



Stanford
Children's Health

Lucile Packard
Children's Hospital
Stanford

5th Annual Stanford University

Pediatric Cardiology Boot Camp

Agenda

Saturday, June 1 - Monday, June 3, 2019



Pediatric Cardiology Bootcamp

Intended Audience: Forty future first-year cardiology fellows from throughout North America starting their ACGME approved pediatric cardiology fellowship in July 2019 will be invited to attend Boot Camp. The pilot program in 2015 included Stanford cardiology fellows and expanded in 2016 to include fellows from throughout the Western United States and Canada. The 3rd annual boot camp in 2017 included 40 fellows from 23 different training programs all over North America. For the 4th boot camp we had had well over 100 applications and included 40 fellows from 35 training programs.

Organizing Faculty/Course Directors:

1. **Scott R. Ceresnak, MD**
Associate Professor of Pediatrics, Cardiology
Program Director, Pediatric Cardiology Fellowship
2. **Catherine D. Krawczeski, MD**
Professor of Pediatrics, Cardiology – Nationwide Children's Hospital
3. **David M. Axelrod, MD**
Clinical Associate Professor of Pediatrics, Cardiology
4. **Kara S. Motonaga, MD**
Clinical Associate Professor of Pediatrics, Cardiology
5. **Loren Sacks, MD**
Clinical Assistant Professor of Pediatrics, Cardiology

Summary: 2 ½ day intensive course prior to the start of pediatric cardiology fellowship (June 2019) designed to provide future fellows an introduction to clinical cardiology, technical aspects of cardiology that are not taught as part of the residency curriculum, and cardiac emergencies that may be encountered as a cardiology fellow. The boot camp is designed to help give incoming fellows a hands-on introduction to clinical cardiology and enhance their preparation for fellowship. Additionally, incoming fellows have an opportunity to network with future colleagues.

Areas of Instruction: Clinical cardiology, electrophysiology, echocardiography, cardiovascular intensive care, cardiac catheterization, cardiac anatomy, pediatric heart failure and transplantation, pulmonary hypertension, cardiac surgery for congenital heart disease.

Course framework: A combination of didactic instruction, hands-on workshops, group learning, and simulation experiences taught by leaders in the field of pediatric cardiology. We also include a Pediatric Cardiology Preparatory Course, a series of basic online teaching modules in varied core pediatric cardiology topics to complete prior to the start of Boot Camp. The 2019 Boot Camp will feature guest faculty from additional institutions.

Course Outline

Technical workshops with group instruction with experts in the field held at the Li Ka Shing Center for Immersive and Simulation Based Learning at Stanford. Course topics include:

- Anatomy – hands-on sessions with heart specimens, dissection of animal hearts; virtual reality station
- Auscultation – basics of auscultation with “Harvey” simulation model
- Echocardiography – basics of the echo machine and probes, practicing basic echo techniques, identifying/interpreting the 5 basic ECHO views, checking for function and effusion.
- Electrophysiology – using a temporary pacing box commonly used after cardiac surgery, interrogating a pacemaker/ICD, navigating the telemetry system, performing surface and atrial ECG, basic ECG interpretation
- Cardiac catheterization – vascular access stations, basics of sheaths/wires/catheters, implantable devices
- Pulmonary hypertension – pathophysiology of PH, pharmacotherapy of PH (including Nitric Oxide), treatment of pulmonary hypertensive crisis
- VAD/MCS experience – hands-on training with Berlin Heart, HeartWare device, controllers and hand pumps; basics of ECMO; emergency management
- Cardiac surgery – basics of cardiopulmonary bypass
- Cardiovascular Intensive care – basics of cardiac monitoring, CPR training, resuscitation scenarios, mechanical circulatory support, pericardiocentesis, team training
- Simulation – simulation lab with clinical scenarios

Day #1 – Saturday June 1, 2019

7:15 – 7:30 am: Registration / Breakfast

7:30 – 7:45 am: Introduction to the Course (Ceresnak)

7:45 – 8:45 am: Cardiac Surgery / CPB Review (Hanley)

8:45 – 9:00 am: Seldinger Technique Review (Sacks)

9:15 – 11:45 am: Workshop 1a

Groups 1-4 = Anatomy Stations

Station 1 – Ventricular and Coronary Anatomy (Maskatia, Shenoy)

Station 2 – Atrial Anatomy, Situs (Collins)

Station 3 - Great Vessels, Systemic and Pulmonary Venous Anatomy (Axelrod, Salmi)

Station 4 – Surgical Considerations (Maeda, Reinhartz, Ma)

Groups 5-8 = Access Workshops

Station 1 – Femoral Access (Bishop)

Station 2 – Internal Jugular Access with Techniques of Ultrasound Guidance (Sacks)

Station 3 - Pericardiocentesis (Kwiatkowski)

Station 4 – Movat Access Workshop (Ceresnak, Motonaga)

11:45- 12:45 pm: Lunch – Cardiology Jeopardy (Ceresnak)

12:45 – 3:15 pm: Workshop 1b

Groups 5-8 = Anatomy Stations

Station 1 – Ventricular and Coronary Anatomy (Maskatia, Shenoy)

