Patient Care Pathways
FOR THE EVALUATION OF CORONARY ARTERY DISEASE
Introduction

Appropriate Use Criteria

Patient-Centered Evaluation

Assessing Risk

Appropriate Use Criteria
INTRODUCTION

Considering Pathways for Patient Care

Patient evaluation pathways can help determine whether cardiac testing or treatment may be appropriate.

Understanding who is at risk for coronary artery disease (CAD) and who may be appropriate for noninvasive cardiac testing or treatment is important. An estimated 1 in 3 adults has cardiovascular disease today—it is the leading cause of death in the United States.¹

This booklet examines several patient pathways that may be considered for the evaluation of CAD. While the information within includes considerations for testing and treatment, it is not comprehensive and should not independently be used for patient risk assessment or diagnosis.

Whether you’re a primary care physician (PCP), cardiology specialist, or other healthcare practitioner (HCP), by following appropriate evaluation pathways, you can help your patients get the right tests or treatment at the right time.
PATIENT-CENTERED EVALUATION

Test or Treat?

Guideline-based pathways may help support clinical decisions for patient-centered care.

According to guidelines from the American Heart Association (AHA) and other leading professional organizations involved with assessing cardiovascular risk, the evaluation of stable patients for suspected CAD follows 2 distinct pathways: one for patients who are asymptomatic and another for those with symptoms (Figure 1). Following these guideline-recommended pathways may help identify which patients require management of risk factors for CAD, and which patients would benefit from further testing to diagnose CAD or assess the risk of a cardiac event. Of note, patients who have acute coronary syndrome (ACS), including myocardial infarction (MI), enter a separate evaluation and management pathway.

FIGURE 1.

Patient-Centered Pathways for Evaluating CAD

ASCVD = atherosclerotic cardiovascular disease; AUC = Appropriate Use Criteria; CAD = coronary artery disease; CHD = coronary heart disease; ECG = electrocardiogram; ED = emergency department; MI = myocardial infarction; NP = nurse practitioner; PA = physician assistant; PCP = primary care physician.
Pretest Probability of CAD by Age, Sex, and Symptoms

<table>
<thead>
<tr>
<th>Age* (Years)</th>
<th>Sex</th>
<th>Typical/Definite Angina Pectoris</th>
<th>Atypical/Probable Angina Pectoris</th>
<th>Nonanginal Chest Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤39</td>
<td>Men</td>
<td>INTERMEDIATE</td>
<td>INTERMEDIATE</td>
<td>LOW</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>INTERMEDIATE</td>
<td>VERY LOW</td>
<td>VERY LOW</td>
</tr>
<tr>
<td>40-49</td>
<td>Men</td>
<td>HIGH</td>
<td>INTERMEDIATE</td>
<td>INTERMEDIATE</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>INTERMEDIATE</td>
<td>LOW</td>
<td>VERY LOW</td>
</tr>
<tr>
<td>50-59</td>
<td>Men</td>
<td>HIGH</td>
<td>INTERMEDIATE</td>
<td>INTERMEDIATE</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>INTERMEDIATE</td>
<td>INTERMEDIATE</td>
<td>LOW</td>
</tr>
<tr>
<td>≥60</td>
<td>Men</td>
<td>HIGH</td>
<td>INTERMEDIATE</td>
<td>INTERMEDIATE</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>HIGH</td>
<td>INTERMEDIATE</td>
<td>INTERMEDIATE</td>
</tr>
</tbody>
</table>

*No data exist for patients aged <30 or >69 years, but it can be assumed that prevalence of CAD increases with age. In a few cases, patients with ages at the extremes of the decades listed may have a probability of CAD slightly outside the high or low range.

The first step for all patients is a thorough initial evaluation of medical history, cardiac risk factors, symptoms, stability, and any prior cardiac test results. For symptomatic patients, the initial evaluation may also include a resting electrocardiogram (ECG).

