

# ANOTHER *BLOODY* NEWSLETTER!

## February 2005

### Personnel:

Please welcome three new medical technologists in our lab. Connie Peterson is full-time, from Greeley, and previously worked at the UNC health center. Our part-time techs are Lugene Jackson and Cindy Jones from Fort Collins. Lugene has been a tech in Kansas City and in the bio-medical industry. Cindy recently moved from Laramie, Wyoming.



Please note that during sampling, the ABL 805 reference electrode chamber must be filled first. Therefore at least 95ul is needed when “lytes” are requested. Requesting “lytes only” does not decrease the volume requirement.

Recording the blood gas specimen “draw time” is no longer required on the ABL 805.

### Instrumentation:

Clinical Pathology recently added two new instruments:

The **OSM3 Hemoximeter** is an automated hemoglobin and oxygen saturation system. Some of the analytes measured on heparinized blood samples are: total hemoglobin, O<sub>2</sub> saturation, oxyhemoglobin, methemoglobin, and carboxyhemoglobin. The sample volume required is 35 ul.

The **ABL 805** measures blood gases, electrolytes, and metabolites including glucose and lactate. Analyses can be made with either syringes or capillary tubes; the sample volume required is shown in the following table:

**Volume Required For ABL Blood Gases:**      **Syringe/Capillary**

*Blood gas (BG)	95ul	55ul
*BG/Lytes/i-Ca/Glu/Lac	95ul	95ul
*i-Ca/Lytes	95ul	95ul
Glu/Lac	95ul	35ul
Cooximetry	35ul	35ul

\* Cooximetry is included with the above parameters if ordered at the same time.

### Blood Gas Pricing:

There are no changes in prices for blood gases, which includes the addition of Gluc/Lac to the BG/Lytes panel. Prices for the following tests are in effect when these are ordered by themselves:

<u>Tests</u>	<u>Routine</u>	<u>Emergency</u>
Gluc/Lac only	\$10	\$15
Cooximetry only	\$22	\$25

### ABL 805 Flexmode (Capillary only):

This mode allows the user to obtain maximal results from a **capillary** sample when you are unsure of the volume. The following parameters can be obtained depending on the available sample volume:

<u>Volume</u>	<u>Parameter profiles</u>
30-40ul	pH
50-70ul	pH + BG
65-100ul	pH + BG + Met
> 90ul	pH + BG + Met + Lytes

(Met = Glucose and Lactate.)

Note: Ethylene Glycol interferes with lactate measurement.

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### Capillary tube sampling procedure:

The *Clinitubes* kit includes:

- Heparinized glass capillary tubes
- Mixing wires
- Capillary caps
- Magnet

Select the puncture site and increase circulation in the region. Loosely mount a capillary cap on one end of the capillary. Insert a mixing wire in the capillary and allow it to slide to the same end as the loosely mounted cap. Apply antiseptic to the sampling site. Then puncture the skin so that drops of blood rapidly form. Fill the capillary with blood from the middle of the blood drop to prevent air getting into the capillary. Tighten the capillary cap, and add a cap to the other end. Move the mixing wire 20 times along the **full length** of the capillary using the magnet to mix the blood and the anticoagulant together. Analyze the sample within 10 minutes, or store horizontally in the refrigerator and analyze within 30 minutes. Before the sample is analyzed, mix it again. Do **not** remove the mixing wire before the sample is aspirated for measurement. Slide the mixing wire to the end of the capillary opposite to that from which the blood is to be aspirated. Remove both capillary caps. Aspirate the sample into the analyzer.

**Note:** interpret pO<sub>2</sub> values obtained from capillary samples with caution.

### Drawing blood gases using syringes:

Rinse syringe with heparin. Expel as much heparin as possible from the hub of syringe. Collect no less than 1 ml. blood. This will minimize interference from heparin in i-Ca tests. According to Boink, et al. (1992), Ca<sup>2+</sup> binding by heparin can be minimized by using either of the following:

- 1) A final concentration of sodium or lithium heparinate of 15 IU/mL blood or less.

- 2) Calcium-titrated heparin with a final concentration of less than 50 IU/mL blood.

**Reminder:** Samples submitted after 4:30 pm for same day testing on weekdays are subject to an emergency charge.

### CE: Hitachi Interferences from Lipemia/Hyperproteinemia:

Lipemia greater than 500 mg/dl or an increase in immunoglobulins causes a “volume exclusion effect”, which lowers the analyte concentrations in the sample. When serum/plasma contains large concentrations of lipid or paraprotein, these extra components occupy volume and displace water. When this happens the serum/plasma contains less water per unit volume and therefore less analytes per unit volume. This effect causes spurious electrolyte results, particularly Sodium when the electrolytes are measured indirectly (i.e., the method used by the Hitachi 917 analyzer). A correct result can be obtained by measuring the electrolytes directly (i.e., using a blood gas analyzer such as our Radiometer ABL 805). The direct measurement analyzes the sample with no intermediate dilution step, and, thus, the well-mixed sample has the proper analyte concentrations.

### References:

ABL 800 Flex Reference Manual, Radiometer Copenhagen, August 2004.

Boink, AB. Buckley, BM. Christiansen, TF. Covington, AK. Maas, AH. Muller-Plathe, O. Sachs, C. Siggard-Andersen, O., “Recommendation on sampling, transport, and storage for the determination of the concentration of ionized calcium in whole blood, plasma, and serum.” *Journal of the International of Clinical Chemistry*. 4(4):147-52, 1992 Sep.

CE presented by Lynne Shanahan, MT(ASCP) at the November, 2004 ASVCP conference in Orlando, FL.

Respectfully submitted by Cherie Heger, Clinical Pathology, MT (ASCP).

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