A Survey of the Use of Ultrasound Based Parameters to Assess Fluid Responsiveness

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Introduction/Rationale:Hemodynamic responses to passive leg raise (PLR) and inferior vena cava collapsibility (IVCc) are best studied ultrasound parameters with respect to fluid responsiveness. Change in the velocity time integral (deltaVTI) with PLR is the most sensitive parameter in the assessment of fluid responsiveness in the critically ill and the current gold standard. The extent of use of these parameters to assess fluid responsiveness or guide fluid management among critical care practitioners is unclear. Methods: This was an observational study of intensive care practitioners/trainees who responded to a Google forms based survey. A link with survey questions was emailed to coordinators of all academic Critical Care fellowship programs with a request to forward to faculty and fellows at University Hospitals and affiliated community based programs in the United States. A link to the survey was also emailed to intensivists on the ANZICS email listserv. Questions asked related to the modality used to assess fluid responsiveness in both spontaneously breathing and mechanically ventilated patients. Results:193 responses were received, the majority were Pulmonary critical care or IM-critical care (84%), the rest were Anesthesia, Anesthesia-Critical Care, Surgical-Critical Care or Trauma Critical Care. 79% of responses were from the USA/Canada, 19% of respondents were from Australia. Among mechanically ventilated patients 73% never used deltaVTI with PLR, 14% rarely used this modality. A large minority (23%) rarely or never used IVCc, with an additional 33% using IVCc occasionally. Among spontaneously breathing patients, 79% never used deltaVTI with PLR, 11% rarely used this modality, in this group, 30% rarely or never used IVCc, an additional 23% reported only occasionally using IVCc. 65% reported ultrasound training with a 1-2 day course, lecture series with quality assurance review or a formal fellowship/RDMS degree. With respect to echocardiography training, 71% reported formal training with a 1-2 day course, lecture series with quality assurance review or a formal fellowship/RDMS degree. Conclusions: A substantial majority of intensive care practitioners/trainees do not use validated ultrasound based fluid responsiveness parameters in the critically ill despite reporting formal training in echocardiography and ultrasound. The reasons for this disconnect are unclear and deserve further assessment.

This abstract is funded by: None