PROCEDURE (TASK): TRANSCUTANEOUS MONITOR

I. KEY PERFORMANCE ELEMENTS

Procedural Element (Step):          Description of Satisfactory Performance:

PREPARATION

1. Re-membranes instrument if needed. Generally every 7 days (refer to manufacturer's literature) Electrode cleaned according to manufacturer's specifications Membrane attached without air bubbles

IMPLEMENTATION

1. Sets/checks temperature of electrode Operating temperature set to manufacturer's recommendations or department policy.
2. Applies electrode correctly. Adhesive ring uniformly Applies contact gel Places electrode preductally in newborns Air tight attachment Placement over vascular rich area

II. REQUISITE PERFORMANCE VARIABLES:

Students are expected to utilize various brands of transcutaneous monitors. Calibration techniques may vary from liquid zeroing techniques to gas techniques. Patient application will usually be in the neonatal environment.

III. ADDITIONAL EVALUATION CRITERIA:

None

IV. ORAL REVIEW QUESTIONS

1. How can you tell that the electrode is airtight?
2. What effect does perfusion have on electrode accuracy?
3. What are the correct calibration values (given any gas system)?
4. How often should electrodes be relocated and why?
5. List reasons why the transcutaneous values would not correlate with arterial blood gas values.
V. SCENARIO QUESTIONS:

1. You are caring for a 1500 gm infant who is being monitored by a transcutaneous Oxygen-Carbon Dioxide monitor. The monitor has been reading a TcPO$_2$ of 62 torr and a TcPCO$_2$ of 38 torr. The high O$_2$ and low CO$_2$ alarms suddenly activate. The TcPO$_2$ reads 150 torr and the TcPCO$_2$ reads 0 torr. What are possible explanations for these findings?

2. A 1750 gram infant is 4 hours old, you are switching sites of a transcutaneous monitor electrode. The monitor was located over the right upper chest wall. At this site the monitor gave TcPO$_2$ readings in the high 50 torr range. You move to the right lower abdomen and the TcPO$_2$ reads in the low 40 torr range. When the probe is moved back to the right upper chest it again gives readings in the high 50 torr range. What are possible explanations for these findings?

3. A 1400 gram infant has had slowly decreasing TcPO$_2$ readings and slowly increasing TcPCO$_2$ readings. What are possible causes of this trend in transcutaneous gas measurements?
### STUDENT:  | COURSE:  
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**KALAMAZOO VALLEY COMMUNITY COLLEGE**  
**RESPIRATORY THERAPY PROGRAM**  
**PROFICIENCY EVALUATION**

**PROCEDURE (TASK): TRANSCUTANEOUS MONITOR - PEDIATRICS AND NEONATAL**

- [ ] THERAPEUTIC PROCEDURE:  
- [ ] NON THERAPEUTIC PROCEDURE

- [ ] CLINICAL  
  - [ ] NEW PATIENT  
  - [ ] REPEAT PROCEDURE

- [ ] COLLEGE LABORATORY  
  - [ ] PEER APPLICATION  
  - [ ] MANIKIN/ANALOG

**EQUIPMENT UTILIZED:**

**STEPS IN PROCEDURE OR TASK:**

**EQUIPMENT AND PATIENT PREPARATION**

1. Selects, gathers, and assembles appropriate equipment. Insures asepsis.
2. Remembers instrument if needed.
3. Reviews pertinent chart information.
4. Identifies patient.
5. Explains procedure to parents (if applicable).

**IMPLEMENTATION**

6. Plugs device into electrical outlet.
7. Turns unit power to on position.
8. Sets/checks temperature of electrode.
9. Readjusts patient position or packs as needed.
10. Calibrates device.
11. Applies electrode correctly.
12. Sets high and low alarms.
13. Examines transcutaneous values.

**FOLLOW-UP**

14. Maintains equipment.
15. Confirms correlation with blood gas values.
16. Relocates electrode when required.

**ADDITIONAL EVALUATION CRITERIA**

17. Records pertinent data in chart and departmental records.
18. Notifies appropriate personnel.
STUDENT'S COMPREHENSION OF COGNITIVE OBJECTIVES RELATED TO THE PROCEDURE: TRANSCUTANEOUS MONITOR - PEDIATRICS/NEONATAL

Upon completion the student will be able to answer oral review questions and discuss clinical scenarios related to the following cognitive objectives:
1. Describe how you can tell if the electrode is air tight.
2. Describe the effect of perfusion of the electrode site on transcutaneous blood gas analysis.
3. Given the concentrations of individual components of calibration gas and the barometric pressure, determine the calibration values for transcutaneous blood gas analyzers.
4. Describe proper placement and application of transcutaneous electrodes to the infant and state the rationale for routinely relocating the transcutaneous electrode site.
5. Given transcutaneous values and blood gas values state possible explanations for discrepancies between the values.
6. Given transcutaneous values and other clinical data give possible explanations for changes or trends in transcutaneous blood gas values.

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<th>Skill evaluation</th>
<th>Oral Review</th>
<th>Specify Deficiencies:</th>
<th>Specifier Data</th>
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<td>Ability to perform applicable steps in procedure as listed on the front of form without error or omission.</td>
<td>Knowledge of the cognitive objectives listed above.</td>
<td>Specify applicable skill steps that were omitted or done erroneously. Also note any errors in discussing cognitive objectives. Please give enough detail to allow the student to work on specific remediation.</td>
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