

1. Regarding syncope which is **not** correct
  - a) The hallmarks are loss of consciousness, spontaneous and full recovery and loss of postural tone
  - b) If the underlying cause is neurological patients are 50% more likely to die than general population
  - c) In 20% of cases the cause is unidentified
  - d) Mortality is >10% at 6 months if the cause is cardiac
  
2. Regarding the San Francisco syncope rule which is correct
  - a) Any one positive criteria indicates patient is not low risk and has a 12% risk of serious outcome within 7 days
  - b) SBP < 100 at any time during ED is a positive criteria
  - c) Blood tests are not needed to use the rule
  - d) Known AF is not a risk factor in the syncope rule
  
3. Which cause of syncope does not typically cause sudden death
  - a) HOCM (hypertrophic obstructive cardiomyopathy)
  - b) Early repolarization of anterior leads
  - c) Myocarditis
  - d) Arrhythmogenic right ventricular dysplasia
  
4. Regarding carotid sinus hypersensitivity syndrome which is correct
  - a) It is characterized by tachycardia and hypotension
  - b) It is more common in young women
  - c) If carotid sinus hypersensitivity is diagnosed on testing this is the likely cause of syncope
  - d) Ischemic heart disease is a risk factor for carotid sinus hypersensitivity syndrome
  
5. In the measurement of orthostatic hypotension as a cause for syncope which is true
  - a) A postural SBP drop of >20mmHg has a sensitivity and specificity of > 90%
  - b) A postural HR increase of > 30 BPM has greater specificity for hypovolemia than a SBP drop of >20mmHg
  - c) SBP postural drop of <20mmHg is abnormal in people aged < 60 years old and if present usually represent the cause of syncope
  - d) Orthostatic vitals should not be taken at more than 2 minutes after standing as results would not help to differentiate orthostatic hypotension vs other causes

6. Which is **not** a typical sign of severe aortic stenosis
  - a) Paradoxical splitting of S2 sound
  - b) Aortic thrill
  - c) Displaced apex beat
  - d) Ejection click
  
7. Which is true regarding heart failure
  - a) Once symptomatic the 2 year mortality rate is about 35%
  - b) Heart failure alone does not tend to decrease GFR
  - c) Systolic dysfunction is defined as ejection fraction <60%
  - d) Diastolic heart failure is more common in elderly males
  
8. When trying to diagnose a patient with suspected heart failure which is true
  - a) Peripheral oedema has a better likelihood ratio at predicting right heart failure compared to dyspnea and orthopnea at predicting left sided heart failure
  - b) Chest xray has a >90% sensitivity for diagnosing heart failure
  - c) BNP levels <100 only has a 50% negative predictive value for heart failure and is not useful in ruling out heart failure
  - d) Raised JVP has a 90% specificity (so is useful if present) but has a poor sensitivities (cannot rule out heart failure if absent)
  
9. Regarding Non Invasive Ventilation for APO in the emergency department
  - a) Initial settings for CPAP should be 15mmHg
  - b) In terms of in-hospital mortality intubation has better outcomes compared to NIV
  - c) NIV decreases need for intubation compared to standard oxygen therapy
  - d) BIPAP worsens myocardial ischemia and should be avoided
  
10. In APO which adjuvant drug is now relatively contraindicated or shown to worsen outcomes
  - a) Ethacrynic acid
  - b) Frusemide
  - c) Sublingual nitroglycerin
  - d) Morphine
  
11. Which concurrent condition is **not** contraindicated to give GTN for APO
  - a) Septal cardiac infarction
  - b) Aortic stenosis

- c) Hypertrophic cardiomyopathy
- d) Hypovolemia or volume depletion

12. Which class of drug does **not** reduce long term mortality in patients with heart failure

- a) ACE-I (Enalapril)
- b) Loop diuretics (Frusemide)
- c) Aldosterone antagonists (Spironolactone)
- d) Beta-blockers (Metoprolol)

13. Which drug is **not** contraindicated in patients with heart failure

- a) NSAIDs (Diclofenac)
- b) Calcium Channel Blockers (Diltiazem)
- c) Amiodarone
- d) Class I antiarrhythmic (Procainamide)

14. Regarding mitral stenosis which is true

- a) Hemoptysis is a common presentation and an early sign
- b) Murmurs are typically pan systolic which may disappear with AF
- c) An opening snap can be heard
- d) ECG changes include biphasic P wave and left axis deviation

15. Regarding mitral regurgitation which is true

- a) Chronic mitral regurg typically has a holosystolic murmur radiating to axilla
- b) Acute mitral regurg is rarely symptomatic
- c) Chronic mitral regurg often has a S4 gallop
- d) Acute mitral regurg often has minimal ECG findings

