

## 5. Sample Handling and Collection

For complete sample handling and collection information, refer to a textbook of standard clinical chemistry procedures.



**Biohazard: Human body fluid specimens may be contaminated with HIV or other pathogens. Treat all specimens, collection devices and tools as biohazardous.**

The patient's status is extremely important when preparing to draw an arterial blood specimen. Patients receiving certain drugs, such as anticoagulants and thrombolytics, are at a greater risk for hematoma or external bleeding. The correct puncture location and sample timing is important in preventing bleeding.



Blood gas samples must be collected into syringes/ capillary tubes containing heparin, including samples from patients receiving heparin treatments. A final heparin concentration of 15-50 IU/mL is recommended. Calcium balanced heparin is recommended. Ammonium heparin will shift the pH of the patient sample analyzed. Using sodium heparin will increase the sodium level of the patient sample.

### Syringe Sample

- 1 Draw blood into a syringe which is pretreated with liquid heparin or use a prepackaged syringe treated with dry lyophilized heparin. The syringe must be completely filled to assure the proper anticoagulation concentration. When preparing an untreated syringe, only 0.05 mL of liquid heparin (1000 IU/mL) is necessary to anticoagulate 1 mL of blood. Too much heparin can alter the blood gas values obtained. Make sure that no air bubbles are present before sealing the syringe with an airtight cap. Note the time of collection.

- 2 Mix the specimen with anticoagulant by gently inverting the syringe several times. DO NOT SHAKE.



Failure to use the proper sampling materials and methods will result in microclots which will degrade the system and result in reliability issues such as PCO<sub>2</sub> and PO<sub>2</sub> electrode failures.

- 3 Analyze specimen within 5 minutes of collection, or immerse the syringe barrel in an ice water bath. The ice water bath maintains an accurate sample for up to 2 hours at a temperature between 1 and 5°C.



Note: Use only the Medica Capillary Kit. Use of other capillary tubes may cause erroneous results, or damage to the analyzer and electrodes.

Evacuated tubes are not recommended for blood gas specimen collection due to variations in technique.



### **Capillary Sample** ==

Capillary tubes are available from your EasyStat dealer. Follow directions in capillary kit.

Errors occur from improper collection or handling procedures. When test results are inconsistent with a patient's present condition or test history, consider the following sources of error: non-heparinized samples, incorrect heparin concentration, syringe filling speed, syringe mixing method, sample storage technique, delayed sample analysis, multiple samples from the same syringe, bubbles in the sample.



### **Interfering Substances**

To test interferences, serum or whole blood was spiked with a potentially interfering substance to the test concentrations shown in the product specification. The interference was calculated using the difference between the medians of the spiked and unspiked samples.

The results found that the potassium thiocyanate 20 mg/dL affected the chloride performance and caused chloride values increasing.