For patients who have symptoms suggestive of CAD, the probability of CAD can be estimated based on the patient’s sex, age, and type of symptoms (see table above). Pretest probability of CAD, exercise capacity, and ECG interpretability are factors that help to determine if a patient should undergo further cardiac testing, as well as which tests may be appropriate.

For patients who are asymptomatic, global risk scoring can be used to estimate 10-year and lifetime risk of a cardiac event, including MI, fatal or nonfatal stroke, or coronary heart disease (CHD) death. The global risk score, along with exercise capacity and interpretability of ECG results, can help inform decisions about further testing or initiating lifestyle modifications or treatments to manage CAD risk factors.
**Patient Evaluation Pathways**

The AHA, American College of Cardiology (ACC), and American College of Cardiology Foundation (ACCF) have clear guideline-based pathways for patients with known or suspected CAD,\(^4\,6\,20\) from initial physician presentation to specialist referral for cardiac evaluation. Different evaluation pathways are suggested for patients with unstable angina (UA) or MI,\(^21\) for patients who are indicated for perioperative cardiac evaluation,\(^22\) and for stable and symptomatic patients.

Referring providers—HCPs who request imaging tests\(^23\) or send patients to a specialist for further evaluation—may include PCPs, emergency department (ED) physicians, internists, and general cardiologists. Nurse practitioners (NPs) and physician assistants (PAs) may refer patients for cardiac testing as well. Referring providers should have a solid understanding of which indications may require cardiovascular evaluation.

Patients referred to the nuclear laboratory may require advanced diagnostic imaging tests to determine whether further cardiac testing or treatment is necessary. Ordering providers can specify which imaging tests are appropriate for these patients.\(^23\)

Although every scenario is different and patients are managed on a case-by-case basis, current published guidelines and clinical studies can help HCPs make more informed decisions for individual patient treatment.
This booklet is only intended to be a starting point for further reading—for more on cardiac testing and treatment, refer to the published guidelines listed below and in Figures 2 and 3.

To learn more about who to treat, refer to the 2013 Prevention Guidelines⁹-¹² and the 2012 Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease (SIHD).²

For further information about when to treat, review the Guidelines for Catheterization and Revascularization,¹⁴ as well as the 2013 Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults.¹¹

Published materials on how to treat include large-scale clinical studies (COURAGE,¹⁵ BARI 2D,¹⁶ FAME 2,¹⁷ FREEDOM,¹⁸ ISCHEMIA,¹⁹ and HOPE), as well as the aforementioned SIHD Guideline² (Figure 2). To determine patient risk and management for CAD, it is important to establish the right test for the right patient at the right time.²⁷

To help determine individual patient test selection, the questions of who, when, and how to test for known or suspected CAD are supported by the ACCF/AHA Appropriate Use Criteria for Multimodality Imaging,⁷ the American College of Radiology (ACR)/ACC appropriate utilization of cardiovascular imaging in ED patients with chest pain,⁵ the American Society of Nuclear Cardiology (ASNC) Registry for MPI,²⁴ the ASNC Model Coverage Policy for SPECT MPI,²⁵ and the PROMISE trial²⁶ (Figure 3). Refer to these materials for further information on appropriate patient-centered testing.
ASSESSING RISK

Initial Patient Evaluation

A thorough risk evaluation should be conducted for patients with known or suspected CAD.
As part of an initial evaluation, global risk scores can be used to estimate the risk of a future cardiac event and identify patients who would benefit from treatments aimed at management of risk. There are several helpful risk score calculators you can access online to evaluate your patients.

### ASCVD Risk Estimator

The ACC/AHA task force on practice guidelines recently developed a risk score based on data from large community-based cohorts that are representative of the US population of Caucasians and African Americans. The atherosclerotic cardiovascular disease (ASCVD) Risk Estimator (also referred to as the Pooled Cohort Equations) provides sex- and race-specific estimates of the 10-year risk and lifetime risk for ASCVD for African American and Caucasian men and women aged 40 to 79 years, taking into account:

- Age
- Total and HDL cholesterol levels
- Systolic blood pressure (including treated or untreated status)
- Diabetes
- Current smoking status

A first ASCVD event is defined as the first occurrence of a nonfatal MI, CHD death, or fatal or nonfatal stroke. Of note, when compared with non-Hispanic Caucasians, the estimated 10-year risk for ASCVD is generally lower in Hispanic American and Asian American populations and higher in American Indian populations; therefore, providers must consider the possibility of overestimating ASCVD risk in Hispanic and Asian American patients and underestimating ASCVD risk when using the equations in American Indian patients.

