

GP41

Collection of Diagnostic Venous Blood Specimens

This standard provides procedures for the collection of diagnostic venous blood specimens, including line draws, blood culture collection, and venipuncture in children.

A standard for global application developed through the Clinical and Laboratory Standards Institute consensus process.

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Abstract

Clinical and Laboratory Standards Institute standard GP41—*Collection of Diagnostic Venous Blood Specimens* provides a descriptive, stepwise process and procedures reflecting the quality system essentials format for diagnostic venous blood specimen collection. Special considerations for collections from vascular access devices, blood culture collection, and collections in isolation environments are included, as well as how to handle emergency situations. An expanded appendix section provides helpful tips for collecting specimens from pediatric and other challenging patients.

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Foreword

Numerous errors can occur during the collection and handling of blood specimens, which pose significant and avoidable risks to the patient and the phlebotomist. When global standards are not fully implemented, it is more likely that patients will be injured during the procedure, biologically representative specimens will not be obtained from patients, and test results will not be comparable from one facility to another.

The process and procedures detailed in this standard are intended to prevent specimen collection errors that threaten specimen quality, protect health care professionals from accidental exposure, and prevent patients from the injuries, complications, and medical mistakes that can result from improperly collected specimens.

Since 1977, CLSI has recognized the importance of the preexamination phase of laboratory testing, including correct blood specimen collection and handling. Highly sophisticated testing technology cannot produce a good result from a poorly collected specimen.

Overview of Changes

This standard replaces the sixth edition of the standard (GP41-A6, formerly H03-A6), which was published in 2007. Many changes were made in this edition. One of the most prominent changes involved reorganizing the content into a process with multiple procedures, which is consistent with CLSI instilling QMS principles into its documents. This standard now articulates a sequence of chronological procedures that compose the process of successfully and safely performing a venipuncture. The QSEs are foundational building blocks that function effectively to support the laboratory's path of workflow. Although not all aspects of the QSEs may be mandatory to perform the venipuncture procedure, adherence to the QSEs ensures that the venipuncture is performed at a higher level of overall quality.

Other changes include:

- ▶ Greater detail on patient ID, specimen labeling, patient positioning, collecting from mastectomy patients, tourniquet use, adverse reactions, needle relocation, prioritizing veins in the antecubital area, and preventing iatrogenic anemia
- ▶ Changes to what constitutes acceptable venipuncture sites
- ▶ Significant revision of the information on collecting specimens from vascular access devices and during infusions
- ▶ Information on trace elements tubes in regards to the order of draw
- ▶ Comprehensive sections on remedies for difficult collections
- ▶ Updated references

KEY WORDS

Antecubital anatomy

Blood specimen

Complications from phlebotomy

Patient identification

Phlebotomist

Phlebotomy

Veins

Venipuncture

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Chapter 1

Introduction

This chapter includes:

- ▶ Standard's scope and applicable exclusions
- ▶ Standard precautions information
- ▶ “Note on Terminology” that highlights particular use and/or variation in use of terms and/or definitions
- ▶ Terms and definitions used in the standard
- ▶ Abbreviations and acronyms used in the standard



Collection of Diagnostic Venous Blood Specimens

NOTE:

These procedures are intended as an appropriate model for adoption by all health care providers responsible for blood specimen collection in outpatient and inpatient settings.

1 Introduction

1.1 Scope

This standard establishes criteria for suitable venous blood specimen collection for medical laboratory testing. These procedures are intended as an appropriate model for adoption by all health care providers responsible for blood specimen collection in outpatient and inpatient settings.

1.2 Standard Precautions

Because it is often impossible to know what isolates or specimens might be infectious, all patient and laboratory specimens are treated as infectious and handled according to “standard precautions.” Standard precautions are guidelines that combine the major features of “universal precautions and body substance isolation” practices. Standard precautions cover the transmission of all known infectious agents and thus are more comprehensive than universal precautions, which are intended to apply only to transmission of bloodborne pathogens. Published guidelines are available that discuss the daily operations of diagnostic medicine in humans and animals while encouraging a culture of safety in the laboratory.¹ For specific precautions for preventing the laboratory transmission of all known infectious agents from laboratory instruments and materials and for recommendations for the management of exposure to all known infectious diseases, refer to CLSI document M29.²

1.3 Terminology

1.3.1 A Note on Terminology

CLSI, as a global leader in standardization, is firmly committed to achieving global harmonization whenever possible. Harmonization is a process of recognizing, understanding, and explaining differences while taking steps to achieve worldwide uniformity. CLSI recognizes that medical conventions in the global metrological community have evolved differently in different countries and regions, and that legally required use of terms, regional usage, and different consensus timelines are all important considerations in the harmonization process. CLSI recognizes its important role in these efforts, and its consensus process focuses on harmonization of terms to facilitate the global application of standards and guidelines.

Additional important notes:

Professionals who perform procedures in the preexamination phase of laboratory testing work in a wide variety of health care disciplines with diverse titles depending on the place of employment (eg, phlebotomist, patient care technician, medical assistant, nurse, laboratory assistant, laboratory technician, or medical technologist). For the purposes of this standard, this individual will be referred to as “phlebotomist.”

It is understood that many terms are used to describe those to whom health care services are provided. As such, throughout this standard, use of the term “patient” refers to inpatients, outpatients, clients, and any other individual seeking services from health care providers.

In the context of this standard, “shall” and “must” are used to indicate a requirement to be followed in order to conform to the standard and from which no deviation is permitted, while the term “should” allows for user discretion.

1.3.2 Definitions

angle of insertion – the angle formed by the surface of the skin and the needle entering the skin.

antecubital – situated anterior to the cubitis, or elbow.³

distal – remote; farther from the point of reference³; **EXAMPLE:** The wrist is distal to the elbow.

hematoma – a localized collection of blood, usually clotted, in an organ, space, or tissue, usually due to a break in the wall of a blood vessel.³

iatrogenic anemia – anemia caused by diagnostic blood sampling.

medial – pertaining to the middle; closer to the median plane or midline of a body or structure.³

median – situated in the midline of a body or structure.³

phlebotomy – the act of drawing or removing blood from the circulatory system through a puncture to obtain a specimen for analysis and diagnosis.

preevacuation – the creation of a vacuum, induced during the manufacture of the tube or by the user immediately before use.

proximal – nearest; closer to the point of reference³; **EXAMPLE:** The wrist is proximal to the metacarpal bones.