

**FCP – PERFUSIONIST – 4<sup>th</sup> August 2011**

1. Which of the following parameters of CPB correlates best with the outcome of paediatric cardiac surgery
  - a. CPB time
  - b. Cross clamp time
  - c. lowest temperature
  - d. Serum lactate level on CPB
2. Persistent left superior venacava doesn't warrant any change in the venous cannulation in which of the following procedures
  - a. Sennings operation
  - b. AV canal defect
  - c. Aortic valve replacement
  - d. Tricuspid valve repair
3. For patients receiving low molecular weight heparin the anticoagulation status is best monitored by
  - a. PT
  - b. aPTT
  - c. ACT
  - d. anti Xa level
4. First clinical use of 'controlled cross circulation' for open heart surgery was by
  - a. Kirklin
  - b. Lillehei
  - c. Gibbon
  - d. Barrat- Boyes
5. The most important purpose of left heart venting is to
  - a. improve venous return
  - b. Reduce air embolism
  - c. prevent distension
  - d. Prevent rewarming
6. Heparin resistance is commonly due to the deficiency of
  - a. coagulation factors
  - b. platelets
  - c. calcium
  - d. anti thrombin III
7. Which of the following commercially available oxygenators have the lowest priming volume
  - a. Polystan Safe micro
  - b. Sorin Dideco Lilliput 1D901



- c. Capiiox SX10
  - d. Capiiox Baby RX05
8. In pH stat strategy of CPB the blood pH is maintained by the addition of
- a. Soda bi carbonate
  - b. CO<sub>2</sub>
  - c. Citrate phosphate dextrose
  - d. thiopentone
9. All the following affect the sVO<sub>2</sub> directly EXCEPT
- a. hematocrit
  - b. flow rate
  - c. peripheral vascular resistance
  - d. myocardial ischemic time
10. The most widely used ventricular assist device in children is
- a. Berlin heart
  - b. Abiomed
  - c. Thoratec
  - d. deBakey Micromed
11. MUF flow more than 20 ml/kg is not advisable because it can cause
- a. air embolism
  - b. cerebral steal
  - c. hemolysis
  - d. hypovolemia
12. Horrow type I protamine reaction is due to
- a. rapid administration
  - b. anaphylactic reaction
  - c. anaphylactoid reaction
  - d. pulmonary vasoconstriction
13. What percentage of cardiac output returns through the bronchial veins to the left heart
- a. <3%
  - b. 5%
  - c. 10%
  - d. 20%
14. Inadequate venous return during CPB can be due all EXCEPT
- a. hypovolemia
  - b. malposition of cannulae
  - c. peripheral vasoconstriction
  - d. high reservoir position



15. The best brain protection during deep hypothermic CPB is achieved by which of the following acid base strategy
- alpha stat
  - pH stat
  - alpha stat cooling & pH stat rewarming
  - pH stat cooling and alpha stat rewarming
16. Which of the following additive does NOT help to reduce the reperfusion injury
- blood
  - L glutamate & aspartate
  - potassium
  - calcium
17. Survival to hospital discharge in pediatric post cardiectomy ECMO is around
- 30%
  - 40%
  - 50%
  - 60%
18. The maximum permissible coronary sinus pressure during retrograde cardioplegia is
- 20 mm Hg
  - 35 mm Hg
  - 50 mm Hg
  - 75 mm Hg
19. 3/16 inch tubing can be used as the venous line in flows up to
- 500 ml/min
  - 600 ml/min
  - 750 ml/min
  - 1000ml/min
20. Which among the following is NOT true about the Boston circulatory arrest study. Patients undergoing TCA had
- poorer mental function at 1 year
  - poorer motor development at 4 years
  - normal IQ at 4 years
  - direct correlation between IQ and TCA time
21. The approximate blood volume of a 5 Kg child is
- 625 ml
  - 525 ml
  - 425 ml
  - 325 ml



22. All are used for treating hyperkalemia EXCEPT
- Insulin
  - calcium
  - digoxin
  - Sodium polystyrene sulfonate
23. The sinus node artery is a branch of
- right coronary artery
  - left anterior descending artery
  - circumflex coronary artery
  - posterior descending artery
24. Temperature recorded at all of the following sites correlates well with cerebral temperature EXCEPT
- rectal
  - oesophageal
  - tympanic
  - nasopharyngeal
25. All are true about blood cardioplegia EXCEPT
- allows re oxygenation
  - avoids reperfusion damage
  - Minimises hemodilution
  - decreases calcium influx
26. Acute Marginal Coronary artery is a branch of
- Left anterior Descending artery
  - Diagonal artery
  - Left Circumflex artery
  - Right coronary artery
27. All the following are used to control arrhythmia post cross clamp period except
- Lignocaine
  - Amiodarone
  - Propofol
  - Magnesium
28. Life span of a normal RBC (in days) is
- 90
  - 70
  - 120
  - 250



