

## Catheter, IV Collection

### **Factors and Their Possible Consequences:**

Blood may travel through several different internal diameters (catheter and connectors) and through various angles. The resultant turbulence may cause RBC rupture.

Note: Blood collection should be from a peripheral vein, whenever possible.

### Corrective Actions:

- Ensure all connections fit together securely.
- Avoid turbulence in blood flow during collection.
- Collect discard tube.
- Increase catheter size.
- Note that the usage of some devices in addition to the catheter may cause less hemolysis (e.g. extension tubing).
- Do not mix manufacturers' components without appropriate validation.

### References:

1. Blood samples drawn from IV catheters have less hemolysis when 5 mL (vs 10mL) collection tubes are used. Cox SR, Dages JH, Jarjoura D, Hazelett S. J Emerg Nurs 2004; 30:529-533.
2. Preanalytical variability in laboratory testing: influence of the blood drawing technique. Lippi G, Salvagno GL, Brocco G, Guidi GC. Clin Chem Lab Med 2005;43:319-325.
3. Effect of specimen collection on routine coagulation assays and D-dimer measurement. Lippi G, Guidi GC. Clin Chem 2004;50:2150-2152.
4. Phlebotomy issues and quality improvement in results of laboratory testing. Lippi G, Salvagno GL, Montagnana M, Franchini M, Guidi GC. Clin Lab 2006;52: 217-230.
5. Blood collection from intravenous lines: Is one drawing site better than others? Lippi G, Avanzini P, Aloe R, Cervellin G. Lab Med 2014;45:172-175.
6. Low vacuum and discard tubes reduce hemolysis in samples drawn from intravenous catheters. Heiligers-Duckers C, Peters N, van Dijck J, Hoeijmakers, J, et al. Clin Biochem 2013;46:1142-1144.