Name: _____
Date: _____

Continuum Pediatric Nursing Services

MECHANICAL VENTILATION EXAM

1. All of the following statements are true **except:**
   a. Ill-fitting tubes can create problems with proper ventilation
   b. Patients are more likely to experience air leakage around their trach at night during sleep because their muscles are more relaxed.
   c. The technique of deep suctioning, in which the catheter is inserted until the tip of the catheter meets resistance, should be used regularly, since it can be beneficial to patients by removing more secretions.
   d. Humidification of inspired air is necessary in children with tracheostomies because the upper airway is bypassed.

2. Pressure Support is:
   a. Airway pressure placed back into the circuit at the end of the delivered breath
   b. Provides preset positive pressure in the circuit to augment patient's inspiratory efforts.
   c. Pressure required to deliver the breath
   d. The amount of air delivered with each breath

3. Synchronized Intermittent Mandatory Ventilation:
   a. Delivers gas at a preset rate and tidal volume or pressure, regardless of inspiratory effort.
   b. Delivers gas at a preset tidal volume or pressure in response to the patient's inspiratory effort. If the patient's inspiratory effort fails to initiate a breath within a preset time, this mode will initiate a breath for them.
   c. Applies positive pressure during spontaneous breaths, improving oxygenation by opening collapsed alveoli at end of expiration.
   d. Delivers a preset tidal volume or pressure and rate while allowing spontaneous breathing. Ventilator breaths are synchronized with the patient's respiratory effort.

4. All of these statements are true about routine suctioning a child with a tracheostomy **except:**
   a. The premeasured technique is used, in which the catheter is inserted to a premeasured depth, with the most distal holes of the catheter just exiting the tip of the tracheostomy tube.
   b. Exact depth of the premeasured technique is critical to avoid epithelial damage if inserted too deeply.
   c. Apply suction upon inserting catheter as well as withdrawing for a maximum of 5 seconds.
   d. Insert catheter until resistance is met and suction until all secretions are cleared.

5. A low pressure alarm can be caused by all **except:**
   a. Disconnected or loose ventilator tubing connection
   b. Mucous plugs in the trach tube
   c. Holes or leaks in the vent tubing
   d. Positional changes or relaxation of the muscles surrounding the stoma site.

6. Assist Control Ventilation is:
   a. Regardless of the patients inspiratory effort, the ventilator will deliver a preset breath
   b. Breaths are delivered to the patient as set, but it can detect a patient's effort to take a breath and deliver a preset breath
   c. Delivers a preset tidal volumes and respiratory rates to the patient and allows the patient to take a spontaneous breath
   d. A preset volume of gas delivered to the patient

7. The home health nurse notices that water needs to be drained from the patient's ventilator circuit rather frequently. She reviews the vent flow chart to see what the heater setting has been, and finds it set at "4" consistently since the ventilator was set-up in February. It is now July. What might the cause be?
   a. The circuit may need to be changed
   b. The heated humidifier is set too high for this patient
   c. Now that the weather has warmed up, the air conditioner is being used more and this is causing a temperature change in the room, resulting in "rain-out" in the patient circuit.
   d. All of the above

8. All of the below are true regarding Peak Inspiratory Pressure (PIP) **except:**
   a. Increases with any airway resistance
   b. Highest level of pressure applied to the lungs during inhalation
   c. PIP may increase due to Bronchospasm
   d. FIO2 delivered to the patient

9. Interventions for the ventilator equipment required throughout your shift include all of the following **except:**
   a. Checking for water build up in all of the tubing
   b. Verifying that the vent settings are in accordance with the physician's order
   c. Checking that the control lock is "ON" to prevent inadvertent changes on the control panel
   d. Turn the vent on after it has been connected to the patient

10. You have been caring for a patient when the High Pressure alarm sounds. **An appropriate assessment would NOT include:**
   a. Ask the physician to change the PIP to accommodate the patient's pressure needs
   b. Determine the status of the patient's breath sounds, is there full and equal excursion
   c. Determine if secretions in the tracheostomy tube may be creating resistance
   d. Evaluate the vent tubing for the presence of condensation

11. High Pressure Alarms can be activated by all of the below **with the exception of:**
    a. Hole in the circuit
    b. Kinked or occluded circuit tubing
    c. Patient coughing
    d. Occlusion of the airway

12. Positive End Expiratory Pressure has no detrimental effects, you can add as much as you like.
    a. True
    b. False

13. When evaluating the possible cause of a low minute volume alarm and a low peak pressure alarm, it would be appropriate to attribute the problem to all **except:**
    a. Positional changes made by the patient that have caused the presence of a leak around the tracheostomy tube
    b. A leak in the patient circuit
    c. Relaxation of the tracheal muscles at night or during sleep
    d. Patient needs suctioning

14. A power outage forces you to enact emergency support for your patient on the ventilator. All actions are appropriate **with the exception of:**
    a. The internal battery in the vent will automatically switch on for 8 hours of emergency power, giving plenty of time until the power is restored
    b. Notify the electric company
    c. Connect the vent to the back-up/portable external battery as soon as possible, making sure the control panel on the vent lights up to verify external power source has been connected
    d. Place ambu bag within reach of patient

15. The back-up travel ventilator needs:
    a. To have both batteries checked every shift
    b. To be used if there is a failure of the bedside ventilator
    c. To be plugged in
    d. All of the above

16. Ventilator checks are to be done:
    a. As ordered by the physician
    b. Immediately after changing the circuitry
    c. Immediately after transferring the patient from the bedside to travel ventilator
    d. Any time the patient's clinical condition deteriorates
    e. All of the above

17. The vent is alarming, your first priority is to:
    a. Reset the alarm
    b. Empty the water trap
    c. Assess the patient's condition
    d. Check vent circuit for disconnections or kinks

18. Ventilator Checkout Tests including Alarms, Display, Control and Leak are recommended to be done:
    a. Daily
    b. With a circuit change after the circuit has been connected to the patient
    c. After circuit change before connecting to the patient
    d. If ordered by MD and after training by a respiratory therapist on how to perform the tests

19. Your patient with a tracheostomy is experiencing respiratory distress. You have already applied suction to the trach, performed an emergency trach change and now administering oxygen while attempting to ventilate with the ambu bag. There is advanced worsening of color and saturations are dropping. As you listen to the patient's breath sounds, you hear diminished breath sounds. You also see that the chest is not rising as fully as it had earlier, **your NEXT step should be:**
    a. You continue to ventilate with the ambu bag with oxygen and call 911
    b. As long as the patient has some degree of spontaneous breathing you can monitor the oxygenation with a pulse ox as you supply oxygen and monitor the patient for further changes
    c. You change the trach tube, suspecting that the new tube may be plugged with secretions. Then you continue to ventilate and oxygenate via the ambu bag to assess the patient's response for improvement
    d. You decide to administer a PRN order for a nebulizing agent, suspecting that the patient is in bronchospasm

20. Your ventilator patient is not getting air, **the first thing** that you should do is:
    a. Disconnect the patient from the ventilator and manually bag them until they can be transferred to the back-up ventilator
    b. Call 911
    c. Change from the bedside ventilator to the backup ventilator
    d. Turn the ventilator OFF wait 5 seconds and turn it back ON

21. When connecting a patient to their ventilator:
    a. Connect to patient first, then turn on vent.
    b. Turn on vent, then connect to patient.
    c. Ambu-bag patient and ask for family assistance.

22. When disconnecting a patient from their ventilator:
    a. Remove vent connector from trach, then turn off vent.
    b. Turn off vent, then disconnect from trach.
    c. There is never a reason to disconnect your patient.