Case Study

HEARTWORKS®

Overcoming ECHO training challenges in Critical Care Settings

James MacBrayne, Consultant in Critical Care and Anaesthesia at Aberdeen Royal Infirmary (UK) looks at the obstacles to ECHO training within intensive care and how simulation training is reversing the skills deficit of this diagnostic skill in the Critical Care unit.

The hospital acquired a HeartWorks Simulator for TOE and TTE education a year ago to meet the growing demand for echo training within the Cardiology and Critical Care departments. Commenting on the hospital's training provision prior to introducing simulation into their programmes, Dr. MacBrayne said, "We could only really practice on real patients and in the critical care environment many of the TTE windows were suboptimal meaning it was difficult for those learning to appreciate what they were meant to be seeing. With regard to the TOE training, that could only really be done in cardiac theatres or cardiology where there was a clinical justification for inserting a TOE probe given the potential complications. Many of the awake patients in cardiology did not tolerate some of the gastric TOE views, so it was difficult for the trainees to get good exposure and experience at obtaining these images."

Aberdeen Royal Infirmary now runs courses for both TOE and TTE where simulation is an integral component of training. The HeartWorks simulator resides in the Intensive Care Unit allowing maximum opportunity for doctors to develop and hone their skills. The cardiology department are also frequent users of the simulator to teach their trainees the basics of TOE prior to examining real patients.

"We have trainees rotating through Critical Care on a regular basis", continued Dr. MacBrayne, "and those who want to pursue Critical Care as a career are now expected to have a basic level of ECHO skills (FICE)."

ECHO simulation making an impact on outcomes

Commenting on the impact simulation has had on trainees' educational outcomes, he observes, "Prior to having the simulator, any TTE echo practice involved real patients, many with sub-optimal views. For trainees starting out in ECHO the most important learning objectives are that they have an understanding of what views they should be trying to visualise, the anatomy of those views and how the probe cuts through the heart in the various positions. The HeartWorks simulator allows all of this along with the ability for trainees to practice image gathering and interpretation in a safe non clinical environment.

“Half the battle with ECHO is having a three-dimensional understanding of cardiac anatomy and how the relevant structures relate to each other.”

TOE is not a benign procedure and needs to have a clinical justification. This means that getting practice on patients in critical care is often difficult and in the awake patients, obtaining all the views can be almost impossible. The simulator gives trainees the chance to practice probe manipulation and image optimisation, so when they are performing real examinations they can get far more out of the experience.”

Integrated and accelerated learning

The availability of the HeartWorks simulator has allowed the hospital’s trainees to get started on their ECHO learning early and allows them to practise in their own time. Regular group teaching sessions also take place to improve image optimisation. Commenting on trainee feedback to the new training approach, Dr. MacBrayne said, “The feedback from those who have attended the courses we have run and used the HeartWorks simulator on the unit has been entirely positive and I am sure has helped develop ECHO skills quicker than previously would have happened.”

Looking ahead, Aberdeen Royal Infirmary are looking to develop further TOE and TTE courses. “With the demand for Critical Care ECHO accreditation increasing, we look certain to be using our simulator to train more and more trainees.”

To find out more about how HeartWorks could help your trainees learn faster and learn better get in touch today.

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