



UNDERSTANDING SPECT MPI AND **Preparing Your Patient**



UTILITY OF
SPECT MPI



NUCLEAR CARDIAC
STRESS TESTING



PATIENT
PREPARATION

SPECT MPI = single-photon emission computed tomography myocardial perfusion imaging.



This presentation is available for you to present to colleagues at your facility (not intended for direct communication to patients).



UTILITY OF SPECT MPI

A widely available option for cardiac assessment¹

1



WHO
IT'S FOR

2



WHAT
IT SHOWS

3



HOW
IT'S USED

1. Udelson JE, et al. In: Zipes DP, et al, eds. Braunwald's Heart Disease. 2019:261-300.



UTILITY OF SPECT MPI

1



Diagnostic testing with SPECT MPI is most useful in patients with an **intermediate likelihood** of coronary artery disease (CAD) based on:^{1,2}

- **STRESS ELECTROCARDIOGRAM (ECG) RESULTS**
- **SYMPTOMS**
- **SEX**
- **AGE**
- **RISK FACTORS INCLUDE**
 - Diabetes
 - Family history
 - Hyperlipidemia
 - Hypertension
 - Obesity
 - Physical inactivity
 - Smoking

SPECT MPI may also help to further stratify a patient's risk for cardiac events into lower or higher risk. Patients at higher risk may benefit from invasive cardiac procedures.²



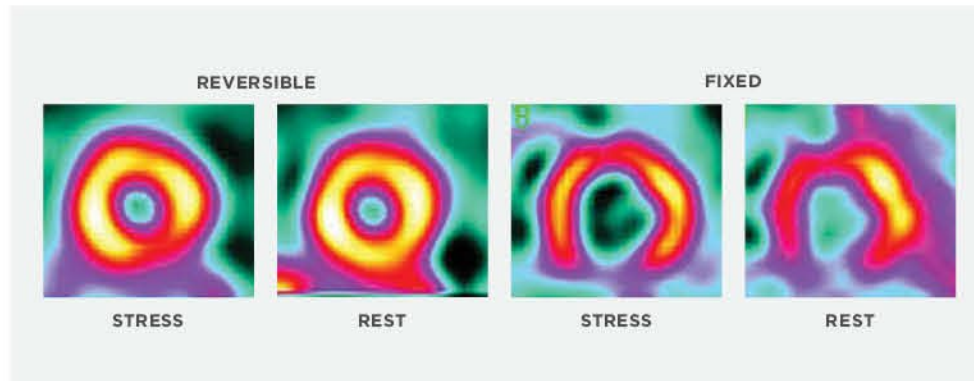


UTILITY OF SPECT MPI

2 | WHAT IT SHOWS

SPECT MPI scans show the distribution of blood flow in the myocardium¹

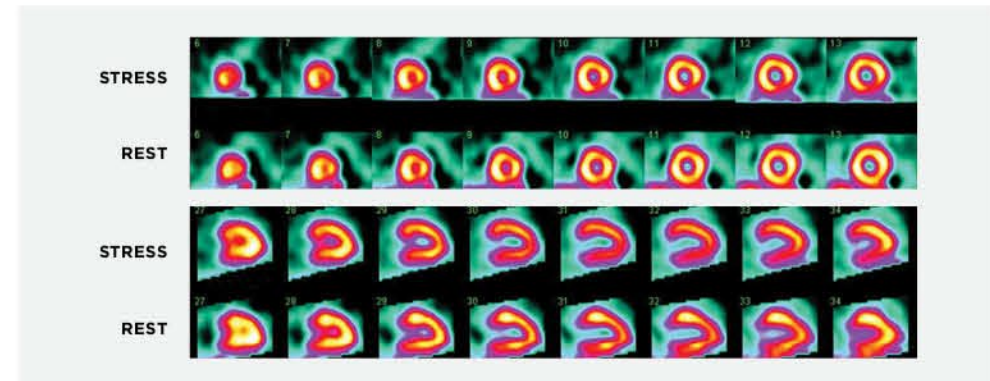
- Allows imaging of the uptake of an intravenously administered radionuclide tracer
- Reduced tracer uptake indicates decreased myocardial blood flow



Images courtesy of Kim Allan Williams, MD.