### Framingham Risk Score

The Framingham Risk Score takes into account age, sex, cholesterol levels, blood pressure, and whether the patient is a smoker. Compared with the new ASCVD Risk Estimator, the Framingham Risk Score was derived using data from Caucasians exclusively and only assesses the 10-year risk of experiencing an MI or CHD death. It cannot be used to estimate the risk of stroke or the lifetime risk of a cardiac event.

### Reynolds Risk Score

The Reynolds Risk Score was initially developed to improve the assessment of cardiovascular event risk in women by taking into account additional factors such as family history of MI and high-sensitivity C-reactive protein (hsCRP). The Reynolds Risk Score was subsequently found to improve risk assessment for men.
For patients with suspected CAD, evaluation may include noninvasive tests that provide additional information about overall risk of cardiac events and the likelihood of a CAD diagnosis.

**Exercise Stress Testing**

Exercise stress testing is the preferred method of stress testing to assess cardiac ischemia and determine the likelihood of CAD and the risk of CHD events.\(^6\)\(^,\)\(^{30}\) This noninvasive method not only provides information about exercise-induced chest pain but also measures exercise capacity, hemodynamic response to exercise, and the presence of cardiovascular abnormalities,\(^6\) all of which can be used to predict the risk of a cardiac event. Calculating the Duke Treadmill Score (Figure 4) can help evaluate patient cardiovascular risk.\(^{30}\)

### FIGURE 4.
**Duke Treadmill Score (DTS)\(^{30}\)**

This score is a composite index that provides an estimate of cardiovascular risk based on results from the exercise stress test, including ST-segment depression, chest pain, and exercise duration.

\[
\text{DTS} = \text{Exercise time in minutes} - (5 \times \text{ST deviation}) - (4 \times \text{Exercise angina*})
\]

<table>
<thead>
<tr>
<th>Score ((-25\ \text{to } 15))</th>
<th>LOW</th>
<th>MODERATE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\geq 5)</td>
<td>(-10\ \text{to } 4)</td>
<td>(\leq -11)</td>
<td></td>
</tr>
</tbody>
</table>

*0 = No angina
1 = Nonlimiting angina
2 = Exercise-limiting angina
For patients whose ASCVD Risk Estimator score does not provide sufficient information on whether they would benefit from initiation of a statin, further testing, including coronary calcium scoring, ankle-brachial index (ABI) testing, and hsCRP testing, may help clarify risk and inform treatment decision-making.11

**Coronary Calcium Scoring**
The coronary calcium score is a measurement of coronary atherosclerotic burden (Figure 5 shows the disease progression) detected by cardiac computed tomography (CT).31 Several studies have shown a linear relationship between the score and global risk,32 coronary events,33 and abnormal results from single-photon emission computed tomography myocardial perfusion imaging (SPECT MPI) procedures (see page 14 for more on SPECT MPI).34-39 Patients with coronary calcium scores ≥300 or who are at or over the 75th percentile for age, sex, and race, may benefit from initiation of statin therapy to reduce the risk of a cardiac event.11 Coronary calcium scoring may also be considered in asymptomatic patients who have an intermediate risk of CHD based on global risk scores to further refine their risk of future cardiac events.33

**ABI and hsCRP**
Using Doppler measurement of blood pressure in all 4 extremities, the ABI is calculated by dividing the highest lower-extremity value by the highest upper-extremity value. The hsCRP is a blood marker of inflammation. Both ABI and hsCRP can help clarify the risk of future cardiac events.33

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**FIGURE 5. Progression of Atherosclerosis**

1. Healthy artery
2. Plaque (made up of calcium, fat, cholesterol, and other substances in the blood) forms in the lining of the artery
3. Plaque collects, narrowing artery walls
4. Plaque ruptures, forming blood clots and limiting blood flow
Is Cardiac Imaging Appropriate?

