Therapeutic Hypothermia Post Quiz

1. What is the most comparable site to the PA for measuring core body temperature?
    a. esophageal
    b. bladder
    c. rectal
    d. tympanic

2. When body temperature is reduced below 30°C, substantial risk emerges for cardiac arrhythmias and respiratory arrest as well as VF and AF.
    a. T
    b. F

3. A frequently cited threshold for shivering when body temperature is dropping is 33°C.
    a. T
    b. F

4. EKG abnormality(-ies) associated with temperature in the range of 30 - 35°C are
    a. bradycardias
    b. prolonged PR interval
    c. prolonged QRS
    d. prolonged QT
    e. all of the above
    f. none of the above

5. Patients undergoing cerebral aneurysm clipping had no greater operative blood loss at 32.5-33.5°C than those maintained at 36-37°C.
    a. T
    b. F

6. $PaCO_2$ values obtained from the blood gas machine directly reflect $PaCO_2$ during hypothermia.
    a. T
    b. F

7. Evidence is largely unsupportive of mild hypothermia effects on neuroinflammation.
    a. T
    b. F

8. The beneficial effects of therapeutic hypothermia on ICP have been repeatedly shown in clinical TBI and CVA.
    a. T
    b. F

9. Concerning survival without neurological damage, the HACAS group in Austria and the Australian Bernard group using hypothermic treatment of VF cardiac arrest have shown
    a. 10-14% better outcomes
    b. 15-24% better outcomes
    c. 25-34% better outcomes
    d. 35-44% better outcomes

10. The quality of evidence supporting therapeutic hypothermia in non VF cardiac arrest is very high.
    a. T
    b. F

11. Therapeutic hypothermia significantly reduces disability in perinatal encephalopathy.
    a. T
    b. F

12. The limited data of non-randomized trials in malignant stroke are not sufficient to recommend therapeutic hypothermia.
    a. T
    b. F

13. Large clinical randomized studies have conclusively demonstrated that therapeutic hypothermia before PTCA limits all types of myocardial infarct size.
    a. T
    b. F

14. During cooling shivering stops at
    a. 35°C
    b. 34°C
    c. 36°C

15. Which should you use to adjust ventilation?
    a. alpha-stat
    b. PH-stat which adjusts for temperature

16. Overcooling is detrimental in cardiac arrest patients.
    a. T
    b. F

17. Hyperthermic overshoot is not deleterious in TBI and CVA patients.
    a. T
    b. F

18. Which of the following rewarming strategies are recommended?
    a. rewarming at a rate no faster than 1°C per 2 hours in CA
    b. rewarming at a rate no faster than 1°C per 4 hours in TBI
    c. rewarming at a rate even slower in severe CVA
    d. not A, B, and C
    e. all A, B, and C

19. There are no significant coagulation or clotting problems at 34° or 33°C in Trauma patients in the therapeutic hypothermia literature.
    a. T
    b. F

20. Cooling during CPR reduces the threshold for ventricular defibrillation.
    a. T
    b. F

21. 2L IV 4°C Saline does the following
    a. requires muscular skeletal blocking agents
    b. requires sedation
    c. lowers temperature (core) up to 1.7°C/hr.
    d. all of the above
    e. none of the above

22. There have been no prospective randomized clinical trails of therapeutic controlled hypothermia in Trauma patients (TBI) with hemorrhagic shock.
    a. T
    b. F

23. There are NO studies of hypothermic use in acute spinal cord injury to support systemic therapeutic hypothermia as an option.
    a. T
    b. F

24. Urinary bladder probe temperature is
    a. more reliable than rectal
    b. accuracy is ± 0.4
    c. 2-4°C lower than brain temp
    d. all of the above
    e. none of the above

25. Rectal temperature probe
    a. is unreliable
    b. may have variable position
    c. can perforate
    d. is equal to PA
    e. all of the above

f. A,B, and C only
g. none of the above

26. The temperature probe
    a. In the PA is the gold standard
    b. In lieu of PA is best measured, in the distal ¼ of the esophagus
    c. can be inserted in an esophageal ET tube to prevent coiling
    d. all of the above
    e. none of the above

27. There is no reduction in cytochrome P450 drug metabolism during hypothermia.
    a. T
    b. F

28. Hypertension appears to be a very common complication of rewarming in children with TBI.
    a. T
    b. F

29. Hypothermia has been found to be therapeutic in all but one of these:
    a. VF
    b. hyperthermic CVA
    c. perinatal asphyxia
    d. TBI
    e. Open heart surgery

30. There are specific drug dosage adjustments available for each °C of hypothermia.
    a. T
    b. F

31. Pancuronuim does not have a receptor effect in humans.
    a. T
    b. F

32. Serum neuron-specific enolase (NSE) is a biochemical marker that can be measured to reflect brain damage.
    a. T
    b. F

33. A landmark paper by Woolf .et.al. supports cooling as soon as possible and quickest to target temperature.
    a. T
    b. F

34. Cooling method rate of cooling (°C/hr)
    1. ice packs to groin _____
    2. cool air _____
    3. alcohol + cover _____
    4. water circulating blanket_____
    5. Medevance adhesive pads _____
    6. total body suit MTRF, Akina _____
    7. Total Body Blanketrol Cincinnati Subzero _____
    8. KCI cold air total body tent _____
    9. Complete patient immersion ThermoSuit_____
    10. Emcools Prerefrigerated graphite/H_2O cube pads with adhesive _____
    11. Cap Fricap_____
    12. IV Saline 2L over 30 minutes 4°C _____

Answer Key

1. A
2. A
3. B – answer is 35.5°C
4. E
5. A
6. B – use alpha-stat
7. A
8. A
9. B
10. B
11. A
12. A
13. B
14. B
15. A
16. A
17. B – causes rebound ICP
18. E
19. A
20. A
21. D
22. A
23. B
24. D
25. F
26. D
27. B
28. B – hypotension
29. D
30. B
31. A
32. A
33. A
34.
    1) .3/hr °C
    2) .3/hr °C
    3) .25/hr °C
    4) .3/hr
    5) 1-1.2°C/hr
    6) 0.9°C/hr
    7) 1.3°C/hr
    8) 0.7°C/hr
    9) 3°C/hr
    10) 3.3°C/hr
    11) 0.5°C/hr
    12) 1.7°C/hr