VAN WERT COUNTY HOSPITAL

Policy/Procedure: Critical Values of Blood Gases

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Concurrence Standard:

Principle

Blood Gases and their critical test values are the responsibilities of the Cardiopulmonary Department and the respiratory care practitioners. All respiratory care practitioners (RCP) shall be competent in analysis and interpretation of normal and critical blood gas values. The RCP shall report all STAT tests and critical values to the authorized agent within 15 minutes. The RCP shall document in the chart that the blood gas was reported to the agent. The agent is a party authorized to act on behalf of the patient. The agent, which is defined as being the RN, LPN, Nursing secretary and the physician of the patient.

Clinical significance

Significant deviations from the narrow ranges (especially when they occur in short intervals of time) are poorly tolerated and may be life-threatening. Blood gases give us the objective measurement with which to diagnose metabolic or ventilatory failure in relation to acid-base balance.

Clinical Test
While all ABG’s yield clinically relevant information, only ABG’s marked as STAT will be considered critical tests.

Critical Values
ABG’s – any ABG value marked as “outside of normal range” will be considered a critical value unless otherwise defined, designated or ordered by the physician.

Critical Value Reporting – turnaround time (TAT)
In general, all reporting of ABG critical values occurs within 15 minutes. These times are generally less, given the nature and size of the facility. These times however may be higher depending on the current conditions of the facility, staffing and patient load.
Specimen
A. Collection and processing (not applicable)
B. Rejection (not applicable)
C. Storage and preservation (not applicable)

Reagents, standards and controls: (not applicable)
A. Preparation (not applicable)
B. Control procedure (not applicable)

Instrumentation (not applicable)

Procedure
A. Performance
1. The blood gas sample shall be analyzed as per policy.
2. Analysis and reporting of STAT tests and critical values shall be done within
   15 minutes after ABL 720 gas calibration verification is confirmed.
3. The laboratory will provide notification of any anticipated delay exceeding the listed time limit.
4. When critical values are communicated verbally or by phone, verification of “read back” results must be documented.
B. Calculations (not applicable)
C. Interpretation of results
1. Any “STAT” tests or values outside of normal range shall be reported within 15 minutes after analysis to the patient’s agent.
2. The agent, which is defined as being the RN, LPN, Nursing secretary and the physician of the patient.

Expected values: Normal

<table>
<thead>
<tr>
<th></th>
<th>Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Reportable range</td>
<td></td>
</tr>
<tr>
<td>PH (7.35-7.45) Normal 7.40</td>
<td>pH &lt; 7.2</td>
</tr>
<tr>
<td>PCO2 (35-45) Normal 40</td>
<td>pCO₂ &lt; 20</td>
</tr>
<tr>
<td>PO2 (80-100) Normal 100</td>
<td>pO₂ &lt; 40</td>
</tr>
<tr>
<td>HCO3 (22-26) Normal 24</td>
<td></td>
</tr>
</tbody>
</table>

BE (+/-2) Normal 0
O2 Sat (95-100%) Normal 97%
HGB Men (13.5-18.0)
   Woman (12.0-16.0)
COHGB Nonsmoker<1.5%
   Smoker 1.5-5%
   Met hgb 0.4-
Mixed venous PH (7.31-7.41) Normal 7.36
PCO2 (41-51) Normal 46
PO2 (35-42) Normal 40
HCO3 (22-26) Normal 24
O2 sat (68-77%) Normal 75%

Normal-Infant-Child ABG

<table>
<thead>
<tr>
<th>Normal ABG values</th>
<th>Interpretation/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Birth</td>
</tr>
<tr>
<td>PH</td>
<td>7.20-7.30</td>
</tr>
<tr>
<td>PCO2</td>
<td>45-55</td>
</tr>
<tr>
<td>PO2</td>
<td>&lt;60</td>
</tr>
<tr>
<td>HCO3</td>
<td>20-24</td>
</tr>
</tbody>
</table>

Capillary Reference

PH 7.45, PCO2 36.8, PO2 70.3, HCO3 25.5, Hgb 13.8, O2Hgb 93%

Values outside normal ranges are critical values and will be reported to attending physician or nurse caring for patient within 15 minutes. Document when critical values were reported in the respiratory treatment notes.

Procedural Notes
  A. Backup for inoperable system (not applicable)
  B. Referral of specimens (not applicable)
  C. Submission and handling of referral specimens (NA)

Limitations and interfering substance (not applicable)

Method validation
  A. 1 point Gas calibration or pulse oximeter may be used to correlate oxygenation.

References: Clinical Practitioners guide to Respiratory care Dana Oakes BA, RRT