

GP26-A3
Vol. 24 No. 36
Replaces GP26-A2
Vol. 23 No. 3

Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition

This guideline describes the clinical laboratory's path of workflow and provides information for laboratory operations that will assist the laboratory in improving its processes and meeting government and accreditation requirements.

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



NCCLS...

Global Consensus Standardization for Health Technologies

NCCLS is an international, interdisciplinary, nonprofit, standards-developing, and educational organization that promotes the development and use of voluntary consensus standards and guidelines within the healthcare community. It is recognized worldwide for the application of its unique consensus process in the development of standards and guidelines for patient testing and related healthcare issues. NCCLS is based on the principle that consensus is an effective and cost-effective way to improve patient testing and healthcare services.

In addition to developing and promoting the use of voluntary consensus standards and guidelines, NCCLS provides an open and unbiased forum to address critical issues affecting the quality of patient testing and health care.

PUBLICATIONS

An NCCLS document is published as a standard, guideline, or committee report.

Standard A document developed through the consensus process that clearly identifies specific, essential requirements for materials, methods, or practices for use in an unmodified form. A standard may, in addition, contain discretionary elements, which are clearly identified.

Guideline A document developed through the consensus process describing criteria for a general operating practice, procedure, or material for voluntary use. A guideline may be used as written or modified by the user to fit specific needs.

Report A document that has not been subjected to consensus review and is released by the Board of Directors.

CONSENSUS PROCESS

The NCCLS voluntary consensus process is a protocol establishing formal criteria for:

- the authorization of a project
- the development and open review of documents
- the revision of documents in response to comments by users
- the acceptance of a document as a consensus standard or guideline.

Most NCCLS documents are subject to two levels of consensus—"proposed" and "approved." Depending on the need for field evaluation or data collection, documents may also be made available for review at an intermediate consensus level.

Proposed An NCCLS consensus document undergoes the first stage of review by the healthcare community as a proposed standard or guideline. The document should receive a wide and thorough technical review, including an overall review of its scope, approach, and utility, and a line-by-line review of its technical and editorial content.

Approved An approved standard or guideline has achieved consensus within the healthcare community. It should be reviewed to assess the utility of the final document, to ensure attainment of consensus (i.e., that comments on earlier versions have been satisfactorily addressed), and to identify the need for additional consensus documents.

NCCLS standards and guidelines represent a consensus opinion on good practices and reflect the substantial agreement by materially affected, competent, and interested parties obtained by following NCCLS's established consensus procedures. Provisions in NCCLS standards and guidelines may be more or less stringent than applicable regulations. Consequently, conformance to this voluntary consensus document does not relieve the user of responsibility for compliance with applicable regulations.

COMMENTS

The comments of users are essential to the consensus process. Anyone may submit a comment, and all comments are addressed, according to the consensus process, by the NCCLS committee that wrote the document. All comments, including those that result in a change to the document when published at the next consensus level and those that do not result in a change, are responded to by the committee in an appendix to the document. Readers are strongly encouraged to comment in any form and at any time on any NCCLS document. Address comments to the NCCLS Executive Offices, 940 West Valley Road, Suite 1400, Wayne, PA 19087, USA.

VOLUNTEER PARTICIPATION

Healthcare professionals in all specialties are urged to volunteer for participation in NCCLS projects. Please contact the NCCLS Executive Offices for additional information on committee participation.

GP26-A3
ISBN 1-56238-553-4
ISSN 0273-3099

Volume 24 Number 36

Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition

Lucia M. Berte, M.A., M.T.(ASCP), SBB, DLM; CQA(ASQ)CQMgr.
D. Joe Boone, Ph.D.
Greg Cooper, CLS, MHA
Patricia L. James, M.A.
Anders Kallner, M.D., Ph.D.
Michael A. Noble, M.D. FRCPC
Daniel W. Tholen, M.S.

Abstract

NCCLS document GP26-A3—*Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition* expands on the laboratory-specific guidance presented in NCCLS document GP26-A2—*Application of a Quality System Model for Laboratory Services*. This guideline describes the clinical laboratory's path of workflow and provides information for laboratory operations that will assist the laboratory in improving its processes and meeting governmental and accreditation requirements. In addition, information from a recently published international standard for medical laboratories has been included in this version. This document, when used with NCCLS document HS1—*A Quality Management System Model for Health Care*, can provide the means for a laboratory to implement a complete quality management system.

NCCLS. *Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition*. NCCLS document GP26-A3 (ISBN 1-56238-553-4). NCCLS, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2004.

