

Guidelines for NON - CRITICAL CARE staff

Arterial Blood Gases: GENERAL ICU PATIENTS ONLY

Non-ICU nurses are not expected to analyse ABGs – this is a basic guide only. Please refer results to a Senior ICU nurse colleague or clinician

QUICK GUIDE TO ARTERIAL BLOOD GAS ANALYSIS

DO NOT TAKE THE PATIENT OFF OXYGEN

Look at the paO_2 and FiO_2

Note the inspired oxygen % and flow rate and document on blood gas print out. This allows a more accurate interpretation of the patient's oxygen requirements in light of their present oxygen need. For example a low paO_2 on high flow/percentage oxygen should trigger a senior medical review for further management.

Look at the pH

< 7.35
ACIDOSIS

> 7.45
ALKALOSIS

Look at the CO_2 and Bicarbonate

$pCO_2 > 45$ mmHg
or 6.0 kpa
Respiratory Acidosis

$HCO_3 < 22$
Metabolic Acidosis

$pCO_2 < 35$ mmHg
or 4.6 kpa
Respiratory Alkalosis

$HCO_3 > 22$
Metabolic Alkalosis

Look for compensation

$HCO_3 > 22$
Metabolic
compensation

$pCO_2 < 35$ mmHg
or 4.6 kpa
Respiratory compensation

$HCO_3 < 22$
Metabolic
compensation

$pCO_2 > 45$ mmHg
or 6.0 kpa
Respiratory compensation

Normal values

pH	7.35 – 7.45
paO_2	80 – 100 mmHg or 10.6 – 13.3 kpa
pCO_2	35 – 45 mmHg or 4.6 – 6.0 kpa
HCO_3	22 – 26 m Equivalents/litre
Base Excess	+2 to -2 mmols/litre
Lactate	0.5 – 2.0 mmols/litre
Oxygen Saturations (SaO_2)	95 – 100%

Document the ABG and your interpretation/management plan in the patients' medical notes.

Further reading

Rhodes A and Cusack R J (2000) Arterial blood gas analysis and lactate. *Current Opinion in Critical Care*. 6:227-231.
 Williams A J (1998) Assessing and interpreting arterial blood gases and acid-base balance. *BMJ*. Volume 317. Downloaded from bmj.com.
 Driscoll P, Brown T, Gwinnutt C & Wardle T. (1997) *A Simple Guide to Blood Gas Analysis*. BMJ Publishing Group.

DH/DB Critical Care Outreach Team 08/2008

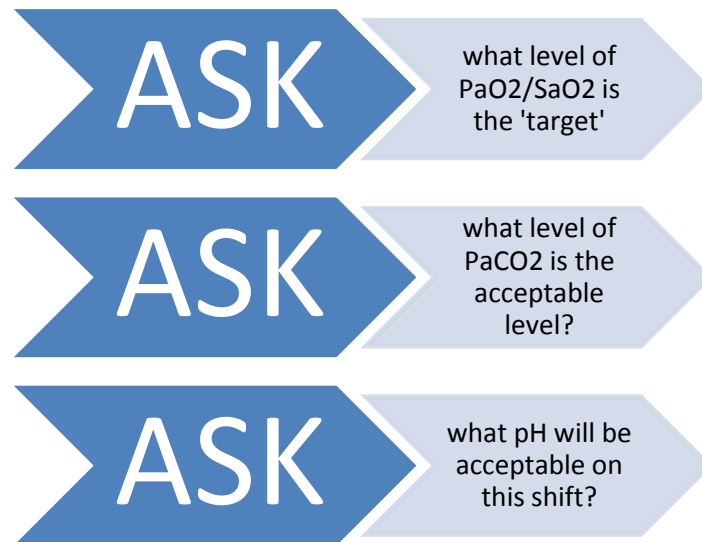
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Arterial Blood Gases: GENERAL ICU PATIENTS ONLY

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- **We DO NOT aim for 'normal' ABGs in the critically ill. We aim for 'acceptable' ABGs which will be determined by several things:**
 - 1: the decision of the clinician on the day
 - 2: the patient's respiratory history and clinical condition thus far
 - 3: the level of ventilator/respiratory support the patient is currently requiring

ON EVERY SHIFT...



- *For most patients, a PaO₂ >8kPa with SaO₂ >92% will be 'acceptable'*
- *For most patients, PaCO₂ <8kPa and >4.5kPa will be 'acceptable'*
- *For most patients, a pH >7.25 to 7.30 will be 'acceptable'*

Some patients with NEURO INJURIES require DIFFERENT parameters. THESE WILL BE MANAGED BY A SENIOR ICU NURSE AND DOCTOR

MAKE NO CHANGES TO VENTILATION WITHOUT DIRECT SUPERVISION FROM A SENIOR ICU NURSING COLLEAGUE