

National Imaging Associates, Inc.	
Clinical guidelines HEART CATHETERIZATION	Original Date: February 01, 2010 Page 1 of 4
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INTRODUCTION:

Heart Catheterization, is an invasive angiographic procedure used to evaluate the presence and extent of coronary artery disease as well as ventricular and valvular function. It can be used to perform various tests, including angiography, intravascular ultrasonography, and measurement of cardiac output (CO), detection and quantification of shunts, endomyocardial biopsy, and measurements of myocardial metabolism. It should be primarily used in acute coronary syndromes and when an intervention is anticipated. These guidelines apply to patients with chronic stable conditions or new but stable conditions. In many but not all of these patients, exercise testing should be done prior to consideration of a left heart catheterization. However, a positive stress test should not automatically lead to cardiac catheterization since angioplasty/stenting may not be the best first-line therapy for stable coronary artery disease.

These guidelines **do not** apply to patients in the acute setting (acute coronary syndrome) or patients with unstable angina. These patients should be handled as a medical emergency.

INDICATIONS FOR LEFT HEART CATHETERIZATION:

- Identification of clinical syndromes in which revascularization may result in prolonged survival:
 - Left main coronary artery disease
 - Three vessel coronary artery disease with left ventricular Ejection Fraction (EF) < 50%
 - Strongly positive stress study, [abnormal hemodynamics, reduced exercise tolerance, strongly positive symptoms, (chest pain/ashen complexion)] and multiple wall motion defects on imaging
- The clinical diagnosis of unstable angina, even in cases lacking additional supportive noninvasive cardiac testing
- Evaluation of patients with:
 - results of noninvasive cardiac studies are equivocal or non-diagnostic, AND
 - symptoms are not responding adequately to optimized medical therapy
- Evaluation of patients who:
 - are unresponsive to optimized medical therapy, AND
 - require invasive procedures for pain relief

- Further evaluation of the presence and/or extent of coronary artery disease, identified by noninvasive imaging studies, for those cases in which the results of catheterization will have a material impact on the patient management
- Causal evaluation of left ventricular dysfunction (congestive heart failure) (EF<50%) in patients suspected of having coronary artery disease
- Further evaluation of patients in whom non-invasive testing raised concerns for potential significant (>10%) jeopardized myocardium
- Further evaluation in cases where recent noninvasive cardiac testing resulted in:
 - equivocal findings,
 - inability to delineate the clinical problem, or
 - indication for intervention or evaluation of the following conditions:
 - Suspicion of cardiomyopathy, or myocarditis
 - progression of known CAD when symptoms are worsening
 - coronary grafts
 - previously placed coronary artery stents
 - structural disease
- To rule out coronary artery disease prior to planned non-coronary cardiac or great vessel surgery (cardiac valve surgery, aortic dissection, aortic aneurysm, congenital disease repair such as atrial septal defect, or pericardial surgery)
- Significant ventricular arrhythmia such as Ventricular Tachycardia/Ventricular Fibrillation (VT/VF)
- Assessment of cardiac transplant for rejection

ADDITIONAL INFORMATION:

Persistent symptoms indicative of CAD can include typical angina (e.g. exertional chest pain), atypical angina (e.g. arm or jaw pain, chest pressure or tightness), or angina equivalent (e.g. shortness of breath)

Optimized Medical Therapy may include (where tolerated): antiplatelet agents, calcium channel antagonists, partial fatty acid oxidase inhibitors (e.g. ranolazine), statins, short-acting nitrates as needed, long-acting nitrates, beta blocker drugs (if no contraindication and patient can tolerate), angiotensin converting enzyme (ACE) inhibitors/angiotensin receptor blocking (ARB) agents (if no contraindication and patient can tolerate)

REFERENCES

2008 focused update incorporated into the ACC/AHA 2006 guidelines 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 (Writing Committee to Revise the 1998 Guidelines for the Management of Patients with Valvular Heart Disease). Retrieved on 12/02/10 from <http://www.guideline.gov/content.aspx?id=14242&search=left+heart+catheterization>

ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to revise the 1999 guidelines for the Management of Acute Myocardial Infarction). (2) 2007 focused update of the ACC/AHA 2004 guidelines for the management of patients with ST-elevation myocardial infarction. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Retrieved on 12/02/10 from <http://www.guideline.gov/content.aspx?id=12192&search=left+heart+catheterization>

ACC/AHA/SCAI 2005 guideline update for percutaneous coronary intervention. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (ACC/AHA/SCAI Writing Committee to update the 2001 guidelines for percutaneous coronary intervention). (2) 2007 focused update of the ACC/AHA/SCAI 2005 guideline update for percutaneous coronary intervention. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Retrieved on 12/02/10 from <http://www.guideline.gov/content.aspx?id=12193&search=left+heart+catheterization>

ACC/SCA&I Expert Consensus Document, American College of Cardiology/Society for Cardiac Angiography and Interventions Clinical Expert Consensus Document on Cardiac Catheterization Laboratory Standards, *Journal of American College of Cardiology*, 37(8), 2170-2214.

ACR Appropriateness Criteria suspected congenital heart disease in the adult Retrieved on 12/02/10 from <http://www.guideline.gov/content.aspx?id=11557&search=left+heart+catheterization>

Diagnosis and Evaluation of chronic heart failure: a collaboration of European Society of Cardiology (ESC), Heart Failure Society of America (HFSA), National Heart Foundation of Australia/Cardiac Society of Australia and New Zealand (NHFA/CSANZ) and Scottish Intercollegiate Guidelines Network (SIGN) guidelines. Retrieved on 12/02/10 from <http://www.guideline.gov/syntheses/synthesis.aspx?id=16433&search=left+heart+catheterization>

Horwich, T.B., Patel, J., MacLellan, W.R., & Fonarow, G.C. (2003, Aug 19). Cardiac Troponin I is associated with impaired hemodynamics, progressive left ventricular dysfunction, and increased mortality rates in advanced heart failure. *Circulation*, 108(7), 833-38.

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