



<b>Body System: Cardiovascular</b>			
<b>Session Topic: Adult Heart Murmurs</b>			
<b>Educational Format</b>		<b>Faculty Expertise Required</b>	
<b>REQUIRED</b>	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.	
<b>OPTIONAL</b>	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. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>	
<b>Professional Practice Gap</b>		<b>Learning Objective(s) that will close the gap and meet the need</b>	<b>Outcome Being Measured</b>
<ul style="list-style-type: none"> <li>Physicians demonstrate significant deficiencies in cardiac auscultation skills; especially if the patient is female, and particularly when male physicians are attempting to correctly auscultate the mitral valve region and palpate for the apical impulse on female versus male patients.</li> <li>Physicians are often challenged to identify pathologic murmur, using physiologic and pharmacologic maneuvers in the differential diagnosis, determining when referral is appropriate, and recognizing when the murmur is benign or needs follow-up.</li> <li>Physicians need to be kept up to date on recent (2014) ACC/AHA) guidelines on the management of patients with valvular heart disease.</li> </ul>		<ol style="list-style-type: none"> <li>Distinguish innocent and abnormal heart murmurs in patients and classify them as systolic, diastolic or continuous.</li> <li>Formulate a differential diagnosis of specific cardiac sounds and explain the pathology of heart murmurs to patients.</li> <li>Evaluate diagnostic factors in patients with suspected heart murmurs using cost-effective cardiac testing.</li> <li>Coordinate referral and follow-up to a cardiologist for patients with a pathologic cardiac examination, or who has cardiac symptoms and questionable findings on the cardiac examination.</li> </ol>	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.
<b>ACGME Core Competencies Addressed (select all that apply)</b>			
X	Medical Knowledge		Patient Care
	Interpersonal and Communication Skills		Practice-Based Learning and Improvement



Professionalism	X	Systems-Based Practice
<b>Faculty Instructional Goals</b>		
<p>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.</p> <ul style="list-style-type: none"> <li>• Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy &amp; reference citations</li> <li>• Facilitate learner engagement during the session</li> <li>• Address related practice barriers to foster optimal patient management</li> <li>• 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 <u>References</u> section below are a good place to start <ul style="list-style-type: none"> <li>○ Visit <a href="http://www.aafp.org/journals">http://www.aafp.org/journals</a> for additional resources</li> <li>○ Visit <a href="http://familydoctor.org">http://familydoctor.org</a> for patient education and resources</li> </ul> </li> <li>• Provide specific case-based examples illustrating how to apply ACC/AHA guidelines to practice</li> <li>• Provide specific case-based examples illustrating the diagnosis &amp; distinction of innocent and abnormal heart murmurs in adult patients</li> <li>• Provide specific strategies and resources for coordinating referral and follow-up to a cardiologist for patients with a pathologic cardiac examination, or who has cardiac symptoms and questionable findings on the cardiac examination</li> </ul>		

**Needs Assessment**

Murmurs can be benign, but they can also be the first signs of pathological changes in the heart valves. Cardiac auscultation is one of the most useful investigative tools available to a physician to detect alterations in cardiovascular anatomy and physiology. Auscultation has a reported sensitivity of 70 percent and a specificity of 98 percent for detection of valvular heart disease. However, the sensitivity and specificity vary substantially with the expertise of the examiner.<sup>1</sup> Distinguishing a pathological murmur from a physiological murmur can be difficult, and some studies indicate that as few as 35% of internal medicine and family medicine residence are able to correctly diagnose a heart murmur using auscultation.<sup>2,3</sup> While signs and symptoms usually depend on the cause (i.e., systolic vs. diastolic functioning) and its severity, some patients exhibit more obvious signs, including blue coloring of the skin; poor eating and abnormal growth, which is especially common in infants; shortness of breath; excessive sweating; chest pain; dizziness or fainting; and fatigue.

Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicates that family physicians have a significant knowledge gap with regard to diagnosing and managing adult heart murmurs.<sup>4</sup> More specifically, CME outcomes data from 2013 and 2014 AAFP Assembly: *Adult Heart Murmur* sessions suggest that physicians are in need of continuing medical education to assist them with diagnosis and evaluation of heart



murmur, especially related to auscultation; identifying pathologic murmur; using physiologic and pharmacologic maneuvers in the differential diagnosis; determining when referral is appropriate; and recognizing when the murmur is benign or needs follow-up.<sup>5,6</sup> A review of the literature validates that physicians at all training levels demonstrate significant deficiencies in cardiac auscultation skills; especially if the patient is female, and particularly when male physicians are attempting to correctly auscultate the mitral valve region and palpate for the apical impulse on female versus male patients.<sup>7,8</sup>

In order to make an accurate diagnosis and appropriate selection of therapeutic interventions, physicians need to be kept up to date on major advances in diagnostic imaging, interventional cardiology and surgical approaches.<sup>9</sup> Awareness of surgical history can help rule out sounds made by prostheses. A prosthetic mitral valve produces a distant click early in diastole that is loudest at the apex and transmitted precordially. A prosthetic aortic valve, on the other hand, causes a sound early in systole. Animal tissues may be silent, and pacemakers no longer produce a sound.<sup>10</sup>

If an abnormal murmur is suspected, physicians may order a chest x-ray, echocardiogram, electrocardiogram, or additional cardiac testing. An echocardiogram is the standard for establishing the cause of a murmur, and family physicians should have working knowledge of current American College/American Heart Association (ACC/AHA) guidelines on the management of patients with valvular heart disease, including recommendations for the use echocardiography in patients with symptomatic and asymptomatic murmurs.<sup>11,12</sup>

Family physicians may choose to refer some patients to sub-specialists for further evaluation and testing, but family physicians should still coordinate care and help explain the potential findings to families. In cases in which specific cardiac abnormalities are confirmed, family physicians are able to offer guidance on steps that can be taken to ensure long-term health, especially when the patient is a child. Depending upon the etiology, family physicians also should be able to discuss potential treatment options, as well as options that may limit progression of further disease, when available.

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

- Radiologic evaluation of suspected congenital heart disease in adults<sup>10</sup>
- Diagnosis and evaluation of heart failure<sup>11</sup>
- 2014 American College of Cardiology/American Heart Association (ACC/AHA) guidelines on the management of patients with valvular heart disease<sup>12</sup>
- Guideline on antibiotic prophylaxis for dental patients at risk for infection<sup>13</sup>
- Simple Tools to Increase Patient Satisfaction With the Referral Process<sup>14</sup>
- Engaging Patients in Collaborative Care Plans<sup>15</sup>
- FamilyDoctor.org. Heart Murmurs | Overview (patient resource)<sup>16</sup>

#### **References:**

1. Mineo K, Cummings J, Josephson R, Nanda NC. Acquired left ventricular outflow tract obstruction during acute myocardial infarction: diagnosis of a new cardiac murmur. *The American journal of geriatric cardiology*. Sep-Oct 2001;10(5):283-285.



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3. Ahlstrom C, Hult P, Rask P, et al. Feature extraction for systolic heart murmur classification. *Annals of biomedical engineering*. Nov 2006;34(11):1666-1677.
4. AAFP. 2012 CME Needs Assessment: Clinical Topics. American Academy of Family Physicians; 2012.
5. American Academy of Family Physicians (AAFP). AAFP Assembly CME Outcomes Report. Leawood KS: AAFP; 2014.
6. American Academy of Family Physicians (AAFP). 2013 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2013.
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8. Chakkalakal RJ, Higgins SM, Bernstein LB, et al. Does patient gender impact resident physicians' approach to the cardiac exam? *Journal of general internal medicine*. Apr 2013;28(4):561-566.
9. Maganti K, Rigolin VH, Sarano ME, Bonow RO. Valvular heart disease: diagnosis and management. *Mayo Clinic proceedings. Mayo Clinic*. May 2010;85(5):483-500.
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12. Nishimura RA, Otto CM, Bonow RO, et al. 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Journal of the American College of Cardiology*. 2014;63(22):e57-e185.
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15. Mauksch L, Safford B. Engaging Patients in Collaborative Care Plans. *Family practice management*. 2013;20(3):35-39.
16. FamilyDoctor.org. Heart Murmurs | Overview. 1999; <http://familydoctor.org/familydoctor/en/diseases-conditions/heart-murmurs.html>. Accessed August, 2013.