Ischemia can be identified by comparing images obtained at stress (either exercise or, for patients unable to undergo adequate exercise stress, pharmacologic) with those obtained at rest²

- During stress, blood flow increases in normal coronary arteries, where little or no increase occurs in stenotic arteries
- Ischemia may appear during stress and rest (fixed perfusion defect) or just at stress (reversible perfusion defect)



Images courtesy of Kim Allan Williams, MD.

1. Strauss HW, et al. J Nucl Med Technol 2008;36(3):155-61. 2. Udelson JE, et al. In: Zipes DP, et al, eds. Braunwald's Heart Disease. 2019:261-300.



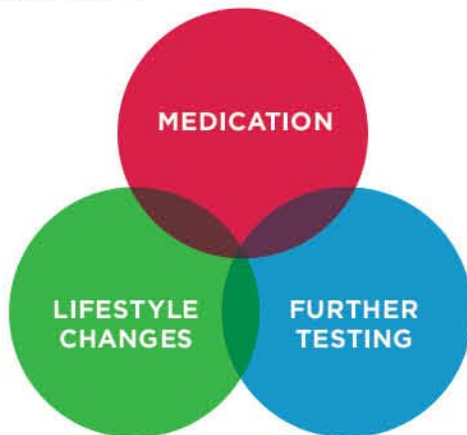
UTILITY OF SPECT MPI

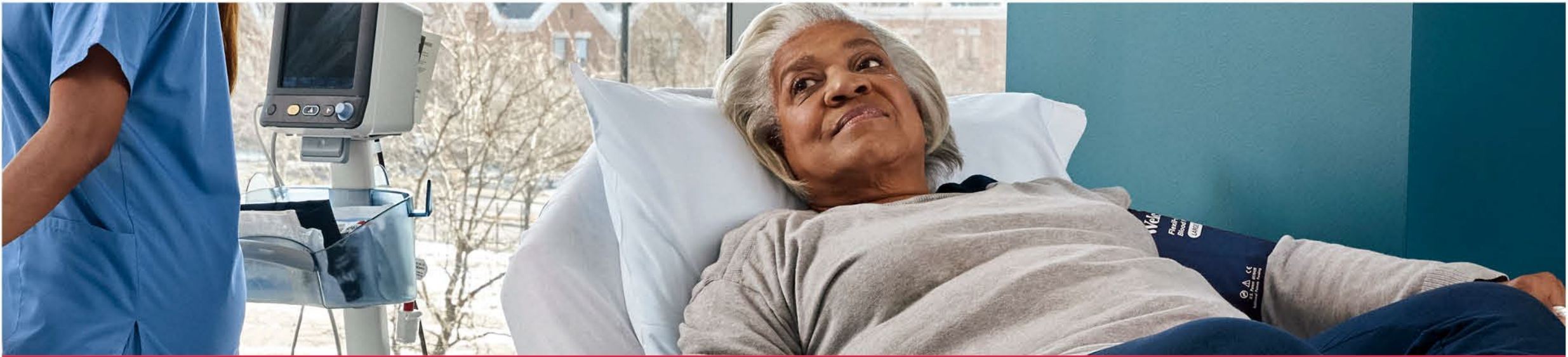
3



HOW IT'S USED

- A SPECT MPI test may be scheduled by a referring or ordering provider, used in an emergency department scenario, or coordinated through a chest pain center (ie, through a hospitalist)
- The nuclear cardiologist will discuss test results with the patient's primary care provider to determine next steps, which may include¹:





NUCLEAR CARDIAC STRESS TESTING

Nuclear stress testing is done using exercise or pharmacologic stress, if patients are unable to achieve adequate exercise stress.¹

