Appendix B:

Indications for Echocardiography – Standards 2012

1. Heart Murmurs:

1.1. Initial evaluation of a murmur in a patient with cardiorespiratory symptoms.

1.2. A murmur in an asymptomatic patient where structural heart disease cannot be excluded by clinical assessment.

1.3. Re-evaluation of known valvular disease with a change in clinical status or cardiac exam.

2. Native Valvular Stenosis:

2.1. Initial assessment of etiology, severity, chamber dimensions, ventricular systolic function and overall hemodynamic impact.

2.2. Assessment of patients with known valvular stenosis of any severity and changing clinical status or discrepancy between clinical and echocardiographic severity.

2.3. Reassessment within 6-12 months of patients with an initial echocardiographic assessment indicating valvular stenosis of any severity.

2.4. Reassessment (>2 yr) of mild valvular stenosis without a change in clinical status or cardiac exam.

2.5. Reassessment (>1 yr) of moderate valvular stenosis without a change in clinical status or cardiac exam.

2.6. Reassessment (>6 mos) of severe valvular stenosis without a change in clinical status or cardiac exam.

3. Native Valvular Regurgitation:

3.1. Initial assessment of etiology, severity, chamber dimensions, ventricular systolic function and overall hemodynamic impact.

3.2. Assessment of patient with known valvular regurgitation of any severity and changing clinical status or discrepancy between clinical and echocardiographic severity.

3.3. Reassessment (>1 yr) of patients with asymptomatic moderate valvular regurgitation.

3.4. Reassessment (>6 mos) of patients with asymptomatic severe valvular regurgitation.

4. Known or Suspected Mitral Valve Prolapse:

4.1. Diagnosis and assessment of hemodynamic severity, leaflet morphology, ventricular cavity size and function in patients with physical findings of mitral valve prolapsed.

4.2. Patients with previous diagnosis of mitral valve prolapse and changing clinical status or physical findings suggestive of progressive valvular dysfunction.

4.3. To re-evaluate patients with prior echocardiographic diagnosis but no supporting physical findings.

4.4. Reassessment (>2 yrs) of patients with significant leaflet thickening or redundancy.

4.5. Periodic reassessment as required by severity of regurgitation (as per section 3).

5. Congenital or Inherited Cardiac Structural Disease (including Bicuspid Aortic Valve, Marfan's Syndrome, Atrial Septal Defect, Ventricular Septal Defect, Ehler's Danlos Syndrome):

5.1. Patients with known congenital or inherited structural heart disease and changing clinical status or symptoms.

5.2. Patients in whom clinical findings, the results of other investigations, or family history would suggest the presence of a congenital or Inherited Cardiac Structural Disease.

5.3. Reassessment (>2 yrs) of asymptomatic individuals with previously diagnosed congenital or Inherited Cardiac Structural Disease.

6. Prosthetic Heart Valves:

6.1. Assessment of a newly implanted prosthetic heart valve (baseline assessment).

6.2. Re-assessment (> 1 years) in asymptomatic, hemodynamically stable patients if no known or suspected prosthetic valve dysfunction.

6.3. Assessment of a prosthetic heart valve in patients with symptoms, clinical findings or prior echocardiogram suggestive of prosthetic valve dysfunction.

7. Infective Endocarditis:

7.1. Patients in whom endocarditis is suspected clinically.

7.2. In a patient with clinically proven or suspected endocarditis to assess the severity and hemodynamic impact of valvular lesions, and to detect other high risk lesions (e.g. fistulae, abscesses).

7.3. Re-assessment of patients at high risk for complications or with a change in clinical status or cardiac exam.

7.4. Reassessment in a clinically stable patient with prior echocardiographic evaluation to assess response to therapy or detect clinically silent disease progression.

8. Pericardial Disease:

8.1. Evaluation of patients with suspected pericarditis, pericardial effusion, tamponade or constriction.

8.2. Initial follow up of patients with no change in clinical status but a pericardial effusion of suspected clinical significance.

