SELF ASSESSMENT – MODULE E: HEMODYNAMICS

1. Which port is used to inject fluid for a thermodilution cardiac output?
    A. Balloon
    B. Distal
    C. Proximal
    D. Thermistor
    E. SvO_2

2. PAP is a measurement of
    A. Preload on the right
    B. Afterload on the right
    C. SVR
    D. Preload on the left
    E. Afterload on the left

3. Which port is used to measure the temperature change of fluid during a thermodilution CO measurement?
    A. Proximal
    B. Distal
    C. Balloon
    D. Thermistor
    E. SvO_2

4. A C wave on the PCWP tracing indicates
    A. Bulging of the aortic valve
    B. Bulging of the mitral valve
    C. Bulging of the pulmonic valve
    D. Bulging of the tricuspid valve

5. What is Westermark's sign? **A TRIANGULAR, WEDGE-SHAPED AREA ON A CHEST X-RAY. IT TYPICALLY REVEALS ASYMMETRIC VASCULAR DISTRIBUTION BETWEEN THE LUNGS, WITH DIMINISHED VASCULAR MARKINGS IN THE LUNG AFFECTED BY THE EMBOLISM CAUSED BY A MALPOSITIONED PULMONARY ARTERY CATHETER.**

6. The dicrotic notch on a pulmonary artery waveform, indicates closure of

    A. Aortic valve
    B. Pulmonic valve
    C. Bicuspid valve
    D. Tricuspid valve

7. Insertion sites for a CVP catheter and PAC are the same
    A. True
    B. False

8. If PEEP is added to the ventilator circuit and the static lung compliance decreases, PEEP may be overdistending the alveoli and compressing on the vascular bed. How would this affect the pulmonary artery pressure? **INCREASE**

9. The c wave of a CVP waveform represents which of the following?
    A.   Atrial contraction
    B.   Ventricular contraction
    C.   Right atrial filling
    D.   None of the above

10. The distal lumen of the PAC lies 30 cm from the tip of the catheter
    A.   True
    B.   False

11. Which of the following will increase the PAP?
    A.   Severe hypoxemia
    B.   Thromboembolism
    C.   Acidosis
    D.   All the above

12. The PAC must be in positioned in which lung zone?

    A.   Zone I
    B.   Zone II
    C.   Zone III

13. During thermal dilution cardiac output measurements, the solution is injected into the **PROXIMAL** lumen of the PA catheter.

14. Given the following information, calculate the Stroke volume index
    CO 5.8 L/min   BSA 1.9 m2   HR 80/min

$$SVI = \frac{CO/HR}{BSA} = \frac{5.8L/min \big/ 80/min}{1.9m^2} = \frac{0.0725L/min}{1.9\ m^2} = \frac{72.5\ mL/min}{1.9m^2} = 38.2\ mL/min/m^2$$

15. Which hemodynamic parameter is used to differentiate cardiogenic from non-cardiogenic pulmonary edema?

    A.   CVP
    B.   MAP
    C.   PAP
    D.   MPAP
    E.   PCWP
    F.   PVR

16. During thermodilution cardiac output measurement, the larger the temperature change sensed by the thermistor lumen, the less the cardiac output
    A.   True
    B.   False

17. List the normal values of the following

    A.   CVP: **2-6 mm Hg or 4-12 cm H₂O**

    B.   PAP: **25/8 mm Hg**

    C.   MPAP: **10 – 20 mm Hg**

    D.   PCWP: **4-12 mm Hg**

    E.   CO: **4-8 L/min**

    F.   CI: **2.5 – 3.5 L/min/m²**

18. A PAC in zone I most likely will reflect

    A.   Alveolar pressure

    B.   Right atrial pressure

    C.   Left atrial pressure

    D.   LVEDP

19. Given the following information, calculate the PVR

PAP 38/25   CVP 14 mm Hg   PCWP 21   CO 4.3 L/min   MAP 88

$$MPAP = \frac{(2 \times DIAST) + SYST}{3} = \frac{(2 \times 25) + 38}{3} = \frac{50 + 38}{3} = \frac{88}{3} = 29.3$$

$$PVR = \frac{(MPAP - PCWP)}{CO} \times 80 = \frac{(29 - 21)}{4.3} \times 80 = \frac{8}{4.3} \times 80 = 1.86 \times 80 = 148.8 \text{ } dynes/sec/cm^{-5}$$

20. Right atrial pressure is measured by

    A.   CVP

    B.   PAP

    C.   MPAP

    D.   MAP

    E.   CI