1



**EXERCISE
STRESS**

2



**PHARMACOLOGIC
STRESS**

As the most commonly used imaging modality in nuclear cardiology, SPECT MPI plays an essential role in the risk assessment and evaluation of CAD.¹

1. Udelson JE, et al. In: Zipes DP, et al, eds. Braunwald's Heart Disease. 2019:261-300.



NUCLEAR CARDIAC STRESS TESTING

1



EXERCISE STRESS

- If the patient is able, and the situation is appropriate, exercise testing is preferred¹
- Preferred method of stress because it provides information about exercise tolerance, hemodynamic response, heart rate recovery, and electrocardiographic changes²
- Induces dilation of the coronary vessels to determine areas of ischemia during stress²
- Adequate exercise performance is necessary to obtain reliable MPI results²
 - Exercise to at least 85% of age-adjusted maximum predicted heart rate is considered adequate³





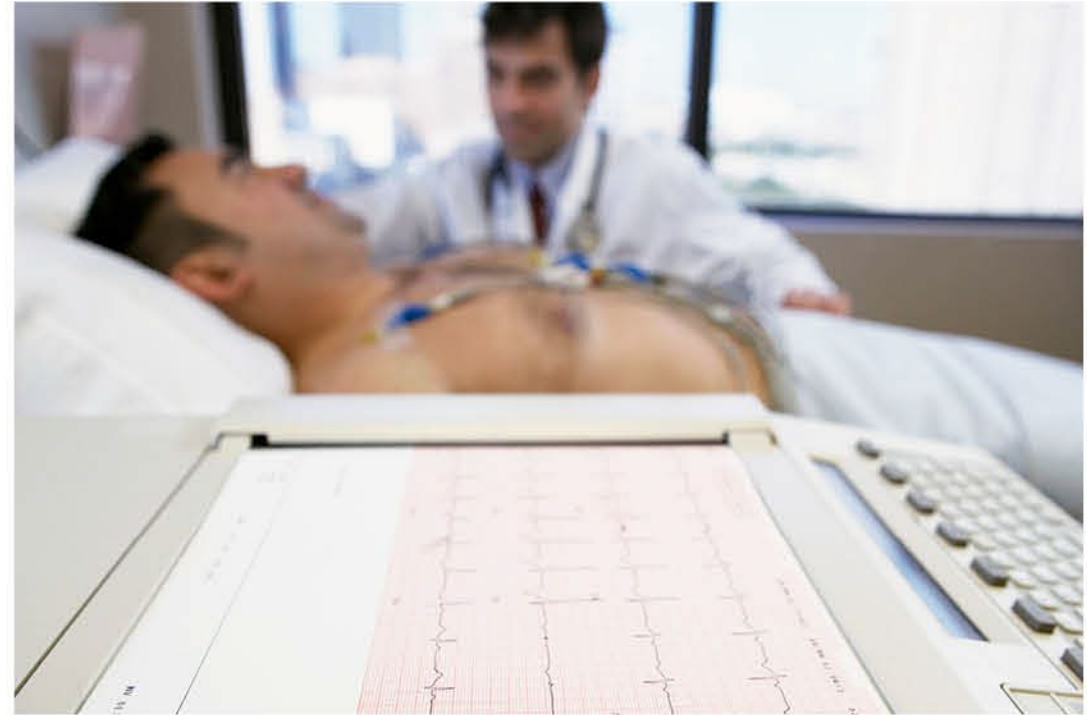
NUCLEAR CARDIAC STRESS TESTING

2



PHARMACOLOGIC STRESS

- Mimics the effect of exercise on coronary blood flow¹
- Preferred for patients unable to exercise adequately due to physical limitations or certain comorbidities¹
- If a patient has chronic obstructive pulmonary disease (COPD) or asthma, they should discuss their respiratory history with their clinicians before scheduling an MPI procedure²





NUCLEAR CARDIAC STRESS TESTING

2



PHARMACOLOGIC STRESS

(continued)

Potential side effects

- Shortness of breath, chest pain, headache, and flushing are common reactions to pharmacologic stress agents^{1,2}
- Potential serious adverse events associated with pharmacologic stress agents include myocardial infarction, sinoatrial and atrioventricular (AV) nodal block, ischemic ST-segment depression, atrial fibrillation, and bronchospasm. Consult the labeling for the specific agent for further safety information^{1,2}





PATIENT PREPARATION

This section provides suggestions that may help your patients receive the highest quality healthcare and have a positive experience at your facility.

