

## Normal Hemodynamic Parameters - Adult

Parameter	Equation	Normal Range
Cardiac Output (CO)	$HR \times SV/1000$	4.0-8.0 l/min
Cardiac Index (CI)	$CO/BSA$	2.5-4.0 l/min/m <sup>2</sup>
Stroke Volume (SV)	$CO/HR \times 1000$	60-100 ml/beat
Stroke Volume Variation (SVV)*	$(SV_{max}-SV_{min})/[(SV_{max} + SV_{min})/2] \times 100$	<10% unlikely to be preload responsive >15% likely to be preload responsive
*During positive pressure mechanical ventilation		
Stroke Volume Index (SVI)	$SV/BSA$	33-47 ml/m <sup>2</sup> /beat
Mean Arterial Pressure (MAP)	Directly from the oscillometric profile	70-105 mmHg
Arterial Blood Pressure (BP)	Systolic (SBP)	90-140 mmHg
	Diastolic (DBP)	60-90 mmHg
Total Peripheral Resistance(TPR)	$80 \times (MAP)/CO$	800-1200 dynes · sec/cm <sup>5</sup>
Total Peripheral Resistance Index (TPRI)	$80 \times MAP/CI$	1970-2390 dynes · sec/cm <sup>5</sup> /m <sup>2</sup>
Cardiac Power Output (CPO)	$MAP \times CO/451$	NA
Cardiac Power Output Index (CPOI)	$(MAP \times CO)/(451 \times BSA)$	NA
Thoracic Fluid Content (TFC)	$1/Z_0 \times C$	

## Oxygenation Parameters - Adult

Parameter	Equation	Normal Range
Arterial Oxygen Saturation (SaO <sub>2</sub> )	Directly from the oscillometric profile	95-100%
Arterial Oxygen Content (CaO <sub>2</sub> )	$1.39 \times Hb \times SaO_2 + PaO_2 \times 0.0031$	17-20 ml/dl
Oxygen Delivery - Indexed (DO <sub>2</sub> I)	$CaO_2 \times CI \times 10$	500-600 ml/min/m <sup>2</sup>
Mixed venous oxygen Saturation (SvO <sub>2</sub> )		60-80%
Venous Oxygen content	$1.39 \times Hb \times Svo_2 + PvO_2 \times 0.0031$	10-14 ml/dl
Arteriovenous oxygen difference (AVD)	$CaO_2 - CvO_2$	3-6 ml/dl
Oxygen extraction	$AVD/CaO_2$	25-40%
Oxygen consumption indexed (VO <sub>2</sub> i)	$AVD \times CI \times 10$	120-160 ml/min/m <sup>2</sup>

Every Beat Every Patient Everywhere  
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