ADVANCED CARDIAC SONOGRAPHY PROGRAM

Rev. 6/18/19

OVERVIEW

About the Program

The CRMC Advanced Cardiac Sonography Program has been developed in response to the Cardiology and Echocardiography profession request and need to create a career track for sonographers who practice at an advanced level in the echocardiography laboratory. The objective of this educational program is to prepare graduates who are committed to improving lab quality and efficiency through preparing preliminary echo assessments; performing advanced echocardiograms; mentoring fellows, students, residents, and staff; developing and implementing educational plans; facilitating continuous quality improvement; and coordinating cardiac ultrasound research.

About the Hospital – Community Regional Medical Center

We provide central California residents with the highest level of care available in the region. Our affiliation with University of California San Francisco Medical School – one of the top medical schools in the nation – gives you access to some of the brightest medical specialists in the country. And our ongoing investment in technology offers you leading-edge treatments. We're known for having the only Level I trauma and comprehensive burn center between Sacramento and Los Angeles and for having the region's first Lung Nodule program designed to expedite care for lung cancer patients.

We were the first hospital in the world to offer Generation 4 CyberKnife technology for treating cancer and our one-of-a-kind Central California Neuroscience Institute brings together clinical experts in brain tumors, stroke, dementia, Parkinson's Disease, Alzheimer's and more.
As a leader in cardiac services, we are one of the few hospitals in the nation chosen to administer the HeartMate II, a life-saving heart pump for patients waiting for a heart transplant.

We are one of the busiest birthing centers in California and have the largest Level III neonatal intensive care unit in the Valley. Our combined expertise in both adult and newborn medicine makes our hospital the only in the area where recovering mothers and critically ill babies can stay together for the treatments they need.

Program Design

The hybrid program design will be utilized. The didactic component will be delivered online with minimal SKYPE instruction. Three weeks of the clinical internship (120 hours) will be completed at Community Regional Medical Center in Fresno, CA. The other 120 clinical internship hours will be completed via distance learning (SKYPE instruction and assigned projects).

FACULTY

Program Director/Principal Instructor

Joy Guthrie, PhD., ACS, RDMS, RDCS, RVT
Assistant Professor of Medicine, UCSF-Fresno
Echocardiography

Medical Director/Instructor

Teresa Daniele, MD
Assistant Professor of Medicine, UCSF
Cardiologist

Administrative Assistant

Michael Reinhold

CURRICULUM STATEMENT

The overall design of the curriculum for the CRMC Advanced Cardiac Sonography Program will follow the recommended curriculum document found in the Standards and Guidelines for the Advanced Cardiovascular Sonography program.

http://www.caahep.org/documents/file/For-Program-Directors/ACSStandardsFinal2012.pdf
Standards and Guidelines for Advanced Cardiovascular Sonography.

COURSE DESCRIPTIONS

Advanced Cardiac Hemodynamics and Pathophysiology

Course length: 5 weeks
Course Description: This course will provide an extensive review of Cardiac Hemodynamics, Physics, and Doppler principles. Advanced Physics, Instrumentation, and emphasis on flow related principles for image optimization will be reviewed. Cardiac hemodynamic instruction will include review of the cardiac cycle, ventricular function, autonomic nervous system, reflex and humoral control of the circulation, vascular and coronary flow, valvular heart disease and exercise physiology.

Physics and Instrumentation

Course length: 5 weeks
Course Description: This course will provide an extensive review of Ultrasound Physics and Instrumentation. Topic will include advanced hemodynamics, Doppler equation, spectral analysis and color flow imaging, 3D (TTE and TEE), Harmonics, contrast agents, biological effects, image acquisition and storage, quality control, equipment selection, image optimization, and recent advances in technology and ultrasound techniques.

Acquired Cardiovascular Disease

Course length: 5 weeks
Course Description: This course will provide and extensive review of acquired cardiovascular disease including: Valvular heart disease, ischemic heart disease, prosthetic valve disease, pericardial disease, cardiac trauma, cardiac masses, radiation heart disease, and diseases of the aorta.

Instructional Techniques

Course length: 5 weeks

Course Description: This course is designed to prepare the learner to present case studies, power point lectures, and facilitate educational sessions at your place of employment. The student will prepare a power point lecture to be presented at an educational session during the clinical internship. Adult learning strategies, empowerment of employees, and educational integration into the echocardiographic laboratory will also be covered. Situational learning will also include scenarios related to department issues, i.e. disruptive behavior, noncompliance, protocol implementation, and quality assurance. Additional instruction in patient historical assessment, physical exam with incorporation of hemodynamic information, and chart review will be covered.