1 |  **COMMUNICATION**

2 |  **EXPECTATIONS**

3 |  **STRESS TEST PREP**

4 |  **RESOURCES**

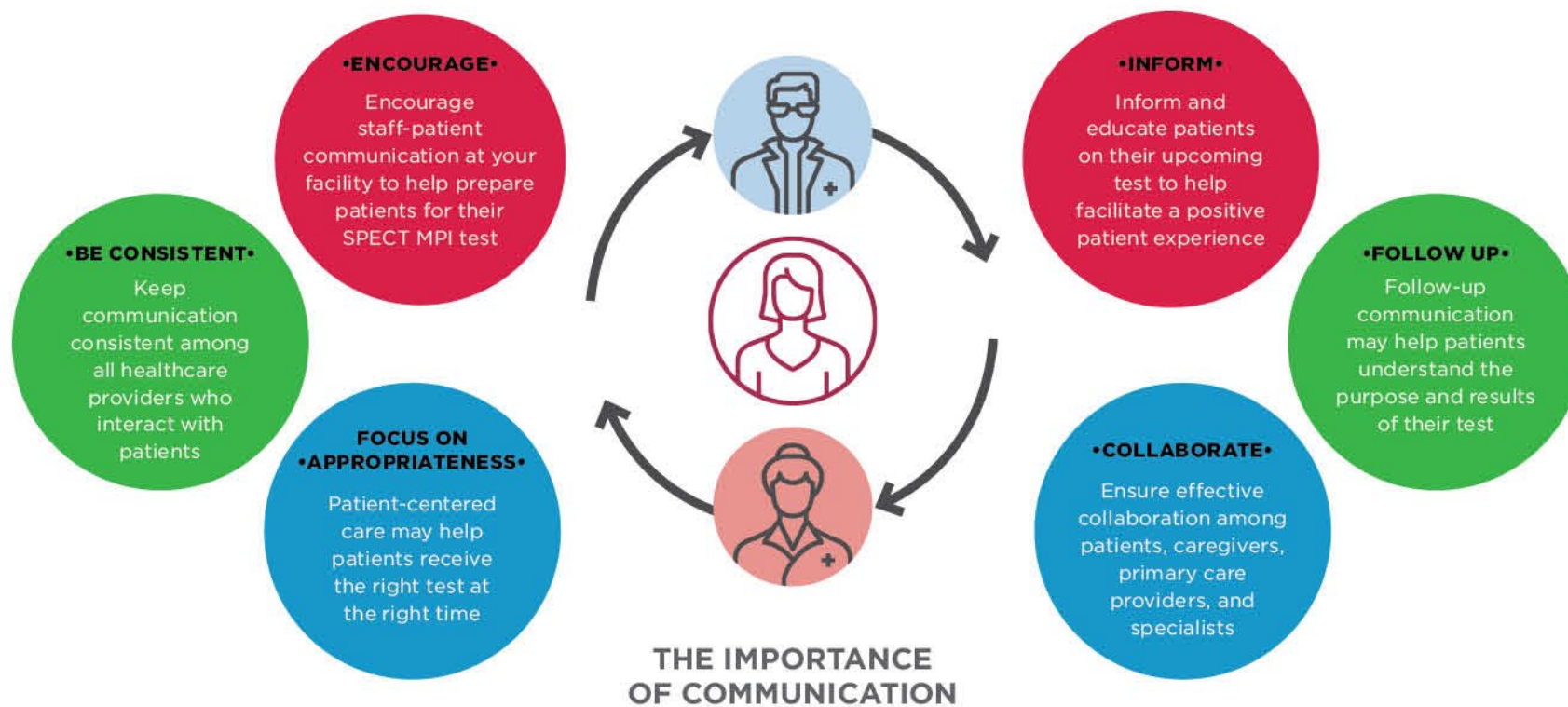


PATIENT PREPARATION

1



COMMUNICATION





PATIENT PREPARATION

2



EXPECTATIONS

SPECT MPI is a noninvasive test¹

- Monitor patients during the test²
- Stress images are acquired either following exercise stress or pharmacologic stress, for those unable to achieve adequate exercise stress¹
- A radiotracer is injected into the patient's bloodstream through a vein in the arm¹
- The patient may lie down on a table or sit upright in a reclining chair to have their heart scanned with a gamma camera that moves around their chest^{1,3}
- The patient should try to be as still as possible while pictures are being taken
- The test may take between 2 and 2.5 hours (depending on your protocol)¹

Prepare patients by providing facility information, including parking information and the location of the lab.²

WHAT YOU NEED TO KNOW ABOUT YOUR Heart Imaging Test

We'll be testing your heart

You will be undergoing a **cardiac nuclear stress test**—it's a very common test for coronary artery disease (CAD). It can help doctors see if there's a problem with the blood flow to your heart without doing any surgery.

*The technical name of this test is myocardial perfusion imaging (MPI).

What is this test exactly?

