Arterial Blood Gas (ABG) analysis is the measurement of arterial blood gases: PaO2, PaCO2 and pH. It provides information on arterial haemoglobin oxygen saturation and acid-base status as affected by respiratory and metabolic function (SVUH, 2011).

**Causes**
- COPD
- Asthma
- Respiratory failure
- Lung collapse
- Opiate overdose
- Diarrhoea & Vomiting
- Excess production of acids
- Lactic acidosis
- Excess ingestion of acids
- Anxiety
- Hyperventilation
- Pain
- Hypoxia
- Over mechanical ventilation
- Vomiting
- Nasogastric suctioning
- Hypokaelemia
- Diuretic therapy
- Respiratory system increases hyperventilation to blow off CO2 and increase pH
- Hypoventilation retains CO2 and decreases pH

**Signs & Symptoms**
- Dyspnoea
- Hypertension
- Tachycardia
- Confusion & impaired consciousness
- Rapid or shallow respirations
- Headache
- Nausea & Vomiting
- Lethargy & Drowsiness
- Arrhythmias
- Rapid respirations
- Palpitations
- Numbness
- Light headedness
- Twitching & anxiety
- Hypoventilation
- Cardiac arrhythmias
- Confusion & Irritability
- Nausea, vomiting & anorexia

**Compensatory Mechanisms**
- Kidneys increase regeneration of HCO3
- Respiratory system increases hyperventilation to blow off CO2 and increase pH
- Kidneys decrease the production of HCO3
- Hypoventilation retains CO2 and decreases pH

**Nursing Management**
- Monitor vital signs/ABG
- High flow O2
- Bronchodilators as prescribed
- May require NIV
- May require intubation in severe cases
- Monitor vital signs/ABG
- Manage underlying cause
- Correction of electrolyte disturbance
- Monitor vital signs/ABG
- High flow O2 if hypoxic
- Identify & treat underlying cause
- Sedation if needed to regulate & relax breathing
- Monitor vital signs/ABG
- IV fluid replacement
- Correct electrolyte imbalances

**Key references**
- Coggon 2008; Hennessey & Japp 2007
- Casey and Kai 2013; Carpenito-Moyet 2009
- LeMone et al 2013; Lee 2009