Appropriate Use Criteria (AUC) may help support clinical decision-making for the selection of advanced diagnostic cardiac imaging tests. An appropriate imaging study is one in which the expected incremental information, combined with clinical judgment, exceeds the expected negative consequences by a sufficiently wide margin for a specific indication that the procedure is generally considered acceptable care and a reasonable approach for the indication.

From the ACCF/AHA Multimodality Appropriate Use Criteria.

*Negative consequences of cardiovascular imaging include the risks of the procedure (ie, radiation or contrast exposure) and the downstream impact of poor test performance, such as delay in diagnosis (false negatives) or inappropriate diagnosis (false positives).
Consistent with the call for patient-centered cardiac imaging to improve quality of care and outcomes, the ACCF initiated a process to determine the appropriateness of various types of cardiac imaging tests in common clinical situations and patient types (AUC ratings are listed in Figure 6).7 Physician judgment and practice experience may be needed in certain cases where appropriateness is not clear.7

In 2013, the ACCF and AHA partnered with key specialty and subspecialty societies to align on the appropriate use of 7 invasive and noninvasive testing modalities for the detection of SIHD and risk assessment across 80 common patient presentations7:

1. Exercise ECG
2. Stress radionuclide imaging (RNI), including SPECT and positron emission tomography (PET)
3. Stress echocardiography (echo)
4. Stress cardiac magnetic resonance (CMR) imaging
5. Coronary calcium scoring
6. Coronary computed tomography angiography (CCTA)
7. Invasive coronary angiography

FIGURE 6.
AUC Ratings for Cardiac Imaging Tests Based on the ACCF/AHA Multimodality AUC7

APPROPRIATE
- Benefits generally outweigh risks
- Generally an effective option
- Dependent on physician judgment and patient-specific preferences

MAY BE APPROPRIATE
- Variable evidence regarding the risk-benefit ratio
- Potentially an effective option
- Dependent on clinical variables, physician judgment, and patient preferences

RARELY APPROPRIATE
- Lack of evidence that benefits clearly outweigh risks
- Rarely an effective option
- Exceptions should have documentation of clinical reasons

ACCF = American College of Cardiology Foundation; AHA = American Heart Association; AUC = Appropriate Use Criteria.
FIGURE 7. The Hierarchy of Indications for Ordering Tests Based on the ACCF/AHA Multimodality AUC


*Refer to the published guidelines for further information on test appropriateness for specific patient indications.

ACCF = American College of Cardiology Foundation; AHA = American Heart Association; AUC = Appropriate Use Criteria; CABG = coronary artery bypass graft; CAD = coronary artery disease; CV = cardiovascular; PCI = percutaneous coronary intervention.
For these “multimodality” AUC, each imaging test is rated for each indication, based on current understanding of the technical capabilities of the procedures examined, evidence base, and clinical experience. For patients who may have multiple clinical indications, a flowchart that places conditions into a hierarchy can be used to help assess test appropriateness (Figure 7).

Legislation Relevant to AUC: What Ordering/Referring Providers Should Know
Since their introduction, AUC have been used to help guide clinical decision-making for patient-centered, appropriate use of various cardiac imaging tests.

The Protecting Access to Medicare Act of 2014 (PAMA) set forth a mandate for the development or endorsement of AUC by national professional medical societies or other provider-led entities. According to PAMA, for outlier ordering professionals, prior authorization will be required for imaging services. Properly documenting the use of AUC should help ordering/referring providers meet PAMA requirements and ensure compliance with the upcoming federal mandate.

