Body System: Cardiovascular

Session Topic: Advanced Cardiac Imaging

Educational Format		Faculty Expertise Required
REQUIRED	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
OPTIONAL	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. Please describe your interest and plan for teaching a PBL on your proposal form.

Professional Practice Gap	Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
• Patients exposed to low-dose ionizing radiation from cardiac imaging and therapeutic procedures after acute myocardial infarction may be at increased risk of cancer. • Gaps exist in the appropriate use of risk assessment tools to stratify at risk patients. • Family physicians have a knowledge and performance gap related to the selection of appropriate cardiac imaging modality for specific cardiovascular problems. • Family physicians have a knowledge gap related to adequate documentation of medical imaging reports.	1. Perform an initial evaluation, including a Framingham risk estimate and global risk score, to assess the need for cardiac imaging or stress testing. 2. Use evidence-based guidelines to apply the principles of judicious imaging for selected cardiac presenting conditions. 3. Use evidence-based guidelines to appropriately document diagnostic cardiac imaging findings.	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.

ACGME Core Competencies Addressed (select all that apply)

X	Medical Knowledge		Patient Care
	Interpersonal and Communication Skills		Practice-Based Learning and Improvement
	Professionalism		Systems-Based Practice

Faculty Instructional Goals

Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of

new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.

- Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations
- Facilitate learner engagement during the session
- Address related practice barriers to foster optimal patient management
- Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the References section below are a good place to start
    - Visit http://www.aafp.org/journals for additional resources
    - Visit http://familydoctor.org for patient eduction and resources
- Provide a clinical decision making tool to assist in the selection of the appropriate cardiac imaging/nuclear imaging/stress test for common and uncommon presenting conditions
- Provide specific case-based examples of selecting cardiac imaging/nuclear imaging/stress test for difficult and challenging situations
- Provide specific strategies to effectively document cardiac imaging findings
- Provide specific guidance for effective communication with specialists when referring for cardiac imaging/nuclear imaging/stress testing.

Needs Assessment:

Ryan:
This is evaluating for ischemic disease, so I am not sure this stat applies.

Not sure the MRI and CT stats are relevant

Asim:
Advaced Cardiac Imaging- looks good. different types of cardiac imaging stress tests vs uc stress tests, ECHO, Angi, calcium scores/ CTs...

At any given time, family physicians are likely to see patients who have evidence of a suspected cardiovascular-related problem. Approximately 600,000 people die of heart disease in the U.S. every year, with coronary heart disease (CHD) being the most common type, and is the leading cause of death for both men and women.[1,2] In 2010, heart disease (excluding ischemic) was the principle diagnosis in over 12 million office visits.[3] Family physicians frequently screen, diagnose, and evaluate heart disease. Magnetic resonance imaging (MRI) scans were performed in over 18 million office visits, computed tomography (CT) scans were performed in over 17 million office visits in 2010.[3] Approximately 11.7% of family physicians provide cardiac stress testing in their practice.[4] Cardiac imaging with echocardiography and radionuclide techniques has played an increasingly important role in cardiovascular care over the past decade; however, patients who are exposed to low-dose ionizing radiation from cardiac imaging and therapeutic procedures after acute myocardial infarction may be at increased risk of cancer.[5-7]

CME outcomes data from the American Academy of Family Physicians (AAFP) Advanced Cardiac Testing CME Program, as well as data from a national study of the National Research Network (NRN), indicate that cardiac tests ordered by family physicians vary regionally, and

that physician-patient communication gaps, as well as coordination of care gaps exists and are barriers to optimal patient care. AAFP CME Needs Assessment CME Survey data suggests that family physicians have knowledge and skill gaps related to stress tests and cardiac imaging.[8] Additionally, CME outcomes data from the 2012 AAFP Scientific Assembly session: *Exercise Testing (Advanced)* and 2014 AAFP Assembly: *Advanced Cardiac Imaging and Stress Testing* sessions, indicated that over 41% of physician-learners identified their need for further education on exercise stress testing protocols and scanning techniques; and using appropriate risk stratification tools. Family physicians must remain up to date on current evidence-based guidelines on cardiac imaging and testing.

