

BLOOD GASES

Blood gas analysis: **PaO2 = Arterial PaO2**
 PaCO2 = Arterial PaCO2
 pH = Arterial pH

1. CDE Variable	PaO2/PaCO2/pH LowPaO2 = Lowest daily arterial pO2 HighPaO2 = Highest daily arterial pO2 PaO2Units = Units for arterial pO2 LowPaCO2 = Lowest daily arterial pCO2 HighPaCO2 = Highest daily arterial pCO2 PaCO2Units = Units for arterial pCO2 LowpH = Lowest arterial pH HighpH = Highest arterial pH
2. CDE Definition	<u>PaO2/PaCO2:</u> Partial pressure of oxygen/carbondioxide in arterial blood <u>pH:</u> Arterial pH value
3. Recommended instrument for assessment	PaO2/PaCO2: mmHg or kPa (1 mmHg = 0.133 kPa; 1 kPa = 7.5 mmHg)
4. Description of measure	PaO2/PaCO2/pH: numerical values
5. Permissible values	<u>PaO2:</u> 40-300 (0-650) mmHg 5.3-39.9 (0-86.5) kPa <u>PaCO2:</u> 20-60 (0-99) mmHg 2.7-8.0 (0-13.2) kPa <u>pH:</u> 6.8 – 7.5 (6.5-7.8) <i>The range presented represents the range of plausible values. Values outside this range may be queried. The numbers given between brackets, represent the range of possible values, including extreme situations. Values outside these ranges, will be queried immediately.</i>
6. Classification: Basic/Intermediate/Advanced	<u>Basic:</u> PaO2/PaCO2: record lowest and highest values measured over a 24 hour period. <u>Intermediate/advanced:</u> pH: record lowest and highest pH per 24 hour period.
7. Procedure	Obtained from arterial blood gases, check unknown if information is not available
8. Comments/Special instructions:	
9. Rationale/justification: Ensuring adequate oxygen delivery to the brain and preventing ischaemia are important principles in the management of TBI. Respiratory/ventilatory disturbances are common in trauma patients treated in the ICU, leading to low PaO2 or high PaCO2 values. Careful monitoring of arterial PaCO2 is essential when moderate hyperventilation is employed for treatment of raised ICP. Careful monitoring of blood gases is therefore essential in the management of TBI.	
10. References: <i>Murray GD, Butcher I, McHugh GS, et al. Multivariable prognostic analysis in traumatic brain injury. J Neurotrauma. Feb 2007; 24(2): 329-377.</i> <i>Brain Trauma Foundation, American Association of Neurological Surgeons (AANS), Congress of Neurological Surgeons (CNS), AANS/CNS Joint Section on Neurotrauma and Critical Care: Guidelines for the management of severe traumatic brain injury. I. Blood pressure and oxygenation. J</i>	

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Davis, DP. Early ventilation in traumatic brain injury. *Resuscitation.* Mar 2008;76(3):333-340.

Recommended time for assessment:

On admission and daily as required by protocol.