This test creates a picture of the blood flow through your heart muscle. A liquid called a tracer, which holds a small amount of radiation, is injected into your vein. The tracer makes its way through your veins and into your heart. Then a special camera creates computer-generated pictures of how the tracer flows into your heart.

 Normal (healthy)	 Clogged (unhealthy)	 Rest Stress	
Using this camera, your doctors will be able to see which areas of your heart are not getting enough blood. This tells them which coronary arteries may be clogged.	The clogged arteries may be identified by looking at 2 images of your heart side by side: one taken while you are at rest, and one taken after you have been exercising.	The images above show what the scans may look like.	If you are not able to exercise, your doctor may prescribe a stress medicine in its place. This medicine will be injected in the same place as the tracer.
			Your doctors will explain to you what your heart images mean.

“GETTING READY” PATIENT HANDOUT

Download this resource and more at
AllForOneCardiovascular.com.

1. American Heart Association. Single photon emission computed tomography (SPECT) (07-31-2015). <https://www.heart.org/en/health-topics/heart-attack/diagnosing-a-heart-attack/single-photon-emission-computed-tomography-spect>. Accessed 06-22-2020. 2. Wackers FJT, et al. Nuclear Cardiology: The Basics. 2008:45-53. 3. Dorbala S, et al. J Nucl Cardiol 2018;25(5):1784-846.



PATIENT PREPARATION

3



STRESS TEST PREP

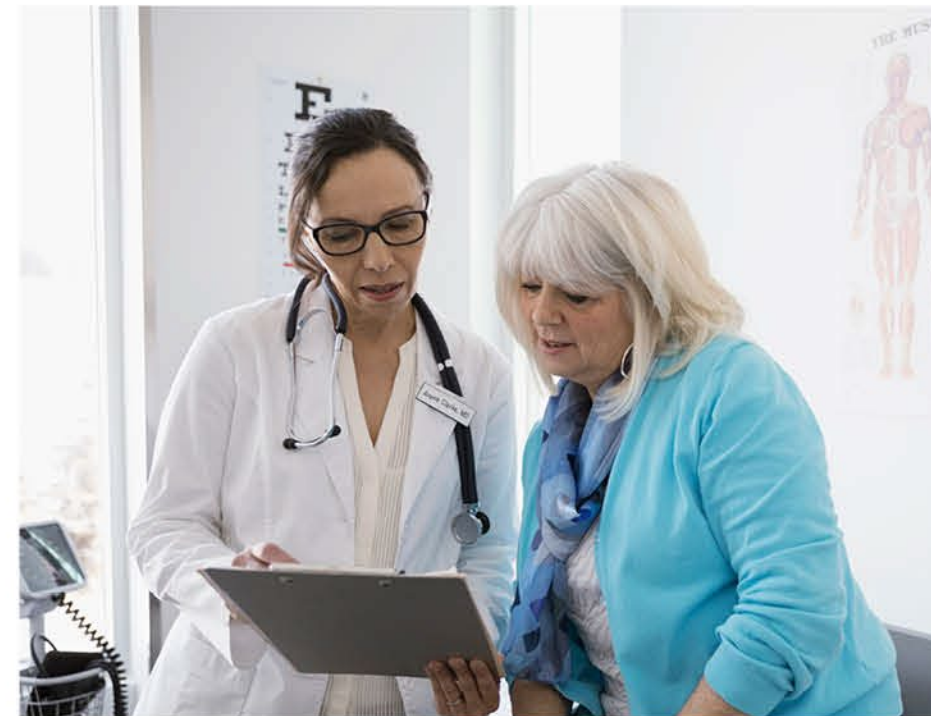
Specific instructions for the patient prior to test