IAC Accreditation Preparedness

Course length: 5 weeks

Course Description: This course is designed to either prepare for IAC accreditation or facilitate the maintenance of an IAC accredited echocardiographic laboratory. The facility, staff, and physician compliance will be covered as well as an extensive review of the IAC quality assurance forms. The student will prepare for a mock quality assurance review and will present this during one of the clinical internship visits.

Clinical Trials and IRB Methodology

Course length: 5 weeks

Course Description: This course is designed to prepare the learner for IRB submission, evaluating clinical trials related to the student's topic of interest, and performing a literature review. CITI training will be completed and a sample IRB application will be completed. Topics will include responsibilities and organization of research, clinical trial design, clinical trial study protocols, research clinical sites, statistical analysis, data handling and management, quality assurance, regulatory consideration, IRB application process, sample size, and subjects training.

Congenital Cardiovascular Disease

Course length: 5 weeks

Course Description: Extensive review of both normal anatomy and congenital heart disease will be covered as noted by fetal echocardiography , pediatric echocardiography, and adult congenital echocardiography. Maternal and fetal risk factors, indications for fetal echocardiography, and care from fetal through adulthood will be covered. Topics to be covered include embryology, segmental intracardiac antomy, cardiac chambers and septation, valve anatomy and dynamics, coronary artery anatomy, conotruncal abnormalities, situs abnormalities, and mediastinal structures.

Advanced Echocardiographic Modalities

Course length: 5 weeks

Course Description: This course will provide and extensive review of advanced echocardiographic modalities. Topics will include Contrast echocardiography, myocardial perfursion, contrast vascular applications, 3D and 4D imaging techniques, 3D quantification, 3D volume imaging, heart failure assessment, strain imaging, and cardiac resynchronization.

Comparative Imaging Analysis

Course length: 5 weeks

Course Description: This course explores the strengths and weaknesses of echocardiography with comparison to other imaging modalities such as x-ray, cardiac catherization, cardiac MRI, and cardiac nuclear medicine. This course will prepare the learner for the ancillary rotations provided during the clinical internship. Topics include coronary angiography and coronary artery imaging, rest and exercise electrocardiography and echocardiography, nuclear cardiology, MRI,

and overall role of complementary imaging modalities in various conditions including CAD, myocardial diseases, valvular heart disease, diseases of the aorta, and congenital heart disease.

Medical / Surgical Treatment of Cardiovascular Disease

Course length: 5 weeks

Course Description: This course provides an extensive review of medical and surgical treatment of cardiovascular disease. This course presents a knowledge based approach to student learning. Various disease processes will be assigned to each student. The students will research medical journals, clinical trials, and established methods to discover the latest and most clinically relevant and accepted medical and /or surgical repair for the assigned topics. The student will present the results to the other students and faculty during the group clinical internship. Topics will include prosthetic valves, balloon valvuloplasty, TEE for hemodynamic monitoring, transcatheter aortic valve implantation, mitral repair, closure of prosthetic paravalvular leaks, surgical options in cardiomyopathies, device closures, myocardial biopsies, and other related topics.

Cardiovascular Pharmacology

Course length: 5 weeks

Course Description: This course is a review of the most common pharmacologic agents utilized in the treatment of cardiovascular disease. Topics will include antihypertensives, diuretics, ACE inhibitors, Angiotension Receptor blockers, Calcium channel blockers, Antiarrhythmics, antiplatelet/anticoagulants, chronotropic and Inotropic agents, nitrates, Local anesthetics, prostaglandin, and vasopressors. The didactic component will be accompanied by an onsite Pharmacology instruction by one of our pharmacologists

Research Methods and Biostatistics

Course length: 5 weeks

Course Description: This course is an introduction to research methods and biostatistics. The learner will develop a research question, define the variables, write the code for the analysis, and define the methodology that will best answer the clinical question. Topics will include population surveys, hypothesis testing, outcomes research, randomized vs. nonrandomized methods, blinded, double blinded and nonblinded, simulations, and multiple biostatistical analysis methods of testing variables.

Image Critique and Analysis 1 (A-E)

Course length: 25 week (two hours per week)

Course Description: The focus of this course is to review a minimum of 250 echocardiographic cases with emphasis on protocol only. The student will apply a given protocol template to the review of these cases as to whether the case, does or does not, adhere to the established protocol. Image critique is of great importance to the advancement of the cardiac sonographer. This exercise will ensure the learner has a sharp recognition of protocol adherence. The template will be applied to the cases at the student's respective place of employment and will be ongoing. The image critique and analysis will be compared to the final interpretation by the interpreting physician to quantify degree of accuracy. The student will log the hours and cases using a de-identified methodology and will be reported to the faculty. The clinical competency will be tested by the faculty during the onsite clinical internship.

