



Neonatal ICU Blood Gas CPG

Indications and Guidance

The focus of this CPG is to establish guidelines and clarity around the maximum intended times to draw blood gases after critical event, intubations, and ventilator changes have been made. Guidelines and safe guards are described below for critical values regarding PH and CO₂. Guidance about real time CO₂ monitoring devices using transcutaneous monitors (TCOM) is also discussed in this document.

Critical Values

<36 Weeks

- PH >7.45 is **critical** and PCO₂ <35 is **critical**
- PH <7.25 is **critical** and PCO₂ >65 is **critical**
- Any critical blood gas result requires a plan and/or a ventilator change made to move towards normalization of the blood gas value.
- A repeat blood gas drawn in no more than ½ hour from the time the critical blood gas was reported out.
- Blood gases can NOT be spaced out until values are out of the critical range and are deemed within normal limits.

Target Range

<36 WEEKS

- PH 7.25-7.40 and PCO₂ 45-65

>36 WEEKS

- PH 7.35-7.45 and PCO₂ 40-50

Please refer to PPHN CPG, Therapeutic Hypothermia CPG, and BPD and chronic lung disease CPG for guidance on blood gas values for these patient populations

- Once a patient is within normal limits blood gases can be spaced out to every 2 hours or to as needed assuming ventilator settings and clinical status of the infant are otherwise stable.

**Ventilator Changes and Escalation in Care**

- A blood gas is to be obtained no later than a ½ hour after a code or traumatic event that requires PPV.
- Post surfactant administration a blood gas must be obtained within 1 hour from the time it was administered to the patient. (Please also see INSURE CPG for blood gas guidance)
- A blood gas must be obtained within 2 hours after every conventional ventilator change is made, and within 1 hour of every high frequency ventilator change.
 - This is especially important for a patient who just recently received surfactant or within the ELBW patient population in the first week of life.
 - These two patient populations should also have their CO₂ closely monitored by TCOM. (See TCOM below)
- When a patient is extubated to NIPPV the patient should receive a follow up blood gas no more than 2 hours post extubation.
- If there is an escalation of patient care from RA to CPAP or CPAP to NIPPV a blood gas should be obtained with in no more than 1 hour of that change. This recommendation is for acute patient populations, and not for our BPD patient population.

TCOM MONITORING

- Transcutaneous monitoring should be initiated and maintained on all patients 34 weeks or less requiring ventilator support and any patient who receives surfactant and is actively weaning.
- TCOM's currently do not replace initial blood gases after surfactant or blood gases after code or traumatic events.
- TCOM's are not considered correlated with a blood gas until there are 2 corresponding or trending blood gases from that site. (Please also see NICU RT policy 6.3)
- TCOM's should have a correlation blood gas at least every 48 hours while the patient is utilizing the device.
- A TCOM should have two correlating gases if the TCOM is off the patient for more then the recalibration time period. (more than 10 minutes)
- When in doubt or if the clinical team has concerns about a TCOM value correlation with a blood gas at any time is always recommended.

NICU clinical teams are encouraged to follow the guidance of the CPG as written, but understandably extenuating clinical circumstances will arise. In those circumstances please document in the patient chart the team decision to deviate from the CPG.

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