Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens; Approved Standard—Sixth Edition

This document provides a technique for the collection of diagnostic capillary blood specimens, including recommendations for collection sites and specimen handling and identification. Specifications for disposable devices used to collect, process, and transfer diagnostic capillary blood specimens are also included.

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

Clinical and Laboratory Standards Institute document H04-A6—Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens; Approved Standard—Sixth Edition provides a technique for the collection of diagnostic capillary blood specimens, including recommendations for collection sites and specimen handling and identification. Specifications for disposable devices used to collect, process, and transfer diagnostic capillary blood specimens are also included.

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Foreword

Since this standard was first proposed in 1977, CLSI has periodically assembled working groups and charged them with the responsibility of updating and maintaining a standardized capillary blood collection procedure for all health care professionals who have capillary blood specimen collection responsibilities. Each working group is composed of members representing industry, government, and the professions.

This latest revision builds on the efforts of past working groups in establishing and maintaining the standardized procedure for skin puncture specimen collection for the health care industry. The Working Group on Capillary Blood Collection functions under the CLSI Area Committee on Quality Systems and Laboratory Practices.

In revising this standard, the working group has reviewed the various comments on the previous standard (H4-A5) received by CLSI, and incorporated changes where appropriate based on new information and studies published since the last revision. This version of the document includes recommendations regarding proper patient identification procedures consistent with other pertinent CLSI documents such as H03\(^1\) and was reorganized for clarity.

Key Words

Calcaneus, capillary, first-drop elimination, heelstick, hemolysis, latex allergy, microdilution, microhematocrit, milking, newborn, order of draw, prewarm, scooping, scorers, sealants
Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens; Approved Standard—Sixth Edition

1 Scope

This standard describes general procedures for collecting diagnostic capillary blood specimens. It is intended for phlebotomists or other health care providers responsible for obtaining specimens from patients, as well as for manufacturers of skin puncture and incision devices and microcollection containers.

In addition, this document describes and recommends several disposable devices for collecting, processing, and transferring diagnostic capillary blood specimens. The recommendations are strictly limited to disposable products, which are used once per specimen or as defined by the manufacturer’s detailed test technique.

This document does not address skin puncture procedure for self-testing or collection procedures for capillary blood gases. (For information on capillary blood gas collection, see CLSI/NCCLS document H11.)

2 Introduction

2.1 Pediatric Patients

Blood specimens obtained by skin puncture are especially important in pediatrics, because small but adequate amounts of blood for laboratory tests can be obtained with this technique. Obtaining blood by venipuncture from infants may be difficult and potentially hazardous, and obtaining large quantities of blood, especially from premature infants, may result in anemia (see Figure 1). Puncturing deep veins in children may cause:

- cardiac arrest;
- hemorrhage;
- venous thrombosis;
- reflex arteriospasm and gangrene of an extremity;
- damage to surrounding tissues or organs (eg, puncturing the apex of the lung or piercing the trachea);
- infection; and
- injury from restraining the infant or child during the collection procedure.
Related CLSI Reference Materials

C46-A  Blood Gas and pH Analysis and Related Measurements; Approved Guideline (2001). This document provides clear definitions of the quantities in current use, and provides a single source of information on appropriate specimen collection, preanalytical variables, calibration, and quality control for blood pH and gas analysis and related measurements.

H01-A5  Tubes and Additives for Venous Blood Specimen Collection; Approved Standard—Fifth Edition (2003). This document provides requirements for venous blood collection tubes and additives, including technical descriptions of ethylenediaminetetraacetic acid (EDTA), sodium citrate, and heparin compounds used in blood collection devices.

H03-A6  Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard—Sixth Edition (2007). This document provides procedures for collecting diagnostic specimens by venipuncture, including line draws, blood culture collection, and venipuncture in children. It includes recommendations on order of draw.


H11-A4  Procedures for the Collection of Arterial Blood Specimens; Approved Standard—Fourth Edition (2004). This document provides principles for collecting, handling, and transporting arterial blood specimens to assist with reducing collection hazards and ensuring the integrity of the arterial specimen.

H18-A3  Procedures for the Handling and Processing of Blood Specimens; Approved Guideline—Third Edition (2004). This document includes criteria for preparing an optimal serum or plasma sample and for the devices used to process blood specimens.


H21-A5  Collection, Transport, and Processing of Blood Specimens for Testing Plasma-Based Coagulation Assays and Molecular Hemostasis Assays; Approved Guideline—Fifth Edition (2008). This guideline contains procedures for collecting, transporting, and storing blood; processing blood specimens; storing plasma for coagulation testing; and general recommendations for performing the tests.

LA04-A5  Blood Collection on Filter Paper for Newborn Screening Programs; Approved Standard—Fifth Edition (2007). This document addresses the issues associated with specimen collection, the filter paper collection device, and the application of blood to filter paper, and provides uniform techniques for collecting the best possible specimen for use in newborn screening programs.

M29-A3  Protection of Laboratory Workers From Occupationally Acquired Infections; Approved Guideline—Third Edition (2005). Based on US regulations, this document provides guidance on the risk of transmission of infectious agents by aerosols, droplets, blood, and body substances in a laboratory setting; specific precautions for preventing the laboratory transmission of microbial infection from laboratory instruments and materials; and recommendations for the management of exposure to infectious agents.

X03-R  Implementing a Needlestick and Sharps Injury Prevention Program in the Clinical Laboratory; A Report (2002). This document provides guidance for implementing safer medical devices that reduce or eliminate sharps injuries to laboratory personnel.

* Proposed-level documents are being advanced through the Clinical and Laboratory Standards Institute consensus process; therefore, readers should refer to the most current editions.