Per your protocol,^a advise the patient to avoid drinks, foods, and medications containing caffeine or theophylline for 12 hours, as well as medications containing dipyridamole for 48 hours, before the test¹

- Provide a list of additional medications to avoid¹
- Advise the patient regarding fasting per your facility protocol¹
- Remind the patient not to apply creams, powders, or lotions to the chest area²
- Advise the patient to wear comfortable clothing and shoes³
- Question the patient about a history of seizures¹

Additional guidance for medications

- Discuss the patient's medications with medical personnel prior to SPECT MPI
- The referring physician may want the patient to undergo testing while on medications to determine if these medications are reducing ischemic burden
- The patient should be instructed to bring a list of their medications on the day of the test



^aProtocols may vary by institution or facility.

1. Henzlova MJ, et al. J Nucl Cardiol 2016;23(3):606-39. 2. Coats NP, et al. J Cardiovasc Nurs 2012;27(4):345-55. 3. National Heart, Lung, and Blood Institute. Stress Test (09-27-2019). <https://www.nhlbi.nih.gov/print/4858>. Accessed 03-20-2020.



PATIENT PREPARATION

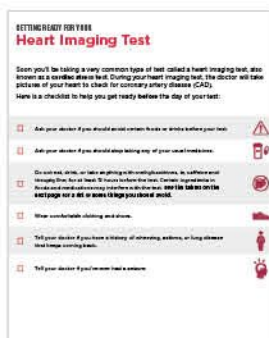
4 | RESOURCES

Customizable patient resources on AllForOneCardiovascular.com

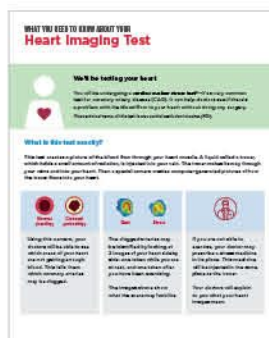
- Visit the site for more information and to download patient education resources that can be customized with your facility information and logo
- Please see AllForOneCardiovascular.com for additional language availability



PATIENT HEART IMAGING TEST GUIDE



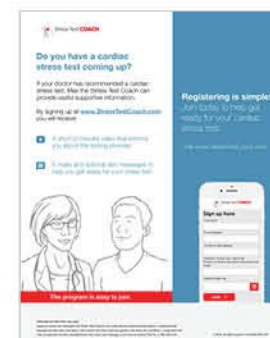
PATIENT TEST PREP CHECKLIST



"GETTING READY" PATIENT HANDOUT



EARLY DETECTION PATIENT FACT SHEET



STRESS TEST COACH HANDOUT



RISK AWARENESS BROCHURE



PATIENT PREPARATION

4

RESOURCES

Customizable practice resource on [AllForOneCardiovascular.com](https://www.allforonecardiovascular.com)

- You can also download a customizable resource for your facility
- Please see [AllForOneCardiovascular.com](https://www.allforonecardiovascular.com) for additional language availability



“NO CAFFEINE” PATIENT IDENTIFIER



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