Practical Echocardiography and Ultrasound in Critical Care

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- World Interactive Network Focused on Critical Ultrasound (www.winfocus.org)

- International Organization

- Bringing quality “Point-of-care” Ultrasound to the patient in all out-of-hospital and in-hospital “critical” scenarios, by developing and fostering, on a global and multi-disciplinary basis, Ultrasound Education, technological Development, Evidence-based Research, and International Teamwork.
Price, S. Cardiovascular Ultrasound 2008, 6:49
### Echocardiography Training Levels

**American College of Cardiology Competence Statement on Echocardiography**

**Table 1.** of Cardiology (ACC) Training Requirements for Performance and Interpretation of Adult Transthoracic Echocardiography (Quinones et al. J Am Coll Cardiol 2003)

<table>
<thead>
<tr>
<th>Level</th>
<th>Duration of Training</th>
<th>Number of Examinations</th>
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<tbody>
<tr>
<td>Level 1</td>
<td>3 months</td>
<td>150 interpreted (includes 75 exams performed)</td>
</tr>
<tr>
<td>Level 2</td>
<td>6 months</td>
<td>300 interpreted (includes 150 exams performed)</td>
</tr>
<tr>
<td>Level 3</td>
<td>12 months</td>
<td>750 interpreted (includes 300 exams performed)</td>
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</table>

- Level 1 training is not sufficient to allow independent interpretation
- Level 2 training permits independent performance and interpretation
- Level 3 training is for directorship of a clinical echocardiography lab

**Common Accepted Indications for TTE in Critical Care**

- Evaluation of hypotension or hemodynamic instability of uncertain or suspected cardiac etiology
- Evaluation of respiratory failure with suspected cardiac etiology
- Evaluation of patient with known or suspected acute pulmonary embolism to guide therapy (i.e., thrombectomy and thrombolytics)
Echocardiographic patterns

- Global LV size and systolic function
- Homogeneous/heterogeneous LV contraction pattern
- Global RV size and systolic function
- Assessment for pericardial fluid/tamponade
- IVC size and respiratory variation
- Basic color Doppler assessment for severe valvular regurgitation
Recognition of Clinical Syndromes Using Echo

**Severe hypovolemia**
- Small hyperdynamic ventricles, small IVC with respiratory variation

**LV failure**
- Global LV systolic dysfunction
- Heterogeneous contractile pattern
- LV cavity dilation

**RV failure**
- RV dilation, paradoxical septal motion, RV dysfunction

**Tamponade**
- Acute massive left-sided valvular regurgitation
Competence in Critical Care Ultrasound

- Pleural Ultraosonography
- Lung Ultrasonography
- Abdominal Ultrasonography
- Vascular Access Ultrasonography
- Ultrasonography for Diagnosis of DVT
Critical Care Ultrasound Education Resources

- WINFOCUS (World Interactive Network Focused on Critical Ultrasound) [www.winfocus.org](http://www.winfocus.org)
- Society of Critical Care Medicine (SCCM)
  Fundamentals of Critical Care Ultrasound and Advanced Ultrasound Courses [www.sccm.org](http://www.sccm.org)
- American College of Chest Physicians (ACCP)
  Training Programs in Critical Care Ultrasound
National Board of Echocardiography

- Examination of Special Competence in Adult Echocardiography (ASCeXAM)
- Examination of Special Competence in Advanced Perioperative Transesophageal Echocardiography (Advanced PTEeXAM)
- Passing the exam confers “Testamur” status
- Board Certification is a separate application that requires Testamur status and documentation of training
American Society of Echocardiography

- http://www.asecho.org
Thank You