

## **AVOIDABLE VENIPUNCTURE PROBLEMS**

The following segment points out some of the more common problems associated with venipunctures. By following these considerations, the best specimen will be collected.

### **To prevent a hematoma:**

- Puncture only the uppermost wall of the vein
- Remove the tourniquet before removing the needle
- Use the most superficial veins
- Make sure the needle fully penetrates the upper most wall of the vein. Partial penetration may allow blood to leak into the soft tissue surrounding the vein by way of the needle bevel
- Apply pressure to the venipuncture site

### **To prevent hemolysis (which can interfere with many tests):**

- Mix tubes with anticoagulant additives gently 5-10 times
- Avoid drawing blood from a hematoma
- Make sure the venipuncture site is dry
- Avoid a probing, traumatic venipuncture

### **Indwelling Lines or Catheters:**

- Potential source of test error
- Most lines are flushed with a solution of heparin to reduce the risk of thrombosis
- Discard a sample at least three times the volume of the line (usually 5-10 cc) before a specimen is obtained for analysis.

**Hemoconcentration:** An increased concentration of larger molecules and formed elements in the blood may be due to several factors:

- Prolonged tourniquet application (no more than 2 minutes)
- Massaging, squeezing, or probing a site

Warren General Hospital Laboratory  
Two Crescent Park West  
Warren, Pa 16365

- Long-term IV therapy
- Sclerosed or occluded veins

**Prolonged Tourniquet Application:**

- Primary effect is hemoconcentration of non-filterable elements (i.e. proteins). The hydrostatic pressure causes some water and filterable elements to leave the extracellular space.
- Significant increases can be found in total protein, AST (SGOT), total lipids, cholesterol, and iron.
- Affects packed cell volume and other cellular elements.

Reference:

1. The Internet Pathology Laboratory for Medical Education, Florida State University College of Medicine, WebPath internet site, 11/06/02, <http://medlib.med.utah.edu/WebPath/TUTORIAL/PHLEB/PHLEB.html>