

# CLINICAL PRACTICE GUIDELINE: Synopsis Prevention of Blood Specimen Hemolysis in Peripherally-Collected Venous Specimens

## Clinical Question:

Which preanalytic variables related to peripheral venous blood specimen collection and transportation decrease hemolysis?

## Problem:

Hemolysis of blood samples can lead to inaccurate results and repeat draws, causing additional pain, delaying treatment decisions, and increasing length of stay. Hemolysis accounts for 40% to 60% of blood specimen rejections by the laboratory, and rates from 3.3% to 77% have been reported. This CPG evaluates the scientific evidence for the prevention of hemolysis of blood specimens in the preanalytic phase (i.e., prior to laboratory analysis).

Description of Decision Options/Interventions and the Level of Recommendation:		
Before the Draw: Preparation and Equipment Selection	Education of the staff performing phlebotomy may decrease hemolysis.	B
	Low (partial) vacuum tubes result in less hemolysis.	B
	Direct venipuncture with straight needles is less likely to cause hemolysis than blood collection through intravenous catheters.	B
	The type of personnel performing phlebotomy does not influence hemolysis.	C
	Stainless steel needles are less likely to cause hemolysis than intravenous catheters; Teflon catheters are less likely to cause hemolysis than Vialon™ catheters.	C
	There is conflicting evidence regarding the influence of needle or catheter gauge on hemolysis.	I/E
	There is conflicting evidence regarding hemolysis with syringes vs. vacuum tubes.	I/E
During and After the Draw	Hemolysis is less likely when blood is drawn from the antecubital fossa.	B
	Drawing blood through needleless connectors does not increase hemolysis.	B
	Minimize tourniquet time by removing the tourniquet after identifying the venipuncture site while preparing equipment and as soon as good blood flow is established.	C
	Filling vacuum tubes to their recommended volume decreases hemolysis.	C
	Properly functioning pneumatic tube systems using short distance and slow speeds do not increase hemolysis.	C
	Drawing blood through extension tubing attached to an intravenous catheter does not increase hemolysis in adults.	C
	There is insufficient evidence regarding the impact on hemolysis of blood flow rate into the vacuum tube.	I/E
	There is insufficient evidence to determine if the number of venipuncture attempts affects hemolysis.	I/E
	There is insufficient evidence as to whether perceived difficulty of intravenous catheter insertion is associated with an increased risk of hemolysis.	I/E
	There is insufficient evidence to determine if the volume/frequency of venipunctures performed influences hemolysis.	I/E
	There is insufficient evidence to determine if monitoring hemolysis rates and providing feedback to the staff performing phlebotomy decreases the incidence of hemolysis.	I/E

A	Level A (High):	Based on consistent and good quality of evidence; has relevance and applicability to emergency nursing practice
B	Level B (Moderate):	There are some minor inconsistencies in quality of evidence; has relevance and applicability to emergency nursing practice
C	Level C (Weak):	There is limited or low quality patient-oriented evidence; has relevance and applicability to emergency nursing practice
NR	Not Recommended	Based upon current evidence
I/E	Insufficient Evidence	Insufficient evidence upon which to make a recommendation
N/E	No Evidence	No evidence upon which to make a recommendation

Access the full clinical guideline at: <http://bit.ly/2vTfYAm>