Medicare reimbursement for advanced diagnostic imaging services in the outpatient setting (including advanced cardiac imaging services MPI, CT, and CMR) will require:
- Consultation of applicable AUC
- Identification of AUC that were used to order the test selection
- Documentation showing that the test ordered is consistent with AUC used
For more than 35 years, noninvasive radionuclide imaging has been used to evaluate myocardial perfusion. As the most commonly used imaging modality in nuclear cardiology, SPECT MPI plays an essential role in the diagnosis and management of CAD.\textsuperscript{42,43}

Although there are many noninvasive cardiac imaging modalities available and several may be appropriate for each patient indication, this booklet focuses on the most widely used imaging procedure in nuclear cardiology—SPECT MPI.\textsuperscript{42,43}

SPECT increases the diagnostic accuracy of traditional exercise stress tests and can help guide treatment if a patient has already been diagnosed with a heart condition.\textsuperscript{42} Gated SPECT MPI can provide functional information about wall motion.

Images courtesy of Kim Allan Williams, MD.
abnormalities or left ventricle dilation that may be related to stress-induced ischemia. Normal SPECT MPI results are consistently associated with good prognosis and low-risk outcomes.

The Basics of SPECT MPI
During a SPECT scan, the radiotracers thallium (TI-201) and technetium (Tc-99m sestamibi or Tc-99m tetrofosmin) can be used to track myocardial blood flow and reveal areas where perfusion of the myocardium decreases during stress (either exercise or pharmacologic) compared with rest (Figure 8). The presence, extent, and severity of stress-induced perfusion abnormalities revealed by SPECT MPI can help detect CAD, assess the risk of cardiac events, and inform treatment decisions.

A Modality by Many Names
You may have heard SPECT MPI referred to as one of the following terms:
• Nuclear stress test
• Noninvasive cardiac imaging
• Cardiac nuclear scan
• Radionuclide imaging (RNI) test

**FIGURE 8. SPECT MPI Scans**
These scans show the heart at stress and rest. Color indicates areas of perfusion where the radiotracer has entered the myocardium. Areas that appear lighter in color at rest and darker during stress indicate areas of stress-induced ischemia, where blood flow is blocked.

*SPECT MPI* = single-photon emission computed tomography myocardial perfusion imaging.
### Appropriateness of SPECT MPI for Various Clinical Scenarios According to the ACCF/AHA Multimodality AUC

<table>
<thead>
<tr>
<th>APPROPRIATE</th>
<th>MAY BE APPROPRIATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For symptomatic patients</strong></td>
<td></td>
</tr>
<tr>
<td>• With intermediate to high risk of CAD</td>
<td>• With a high global CAD risk</td>
</tr>
<tr>
<td>• With uninterpretable ECG</td>
<td>• With an uninterpretable ECG or inability to exercise</td>
</tr>
<tr>
<td><strong>In postrevascularization (PCI or CABG)</strong></td>
<td><strong>In postrevascularization (PCI or CABG)</strong></td>
</tr>
<tr>
<td>• Only if symptomatic or revascularization was incomplete and additional revascularization is feasible</td>
<td>• Prior left main coronary stent</td>
</tr>
<tr>
<td></td>
<td>• ≥2 years after PCI</td>
</tr>
<tr>
<td></td>
<td>• ≥5 years after CABG</td>
</tr>
<tr>
<td><strong>With other cardiovascular conditions</strong></td>
<td><strong>With other cardiovascular conditions</strong></td>
</tr>
<tr>
<td>• Newly diagnosed heart failure (systolic or diastolic)</td>
<td>• Arrhythmias with infrequent PVCs or new-onset atrial fibrillation</td>
</tr>
<tr>
<td>• Arrhythmia with ventricular tachycardia, frequent premature ventricular contractions (PVCs), or ventricular fibrillation</td>
<td>• Syncope with low global CAD risk</td>
</tr>
<tr>
<td>• Arrhythmia prior to therapy with high global CAD risk</td>
<td><strong>For follow-up testing</strong></td>
</tr>
<tr>
<td>• Syncope and intermediate or high global CAD risk</td>
<td>• Within 90 days of abnormal or uncertain stress imaging study result</td>
</tr>
<tr>
<td></td>
<td>• Asymptomatic or stable symptoms with last study ≥2 years ago; abnormal calcium score</td>
</tr>
<tr>
<td></td>
<td>• New or worsening symptoms and abnormal prior stress imaging study result</td>
</tr>
<tr>
<td></td>
<td>• With intermediate to high global CAD risk with last study ≥2 years ago</td>
</tr>
<tr>
<td><strong>For follow-up testing: new or worsening symptoms</strong></td>
<td><strong>For preoperative evaluation before noncardiac surgery</strong></td>
</tr>
<tr>
<td>• With normal or abnormal exercise ECG</td>
<td>• In patients with poor or unknown functional capacity with ≥1 clinical risk factor prior to intermediate-risk surgery</td>
</tr>
<tr>
<td>• With nonobstructive CAD on angiography OR normal prior stress imaging study</td>
<td></td>
</tr>
<tr>
<td>• With obstructive CAD on CCTA or invasive coronary angiography</td>
<td></td>
</tr>
<tr>
<td>• With abnormal calcium score</td>
<td></td>
</tr>
<tr>
<td><strong>For preoperative evaluation before noncardiac surgery</strong></td>
<td></td>
</tr>
<tr>
<td>• In patients with poor or unknown functional capacity prior to kidney or liver transplant, or vascular surgery with ≥1 clinical risk factor</td>
<td></td>
</tr>
</tbody>
</table>
RARELY APPROPRIATE

