population.



BEFORE SURGERY

Evaluation by Cardiac Surgical Team	
Risk factor identification	Identification of economic risk factors (i.e., VHHA data, etc.)
	Calculation of risk score
Optimize pre-existing conditions	heart failure
	diabetes (A1c greater than 10 or ?)

INPATIENT

Clinical	
Fluid status	pleural effusions (leave drainage tubes longer in CHF, CRI patients; consider thoracentesis pre-discharge)
Administrative	
Nurse Navigator roles	daily rounds with providers
	separate rounds to educate patients and families
Standardization	EMR checklist for all interventions
Follow-up	provide wrist band with contact information to wear until the 30-day postoperative visit
Medications	
Hospital Pharmacist to visit and assist in education about medications	



High Yield ROI

Intervention Strategies




**READMISSION RISK:
HIGH**

POST DISCHARGE

Clinical follow-up		
All patients discharged home are called in the first 24-48 hours		standard set of questions to check for potential problems (wounds, fluid status, temps, BP, HR, SOB) with triggers for urgent clinic visit
		review medications to confirm prescriptions are filled and reconciled
		review instructions for follow-up visits

ADVANCED INTERVENTIONS:

Quality Assurance		
		Review all readmission cases in multidisciplinary setting for root causes, trends, gaps
		Decrease variation in care among surgeons with standardization and consistency
		Implementation of Atrial Fibrillation prophylaxis protocols
		Seek feedback from readmitted patients as to the cause
Education		
Home Health Nursing / Rehab / SNFs		develop education plan and protocols to present to Home Health Agencies and Rehab Centers / SNFs *
Emergency Department 		develop a system identifying post-op heart surgery patients presenting to the ED
		call the cardiac surgical team early when post-op patients present to the ED
		Cardiac Surgery Team agrees to see and manage the patient in the ED
Monitoring		
		Remote monitoring of HR, BP, weight, and pulse oximeter, with daily reports to CT office
Administrative		
		Observation Status vs Admission
		Set up a minor procedure room in CT clinic: thoracenteses, wound debridement
		Develop follow-up plans for those deemed at higher risk for readmission




High Yield ROI

Intervention Strategies



**READMISSION RISK:
HIGH**

ADVANCED INTERVENTIONS, CONT'D.:

IT	
Develop a mechanism in the EMR for the ED when a post-op patient presents to the ED within 30 days of discharge with request to call the Cardiac Surgery team. 	
I-pads to larger volume rehab sites to facilitate a virtual visit	
Personnel	
Recruit Discharge Planner if Nurse Navigator role not available	<p>This person can be part of the CT surgery team or a member of a larger team that is focused on readmission reduction at the institutional level. Broad functions of a discharge planner include coordination of patient care before, during, and after the hospitalization for surgery:</p> <ul style="list-style-type: none">• interaction with the patient and family• keeping the Primary Care Provider (PCP) in the loop• identifying consultants involved in patients' ongoing involving the social worker in planning surgery• monitoring the daily progress of patients after surgery• setting up resources (pharmacy, physical/occupational therapy, home healthcare, follow-up appointments) for ongoing recovery outside of the hospital



High Yield ROI