QUIZ 4th March 2020 (answers below)

1. **List the 4 recognised views used when performing a bedside ECHO in the ED.**

2. **List 3 signs of pericardial tamponade on bedside ECHO.**

3. **List 3 signs of PE on bedside ECHO**

4. **What is SCAD?**

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

BLOOD GAS VALUES

pH	7.19		(7.350 – 7.450)
pCO_2	41	mmHg	(32.0 – 45.0)
pO_2	441	mmHg	(75.0 – 105)

OXIMETRY VALUES

*c*tHb	105	g/L	(115 – 180)
sO2	99	%	(95.0 – 99.0)
COHb	0.0	%	(0.0 – 0.2)
MetHb	66.9	%	(0.0 – 1.5)

ELECTROLYTE VALUES

*c*Na	141	mmol/L	(137 – 146)
*c*K	5.4	mmol/L	(3.5 – 5.0)
*c*Ca	1.09	mmol/L	(1.15 – 1.3)
*c*Cl	119	mmol/L	(98 – 106)

METABOLITE VALUES

*c*Glu	8.5	mmol/L	(3.0 – 7.8)
*c*Lac	8.1	mml/L	(0.5 – 2.2)
*c*Creat	126	umol/L	(60 – 120)

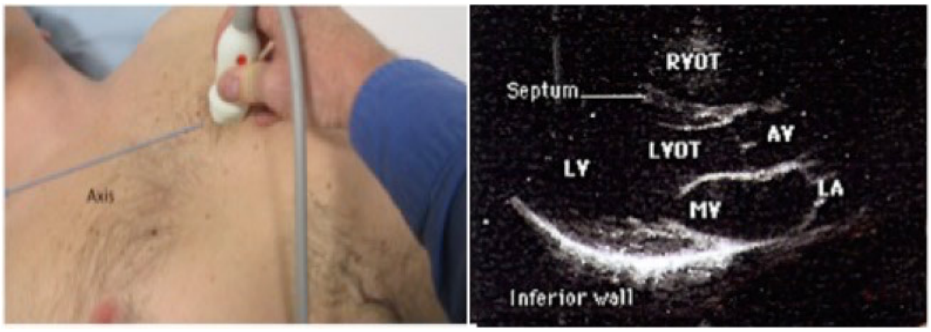
CALCULATED VALUES

ABE*c*	-13	mmol/L
cHCO_3^-	16	mmol/L

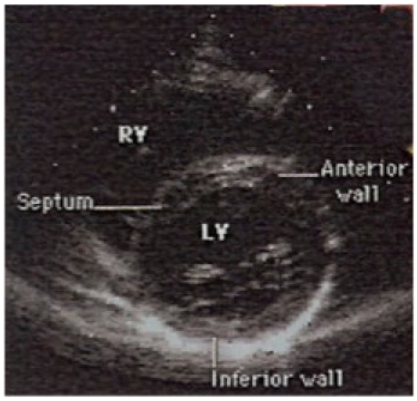
QUIZ answers 4TH MARCH 2020

1. List the 4 recognised views used when performing a bedside ECHO in the ED

Parasternal long axis – 2nd I/C space just left of the sternum, cardiac probe angled between 9 & 12 o'clock.

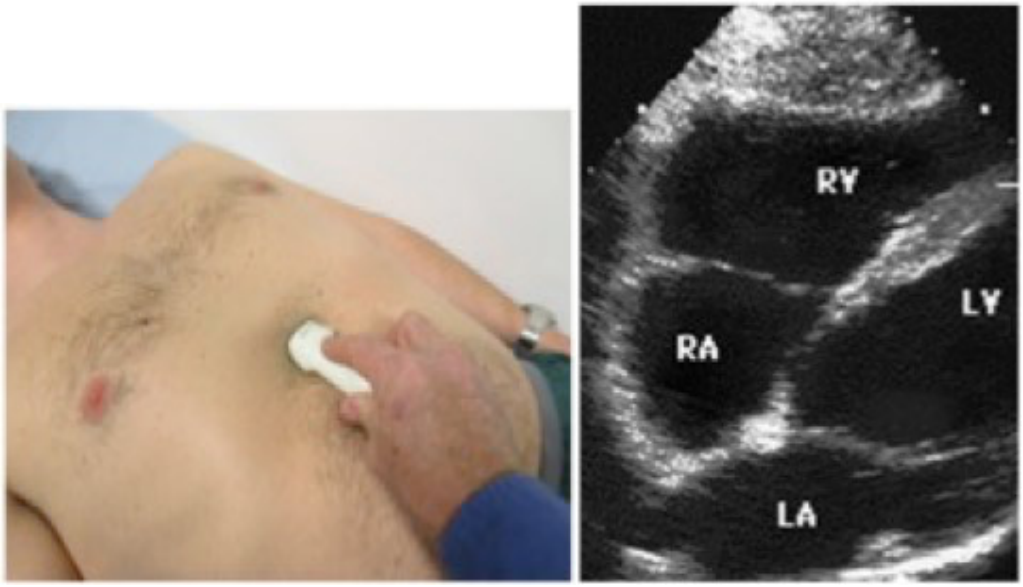


Parasternal short axis – as above with the probe angled at around 2 o'clock



Apical view – just beneath the nipple in a man

Subxiphoid or subcostal view



2. List 3 signs of pericardial tamponade on bedside ECHO.

The core echocardiographic findings of pericardial tamponade consist of:

