

## POSTER PRESENTATION

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# Nurse delivered focused echocardiography to determine intravascular volume status in a deployed maritime critical care unit

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## Introduction

Focused echocardiography is increasingly used by clinicians in the management of critically ill patients and has been adopted by the Defence Medical Services as a tool to guide flow assessment and resuscitation in deployed critical care.

## Objectives

We aimed to explore whether two focused echo techniques; Inferior Vena Cava (IVC) and Left Ventricular Outflow Tract (LVOT) Velocity Time Integer (VTi) variability could be taught to a group of critical care nurse who had no previous exposure to ultrasound imaging.

## Methods

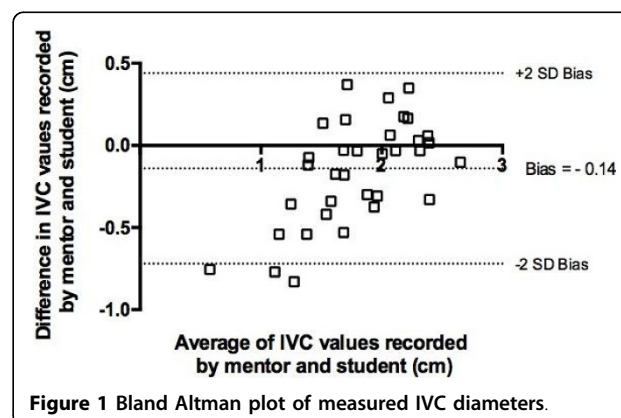
Ethical approval was waived for this service improvement study. After a five week program of training validation was carried out on healthy volunteers. The mentor, an accredited focused echo trainer, and six nurses performed a total of 48 scans on 11 volunteers. The mentor and students acquired subcostal long axis and apical five chamber windows using a high frequency linear ultrasound probe (Sonosite M Turbo, P21-51x transducer). Mean values from three measurements were obtained for IVC diameter and LVOT VTi. Minimum and maximum values were recorded for both variables across a full respiratory cycle. Echo images were saved and at least two images for each student were reviewed offline by an accredited echo training supervisor.

## Results

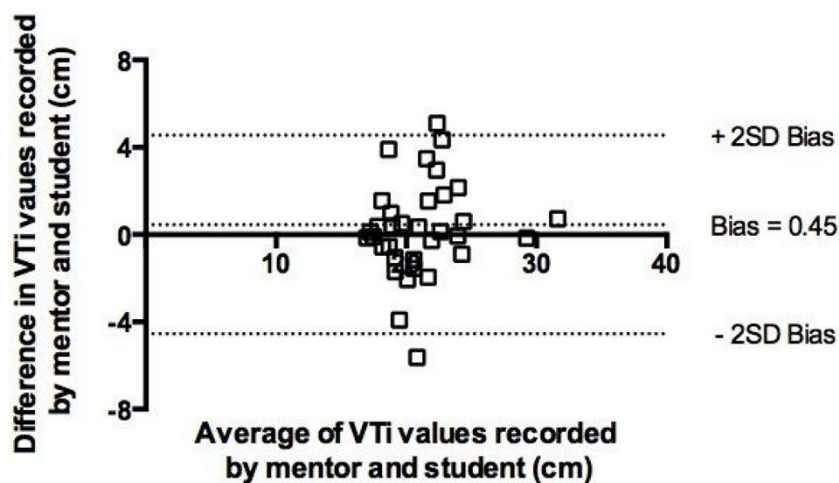
In all cases students were able to obtain adequate echo windows. There was good correlation between values recorded by the mentor and students for both IVC diameter ( $r = 0.90$ ,  $p < 0.001$ ) and LVOT VTi ( $r = 0.77$ ,  $p < 0.001$ ). Bland Altman analysis showed good correlation with minimal bias for VTi measurements. There was, however, some increase in bias for IVC measurements below 1.2 cm.

## Conclusion

We demonstrated that two focused echo techniques for assessing intravascular volume status could be acquired by specialist nurses, with no previous experience, in a relatively short time and that results were comparable to those produced by an experienced practitioner. These results will need to be replicated in a clinical setting before being adopted into practice.



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**Figure 2** Bland Altman plot of LVOT VTI measurements.

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