16. Regarding aortic regurgitation which is **not** true

- a) Acute aortic regurg can be a result of aortic dissection, endocarditis or trauma
- b) Isometric exercise can worsen symptoms due to increased afterload
- c) Up to 25% of patients with chronic aortic regurg causing aortic insufficiency are asymptomatic before developing late signs of heart failure
- d) Presence of Austin Flint murmurs and "Warhammer pulse" are diagnostic of aortic regurg

17. Which is a cause of right axis deviation on ECG
- Inferior MI
  - Pulmonary valve stenosis
  - Left anterior hemiblock
  - Aortic valve stenosis
18. Regarding dilated cardiomyopathy, which is **incorrect**
- Idiopathic is the most common cause
  - It is more prevalent in females
  - ACE-I and beta blockers can improve survival
  - LV dilation accompanied by a normal LV wall thickness are the hallmarks of this condition
19. In Acute Myocarditis which is **incorrect**
- Steroids have shown to improve mortality if cause is viral
  - It is more frequent in children
  - Low ECG Voltages in precordial leads indicates a poorer prognosis
  - Causes can include HIV, giant cell arteritis, trypanosoma and chlamydia pneumoniae
20. Which is a true characteristic of HOCM (hypertrophic obstructive cardiomyopathy)
- HOCM is a symmetrical septal hypertrophy which can involve LV and/or RV
  - It is more prevalent in males than females
  - Ejection fraction and cardiac output are often impaired
  - It is the most common cause of sudden cardiac death in young athletes
21. In HOCM which physical examination finding can aid diagnosis
- A murmur that increases in volume from isometric exercise such as hand grip and squatting
  - Prominent v wave on JVP
  - An ejection systolic murmur loudest at left sternal edge
  - Palpation of the carotid pulse is unhelpful in aiding diagnosis
22. Which ECG finding is **not** a feature of HOCM
- Deep narrow "Dagger Q" waves inferior and laterally
  - Very large T wave inversions in precordial leads
  - Signs of WPW
  - Tall R wave in aVR

23. In the workup and management of HOCM which is **incorrect**
- a) Beta blockers are the mainstay of therapy
  - b) Exercise testing should not be done as it can exacerbate symptoms
  - c) Implantable defibrillator may be indicated
  - d) Obstructive hypertrophic cardiomyopathy has higher mortality compared to non-obstructive disease
24. What is the most common cause of restrictive cardiomyopathy
- a) Idiopathic
  - b) Sarcoid
  - c) Scleroderma
  - d) Hemochromatosis
25. Which is correct regarding pericarditis
- a) There is normally up to 100ml of fluid between the visceral and parietal pericardium
  - b) If ratio of ST amplitude to T wave amplitude of lateral leads is  $>0.25$ , pericarditis is likely
  - c) PR depression is only present in phase 3 of the disease
  - d) CT scans are more sensitive at picking up pericardial effusions than echocardiograms
26. In the treatment and prognosis of pericarditis which is **incorrect**
- a) Fever indicates a poorer prognosis
  - b) Elevated CRP is associated with increased risk of recurrence
  - c) Steroids are not indicated for the treatment of pericarditis
  - d) Colchicine can reduce severity of symptoms and recurrence in viral pericarditis
27. Regarding non-traumatic cardiac tamponade which is correct
- a) Usually at least 300mL is needed in the pericardium to cause tamponade
  - b) Cardiac ischemia commonly results from tamponade as it causes decreased coronary artery flow
  - c) Beck's triad (hypotension, muffled heart sounds, jugular vein distension) is highly sensitive
  - d) Kussmaul's sign (inspiratory neck vein distension) is more associated with constrictive pericarditis whilst pulsus paradoxus is more common with tamponade