THE NCCLS consensus process, which is the mechanism for moving a document through two or more levels of review by the healthcare community, is an ongoing process. Users should expect revised editions of any given document. Because rapid changes in technology may affect the procedures, methods, and protocols in a standard or guideline, users should replace outdated editions with the current editions of NCCLS documents. Current editions are listed in the *NCCLS Catalog*, which is distributed to member organizations, and to nonmembers on request. If your organization is not a member and would like to become one, and to request a copy of the *NCCLS Catalog*, contact the NCCLS Executive Offices. Telephone: 610.688.0100; Fax: 610.688.0700; E-Mail: exoffice@nccls.org; Website: www.nccls.org



This publication is protected by copyright. No part of it may be reproduced, stored in a retrieval system, transmitted, or made available in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) without prior written permission from NCCLS, except as stated below.

NCCLS hereby grants permission to reproduce limited portions of this publication for use in laboratory procedure manuals at a single site, for interlibrary loan, or for use in educational programs provided that multiple copies of such reproduction shall include the following notice, be distributed without charge, and, in no event, contain more than 20% of the document's text.

Reproduced with permission, from NCCLS publication GP26-A3—*Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition* (ISBN 1-56238-553-4). Copies of the current edition may be obtained from NCCLS, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898, USA.

Permission to reproduce or otherwise use the text of this document to an extent that exceeds the exemptions granted here or under the Copyright Law must be obtained from NCCLS by written request. To request such permission, address inquiries to the Executive Vice President, NCCLS, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898, USA.

Copyright ©2004. The National Committee for Clinical Laboratory Standards.

Suggested Citation

(NCCLS. *Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition*. NCCLS document GP26-A3 [ISBN 1-56238-553-4]. NCCLS, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2004.)

Proposed Guideline

July 1998

Approved Guideline—Third Edition

November 2004

Tentative Guideline

October 1999

Approved Guideline

October 1999

Approved Guideline—Second Edition

February 2003

ISBN 1-56238-553-4

ISSN 0273-3099

Committee Membership

Area Committee on General Laboratory Practices

Sheila M. Woodcock, A.R.T., M.B.A.
Chairholder
QSE Consulting
Rose Bay, Nova Scotia, Canada

Albert Rabinovitch, M.D., Ph.D.
Vice-Chairholder
Abbott Laboratories
Hematology Business Unit
Santa Clara, California

Eric Arendash, M.T.(ASCP)
Centers for Medicare & Medicaid
Services
Philadelphia, Pennsylvania

Miguel Azar, M.D.
Dept. of Veterans Affairs Medical
Center
Minneapolis, Minnesota

Lucia M. Berte, M.A.,
M.T.(ASCP)SBB, DLM;
CQA(ASQ) CQMgr.
Quality Systems Consultant
Westminster, Colorado

Margaret M. Grimes, M.D.
Medical College of Virginia
Campus
Richmond, Virginia

Theresa D. Stokeld, M.B.A.,
M.T.(ASCP)DLM
Remel, Inc.
Lake Charles, Louisiana

Advisors

Kay M. Creed
St. Mary's Hospital
Richmond, Virginia

Steven I. Gutman, M.D., M.B.A.
FDA Ctr. for Devices/Rad. Health
Rockville, Maryland

Gerald A. Hoeltge, M.D.
The Cleveland Clinic Foundation
Cleveland, Ohio

Stephen J. Sarewitz, M.D.
Valley Medical Center
Renton, Washington

Jennifer Schiffgens, M.B.A.,
M.T.(ASCP)
California Pacific Medical Center
San Francisco, California

Daniel W. Tholen, M.S.
Dan Tholen Statistical Consulting
Traverse City, Michigan

Marla Thomas
Litton Pathology Associates
Blue Springs, Missouri

Eleanor M. Travers, M.D.
State of Connecticut Department of
Public Health
Hartford, Connecticut

Area Committee on Healthcare Services

Judy Dye, M.A.
Chairholder
University of Arizona Medical
Center
Tucson, Arizona

Carl D. Mottram, RRT, RPFT,
FAARC
Vice-Chairholder
Mayo Clinic
Rochester, Minnesota

Barbara M. Goldsmith, Ph.D.
Lab Alliance/Lab One
Cincinnati, Ohio

Hector Lozano
Respironics, Inc.
Murrysville, Pennsylvania

Toby L. Merlin, M.D.
Centers for Disease Control and
Prevention
Atlanta, Georgia

Jeannie Miller, RN, MPH
Centers for Medicare & Medicaid
Services
Baltimore, Maryland

Peter L. Minetti
Fujirebio Diagnostics, Inc.
Malvern, Pennsylvania

Advisors

Lucia M. Berte, M.A., M.T.
(ASCP), SBB, DLM, CQA(ASQ),
CQMgr
Quality Systems Consultant
Westminster, Colorado