For symptomatic patients
• With low risk of CAD and interpretable ECG

For asymptomatic patients
• With low global CHD risk
• With intermediate global CHD risk but interpretable ECG and ability to exercise

In postrevascularization (PCI or CABG)
• <2 years after PCI
• <5 years after CABG

For follow-up testing
• Asymptomatic or stable symptoms with last test <2 years ago

For preoperative evaluation before noncardiac surgery
• Prior to low-risk surgery
• In asymptomatic patients with normal prior testing or revascularization <1 year ago
• In patients with moderate to good functional capacity or no clinical risk factors

For evaluation prior to exercise prescription or cardiac rehabilitation, except in patients with heart failure

Advances in SPECT MPI

Advances in SPECT camera technology, image acquisition and processing software, and imaging protocols have made it possible to improve image quality and lower radiation exposure to patients and staff. New SPECT cameras can acquire images in a fraction of the time of older cameras and can detect signals from lower doses of radiotracers. New software can process images taken during shorter acquisition times or with lower radiotracer doses while maintaining image resolution.
CARE COORDINATION

Working Together for the Patient

Patients with heart disease are often managed by multiple HCPs for a range of medical conditions. Provider communication and coordination are necessary to achieve patient-centered care.
Provider Communication
Communication between the referring provider and cardiac imaging specialist can aid in making informed decisions regarding patient management. Coordination with the specialist may help your patients understand what is needed before and after the cardiac imaging test (Figure 9). For SPECT MPI tests, ASNC has published imaging guidelines with more detailed information on how to properly prepare your patients for testing.44

FIGURE 9.
Delivering Patient-Centered Care6,20-22

This figure highlights the importance of communication between HCPs (gray boxes in first column) and specialists in the nuclear laboratory (colored boxes at right). For each patient scenario, HCPs and cardiac specialists must communicate to coordinate patient-centered care (white boxes in center).

CAD = coronary artery disease; ED = emergency department; MI = myocardial infarction; UA = unstable angina.
Considerations for the SPECT MPI Test

### Determining the Test\(^{5,7}\)

- **Consult** AUC and/or communicate with a cardiac imaging specialist to determine the most appropriate test for each patient
- **Discuss** test options with patients, covering risks and benefits

### Preparing the Patient\(^{7,44,45}\)

- **Forward** prior testing results and medical history to the nuclear laboratory because these factors may impact which protocol is used
- **Ensure** the correct patient weight is recorded for accurate selection of radiotracer dose and test protocol
- **Share** your assessment of patient exercise capacity with the cardiac imaging specialist. Patients who cannot exercise adequately may need a pharmacologic stress test
- **Help** your patients understand the test preparation requirements to avoid rescheduling a test
Reviewing the Results

- **Request** a summary of patient test results from the nuclear laboratory, along with any recommendations for further testing.

