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Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard—Fifth Edition

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

A standard for global application developed through the NCCLS consensus process.



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Abstract

H3-A5—*Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard—Fifth Edition* provides a descriptive, stepwise procedure for the collection of diagnostic blood specimens by venipuncture. Special considerations for venipuncture in children, line draws, blood culture collection, and venipuncture in isolation situations are included.

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Contents

Abstract i

Committee Membership iii

Foreword vii

1 Scope 1

2 Introduction 1

3 Standard Precautions 1

4 Definitions 1

5 Factors That Affect Laboratory Values 2

6 Facilities 2

 6.1 Venipuncture Chairs 2

 6.2 Hospital Area 3

7 Supplies 3

 7.1 Utility Carts 3

 7.2 Blood Collecting Trays 3

 7.3 Gloves 3

 7.4 Needles and Holders 4

 7.5 Sterile Syringes 4

 7.6 Venous Blood Collection Tubes 4

 7.7 Tourniquets 4

 7.8 Antiseptics 5

 7.9 Gauze Pads 5

 7.10 Puncture-Resistant Disposal Container 5

 7.11 Ice 5

 7.12 Adhesive Bandages 5

 7.13 Warming Devices 5

 7.14 Test Reference Manual 5

8 Venipuncture Procedure 5

 8.1 Step 1: Prepare Accession Order 6

 8.2 Step 2: Approach and Identify the Patient 6

 8.3 Step 3: Verify Patient Diet Restrictions and Latex Sensitivity 8

 8.4 Step 4: Assemble Supplies 8

 8.5 Step 5: Position Patient 9

 8.6 Step 6: Apply Tourniquet 10

 8.7 Step 7: Put on Gloves 13

 8.8 Step 8: Cleanse Venipuncture Site 13

 8.9 Step 9: Perform Venipuncture 13

 8.10 Step 10: Order of Draw 17

 8.11 Step 11: Release the Tourniquet 17

 8.12 Step 12: Place the Gauze Pad 17

 8.13 Step 13: Remove and Dispose of the Needle 18

 8.14 Step 14: Bandage the Arm 18

Contents (Continued)

8.15 Step 15: Label Blood Collection Tubes and Record Time of Collection 18

8.16 Step 16: Chill the Specimen 19

8.17 Step 17: Send Blood Collection Tubes to the Proper Laboratories 19

9 Venipuncture in Children and Difficult Collections 19

 9.1 Procedure 19

 9.2 Equipment 19

10 Additional Considerations 19

 10.1 Monitoring Blood Volume Collected 19

 10.2 Hematoma 20

 10.3 Hemolysis 20

11 Special Situations 20

 11.1 Timed Intervals 20

 11.2 Specific Collection Techniques 20

 11.3 Indwelling Lines or VADs 21

 11.4 Heparin or Saline Locks 22

 11.5 Fistula 22

 11.6 Intravenous Fluids 22

 11.7 Isolation 23

 11.8 Emergency Situations 24

References 26

Summary of Comments and Subcommittee Responses 27

Summary of Delegate Comments and Working Group Responses 28

The Quality System Approach 34

Related NCCLS Publications 35

Foreword

The errors that can occur during the collection and handling of blood specimens are potentially numerous (e.g., inaccurate identification of specimens, specimen hemolysis, the improper handling of anticoagulants, the formation of hematomas, hemoconcentration). Standards for venipuncture can reduce or alleviate many of these errors in much the same way that quality control standards have reduced errors within the laboratory.

Reducing errors during blood collecting will result in biologically representative specimens that are comparable from one institution to another. A well-planned, attractive environment in which to perform venipunctures will reduce patient anxiety and increase the efficiency and accuracy of the phlebotomist. Phlebotomists need a complete assortment of equipment at their fingertips so they can judiciously select the most appropriate materials for each patient. Standards governing the processing of paperwork will reduce errors and save time. Without question, a comprehensive training program is needed to produce efficient, well-trained phlebotomists. Finally, standards for the actual venipuncture procedure are needed to help eliminate the many errors that can occur during blood collection. Biologically representative specimens for laboratory testing will be obtained if national venipuncture standards are used.

Various comments received on the previous edition of this standard have been reviewed and incorporated where appropriate. All comments and the subcommittee's responses are summarized at the end of the document.

This document replaces the fourth edition approved standard, H3-A4, which was published in 1998. Several changes have been made in this edition; chief among them is the revised order of draw (Section 8.10.2), which reflects the increased use of plastic blood collection tubes. This standard also contains revised recommendations regarding collection of blood specimens in relation to intravenous sites (Section 11.6). The recommendations regarding the collection of coagulation specimens (Section 8.10.3) have been revised for consistency with NCCLS document H21—*Collection, Transport, and Processing of Blood Specimens for Coagulation Testing and General Performance of Coagulation Assays*.

Key Words

Accession, blood specimen, phlebotomist, sample, venipuncture

Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard—Fifth Edition

1 Scope^a

This document establishes criteria for the correct collection of blood specimens by venipuncture. These procedures are intended to be a suitable model for adoption by all healthcare providers responsible for the collection and handling of blood specimens in both outpatient and inpatient settings.

2 Introduction

Since 1977, NCCLS has progressively recognized the quality requirement that significant attention be directed towards the preanalytical components of laboratory testing, specifically, the correct collection and handling of blood specimens. Highly sophisticated testing technology cannot produce a good result from a poor specimen. Proper specimen collection and handling are of the utmost importance because significant errors occur in the preanalytical phase of laboratory testing.¹

Preanalytical errors have the potential to be numerous: incorrect patient ID, incorrect order-of-draw, incorrect use of additive tubes, labeling errors, incorrect timing of collection, clerical errors, etc. Standard procedures and protocols are intended to prevent these problems and protect patient results quality.

3 Standard Precautions

Because it is often impossible to know what might be infectious, all human blood specimens are to be 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 any pathogen and thus are more comprehensive than universal precautions which are intended to apply only to transmission of blood-borne pathogens. Standard precaution and universal precaution guidelines are available from the U.S. Centers for Disease Control and Prevention (*Guideline for Isolation Precautions in Hospitals*. Infection Control and Hospital Epidemiology. CDC. 1996;Vol 17;1:53-80), (MMWR 1987;36[suppl 2S]2S-18S), and (MMWR 1988;37:377-382, 387-388). For specific precautions for preventing the laboratory transmission of blood-borne infection from laboratory instruments and materials and for recommendations for the management of blood-borne exposure, refer to the most current edition of NCCLS document M29—*Protection of Laboratory Workers from Occupationally Acquired Infections*.

4 Definitions

In the context of this publication, the terms listed below are defined as follows:

Accession – The steps required to ensure that a specific patient specimen and the accompanying documentation are unmistakably identified as referring to a specific person.

Angle of insertion – The angle formed by the surface of the arm and the needle entering the arm.

^a This standard reflects recent revisions to OSHA’s Blood Borne Pathogens Standard (29 CFR 1910.1030). Therefore, all references to needles/winged blood collection sets indicate sharps with engineered safety features. This also encompasses safety accessories used in combination with conventional needles.