

Beyond Pretty Pictures:

Clinical Application of 3D Echo in Pediatric Heart Disease

A Workshop, April 24 & 25, 2020

<http://www.pedsecho.ca/>

Organizers: Dr. Lisa Hornberger, Dr. Nee Khoo, Dr. Tim Colen, Dr. Lily Lin, Jennifer Mesch RDCS, Nell Freas, Dana Black
**University of Alberta & Stollery Children's Hospital Echocardiography Laboratory
Mazankowski Alberta Heart Institute, Shaw Auditorium**

Overall Objectives

- To describe and perform current applications of 3D echocardiography in pediatric congenital and acquired heart disease.
- To describe and perform 3D echocardiography in surgical and catheter interventional planning, and in evaluate the success of the intervention

Individual session objectives:

Session 1: Keynote talk and 3D Echo for Function

Keynote talk is by a world recognized expert in 3DE and its utility in cardiac interventions. This will outline this new and exciting direction for 3DE.

1. To describe the utility, advantage and limitations 3DE assessment in the perioperative assessment.
2. To describe assessment of 3DE left and right ventricular function, such as auto segmentation, volumetric and strain.

Session 2: Assessment of the Normal & Abnormal AV valve & Surgical Integration

3. To classify the anatomy and function of the tricuspid and mitral valves and mechanisms of valve dysfunction as demonstrated by 3D echocardiography
4. To describe the use of 3DE in intervention

Session 3: 3D Assessment of Simple and Complex Cardiac Outflows

1. To describe the additional anatomical details that 3D echo can provide in assessing congenital heart disease associated with outflow tract pathology, aortic valve repair and ventricular septal defects
2. To demonstrate how 3D echo can contribute to the assessment of the AVSD and its variants
3. To establish the role of 3D echo planning surgical intervention and in post-surgical surveillance, including what a surgeon requires from 3DE

Session 4: Complex Cardiac Outflows, Future Directions

1. To describe the anatomy of complex lesions such as DORV and straddling valves
2. Outline upcoming technologies in 3DE

Hands-on sessions objectives:

Image acquisition I:

1. Station #1 Learn knobology, perform scan and assess adequacy of left ventricle on Philips Epiq platform

2. Station #2 Learn knobology, perform scan and assess adequacy of right ventricle on Philips Epiq platform
3. Station #3 Experience and understand utility of Stereoscopic display of 3DE
4. Station #4 Learn knobology, perform scan and assess adequacy of left ventricle on GE E95 platform
5. Station #5 Perform analysis of LV and RV volumetric on GE Echopac modules

Image acquisition II:

1. Station #1 Learn knobology, perform scan and assess adequacy of MV on Philips Epiq platform
2. Station #2 Learn knobology, perform scan and assess adequacy of TV on Philips Epiq platform
3. Station #3 Learn knobology, perform scan and assess adequacy of aortic valve on Philips Epiq platform
4. Station #4 Learn knobology, perform scan and assess adequacy of MV on GE E95 platform
5. Station #5 Perform analysis of MV analysis on GE Echopac modules

Offline analysis I:

1. Learn basic cropping tools
2. Assess adequacy of datasets
3. Orientate datasets
4. Perform workflow of LV volumetric analysis in Qlab
5. Perform workflow of MV assessment on MPR

Offline analysis II:

1. Perform workflow of TV assessment on MPR
2. Perform workflow of LVOTO assessment on MPR
3. Perform workflow of early valve failure assessment on MPR
4. Perform workflow of DORV/straddling valve assessment on MPR

Friday, April 24, 2020

0700-0800 Registration and Breakfast

0800-0810 Welcome and Intro

Dr. Lisa Hornberger

Session I: Keynote talk and 3D Echo for Function

0810-0900 Keynote talk – 3DE and perioperative utility

Dr. Pei-Ni Jone

0900-0920 3D Echo in Left Ventricular Function

Dr. Tim Colen

0920-0940 3D Echo in Right Ventricular Function

Dr. Pei-Ni Jone

0940-0955 Q&A

0955-1010 **Coffee break**

Session 2: Assessment of AV valves

1010-1040 Mitral Valve

Dr. Tim Colen

1040-1110 Tricuspid Valve

Dr. Kandice Mah

1110-1140 3DE in Catheter Intervention

Dr. Pei-Ni Jone

1140-1200 Q&A

1200-1300 **Lunch**

1300-1500 Hands-on workshop: Image Acquisition & Offline Analysis I

1500-1515 **Coffee break/switch groups**

1515-1715 Hands-on workshop: Image Acquisition & Offline Analysis I

Hands-On workshop

Image Acquisition: 5 rotating stations with 5 participants per station.

Station #1 Live scanning Philips Epiq platform

Station #2 Live scanning Philips Epiq platform

Station #3 Stereoscopic 3DE cropping and analysis display

Station #4 Live scanning GE E95 platform

Station #5 Analysis of LV and RV volumetric on GE Echopac modules (individual laptops)

Offline Analysis I: 25 participants (individual laptops with Philips, Qlab software)

Introduction to cropping tools

LV volumetric analysis

Simple valve analysis – clinical cases MV, AVSD

1715-2000 Evening Reception

Saturday, April 25, 2020

0730-0800 **Breakfast**

0800-0810 Workshop updates Dr. Lisa Hornberger

Session 3: 3D Assessment of Simple and Complex Cardiac Outflows

0810-0840 Aortic valves, LVOTO, and VSDs

Dr. Lily Lin

0840-0910 AVSD

Dr. Silvia Alvarez

0910-0935 Role of 3D in a Return to the OR

Dr. Nee Khoo

0935-0955 Surgical Perspective

Dr. Mohammed Al Aklabi

0955-1010 Q&A

1010-1025 **Coffee break**

Session 4: Complex Cardiac Outflows, Future Directions

1025-1050 DORV

Dr. Lily Lin

1050-1110 Straddling valves

Dr. Nee Khoo

1110-1150 Future of 3DE and AI

Dr. Pei-Ni Jone

1150-1200 Q&A

1200-1300 **Lunch**

1300-1500 Hands-on workshop: Image Acquisition & Offline Analysis II

1500-1515 **Coffee break, switch groups**

1515-1715 Hands-on workshop: Image Acquisition & Offline Analysis II

Hands-On workshop

Image Acquisition: 5 rotating stations with 5 participants per station.

Station #1 Live scanning Philips Epiq platform

Station #2 Live scanning Philips Epiq platform

Station #3 Live scanning Philips Epiq platform

Station #4 Live scanning GE E95 platform

Station #5 Analysis of MV analysis on GE Echopac modules (individual laptops)

Offline Analysis II: 25 participants (individual laptops with Philips, Qlab software)

Brief refresher on cropping tools

Complex clinical cases – TV valves, LVOTO analysis, DORV/Straddling valve