The goal for using any cardiac imaging or stress test should be to maximize usefulness without unnecessary cost or harm to the patient, however, some studies suggest that 30% to 50% of cardiovascular imaging tests are partially or totally inappropriate.[9] Cardiac imaging tests have been ordered with more frequency over the last several decades; with more imaging tests being ordered by the self-referring physician who have their own equipment, compared to who refer to a radiologist.[10-12] The AAFP position paper on radiology discusses ordering and interpreting radiographs in the outpatient setting, and referring for more extensive imaging when indicated.[13] Physicians should apply the principles of judicious imaging, which involves ordering the recommended diagnostic procedures for selected common presenting conditions. Appropriateness criteria for various imaging modalities for specific clinical scenarios were developed by the American College of Radiology (ACR). The ACR uses a nine-point scale, with a score of 9 representing a test that is considered most appropriate by expert consensus panels. There is no single imaging modality that has proven to be superior in all situations; therefore family physicians should be prepared to tailor imaging to each person based on the clinical judgment of the a priori risk of cardiac event, clinical history and local expertise.[14] Documentation of diagnostic imaging is also inconsistent among many primary care providers; therefore, family physicians should be familiar with ACR practice guidelines for communication of diagnostic imaging findings.[15,16]

Physicians must always consider the safe and effective use of diagnostic imaging, as risks of diagnostic imaging include cancer from radiation exposure and nephrogenic systemic fibrosis, and the overuse of health care services leads to poor quality and high costs.[6,17-19] Physicians should consult Choosing Wisely® recommendations when considering cardiac imaging tests:[20-26]

- Don’t perform stress cardiac imaging or advanced noninvasive imaging in the initial evaluation of patients without cardiac symptoms unless high-risk markers are present.
- Don’t perform cardiac imaging as a preoperative assessment in patients scheduled to undergo low- or intermediate-risk noncardiac surgery.
- Use methods to reduce radiation exposure in cardiac imaging, whenever possible, including not performing such tests when limited benefits are likely.
- Don’t perform cardiac imaging for patients who are at low risk.
- Don’t perform radionuclide imaging as part of routine follow-up in asymptomatic patients.

As research continues to help develop new techniques and improve existing techniques in the areas of cardiac radionuclide imaging, echocardiography, cardiac computed tomography (CT), and cardiac magnetic resonance imaging (MRI), family physicians must receive continuing

education to be able to incorporate current guidelines from national organizations, including the American Heart Association (AHA) and the American College of Cardiology (ACC), provide guidance on the choice and use of imaging modalities in patient populations with and at risk of CAD.[27] Family physicians should be familiar with AAFP and USPSTF recommendations on the use of cardiac imaging and stress tests to screen for CHD in adults. The AAFP found insufficient evidence to recommend for or against routine screening with electrocardiography (ECG), exercise treadmill test (ETT), electronbeam computerized tomography (EBCT) scanning for coronary calcium for either the presence of severe coronary artery stenosis (CAS) or the predication of coronary heart disease (CHD) events in adults at increased risk for CHD events.[28]

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Noninvasive Cardiac Imaging[27]
- Diagnosis of stable ischemic heart disease[29]
- ACCF/SCCT/ACR/AHA/ASE/ASNC/NASCI/SCAI/SCMR Appropriate Use Criteria for Cardiac Computed Tomography[30]
- ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease:[31]
- ACCF/AHA guideline for assessment of cardiovascular risk in asymptomatic adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines[32]
- Transient ischemic attack: Part I. Diagnosis and evaluation[33]
- Improvement of cardiovascular risk prediction using coronary imaging: subclinical atherosclerosis: the memory of lifetime risk factor exposure[34]
- Radiologic evaluation of suspected congenital heart disease in adults[35]
- ACR-NASCI-SPR practice guideline for the performance of pediatric and adult body magnetic resonance angiography (MRA)[36]
- Appropriate and safe use of diagnostic imaging[6]
- ACCF/ASE/ACEP/AHA/ASNC/SCAI/SCCT/SCMR appropriateness criteria for stress echocardiography[37]
- ACR Appropriateness Criteria: chronic chest pain--high probability of coronary artery disease[38]
- ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM appropriate use criteria for cardiac radionuclide imaging[39]
- Stress protocols and tracers[40]
- ACR Appropriateness Criteria: acute nonspecific chest pain-low probability of coronary artery disease[41]
- ACR Appropriateness Criteria: on chest pain, suggestive of acute coronary syndrome[42]
- ACCF/ACR/ASE/ASNC/SCCT/SCMR Appropriate Utilization of Cardiovascular Imaging in Heart Failure[43]
- ACR Cardiac Imaging Criteria[44]
- 2013 ACR/ACCF Joint Criteria for the Appropriate Utilization of Cardiovascular Imaging[12]
- ACR practice guideline for communication of diagnostic imaging findings[16]

- Update on Exercise Stress Testing[45]
- Family Practice Management: FPM Toolbox – Clinical Decision Tools[46]
- Thinking on Paper: Documenting Decision Making[47]
- The Integrated Summary: A Documentation Tool to Improve Patient Care[48]
- FamilyDoctor.org. Heart Attack | Diagnosis & Tests (patient resource)[49]

References

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