29. Hypothermia produces all the following except
- Reduced renal cortical blood flows
  - Reduced Glomerular filtration Rate
  - Augmented renal tubular function
  - Reduced free water and osmolar clearance
30. Mesenteric Ischemia following CPB is due to the following except
- Vasoconstriction
  - Reduced levels of Angiotensin 2
  - Microemboli with release of vasoactive substances
  - Preexisting atherosclerosis
31. Mechanism of action of Heparin is
- Activation of Antithrombin 3
  - Activation of Platelet Factor 4
  - Activation of cGMP
  - Activation of Factor 10A
32. Blood Conservation strategies in cardiac surgery are all except
- Normovolemic hemodilution
  - Intraoperative blood salvage
  - Erythropoietin therapy
  - Desmopressin administration
33. Recommended flow rates for infants and children at 28 deg Celsius is
- 1 L/min/m<sup>2</sup>
  - 1.8 L/min/m<sup>2</sup>
  - 2.5 L/min/m<sup>2</sup>
  - 3.5 L/min/m<sup>2</sup>
34. To flush out air after massive air embolism, the recommended flow for retrograde cerebral perfusion at 20 deg Celsius is
- 1-2 L/min for 1-3 mins
  - 0.5 – 1 L/min for 1-3 mins
  - 3 –4 L.min for 3-5 mins
  - 0.5 – 1 L/min for 3-5 min
35. Approximate prime volume (in ml) per meter of ½ inch (internal diameter) tubing
- 65
  - 85
  - 115
  - 255



36. The following are contra-indications of CPB except
- Intracerebral bleeding
  - Epidural hematoma
  - Subdural hematoma
  - Diaphragmatic hernia
37. Drugs used to lower SVR are all except
- Propofol
  - Sodium Nitroprusside
  - Phenylephrine
  - Benzodiazepines
38. The following are true of alpha-stat management strategy at 28 deg celsius except
- Elevated coronary blood flow
  - Preserved LV function
  - Reduced left ventricular oxygen consumption
  - Increased lactate utilization
39. Neurological effects leading to brain injury following CPB are due to the following except
- Manipulation of diseased ascending aorta during cannulation
  - Coanda effect
  - Hypoglycemia due to stress of CPB
  - Lipid microembolisation after intraoperative blood salvage
40. The gas used in IABP is
- Hydrogen
  - Helium
  - Nitrogen
  - Carbondioxide
41. The safe limit of vacuum applicable to the venous reservoir is
- 20 –60 mm Hg
  - 0-20 mm Hg
  - 60 – 100 mm Hg
  - 100- 120 mm Hg
42. Contraindication for use of IABP
- Aortic Stenosis
  - Aortic regurgitation
  - Mitral Stenosis
  - Mitral Regurgitation



43. Drug therapy for air embolism is first aimed at
- Raising arterial pressure
  - Decreasing arterial pressure
  - Raising venous pressure
  - Causing diuresis
44. The thickness of membrane in an oxygenator is
- 150 micron
  - 10 micron
  - 0.5 micron
  - 50 micron
45. Normal Glomerular Filtration rate is
- 50 – 100 ml/min
  - 100 – 200 ml/min
  - 200-250 ml/min
  - 250 – 300 ml/min
46. Post pump jaundice is usually caused by
- Direct Hyperbilirubinemia
  - Indirect Hyperbilirubinemia
  - Hepatocellular dysfunction
  - Hepatocellular destruction
47. The following are true of mini bypass circuits except
- Venous reservoir and cardiomy suction are absent
  - The priming volume is around 1800 ml
  - An integrated venous bubble trap is present
  - There is also some evidence of decreased cerebral microembolization and improved postoperative renal function.
48. Advantages of Heparin coated circuits are all except
- enhanced thromboresistance.
  - decrease pulmonary vascular resistance
  - decrease the alveolar-arterial ( $PA_{O_2} - Pa_{O_2}$ ) gradient
  - decrease static lung compliance
49. Cold agglutinin disease involve-
- Ig A
  - Ig D
  - Ig M
  - Ig E