Susan Blonshine, RRT, RPFT,
FAARC
TechEd
Mason, Michigan

Susan T. Martin, M.D.
Oconee Memorial Hospital
Seneca, California

Robert K. McNamee
Dianon Systems, Inc.
Stratford, Connecticut

Working Group on Quality Systems

**Lucia M. Berte, MA, MT(ASCP),
SBB, DLM; CQA(ASQ)CQMgr.
Westminster, Colorado
Chairholder**

D. Joe Boone, Ph.D.
Centers for Disease Control and
Prevention
Atlanta, Georgia

Greg Cooper, CLS, MHA
Bio-Rad Laboratories, Inc.
Irvine, California

Patricia L. James, M.A.
Agency for Health Care
Administration
Tallahassee, Florida

Anders Kallner, M.D., Ph.D.
Karolinska Hospital
Stockholm, Sweden

Michael A. Noble, M.D. FRCPC
University of British Columbia
Vancouver, British Columbia,
Canada

Regina Robertson
National Association of Testing
Authorities, Australia
Rhodes, New South Wales,
Australia

Daniel W. Tholen, M.S.
Dan Tholen Statistical Consulting
Traverse City, Michigan

Advisors

Judy Dye, M.A.
Univ. of Arizona Medical Center
Tucson, Arizona

Deborah Greene
University of Iowa Hospitals and
Clinics
Iowa City, Iowa

Tania Motschman, MS,
M.T. (ASCP) SBB; CQA(ASQ)
Mayo Clinic
Rochester, Minnesota

Carl D. Mottram, BA, RRT, RPFT,
FAARC
Mayo Clinic
Rochester, Minnesota

Albert Rabinovitch, M.D., Ph.D.
Abbott Laboratories, Hematology
Business Unit
Santa Clara, California

Sheila M. Woodcock, A.R.T.,
M.B.A.
QSE Consulting
Rose Bay, Nova Scotia, Canada

Staff

Jennifer K. McGeary, M.T.(ASCP),
M.S.H.A.
Staff Liaison
NCCLS
Wayne, Pennsylvania

Donna M. Wilhelm
Editor
NCCLS
Wayne, Pennsylvania

Melissa A. Lewis
Assistant Editor
NCCLS
Wayne, Pennsylvania

Acknowledgement

NCCLS acknowledges the experts and their institutions listed below for their “special review,” advice, and help in preparing the approved-level, third edition of this guideline:

Mr. Tsutomu Aoyagi, Japan Accreditation Board for Conformity Assessment

Mr. Aoki, Colby Group International, Inc.

Dr. David Burnett, United Kingdom

Ms. Kathryn Connolly, COLA

Dr. Orno Dreazen, Israel Laboratory Accreditation Authority

Dr. Naotaka Hamazaki, Kyusyu University School of Medicine

Mr. Fumio Kariya, Daiichi Chemical Co. Ltd.

Dr. Tadashi Kawaii, International Clinical Pathology Center

Dr. Yasushi Nomura, formerly Hitachi

Ms. Oguchi, Colby Group International, Inc.

Ms. Holly Rapp, M.T.(ASCP)SBB, CQA(ASQ)CQMgr, American Association for Blood Banks

Contents

Abstract.....i

Committee Membership..... iii

Foreword..... vii

1 Scope..... 1

2 Introduction..... 1

3 Definitions 1

4 The Path of Workflow Concept3

5 The Clinical Laboratory’s Path of Workflow—A Detailed Discussion3

 5.1 Preexamination Activities.....6

 5.2 Examination Activities 10

 5.3 Postexamination Activities 12

 5.4 Application of Examination Results to Patient Care 15

6 Application of QSEs for Clinical Laboratory Services..... 15

 6.1 QSE: Documents and Records..... 17

 6.2 QSE: Organization 19

 6.3 QSE: Personnel 19

 6.4 QSE: Equipment 20

 6.5 QSE: Purchasing and Inventory 21

 6.6 QSE: Process Control 22

 6.7 QSE: Information Management..... 23

 6.8 QSE: Occurrence Management..... 23

 6.9 QSE: Assessment..... 24

 6.10 QSE: Process Improvement..... 25

 6.11 QSE: Customer Service 26

 6.12 QSE: Facilities and Safety 26

7 Conclusion 28

References.....30

Appendix A. Example of a Sample Retention Schedule..... 31

Appendix B. The Laboratory’s Path of Workflow and Supporting Documents 32

Appendix C. Comparison of NCCLS QSEs to the Requirements of ISO 9001:2000 and ISO 15189:2003 33

Appendix D. Example Record Retention Schedule 35

Appendix E. Excerpt From a Position Description Showing Duties in the Path of Workflow..... 38

