INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHY, CA3 – UCLA Westwood

I. GOALS AND OBJECTIVES

A. General Goals and Competencies

The Intra-operative Transesophageal Echocardiography elective rotation at UCLA is designed to provide the CA-3 residents with the basic theory and applications of echocardiography principles as well as clinical skills to perform a complete TEE examination in patients undergoing cardiac surgical procedures. The patient population at UCLA includes neonates, children, and adults with a variety of acquired and congenital heart lesions, as well as heart and lung transplant recipients. It is expected that at completion of this rotation the participants will gain the expertise to conduct a basic but thorough echocardiographic evaluation of common acquired cardiac disease processes as well as simple congenital heart defects, and to use this diagnostic and monitoring modality in anesthetic management of patients undergoing cardiac surgical procedures. In addition, the residents will acquire the knowledge and capability to use echocardiography in peripherative management of hemodynamically unstable patients both in the operating room and in the ICU, as well as patients undergoing a variety of non cardiac surgical procedures, i.e., major vascular surgery liver transplantation, trauma surgery, etc.

With completion of this rotation trainees should have demonstrated proficiency in caring for patients with complicated medical problems in a compassionate manner. This includes the preoperative evaluation, intra-operative management, and postoperative care utilizing the most current medical knowledge pertinent to each case; using on-line medical information; communicating with patients and working effectively with patient care team; demonstrating ethical principles; and practice cost-effective yet quality health care. The cases will be progressively more complex with increased independence and responsibility.

B. Learning Objectives

1. Understand the physics of ultrasound ad its incorporation into current echocardiography technology.
2. Learn the basic principles of 2D echo, color flow, and spectral doppler.
3. Learn to recognize the basic cardiac anatomy through the various echocardiographic views and conduct a basic TEE examination.
4. Have the basic knowledge necessary to evaluate the right and left ventricular function as well as regional wall motion.
5. Be familiar with the basic valvular pathophysiology and the intraoperative assessment of heart valves and the aorta.
6. Learn the use of intraoperative TEE in measuring hemodynamics, i.e., pressure gradients, stroke volume, valve areas, etc.
7. Develop the skills to use TEE as a diagnostic tool in management of hemodynamically unstable and critically ill patients.
8. Be aware of the common interpretation errors, artifacts, equipment pitfalls, and limitations of echocardiography

II. PREREQUISITES

Residents with an interest in echocardiography who have successfully completed the CA-2 year in anesthesiology qualify to participate in this elective rotation in their CA-3 year.

III. CLINICAL RESPONSIBILITIES / SCHEDULE OF ACTIVIES

The residents are assigned to clinical cases one day prior to the actual procedure date. They review the patients medical history (both cardiovascular and other), pertinent physical findings, and perform a cardiac physical exam. Residents also obtain a comprehensive airway and gastrointestinal history and conduct a complete airway evaluation. In addition, residents are familiar with the patients pre-operative echocardiography reports, cardiac catheterization data, stress tests, and other pertinent data.

The education and training of the participants is conducted under direct supervision of attending cardiac anesthesiologists who are board certified in perioperitive transesophageal echocardiography.

The clinical training includes insertion of the transesophageal echo probe (at least 5 cases) and performing a minimum of 15 comprehensive TEE exams, under the supervision of an attending cardiac anesthesiologist. The exams are performed both prior to and following the completion of the surgical procedure. Only one resident rotates through this elective every two weeks. On the average 15 cardiac surgical cases are performed at UCLA medical center every week, which will allow the participants ample opportunity to complete their required number of exams. In addition, residents are encouraged to participate in and conduct TEE exams on all clinical cases for the day to maximize their educational experience.

Participating residents are given a blank VHS videotape on the first day of the rotation. They are expected to record 10 video clips on this tape. The clips are anticipated to be interesting or unusual findings, significant pathologic processes, normal variants, congenital anomalies, post surgical repair of lesions, etc. These video clips are reviewed, collected over time, and used for teaching purposes. To maintain patient confidentiality, patient identification data are not recorded on these tapes.

A copy of all following materials is available to the participants through the Anesthesia Resident Library.

1. "The Echo Manual", 2nd edition, Jae k. Oh, James B. Seward, and A. Jamil Tajik. This concise but comprehensive text book illustrating basic principles, technical aspects, and applications of echocardiography, supplemented by numerous schematic drawings and still frames of actual echocardiographic examinations.

2. "Intraoperative Transesophageal Echocardiography CD-ROM", Michael Cahalan, M.D. This is an interactive source with text, videos,

and film strips, displaying theory and principles of 2-D, color, and spectral doppler, as well as techniques of assessment of cardiovascular diseases.

3. "Video Seminars Series on Echocardiography". This is a collection of lectures and videotapes presented by the American College of Cardiology's Heart House and the Mayo Clinic.

4. "Intraoperative Transesophageal Echocardiography Resident Manual". This manual contains a number of lectures, review articles, and scientific papers, gathered from review courses, workshops, conferences, and seminars given by the experts in the field.

This is a 2-week elective rotation focused on learning the basic principles of echocardiography and development of skills to conduct a comprehensive TEE examination.

IV. COMPETENCIES

Residents will achieve general competencies in the areas as follows:

1. Patient care, Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. (Daily Assignments)
2. Medical Knowledge, Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate sciences and the application of this knowledge to patient care. (Daily Assignments)
3. Practice-Based Learning and Improvement, Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. (Transesophageal Echo Conference, Cardiac Journal Club)
4. Interpersonal and Communication Skills, Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients families, and professional associates. (Communication with OR team about TEE results)