

## **Abstract**

### **Limited focused goal - directed transthoracic echo - haemodynamic echocardiography assessment in real time**

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The rationale for having a rapid assessment tool using ultrasound in critical care medicine relates to the quality and safety of information that can be obtained. The interest in this has increased markedly with the advent of portable ultrasound equipment. A typical ultrasound machine of the year 2000 was a relatively immobile, expensive machine that would only be brought out in cases of extreme concern in the intensive care setting. Use in cardiac surgery was controversial but being done in some centers. The current generation of machines are considerably cheaper, extremely portable and used extensively across all areas of critical care for a number of diagnostic and procedural uses.

The biggest limitation now is the ability of critical care doctors to obtain training in how to use this equipment to its fullest capability. Traditional echocardiography was performed by a technician, in an imaging laboratory, as a single examination and reported subsequently by a cardiologist. The examination was comprehensive, irrespective of the indication for the examination. This approach is very different to the needs of most critical care doctors, who often have a specific set of clinical questions to answer, and are otherwise knowledgeable in the clinical details of the patient they are looking after. Furthermore, they are often interested in repeating assessments over time to reassess the haemodynamic state as a result of interventions that have been made.

The comprehensive echo laboratory model for echocardiography has been the basis for point of care echocardiography, but clearly it cannot provide for all the requirements of a bedside clinician.

A number of rapid screening tools have been developed, such as the Haemodynamic Echocardiography Assessment in Real Time (as taught by the University of Melbourne under the banner of the HART scan). This shares a similarity between a number of other rapid screening tools such as the RACE, FATE and even the abdominal trauma screening tool known as the FAST scan.

While these tools do not replace full echocardiography, they give the user an enormous advantage in cardiac assessment compared to the traditional stethoscope, and do not require either a cardiologist or a technician to perform. They are valuable not only in the operative period, but also in the pre and post operative period for cardiac assessment.

The adoption of these tools is occurring at a formidable rate amongst critical care doctors and this trend is still currently accelerating.