Functional Area: Care of the Patient

Subject: CAPNOSTREAM CAPNOGRAPHY/PULSE OX DEVICE

Policy: The Respiratory Therapy department will adhere to the following guidelines for the use and operation of the Capnostream capnography/pulse ox device.

Purpose: The capnostream bedside monitor provides accurate, continuous capnography (EtCO2) and pulse oximetry (SpO2) monitoring. Capnography is a non-invasive method for monitoring the level of carbon dioxide in exhaled breath to assess a patient's ventilation status. The pulse oximeter determines Spot Oxygen Saturation by passing red and infrared light into an arteriolar bed and measures absorption during the pulsatile cycle.

Indications: The device may be used on the following patients with a physician order, but not limited to:
1. All patients with PCA devices
2. Patients with COPD
3. Patients with sleep apnea
4. Patients with physician order for monitoring EtCO2
5. Patient on bipap/cpap
6. Post op patients
7. Pediatric patient receiving opioids or other medication with sedation side effect.

Equipment:
1. Capnostream 20 monitor
2. Capnolines for EtCO2 if applicable (Adult 012463 or Peds 007743)
3. Pulse ox cable and finger probe.
4. Electrical plug

Procedure:
1. Obtain physician order.
2. Obtain equipment from the department.
3. Plug electrical cord into main plug on the back of the monitor and into AC supply.
4. Check to make sure that the orange LED light is on or it will be in battery mode.
5. Press the power on/off button on the front panel.
6. A prompt will appear reading if this is a “new patient.”
a. Select yes if this is a new patient
b. Select no if it is the same patient
c. Please note that if you select yes, all stored data will be deleted.

7. Once this is complete you are ready to connect the pulse ox cable and sensor, along with the capnoline for EtCO2 monitoring if applicable.

Alarms:

1. Alarms must always be on.
2. Use the menu bar located at the bottom of the screen to scroll back and forth between different options.
3. Urgent alarms are set on default unless changed by each individual setting up the monitor.
   a. SpO2:
      i. High: 100%, unless otherwise ordered by physician.
      ii. Low: 90%, unless otherwise ordered by physician.
      iii. Low Pediatrics: 92%
   b. EtCO2:
      i. High: 60 (unless otherwise ordered by physician)
      ii. Low: 8 (unless otherwise ordered by physician)
   c. Sat Sec:
      i. 50
   d. Respiratory Rate:
      i. High: 35 (unless otherwise ordered by physician)
      ii. Low: 8 (unless otherwise ordered by physician)
   e. Heart Rate:
      i. High: 140
      ii. Low: 50
      iii. High Peds: 160
      iv. Low Peds: 80
   f. Apnea (no breath):
      i. 20 seconds (unless otherwise ordered by physician)

4. Caution Alarms are enabled as a default.
5. Alarm volume must always be set to the highest setting. The pulse tone may be turned off. The alarm volume setting for both is located on the bottom of the screen on the far right hand side. Highlight what looks like a speaker, turn the dial all the way up for the alarm and all the way down for the pulse tone.

6. The normal EtCO2 value is 35-45 mmHg, however some patients may have a higher baseline due to chronic lung disease, in this case Respiratory therapy is to adjust the alarm limits.

Clinical Assessment and Care:

1. Educate the patient/family on the purpose of capnography and continuous pulse oximetry, emphasizing the benefit and improved safety of continuous monitoring.
2. Ensure that the patient is wearing the capnoline filter line if applicable and the pulse oximeter sensor is on correctly.
3. Assess and document the EtCO2, RR, PR, SpO2, and IPI initially and then every 4 hours by either the RT, nursing or CMT.
4. If the patient is being monitored by the CMT unit, the patient must be entered into the system as a new patient.
5. Change the capnolines and pulse ox sensors as needed. Alarm will sound when loose or saturated with water.
6. Respiratory or nursing may place the monitor in a 15 minute suspend mode if the patient is up walking, using the restroom or other activities that would prevent proper reading. (To place in suspend mode you simply push the button on the front that reads CO2, it will then place the screen in suspend mode for 15 minutes, giving you a countdown. You may take it out of this mode early by simply pushing the same button again.)
7. If the patient requires oxygen therapy, attach tubing to O2 source. The filter line cannula can deliver up to 5 lpm. If the patient requires oxygen at greater than 5 lpm, leave the filter line cannula in place but disconnect filter line oxygen tubing and then apply oxygen delivery device to the patient’s face such as venti-mask, NRB, or bipap.

Reportable Conditions:

CMT will notify the patient’s RN if the any of the following are present, who will then in turn notify the physician and RT. The following conditions are not all inclusive, other conditions not listed may require a call to the RN, RT or MD.

Normal EtCO2 is 35-45 mmHg.

1. EtCO2 is greater than 60 mmHg
2. EtCO2 is ≤8 mmHg
3. SpO2 is less than 90%
4. Respiratory rate is less than 8 per minute
5. Respiratory pause is great than 30 seconds
6. IPI is ≤ 4
7. EtCO2 trend increases by 15 mmHg from baseline. (especially in those cases where the patients baseline is higher than normal due to lung disease)

Monitoring:

1. If any of the above reportable conditions occur:
   a. Attempt to stimulate and arouse patient
   b. Reposition the filter line if necessary
   c. If patient is immediately aroused and breathing normally monitor every 15 minutes x 1 hour.
   d. Evaluate the need for decrease in narcotic dose and/or frequency.
   e. Call MD immediately to report patient condition.

Discontinuation:

1. EtCO2 monitoring may be discontinued when:
   a. PCA pump is discontinued
   b. Physician orders to discontinue
1. Set the pulse ox to the following depending on the age:
   a. Infant/neo: birth to 1 year
   b. Pediatric: 1-3 years
   c. Pediatric: 3-6 years
   d. Pediatric: 6-12 years
   e. Adult: ≥ 12 years.
2. The filter line cannula must be changed when the monitor displays “blockage or “occlusion”.
3. Battery:
   a. The green power-on indicator is on when the monitor is switched on.
   b. If the orange AC power indicator is off and the green power-on indicator is on, the monitor is on battery. (In other words, both lights should be on, the orange and green)
   c. If power is lost the monitor will automatically switch to battery mode.
   d. An advisory message of “battery low” appears when there is approx. 15 minutes of battery charge left.
4. Refer to page 27 of manual for picture and labels of front view.

REFERENCE

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