Station 2 – Atrial Anatomy, Situs (Collins)

Station 3 - Great Vessels, Systemic and Pulmonary Venous Anatomy (Axelrod, Salmi)

Station 4 – Surgical Considerations (Maeda, Reinhartz, Ma)

Groups 1-4 = Access Workshops

Station 1 – Femoral Access (Bishop)

Station 2 – Internal Jugular Access with Techniques of Ultrasound Guidance (Sacks)

Station 3 - Pericardiocentesis (Kwiatkowski)

Station 4 – Movat Access Workshop (Ceresnak, Motonaga)

3:15 – 3:30 pm: **BREAK**

3:30 – 6:00 pm: Workshop 2a

Groups 1-4 = ECHO, Auscultation, ECG Reading

Station 1 – Neonatal ECHO Simulator – ECHO Basics (Tacy, Shenoy, Weidenbach)

Station 2 – Basics of ECG Reading (Ceresnak)

Station 3 – Basic Echo Interpretation (Tierney)

Station 4 – Auscultation - Harvey Simulator (Olson)

Groups 5-8 = ECG Basics and Cath/Fluro Simulation

Station 1 – Performing Surface and Atrial ECGs, Telemetry Review (Maurille, Kwiatkowski)

Station 2 - Zoll Defibrillator and Feedback CPR (Sacks)

Station 3 - 3D mapping and Pacemaker Placement Simulation (Motonaga)

Station 4 - Cath Fluoroscopy Simulator (Perry)

6:00 – 6:10pm – **Wrap-up for the Day** (Ceresnak)

6:15pm – Group **DINNER**

VR set up during dinner to allow participants to “play” at their leisure



Day #2 – Sunday June 2, 2019

7:15 – 7:30 am: **Introduction** to the Day and Breakfast (Ceresnak)

7:30 – 8:30 am: **Catheterization / Hemodynamics Workshop** (Lynn Peng)

8:30 – 10:30 am: Workshop 3a

Groups 1-4 = Cardiac Pacing/ EP stations

Station 1 – Neonatal ECHO Simulator – CHD (Shenoy, Maskatia, Weidenbach)

Station 2 - Pacemaker/ICD interrogation and Programming (Ceresnak, Avasarala, Trela, Hanisch)

Station 3 – Temporary Pacemaker Programming (Krawczeski)

Station 4 - Performing Surface and Atrial ECGs, Telemetry Review (Maurille, Kwiatkowski)

10:30 – 12:30 pm: Workshop 3b

Groups 1-4 = VAD /ECMO/Pediatric Heart Failure/VR

Station 1- Virtual Reality Heart (Axelrod)

Station 2 – HeartWare/Mate/Berlin Heart (Murray)

Station 3 – ECMO (Yarlagadda)

Station 4 – Case Based Management in Pediatric Heart Failure (Almond)

8:30 – 12:30 pm: **SIM Session 1 (Sacks, Su, Axelrod, Bishop)

Groups 5 – 8 = 20 people, 4 scenarios, 5 people per “team”

12:30 – 1:30 pm: **Lunch/Networking – RAFFLE** (Ceresnak) **VR – Difficult Conversations (Sacks/Mills)**

1:30 – 2:15 pm: **Pulmonary Hypertension** (Hopper)

2:15 – 3:00 pm: **Rapid Fire Images in Cardiology** (Ceresnak)

3:15 – 3:30 pm: **BREAK**

3:30 – 6:00 pm: Workshop 2b

Groups 5-8 = ECHO, Auscultation, ECG Reading

Station 1 – Neonatal ECHO Simulator (Maskatia, Weidenbach)

Station 2 – Basics of ECG Reading (Ceresnak)

Station 3 – Basic Echo Interpretation (Shenoy)

Station 4 – Auscultation - Harvey Simulator (Olson)

Groups 1-4 = ECG Basics and Cath/Fluro Simulation

Station 1 – 3D mapping and Pacemaker Placement Simulation (Dubin, Avasarala)

Station 2 - Zoll Defibrillator and Feedback CPR (Sacks / Bishop)

Station 3 - Arrhythmia Lab [Interactive, mini-sim] (Motonaga)

Station 4 - Catheterization Fluoroscopy Simulation (Perry)

6:00 pm: **DINNER** (LKSC Lawn) – VR Set-up (Axelrod)

Day #3 – Monday June 3, 2019

7:30 – 8:00 am: **Introduction to the Day**, Breakfast (Ceresnak)

8:00 – 10:00 am: Workshop 3b

Groups 5-8 = **Cardiac Pacing/ EP stations**

Station 1 – Neonatal Echo Simulator - CHD (Bhombal, Maskatia, Weidenbach, Kips)

Station 2 - Pacemaker/ICD interrogation and Programming (Chubb, Hanisch, Trela)

Station 3 – Temporary Pacemaker Programming (Krawczeski)

Station 4 - Arrhythmia Lab [Interactive arrhythmia Lab, mini-sim] (Motonaga)