8.3. Follow up of any pericardial effusion in patients with changing clinical status suspected related to the effusion.

8.4. Reassessment at yearly intervals in patients with moderate or large pericardial effusion.

8.5. Echocardiographic guidance of pericardiocentesis for diagnostic or therapeutic purposes.

9. Cardiac Masses:

9.1. Evaluation of patients with clinical syndromes suspicious for an underlying cardiac mass.

9.2. Follow up following surgical removal of masses/tumours, intervals to be determined by the pathology, patient clinical status and known natural history of the lesion.

9.3. Patients with malignancies when echocardiographic assessment for cardiac involvement is part of the standard disease staging process.

9.4. Evaluation of cardiac mass detected by other imaging modalities.

10. Interventional Procedures:

10.1. To assist pre and peri-procedural decision making for percutaneous interventional and electrophysiologic procedures (e.g. valvuloplasty, closure device insertion, catheter ablation, mitral valve repair).

10.2. Post-intervention baseline studies for valve function, closure device placement and stability, and ventricular remodeling (e.g. within 3 months).

10.3. Re-evaluation of patients post interventional procedure with suspected surgical complication (e.g. valvular dysfunction, closure device erosion/migration, perforation).

11. Pulmonary Diseases:

11.1. Evaluation of suspected or established pulmonary hypertension.

11.2. Reassessment of pulmonary hypertension to evaluate response to treatment.

11.3. Evaluation of suspected acute pulmonary embolism.

11.4. Reassessment after initial treatment of pulmonary embolism.

11.5. Patients being considered for lung transplantation or other surgical procedure for advanced lung disease to exclude possible cardiac disease.

11.6. Patients with known chronic lung disease and unexplained desaturation.

12. Chest Pain and Coronary Artery Disease:

12.1. Evaluation of suspected aortic dissection.

12.2. Chest pain with hemodynamic instability.

12.3. Chest pain or ischemic equivalent suggestive of underlying coronary artery disease.

12.4. Heart murmur associated with acute or recent myocardial infarction

12.5. Assessment of infarct size and baseline LV systolic function post myocardial infarction.

12.6. Assessment of LV function post revascularization.

12.7. As a component of periodic (≥1 yr) reassessment of patients with known ischemic LV dysfunction.

12.8. Periodic (≥6 mos) reassessment of LV function to guide or modify therapy in patients with known severe ischemic LV dysfunction.

13. Dyspnea, Edema and Cardiomyopathy:

13.1. Assessment of patients with suspected heart failure.

13.2. Clinically suspected cardiomyopathy.

13.3. Patients with clinically unexplained hypotension.

13.4. Assessment of baseline LV function and periodic review when using cardiotoxic drugs.

13.5. Re-evaluation of LV function in patients with documented cardiomyopathy and change in clinical status or undergoing procedures that could potentially affect function such as alcohol septal ablation or surgical myomectomy.

13.6. Reassessment of patients with known cardiomyopathy to evaluate significance of symptoms and guide therapy.

13.7. Screening of relatives potentially affected by inherited cardiomyopathy.

13.8. Reassessment (> 1 yr) of asymptomatic cardiomyopathy patients for disease progression in order to assess suitability for medical or device treatment.

14. Hypertension:

14.1. Suspected left ventricular dysfunction.

14.2. Evaluation of left ventricular hypertrophy that may influence management.

15. Thoracic Aortic Disease:

15.1. Suspected aortic dissection.

15.2. Suspected aortic rupture/trauma.

15.3. Suspected dilatation of aortic root or ascending aorta for any cause.

15.4. Evaluation patient with known aortic pathology and change in symptoms or clinical findings suggestive of progression.

15.5. Suspected or proven Marfan Syndrome or other connective tissue disorder in which aortic pathology is a potential feature.

15.6. Reassessment of asymptomatic patients with aortic aneurysm (frequency dependent on aortic dimensions and rate of progression).

