Methaemoglobin

Description	Haemoglobin containing iron in the oxidised (Fe^{3+}) form.
Indication	Cyanosis that is unresponsive to oxygen
Additional Info	Methaemoglobin (MetHb) is unable to bind oxygen and gives blood a chocolate brown colour. Under normal conditions 95-99% of the methaemoglobin produced is reduced to haemoglobin via cytochrome b5 reductase and NADH through the diaphorase pathway. MetHb is reported as a percentage of the total haemoglobin and is measured on the blood gas analyser.
Concurrent Tests	Oxygen saturation, co-oximetry
Dietary Requirements	None
Interpretation	Normal levels are <1.5%. Levels will rise under conditions that cause oxidative stress. Methaemoglobinaemia is usually acquired due to exposure to oxidative drugs, chemicals or toxins. These substances fall into two categories: nitrites or aromatic amines. Examples include: nitrates/nitrites, chlorates, local anesthetics (benzocaine), sulphonamides and dapsone. Rarer inherited causes include cytochrome b5 reductase deficiency, Haemoglobin M (abnormal haemoglobin), and G6PD deficiency. Symptoms are proportional to the MetHb concentration and range from skin discoloration (10-20% MetHb), fatigue, anxiety, confusion, dizziness and dyspnea on exertion (20-50% MetHb), coma and seizures (50-70% MetHb) to death (>70% MetHb).
Collection Conditions	Use blood gas heparinised syringe – transport to lab immediately on ice and do NOT use a pneumatic tube system
Frequency of testing	As required