10:00 – 12:00 pm: Workshop 3a

Groups 5-8 = **VAD /ECMO/Pediatric Heart Failure**

Station 1- Virtual Reality Heart (Axelrod)

Station 2 - HeartWare/Mate/Berlin Heart (Allen Shiu)

Station 3 – ECMO (Yarlagadda)

Station 4 – Case Based Management in Pediatric Heart Failure (Chen)

****8:00 – 12:00 pm: SIM Session 2** (Sacks, Su, Axelrod, Bishop)

Groups 1 – 4 = 20 people, 4 scenarios, 5 people per “team”

12:00 – 1:00 pm: **Lunch, Post-Test, Survey and Wrap Up** (Ceresnak)

12:00 – 12:30 – 1st Testing Group (early flight departures)

12:30 – 1:00 – 2nd Testing Group



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2018 Pediatric Cardiology Boot Camp



2019 Boot Camp Faculty and Staff

Christopher Almond, MD, MPH – Professor of Pediatrics (Pediatric Cardiology) – Heart Failure and Transplantation
Alisa Arunamata, MD – Clinical Assistant Professor Pediatric (Pediatric Cardiology) – Echocardiography – Associate Program Director
Ritu Asija, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) – Cardiovascular Intensive Care
Kishor Avasarala – Director, Pediatric Electrophysiology, UCSF Benioff Oakland – Electrophysiology
David Axelrod, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) – Cardiovascular Intensive Care
Robert Bishop, MD – Assistant Professor of Pediatrics (Pediatric Cardiology), Colorado Children's Hospital- Cardiovascular Intensive Care
Scott Ceresnak, MD – Associate Professor of Pediatrics (Pediatric Cardiology) – Electrophysiology – Program Director
Sharon Chen, MD, MPH – Clinical Assistant Professor of Pediatric (Pediatric Cardiology) – Heart Failure and Transplantation
Henry Chubb, MD PhD – Clinical Instructor of Pediatric (Pediatric Cardiology) - Electrophysiology
R. Thomas Collins, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) – Echocardiography
Anne Dubin, MD – Professor of Pediatrics (Pediatric Cardiology) – Director, Pediatric Electrophysiology
Paul Grossfeld, MD – Professor of Pediatrics (Pediatric Cardiology) UCSF School of Medicine - Cardiogenomics
Debra (Deb) Hanisch PNP – Electrophysiology Nurse Practitioner
Frank Hanley, MD – Professor of Surgery – Pediatric Cardiothoracic Surgery
Seth Hollander MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) – Heart Failure
Rachel Hopper, MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) – Pulmonary Hypertension
Alaina Kipps, MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) - Echocardiography
Catherine Krawczeski, MD – Professor of Pediatrics (Pediatric Cardiology), Nationwide – Cardiovascular Intensive Care
David (Dave) Kwiatkowski, MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) – Cardiovascular Intensive Care
Cecilio (Leo) Lopez, MD – Clinical Professor (Pediatric Cardiology) Director, Pediatric Echocardiography
Shiraz Maskatia, MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) – Echocardiography /MRI
Katsuhide (Kats) Maeda, MD – Clinical Associate Professor of Surgery – Pediatric Cardiothoracic Surgery
Michael Ma, MD – Clinical Assistant Professor of Surgery - Pediatric Cardiothoracic Surgery
Mithras (Mit) Maurille – Director of Non-Invasive Pediatric Cardiology Laboratory
Doff McElhinney, MD – Professor of Surgery – Pediatric Cardiothoracic Surgery
Kara Motonaga, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) - Electrophysiology
Daniel Murphy, MD – Professor of Pediatrics (Pediatric Cardiology) – Echocardiography
Jenna Murray, PNP – Heart Failure Nurse Practitioner
Inger Olsen, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) – Echocardiography
Lynn Peng, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) – Interventional Cardiac Catheterization
Stanton (Stan) Perry, MD - Associate Professor of Pediatrics (Pediatric Cardiology) – Interventional Cardiac Catheterization
Olaf Reinhartz, MD – Associate Professor of Surgery – Pediatric Cardiothoracic Surgery
Lupe Romero-Villanueva – Pediatric Cardiology Fellowship Coordinator
Darren Salmi – Clinical Assistant Professor (Pathology) – Cardiac Pathology
Loren Sacks, MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) – Cardiovascular Intensive Care
Rajesh Shenoy, MD – Associate Professor of Pediatrics (Pediatric Cardiology) - Icahn School of Medicine – Echocardiography
Allen Shiu, RN – Ventricular assist device coordinator
Lillian Su, MD – Clinical Assistant Professor of Pediatrics (Pediatric Cardiology) – Cardiovascular Intensive Care
Theresa (Terri) Tacy, MD – Associate Professor of Pediatrics (Pediatric Cardiology) - Echocardiography
Anthony (Tony) Trela, PNP – Electrophysiology Nurse Practitioner
Michael Weidenbach, MD, PhD – Consultant (Pediatric Cardiology), University of Leipzig - Echocardiography
Vamsi Yarlagadda, MD – Clinical Associate Professor of Pediatrics (Pediatric Cardiology) – Cardiovascular Intensive Care