## Answers

1. C (40% of cases the cause is unknown)
2. A (San Francisco syncope rule is positive if any one criteria is met, sensitivity of 85 - 95%, criteria: SBP<90 at Triage; SOB; CCF; not in sinus rhythm; ECG changes; hematocrit < 30. Syncope DUNN RJ emergencymedicinemanual.com 2016. Note Tintinalli has different stats pg403)
3. B (Early repolarization of inferior leads is a risk factor for sudden death. Syncope DUNN RJ emergencymedicinemanual.com 2016)
4. D (It is characterized by bradycardia ventricular pause > 3s and hypotension >50mmHg drop in SBP, it is more common in men and the elderly, if testing is positive but no syncope occurs it is unlikely to be the cause of syncope)
5. B (Ideally orthostatic vitals should be taken at 1 min and 3 min after standing and at least 5 minutes of being supine, up to 40% of people >70 years old and 25% of people <60 years old can have asymptomatic postural drop, sensitivity for SBP drop is 30% and specificity 80%, sensitivity for HR increase for 1L blood loss is 97% and specificity 98%. Assessment of intravascular volume DUNN RJ emergencymedicinemanual.com 2016)
6. D (Signs of severe AS: slow rising pulse, S4, paradoxical splitting of S2, aortic thrill, greater length and harshness of murmur, displaced apex beat, LV Failure. LIFL Cardiac Lesions and Severe Clinical Signs 2016. Ejection click due to mobile cusps in congenital forms only, also syncope has average 3 year survival and dyspnea has average 2 year survival if left untreated. Aortic valve disease DUNN RJ emergencymedicinemanual.com 2016)
7. A (Normal systolic function has an EF of 60% with <40% defining systolic dysfunction, diastolic heart failure is <40%, 80% of heart failure patients have a reduced GFR of 30-60 mL/min. Cardiac failure DUNN RJ emergencymedicinemanual.com 2016)
8. D (Orthopnea has a better likelihood ratio than oedema, up to 18% of patients have normal CXR with acute heart failure 75% sensitivity, BNP < 100 has a 89% NPV. Cardiac failure DUNN RJ emergencymedicinemanual.com 2016)
9. C (Initial settings should be 5-10mmHg, intubation does not improve in-hospital mortality compared to NIV, BIPAP previously thought to be harmful is no longer considered to be the case. Cardiac failure DUNN RJ emergencymedicinemanual.com 2016)
10. D (morphine worsens outcomes, frusemide should not be used alone and only in combination with nitrites via any method of delivery however frusemide does not worsen outcomes and is not contraindicated, ethacrynic acid can be a substitute for frusemide if severe sulfa allergy)
11. A (Septal infarcts are usually supplied by LAD, avoid GTN in RV infarcts usually supplied by RCA)
12. B (loop diuretics for symptom relief only, poor response to diuretics in APO has a bad prognosis)
13. C (amiodarone does not increase risk of sudden death but should be avoided for long term use)
14. C (Hemoptysis due to bronchial vein rupture is usually a late sign, murmurs are mid diastolic, ECG changes include biphasic P wave and right axis deviation from pulmonary HT)
15. A (Acute mitral regurg usually secondary to ischemia typically inferior or anterior infarcts and presents with APO or cardiogenic shock and can have a S4 gallop, chronic MR may be asymptomatic or present as AF and be tolerated for years)
16. D (Classic clinical findings of aortic regurg have poor sensitivity and specificity)

17. B (Mnemonic RAD RALPH the LAD from VILLA. RAD: RVH, Anterolateral MI, Left Posterior Hemiblock. LAD: VT, Inferior MI, LVH, Left anterior Hemiblock. WPW can cause both. Aortic stenosis tends to cause LVH thus LAD. Cardiac axis DUNN RJ emergencymanual.com)
18. B (more prevalent in black males)
19. A (steroids may be indicated in autoimmune diseases as cause. Acute myocarditis DUNN RJ emergencymanual.com 2016)
20. D (HOCM is an asymmetric septal hypertrophy of LV and/or RV, it has no gender or ethnicity predilections, cardiac output and ejection fraction are usually normal)
21. C (Murmur decreases in intensity with isometric exercise and squatting, increases in intensity with Valsalva and standing, prominent a wave on JVP, rapid upstroke and biphasic carotid pulse)
22. D (HOCM: LVH; deep Q waves inferior & lateral; Tall R wave leads I, aVL and V4-6; dysrhythmias; large precordial T wave inversion in apical HOCM; can be associated with WPW. Tall R wave in aVR usually caused by tricyclic overdose. LITFL Hypertrophic Cardiomyopathy 2016)
23. B (exercise stress test done to assess BP response)
24. A
25. B (normally 50ml fluid around pericardium, PR depression more likely in phase 1 and 2 with ST elevation in phase 1 only, CT scan has either same or less sensitive at detecting effusion than echo. Pericarditis DUNN RJ emergencymanual.com 2016)
26. C (steroids can be given for pericarditis resulting from uraemia, autoimmune and Dresslers. Pericarditis DUNN RJ emergencymanual.com 2016)
27. D (Usually at least 200ml to cause tamponade, coronary blood flow usually unchanged, Beck's triad is specific but sensitivity is 30%. Pericardial Tamponade DUNN RJ emergencymanual.com 2016)