

Supplementary table 2 | Common challenges in volume status assessment in the acute setting

Parameter	View and technique	Relevant value(s)	Notes
<b>Static parameters</b>			
LV end-diastolic area	Short-axis LV on 2D echo	• <5.5 cm <sup>2</sup> /m <sup>2</sup>	<ul style="list-style-type: none"> <li>• Might be marker of severe hypovolaemia, but no normal values</li> <li>• Not valid in LV disease</li> <li>• Might appear underfilled as a result of RV dysfunction, not hypovolaemia</li> <li>• Might be affected by intracardiac shunt</li> </ul>
IVC end-expiratory dimension	Subcostal view, maximal dimension 1–2 cm from IVC to RA junction on M-mode or 2D echo	<ul style="list-style-type: none"> <li>• Spontaneous breathing: &lt;1 cm</li> <li>• PPV: &lt;1.5 cm</li> </ul>	<ul style="list-style-type: none"> <li>• Affected by pressures: intrathoracic, intra-abdominal, and intrapericardial</li> <li>• Right heart pathology affects IVC size; might have large IVC, but be profoundly hypovolaemic in the presence of any of these pathologies</li> </ul>
Tricuspid TDI	Apical four-chamber on TDI	• Velocity >1.5 cm/s	• Might reflect role of the right ventricle in limiting capacity of the heart to increase SV rather than hypovolaemia <i>per se</i>
<b>Dynamic parameters</b>			
ΔPeak aortic VTI	LVOT PW Doppler	>12% indicates up to 15% increase in SV	• Sensitivity 90%, specificity 100%, but false positives likely for high tidal volumes, and false negatives if low tidal volumes
ΔIVC dimensions	Subcostal M-mode or 2D echo	<ul style="list-style-type: none"> <li>• Spontaneous breathing: %ΔIVC &gt;50% indicates volume responsiveness</li> <li>• PPV (IVC distensibility index) &gt;18% predicts potential 15% increase in SV in response to volume</li> </ul>	<ul style="list-style-type: none"> <li>• Sensitivity 100%, specificity 90%</li> <li>• Unreliable with prominent eustachian valve, large BSA, narrowing of IVC–RA junction, or tissue present in IVC</li> </ul>
SVC collapsibility index	TOE 90–100° in mid-high oesophageal view	• %ΔSVC >36% indicates potential 15% increase in SV in response to volume	• Only in patients who are entirely passively ventilated
Passive leg raising ΔSV	LVOT PW Doppler	• SV increase of 12% correlates with fluid responsiveness	<ul style="list-style-type: none"> <li>• Sensitivity 77%, specificity 100%</li> <li>• Must perform PLR correctly: passive change of patient position from semi-recumbent (45°) to supine</li> <li>• Limitations: profound hypovolaemia, high intra-abdominal pressures, MCS, patient awareness/comfort, RV dysfunction</li> </ul>

BSA, body surface area; Echo, echocardiography; IVC, inferior vena cava; LV, left ventricular; LVOT, left ventricular outflow tract; MCS, mechanical circulatory support; PLR, passive leg raising; PPV, positive pressure ventilation; PW, pulsed-wave; RA, right atrial; RV, right ventricular; SV, stroke volume; SVC, superior vena cava; TDI, tissue Doppler imaging; TOE, transoesophageal echocardiography; VTI, velocity time integral.