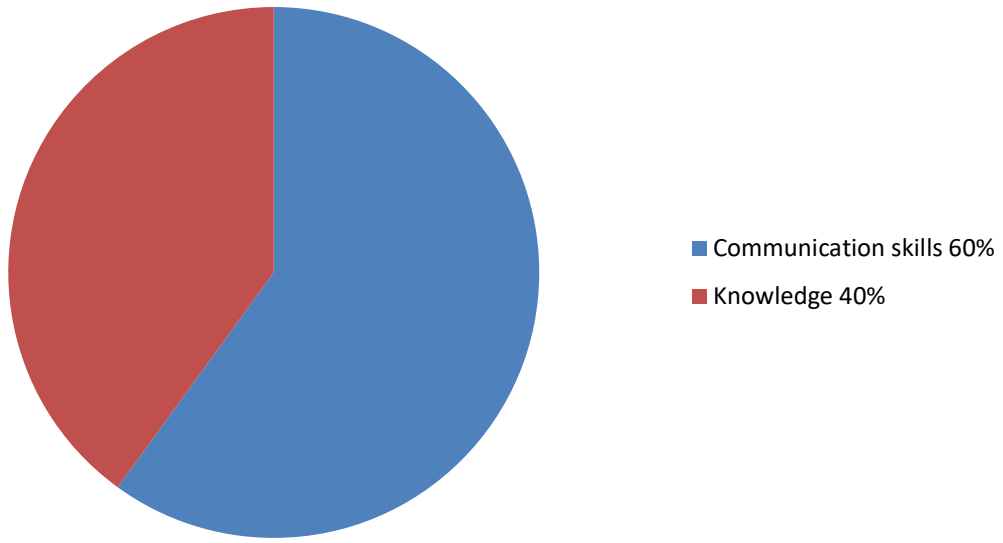


Marking



Demonstrate to a medical student how to interpret ABGs

Washed hands	
Introduces self	
Checks doctors identity	
Ensures patient is safe in department	
Establishes doctors baseline knowledge and expectation for learning session	
Signposts what will be covered during session in logical order, e.g.: <ul style="list-style-type: none"> • Indications • Contraindications • Procedure – we will not cover today as will use the time to ensure understanding of ABG interpretation • Another area to cover would be causes of metabolic and respiratory acidosis/alkalosis 	
Is the patient hypoxic? $PAO_2 = FiO_2 - (PaCO_2/RQ)$ A rough guide would be 10Kpa below inspired O2	
What is the pH? A negative logarithmic scale – of hydrogen ion concentration in blood. It is a scale that measures the acid-base balance in human blood. Normal is between 7.35-7.45. In order for cellular mechanisms and biological processes to be optimum, pH must be tightly controlled A pH of 6.0 would have 10 x the number of hydrogen ions than a pH of 7.0 This occurs by means of the respiratory system and then renal system $H_2O + CO_2 \rightarrow H_2CO_3 \rightarrow HCO_3 + H$	
What is the resp component doing? The respiratory system allows exchange of carbon dioxide for oxygen. Before carbon dioxide reaches lungs is carried in the blood partially dissolved as carbonic acid. High levels of carbon dioxide leads to high levels of carbonic acid and acidaemia. Low levels of carbon dioxide leads to alkalaemia Normal values In Kpa – 4.5-6.0 – or 35-45mmHg	
What is the metabolic component doing? The kidneys can excrete acid or generate bicarbonate HCO_3^- freely excreted in glomerulus. But recaptured mostly in proximal but also distal convoluted tubule. So kidneys can excrete acid/ammonia but can also recapture bicarbonate as required High levels of bicarbonate would cause alkalaemia	

<p><i>Low levels of bicarbonate would cause acidaemia</i></p> <p><i>Normal values</i></p> <p><i>22-26mmol/L</i></p>	
<p>Is there any compensation?</p> <p><i>A COPD patient, who retains CO₂, may have a permanently higher CO₂ level than a non COPD patient. In order for the body to maintain a normal pH the kidneys will capture more bicarbonate or excrete more hydrogen in order to compensate this chronically high CO₂</i></p> <p><i>Conversely, a patient who presents in DKA – often have high resp rates – they have a metabolic acidosis but are trying to compensate physiologically by decreasing CO₂</i></p>	
<p>Other useful information on ABG</p> <ul style="list-style-type: none"> • Lactate • Potassium • Calcium • Sodium • Carboxyhaemoglobin 	
Asks doctor if they have any questions	
<p>Suggests sources to find more information from</p> <ul style="list-style-type: none"> • RCEM module • I have a presentation..... 	
Arranges another time to meet	
Thanks patient	
Thanks doctor	
Patient mark	