50. Hemophilia A is due to deficiency of factor
- 7
  - 8
  - 9
  - 10
51. Which is contraindicated in vasoplegic patients
- Methylene Blue
  - Phenyl ephrine
  - Dobutamine
  - Nor adrenaline
52. Ph of Ringers lactate is
- 6.5
  - 7.4
  - 5.0
  - 7.8
53. Maximum pressure generated by centrifugal pumps in mm of Hg when arterial line is clamped is
- 700-900
  - 400-500
  - 200-400
  - 1200-1400
54. P50 is the PO<sub>2</sub> in which 50 % HB is saturated. Normal P50 value in mm of Hg is
- 26.6 mm
  - 40.0
  - 50.6
  - 75.8
55. Cardiac pacing mode, which is more physiologic is
- VOO
  - DDD
  - VVI
  - AOO
56. Maximum Negative pressure in Vacuum assisted drainage is
- 90
  - 150
  - 240
  - 50



57. Pulse pressure and mean arterial pressure of a person with 120/70 BP are
- 90 & 70
  - 50 & 90
  - 190 & 50
  - 50 & 120
58. Which component of myocardial cell transmits action potential?
- Tight junctions
  - Gap Junctions
  - Desmosomes
  - T-Tubules
59. Heartmate II LVAD is
- Extracorporeal Nonpulsatile
  - Paracorporeal Pulsatile
  - Intracorporeal Nonpulsatile
  - Intracorporeal Pulsatile
60. Arterial Pressure is mainly regulated by
- Aorta
  - Small arteries
  - Arterioles
  - Capillaries
61. Raised prothrombin time is corrected by
- FFP
  - Platelet transfusion
  - FFP & Vitamin K
  - RBC
62. Increasing CO<sub>2</sub> level decreases affinity of Hb to O<sub>2</sub>. This effect is called
- Haldane
  - Bohr
  - Raman
  - Bernoulli
63. Left superior vena cava may pose problems in all of the following conditions except
- Repair of VSD
  - Repair of ASD
  - Repair of TOF
  - AVR



64. Cardiogenic shock is defined as Cardiac index below
- 3
  - 2.8
  - 2
  - 1.2
65. Which law states that volume of compressed gas is inversely proportional to its pressure
- Charles' Law
  - Boyles' Law
  - Henry's law
  - Gibbons ' law
66. Extra corporeal flow rate of neonate in ml/kg/mt is
- 75
  - 150
  - 200
  - 100
67. True Membranes are made from
- Cellulose
  - Silicone
  - Polypropylene
  - Dacron
68. All of the following are reference conditions to assess oxygenator performance except
- CO<sub>2</sub> refernce blood flow
  - Index Hemolysis
  - Plasma levels of C3 a
  - Plasma levels of free Hb
69. Aortic valve may have 4 or more leaflets in
- TOF
  - TAPVC
  - Truncus
  - DORV
70. The most dreaded complication of Heparin Induced Thrombocytopenia is
- Bleeding
  - Thrombosis
  - Hypotension
  - Infection



71. Moderator Band is seen in  
a. RA  
b. LA  
c. RV  
d. LV
72. SA Node is an  
a. epicardial structure  
b. endocardial structure  
c. pericardial structure  
d. myocardial structure
73. LSVC most commonly drains into  
a. Coronary Sinus  
b. RA  
c. LA  
d. RV
74. Number of bronchopulmonary segments in left lung are  
a. 6  
b. 8  
c. 10  
d. 12
75. SodiumPotassiumChloride pump is located in  
a. Proximal Convoluted Tubule  
b. Distal Convoluted Tubule  
c. Ascending Loop of Henle  
d. Collecting Tubule
76. The following are alternatives of heparin, **except**  
a. Bivalrudin  
b. Argatroban  
c. Platelet Factor 4  
d. Danaproid
77. Following are indicators of low cardiac output **except**  
a. Fall in urine output  
b. High mixed venous saturation  
c. Low BP  
d. Cold peripheries



78. The normal blood pH is between

- a. 7.25 – 7.35
- b. 7.35 – 7.45
- c. 7.45 – 7.55
- d. 7.15 – 7.25

79. Maximum oxygen transfer across membrane oxygenator is

- a. 100 – 200 ml/min
- b. 200 – 400 ml/min
- c. 400 – 600 ml/min
- d. 600 – 800 ml/min

80. Oxygen dissociation curve is shifted to right in all except

- a. Hyperthermia
- b. Decreased 2,3, DPG
- c. Acidosis
- d. Increased pCO<sub>2</sub>