- *a pericardial effusion*
- *early diastolic right ventricular & right atrial collapse (high specificity)*
- *a plethoric inferior vena cava with minimal respiratory variation (high sensitivity = 92% - 97%, but poor specificity) ie dilatation of the IVC (>20 mm).*

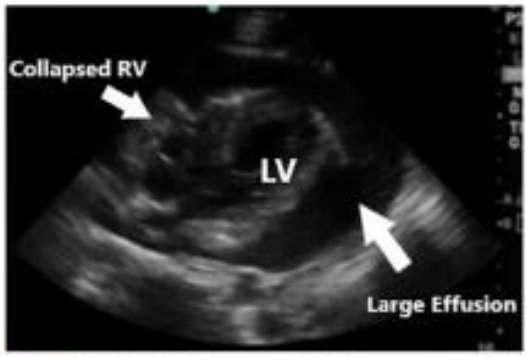


Figure 2. An echocardiographic image taken in the parasternal long-axis view demonstrates a large effusion causing right ventricular collapse during diastole.

3. List 3 signs of PE on bedside ECHO

- *RV wall hypokinesis*
  - *Moderate or severe*
  - *McConnell's sign - echocardiographic pattern of RV dysfunction consisting of akinesia of the mid free wall but normal motion at the apex. (77% sensitivity and 94% specificity for diagnosis of pulmonary embolism)*
- *RV dilatation*
  - *End-diastolic diameter >30 mm in parasternal view .*
  - *The end-systolic RV/LV ratio should be around 0.5, with the LV indenting the RV into a letter D shape. If this D is reversed with the RV indenting the LV it is strongly indicative of high right sided pressures.*
  - *RV larger than LV in subcostal or apical view*
  - *Paradoxical RV septal systolic motion*
- *Pulmonary artery hypertension*
  - *Pulmonary artery systolic pressure >30 mmHg*
  - *Dilated IVC with lack of respiratory collapse*

4. What is SCAD?

Spontaneous coronary artery dissection (SCAD) has emerged as an important cause of acute coronary syndrome, myocardial infarction, and sudden death, particularly among young women and individuals with few conventional atherosclerotic risk factors.

Spontaneous coronary artery dissection (SCAD) is defined as an epicardial coronary artery dissection that is not associated with atherosclerosis or trauma and not iatrogenic. The predominant mechanism of myocardial injury occurring as a result of SCAD is coronary artery obstruction caused by formation of an intramural hematoma or intimal disruption rather than atherosclerotic plaque rupture or intraluminal thrombus. SCAD has unique risk factors and associated conditions including female sex, pregnancy/post partum, emotional stress triggers, concurrent systemic arteriopathies, particularly fibromuscular dysplasia, intense exercise, inflammatory conditions such as lupus, Crohn disease, ulcerative colitis, rheumatoid arthritis, connective tissue disorders – such as Marfan syndrome, intense hormonal therapy, recreational drugs – such as cocaine and amphetamines.

SCAD also has different diagnostic, therapeutic, and prognostic implications compared with atherosclerotic coronary disease.

SCAD continues to be misdiagnosed, underdiagnosed, and managed as atherosclerotic ACS, which may cause harm to patients with SCAD. An emphasis on accurate diagnosis is key to not only providing early supportive care but also ensuring that an invasive strategy of percutaneous coronary intervention (PCI) be reserved for a select group of these patients because PCI for SCAD has been associated with lower technical success and higher complications than PCI for atherosclerotic disease.

Ref: Spontaneous Coronary Artery Dissection: Current State of the Science: A Scientific Statement From the American Heart Association. Circulation vol 137, No. 19

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

pH	*7.19*	*Acidotic*
pCO_2	*41 mmHg*	*Normal or just on acidotic side of normal (40mmHg)* *Therefore there is a respiratory acidosis* *But pCO2 would need to be 80mmHg acutely (HCO3 of 28) to cause pH 7.19 so there must be a metabolic acidosis predominantly*
$cHCO_3^-$	*16 mmol/L*	*Demonstrates metabolic acidosis* *For pCO_2 41 mmHg, HCO_3^- should be 24mmol/L* *For HCO_3^- 16mmol/L, pCO_2 should be 32mmHg (Winter's formula) but pCO_2 41mmHg demonstrating respiratory acidosis as already mentioned*
pO_2	*441 mmHg*	*On supplemental oxygen*
Hb	*105 g/L*	*Mild anaemia*
MetHb	*66.9 %*	*Grossly elevated*
Chloride	*119mmol/L*	*Hyperchloraemia acidosis (ie NAGMA)*
Anion Gap	*6*	*Normal as per NAGMA above*
Glucose	*8.5 mmol/L*	*Normal*
Lactate	*8.1 mmol/L*	*Elevated lactate*
Creat	*126 umol/L*	*Slightly elevated*

➔ *Methaemoglobinaemia – life threatening is >30 – 40%*
Metabolic acidosis NAGMA
Respiratory acidosis
Lactataemia
Mild anaemia
Mild renal impairment

➔ *This was an unconscious Mardi Gras patient the had ingested amyl nitrate*
Adrian fixed him with methylene blue