QUIZ 20th Feb 2019 (answers below)

1. **Which patients with atrial fibrillation warrant cardioversion in ED?**

2. **What is the CHADSVASC score?**

3. **What is the HASBLED score?**

4. **What is the dose of apixaban?**

5. **Describe and interpret the following blood gas result.**

RADIOMETER ABL800 FLEX

ABL827 Emergency
PATIENT REPORT — Syringe - S 250uL — Sample # 45965

Identifications	
Patient ID	
Patient Last Name	
Patient First Name	
Sex	Male
Sample type	Not specified
T	37.0 °C
$FO_2(I)$	21.0 %
PEEP	cmH2O
Pressure Support	cmH2O
SIMV	Rate
Liter Flow	L/min
Note	
Operator	
Accession No	

Blood Gas Values			
↓ pH	**7.034**		[7.350 - 7.450]
↑ pCO_2	**45.9**	mmHg	[32.0 - 45.0]
↓ pO_2	**42.3**	mmHg	[75.0 - 105]
Oximetry Values			
↓ *c*tHb	**128**	g/L	[130 - 180
↓ sO_2	**69.2**	%	[95.0 - 99.0
*F*COHb	**0.4**	%	[0.0 - 1.5
*F*MetHb	**0.8**	%	[0.0 - 1.5
Electrolyte Values			
↓ cNa^+	**131**	mmol/L	[137 - 146
↑ cK^+	**5.7**	mmol/L	[3.5 - 5.0
↑ cCa^{2+}	**1.33**	mmol/L	[1.15 - 1.30
↑ cCl^-	**113**	mmol/L	[98 - 106
Metabolite Values			
*c*Glu	**6.7**	mmol/L	[3.0 - 7.8
*c*Lac	**0.9**	mmol/L	[0.0 - 2.2
↑ *c*Crea	**216**	µmol/L	[60 - 120
Calculated Values			
ABE_c	**-19.0**	mmol/L	[-
$cHCO_3^-(P)_c$	**11.6**	mmol/L	[-

QUIZ answers 20th Feb 2019

1. **Which patients with atrial fibrillation warrant cardioversion in ED?**

i) Life threatening haemodynamic compromise due to atrial fibrillation

ii) Paroxysmal atrial fibrillation where:

Clear onset within 48 hours
OR
Onset up to 7 days ago if on therapeutic anticoagulation for > 4 weeks

Notes

- *Rhythm or rate control are both options here*
- *Rhythm control may be pharmacological or electrical*
- *Rhythm control is the preferred option for low risk patients with a CHA_2DS_2-VASc score <2*
- *High risk patients with CHA_2DS_2-VASc >=2 warrant discussion with consultant ED/Cardiology before deciding on best option*

2. **What is the CHA_2DS_2-VASC score?**

The CHA_2DS_2-VASc is a validated tool to estimate the risk of stroke in non-valvular atrial fibrillation and is used to make decisions regarding the need for anticoagulation.

CHA_2DS_2-VASc	Score
Congestive heart failure (or LV dysfunction)	1
Hypertension: BP > 140mmHg or treated hypertension on medication	1
Age >=75	2
Diabetes mellitus	1
Vascular disease (eg. Peripheral vascular disease, AMI, aortic plaque)	1
Prior stroke or TIA or thromboembolism	2
Age 65 - 74	1
Sex (female)	1

Score 0-1 consider aspirin
Score 2 or more – anticoagulation recommended

CHA_2DS_2-VASc	0	1	2	3	4	5	6	7	8	9
Annual Stroke risk %	0	1.3	2.2	3.2	4.0	6.7	9.8	9.6	12.5	15.2

3. What is the HASBLED score?

HASBLED is a scoring system designed to assess risk of major bleeding (intracranial, hospitalization, haemoglobin decrease > 2 g/L, and/or transfusion) in patients on anticoagulation for atrial fibrillation.

	Condition	Points
H	Hypertension: (uncontrolled, >160mmHg)	1
A	Abnormal renal function:Dialysis, transplant, Cr >200umol/L Abnormal liver function: Cirrhosis or bilirubin >x2 Normal or AST/ALT/AP >x3 Normal	1
S	Stroke: Prior history of stroke	1
B	Bleeding: Prior major bleeding or predisposition to bleeding	1
L	Labile INR: Unstable/high INR, time in therapeutic range <60%	1
E	Elderly: age >65 years	1
D	Drugs Prior alcohol or drug usage history (>8 drinks/week) Medication usage predisposing to bleeding (antiplatelets, NSAIDs)	1

A score >=3 indicates a high risk of bleeding. Regular review and treatment of modifiable bleeding risk factors is recommended for these patients, rather than avoidance of oral anticoagulation.

Pisters, R et al A Novel User-friendly Score (HAS-BLED) to assess 1-year risk of Major Bleeding in Patients with Atrial Fibrillation
Chest 2010 138(5): 1093-1100

4. What is the dose of apixaban?

Creatinine clearance <25mL/min: *Apixaban is contraindicated*

Creatinine clearance >25mL/min
PLUS at least two of the following:
- *Age >80*
- *Weight <60kg*
- *Creatinine >133umol/L* — *Apixaban 2.5mg BD*

For everyone else: *Apixaban 5mg BD*

5. Describe and interpret the following blood gas result.

pH	7.034	Acidosis
pCO_2	45.9 mmHg	Acidotic side of normal (40mmHg) So there is a component of respiratory acidosis An isolated acute rise in pCO_2 to 45.9mmHg would lead to HCO_3^- to rise by 0.5mmol/L from 24 to 24.5mmol/L. This results in a pH 7.35. In this case, the pH is 7.034 so there must be a large metabolic acidosis with a concurrent comparatively very small respiratory acidosis. Note that we have calculated all this from just the pH and pCO_2.
HCO_3^-	11.6 mmol/L	Very low as expected

Anion gap		131 – 11.6 – 113 = 6.4 = Normal anion gap (NAGMA)
		
		Causes of NAGMA
		• Administration of Chloride/HCl
		• Loss of HCO_3^-
		  ○ GIT loss – diarrhoea, stomal output
		  ○ Type 2 RTA (proximal)
		  ○ Carbonic anhydrase inhibitors
		• Decreased H^+ excretion
		  ○ Chronic kidney disease with tubular dysfunction but relatively preserved GFR
		  ○ Type 1 RTA (distal)
		  ○ Type 4 RTA (hypoaldosteronism)

pO_2	42.3 mmHg	Appropriate for a venous sample If patient's sats are 70%, it's probably arterial and you should be here looking at the gas, you should be with the patient
Creat	216 umol/L	

➔ Normal anion gap metabolic acidosis
Likely renal cause as elevated creatinine
Concurrent mild respiratory acidosis