- **Discuss** next steps and patient treatment strategies with the cardiologist before reviewing results with your patients.

Cardiac Testing Communication Tips

- **Reach out** to the cardiac imaging specialist or cardiologist with any questions or concerns you may have about your patients—a quick phone call may save time in the long run.

- **Coordinate** with the nuclear laboratory so that your patients have the information they need for their cardiac imaging experience.

- **Ask** any questions you may have about the test results to help your patients understand next steps.
PATIENT EDUCATION

Focusing on the Patient

Informed patients who are prepared for their cardiac imaging tests are more likely to have a better experience.
Preparing Your Patients for a SPECT MPI Test

A comprehensive dialogue with your patients will help them understand and properly prepare for the test. Explain why the test is being performed and how the test results may be used to make decisions about their care.45,47

- **Go over** risks and benefits of the test. For an appropriate test, benefits will typically outweigh radiation risks.
- **Discuss** medications they may need to abstain from that may interfere with the procedure.
- **Explain** fasting requirements—they should fast for 3 hours and avoid caffeine for at least 12 hours prior to a pharmacologic stress test.
- **Check** that they know the location of the testing facility, how to prepare for the test, and what they can expect on the day of the test.
- **Encourage** them to contact the testing facility with any specific questions.

Patients seek health information from a variety of sources, but education from an HCP may be most helpful. Reviewing results with your patients may help explain next steps and motivate patients to follow your directions.

Questions Your Patients May Ask About the SPECT MPI Test47

**ABOUT THE TEST**
- What is this test?
- How is it performed?
- Will the test tell me if I have heart disease?
- Will the test tell me about my risk of a having a heart attack?

**ABOUT THE BENEFITS**
- How will the test help me?
- What will you learn from the test results?
- How will this test help you make decisions about my care?

**ABOUT APPROPRIATE USE**
- Is this the most appropriate test for me?
- Are there any alternative tests?
- If my results are normal, does it mean I should not have taken the test?

**ABOUT THE POTENTIAL RISKS**
- How much radiation is used for the test? How does it compare with the amount of radiation I am normally exposed to in other aspects of my life?
- Is the radiation from this test harmful?
- Does radiation from a SPECT MPI test increase my cancer risk?
RESOURCES

Keeping Connected

For over 20 years, Astellas has supported the cardiology community, providing practical resources for patient-centered care. This booklet is an introduction to cardiac testing, and is intended to be a starting point for further reading.

Astellas offers a number of online resources, which you can access to learn more about cardiac testing and keep abreast of the latest information in cardiovascular care.

1. CardiacTesting.com
   Learn more about appropriate indications for noninvasive cardiovascular imaging and how to integrate advanced imaging tests into clinical practice.
   Register for a cardiac testing speaker program event for further information on cardiovascular risk assessment and patient evaluation.

2. AUCTracker.com
   Download the Multimodality AUC App, which is available for most platforms. The app will prompt you to answer a few questions about your patients, and then cardiac imaging appropriateness ratings are provided for each indication, based on the ACCF/AHA Multimodality AUC.
   Register for a free AUC Tracker account to securely save and track your AUC data for RNI. The AUC Tracker works seamlessly with the AUC App.

3. AstellasPatientResources.com
   Download patient education resources you can customize for your facility. Access tools such as the Stress Test Coach handout to help your patients become well-informed about cardiac imaging tests and prepare them for their test experience.
Shared Understanding of Cardiovascular Care

Astellas is committed to bringing you the latest information on cardiac testing, so your entire care team can be better equipped to help patients with known or suspected heart disease.

Learn more about cardiovascular risk assessment and diagnosis at CardiacTesting.com.