15.7. Baseline and continuing reassessment (>1yr) of patients with prior surgical repair of aorta.

16. Neurologic or Other Possible Embolic Events:

16.1. Patient of any age with abrupt occlusion of a major peripheral or visceral artery.

16.2. Stroke or TIA in the absence of established causative pathology

17. Arrhythmias Syncope and Palpitations:

17.1. Initial investigation of symptomatic arrhythmia.

17.2. Asymptomatic documented frequent premature atrial beats, chaotic atrial rhythm, paroxysmal or permanent atrial fibrillation or flutter, frequent ventricular premature beats, nonsustained VT, sustained VT.

17.3. Investigation of syncope of undetermined etiology.

17.4. Pre-procedural before electrophysiologic studies and procedures and before ICD or pacemaker implantation if not performed within 3 months.

17.5. Investigation of patients with LBBB, high grade AV block.

17.6. Investigation of patients with WPW pre-excitation.

17.7. Follow-up of patients with sustained tachycardia at risk for development of Cardiomyopathy.

18. Before Cardioversion:

18.1. Patients with atrial fibrillation of more than 48 hours duration requiring cardioversion and not chronically or adequately anticoagulated.

18.2. Patients for whom atrial thrombus has been demonstrated in previous study.

18.3. Precardioversion evaluation of patients who have previous echocardiographic evidence of structural heart disease.

19. Suspected Structural Heart Disease:

19.1. Where an investigation suggests possible structural heart disease and an echocardiographic study has not been previously performed or the finding has not previously identified.

20. Indications for Transesophageal Echo:

20.1. Non-diagnostic transthoracic study, either due to technical limitations or failure to fully characterize a potentially significant finding.

20.2. Assessment of structure and function of cardiac valves to assess feasibility of surgery or catheter-based intervention.

20.3. Patient selection, guidance and monitoring of interventional procedures including but not limited to device closure of intra-cardiac shunt and radio-frequency ablation.

20.4. Detection of cardiac source of embolus in the absence of established causative pathology.

20.5. Evaluation of patients with suspected aortic dissection or aortic disease not fully evaluated by other imaging modalities.

20.6. Detection of atrial thrombus in patients prior to cardioversion or interventional procedures.

20.7. Moderate or high risk for endocarditis when TTE is negative or inconclusive.

20.8. Detection of valvular and peri-valvular complications in high risk endocarditis patients such as patients with staphylococcal bacteremia.

21. Indications for Stress Echo:

21.1. Typical or atypical chest pain or ischemic equivalent syndrome.

21.2. Possible ACS with non-diagnostic ECG changes and negative or borderline significant troponin levels.

21.3. History of Congestive Heart Failure.

21.4. Known LV systolic dysfunction of unclear etiology.

21.5. Significant ventricular arrhythmia.

21.6. Syncope of unclear etiology.

21.7. Borderline or high troponin levels in a setting other than ACS.

21.8. Significant cerebrovascular or peripheral atherosclerosis.

21.9. Re-evaluation (≥1 yr) in patients with significant cerebrovascular or peripheral atherosclerosis.

21.10. Equivocal or non-diagnostic results from other stress modalities.

21.11. Initial evaluation of patients at intermediate or high global CAD risk.

21.12. Periodic (≥2 yrs) re-evaluation of patients with intermediate or high global CAD Risk.

21.13. New or worsening chest pain or ischemic equivalent.

21.14. Post MI or ACS for risk stratification (within 3 months).

21.15. Viability in patients with known significant LV dysfunction post re-vascularization.

21.16. Periodic (≥1 yr) re-evaluation of stable patients with known CAD (previous coronary angiography, CTA/EBCT, MI, ACS or abnormal stress imaging).

21.17. For physiologic assessment and/or symptom correlation in patients with moderate or severe Aortic Stenosis, Mitral Stenosis, Mitral Regurgitation, Aortic Regurgitation, Hypertrophic Cardiomyopathy.

21.18. Assessment of established or latent pulmonary hypertension.