Appendix F. Examples of Laboratory Quality Indicators by Path of Workflow 39

Appendix G. Published Laboratory Quality Indicators Grouped by Path of Workflow and QSE..... 40

Contents (Continued)

Summary of Consensus/Delegate Comments and Working Group Responses	42
Related NCCLS Publications.....	46

Foreword

This document, GP26-A3, introduces the clinical laboratory's path of workflow—that is, the processes that transform a request for a clinical laboratory service (i.e., a laboratory that performs screening, diagnostic, or monitoring examinations for patient care) through obtaining and transporting the sample, performing the examination, interpreting the results, and providing the patient's laboratory examination report.

NCCLS document GP26-A3 is intended for use in conjunction with NCCLS document HS1—*A Quality Management System Model for Health Care*, when developing a quality management system for the clinical laboratory. Additional guidelines in the NCCLS Quality Series will also be a valuable resource for additional QSE- and clinical service-specific information.

Overview of Changes

The revisions in this version of the GP26 guideline are intended principally to include the concepts published in ISO 15189, *Medical laboratories—Particular requirements for quality and competence*.¹

The document has been streamlined and a new “crosswalk” table has been introduced that correlates laboratory QSE information with its generic counterparts in HS1. Laboratory-specific forms and examples are also included.

A Note on Terminology

NCCLS, as a global leader in standardization, is firmly committed to achieving global harmonization wherever possible. Harmonization is a process of recognizing, understanding, and explaining differences while taking steps to achieve worldwide uniformity. NCCLS recognizes that medical conventions in the global metrological community have evolved differently in the United States, Europe, and elsewhere; that these differences are reflected in NCCLS, ISO, and CEN documents; and that legally required use of terms, regional usage, and different consensus timelines are all obstacles to harmonization. In light of this, NCCLS recognizes that harmonization of terms facilitates the global application of standards and is an area of immediate attention. Implementation of this policy must be an evolutionary and educational process that begins with new projects and revisions of existing documents.

In order to align the usage of terminology in this document with that of ISO, the term *sample* has replaced the term *specimen* and the term *test* has replaced the term *examination*. The users of GP26-A3 should understand that the fundamental meanings of the terms are identical in many cases, and are defined in the guideline's Definitions section (see Section 3). The terms in this document are consistent with those defined in the ISO 15189 and ISO 9000 series of standards.

Key Words

Examination, path of workflow, postexamination, preexamination, processes

Application of a Quality Management System Model for Laboratory Services; Approved Guideline—Third Edition

1 Scope

This publication describes important activities in the path of workflow for laboratory services, including *in vitro* testing in clinical and anatomic pathology. Discipline-specific details are referenced in the Related NCCLS Publications section of this document.

This guideline is intended for use by laboratory directors, managers, supervisors, and the quality manager as a means to ensure that their laboratories have in place the policies, processes, procedures, activities, and records that support the activities described herein.

2 Introduction

This document describes the clinical laboratory's path of workflow—defined as the sequential processes in clinical laboratory activities that transform a physician's order into laboratory information. Each facility—whether large and complex, or of narrower scope such as physician's offices and point-of-care programs—needs to understand how work flows through its particular laboratory so that processes can be designed and procedures documented that will build the required level of quality into laboratory work and reduce the potential for medical error that wastes resources and harms patients.

To establish a complete quality management system, policies, processes, and procedures for activities in the clinical laboratory's path of workflow need to be combined with policies, processes, and procedures for the Quality System Essentials (QSEs). Readers of this document are strongly encouraged to combine the activities described in both GP26-A3 and the most current version of NCCLS document HS1—A *Quality Management System Model for Health Care*, to ensure a complete infrastructure for quality management in the clinical laboratory.

This guideline presents information about the clinical laboratory's path of workflow and provides specific laboratory examples. Additional laboratory-specific information for the QSEs is also provided with relevant examples.

3 Definitions

Accreditation – Procedure by which an authoritative body gives formal recognition that an organization or person is competent to carry out specific tasks [modified from ISO/IEC 17000].²

Certification – Procedure by which a third party gives written assurance that a service conforms to specified requirements [modified from ISO/IEC 17000].²

Examination – Set of operations having the object of determining the value or characteristics of a property; **NOTES:** a) In some disciplines (e.g., microbiology), an examination is the total activity of a number of tests, observations, or measurements [ISO 15189 (3.3)]¹; b) In this document, the term "examination" replaces the term "test"; however, for the purposes of this guideline, readers can consider the terms equivalent.

Examination procedure – Set of operations, described specifically, used in the performance of examinations according to a given method [ISO 15198].³