Image Critique and Analysis 2 (A-E)

Course length: 25 weeks (two hours per week)

Course Description: The focus of this course is to review a minimum of 250 echocardiographic cases with emphasis on pathology recognition and reporting. The student will apply a given report template to the review of these cases as either normal or pathology using a systematic approach. Pathology recognition and analysis is of great importance to the advancement of the

cardiac sonographer. This exercise will ensure the learner has a sharp recognition of both normal and abnormal cases. The template will be applied to the cases at the student's respective place of employment and will be ongoing. The image critique and analysis will be compared to the final interpretation by the interpreting physician to quantify degree of accuracy. The student will log the hours and cases using a de-identified methodology and will be reported back to the faculty. The clinical competency will be tested by the faculty during the onsite clinical internship.

Advanced Cardiac Sonographer Credentialing Exam Review (1-3)

Course Length: 15 weeks (3 five week courses)
Course Description: This course is designed to prepare the learner for the Advanced Cardiac Sonographer credentialing examination. This course will review the entire previous curriculum and provide a mock examination at the completion of the course. The entire ACS curriculum as outlined in Standards and Guidelines document of the Advanced Cardiovascular Sonography (CAAHEP) will be reviewed prior to graduation.

Clinical Internship

Course length: 240 hours
Course Description: Three required synchronous weeks with the entire class will be scheduled at Community Regional Medical Center. Week one is orientation and introduction to the program and skills needed to complete the respective online coursework. Week two will be at the six month mark to allow for onsite instruction by the Medical Director and Program Director, required group presentations, advanced echocardiographic techniques, and onsite image critique and analysis education. The last week will be the final clinical competencies and final proctored examination. The three remaining weeks are scheduled in an asynchronous fashion to be arranged between the individual student and the faculty. During these three weeks, the students will have assigned tasks with the sonography students, cardiac sonographers and the UCSF cardiac Fellows. In addition the student will complete ancillary rotations through nuclear medicine, fetal echocardiography, NICU, adult congenital, and cardiac MRI.

COST

Tuition & Fees

Application Fee	$50.00
Tuition	$8,000.00
TOTAL TUITION AND FEES	**$8,050.00**

Additional Expenses

Books*	$600.00
Materials*	$50.00
TOTAL ADDITIONAL EXPENSES	**$650.00**

TOTAL PROGRAM EXPENSE*	**$8,700.00**

Estimate – Price Subject to Change

These fees do not include travel and lodging fees which are the sole responsibility of the student. These fees will vary depending on the place of residence of each student. There are three weeks (Monday through Friday) required residencies during this program.

PREREQUISITES

- Applicant must have a Bachelor's Degree (Master's preferred) *(In any field of study)*
- Applicant must be a credentialed sonographer in Adult Echocardiography (RDCS or RCS)
- Applicant must have a minimum of three years of clinical experience in an echocardiography laboratory
- In ADDITION, the following courses MUST have been passed with a cumulative grade of 2.5 or higher, with no individual grade lower than 2.0:
  - Anatomy (This course must include a lab.)
  - Physiology (This course must include a lab.)
  - Medical Terminology
  - General Physics (This course does NOT need to include a lab.)
  - Math (Algebra or higher. Statistics will also suffice.)
  - English (This prerequisite may be met by a variety of courses including Grammar, Composition, etc.)
  - Communication Skills (This prerequisite may be met by a variety of courses including Speech, Group Discussion, etc.)
- Applicants must be able to complete the required onsite clinical internship of 120 hours (three weeks) in Fresno, CA.

DATES & APPLICATIONS

Dates for the Next ACSP Cohort

The next cohort will begin in January, 2020, and conclude in July, 2012.

Applications and Deadlines

Applications for the next cohort will be available in January, 2019. They must be submitted no later than July 31, 2019.

MORE INFORMATION

Website Links

To access more information regarding the Community Regional Medical Center ADVANCED CARDIAC SONOGRAPHY PROGRAM, return to our Home Page and refer to the various links at the bottom of the page.

https://www.communitymedical.org/Sonography-Programs

Phone & Email

- Call the ACSP office: (559) 459-2731
- Send an email message to: FresnoACSP@communitymedical.org

Mail

Community Regional Medical Center
Trauma Critical Care Building
3rd Floor, Ultrasound Department
2823 Fresno Street
Fresno, California 93721