**SUPPLEMENTAL MATERIALS:**

**APPENDIX A:**

**LMBPTM Expert Panel Members**

* Sharon Geaghan, Dept. of Pathology, Stanford University School of Medicine\*
* Dennis J. Ernst, Center for Phlebotomy Education, Inc.
* William Hunt, Pathology and Laboratory Medicine, Pennsylvania Hospital
* Raymond Aller, Keck School of Medicine of USC
* Edward J. Peterson, Barnes-Jewish Hospital
* Ana K. Stankovic, World Wide Vice President Medical Affairs - PAS, BD Diagnostics, Vanderbilt University
* Elizabeth Wagar, Department of Laboratory Medicine

\* LMBPTM Workgroup Member

**APPENDIX B:**

**Laboratory Medicine Best Practices Workgroup (LMBPTM Workgroup) Members**

LMBPTM Workgroup is a non-federal multidisciplinary advisory panel. This panel includes 13 invited experts including two ex officio representatives from the Centers for Medicare and Medicaid Services (CMS) and the Food and Drug Administration (FDA). The Workgroup member team consists of clinicians, pathologists, laboratorians, and specialists in systematic evidence reviews with recognized expertise in performance measurement, standard setting, and health services research. The LMBPTM Workgroup is supported by a LMBPTM team, Laboratory Research and Evaluation Branch, Division of Laboratory Programs, Standards, and Services, Center for Surveillance, Epidemiology, and Laboratory Services, Office of Public Health Scientific Services, CDC.

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| --- | --- |
| **Robert H. Christenson, PhD, DABCC, FACB**Professor of Pathology, Professor of Medical and Research TechnologyUniversity of Maryland School of MedicineClinical Director, Core Laboratories and Point of Care ServicesUniversity of Maryland Medical Center | **David. R. West, PhD**Professor, Department of Family MedicineSchool of MedicineUniversity of Colorado Anschutz Medical Campus |
| **Julie Gayken, MT(ASCP), CLC(AMT)**Senior Director of Laboratory ServicesHealthPartners and Regions Hospital | **Sharon Geaghan, MD**Associate Professor, Departments of Pathology and PediatricsStanford University School of Medicine |
| **Christine Litwin, MD**Professor of PathologyClinical Microbiology and Immunology Medical DirectorGeorgia Health Sciences University | **Thomas S. Lorey, MD**Medical Director, Regional Reference LaboratoryKaiser Permanente Northern California Region |
| **Sajal Chattopadhyay**Economic AdvisorCommunity Guide BranchDivision of Epidemiology, Analysis, and Library ServicesCenters for Disease Control and Prevention | **James H. Nichols, Ph.D., DABCC, FACB**Professor of Clinical Pathology, Microbiology and ImmunologyMedical Director, Clinical ChemistryVanderbilt University School of Medicine |
| **Mary Nix, MS, MT(ASCP)SBB, PMP**Health Scientist AdministratorNational Guideline Clearinghouse, National Quality Measures Clearinghouse & AHRQ Health Care Innovations Exchange, Center for Outcomes and Evidence, Agency for Healthcare Research and Quality | **Brian Jackson, M.D.**Associate Professor of Pathology (Clinical)Medical Director of Informatics, ARUP LaboratoriesDepartment of PathologyUniversity of Utah  |
| **Jennifer Rhamy, MBA, MA, MT(ASCP)SBB, HP**Director, Regional Blood Donor CenterSt. Mary’s Hospital, Grand Junction | **Melissa Singer, MT(ASCP)** *ex officio*Centers for Medicare and Medicaid ServicesCenter for Clinical Standards and QualitySurvey and Certification GroupDivision of Laboratory Services |
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**Appendix C: Literature Search Strategy**

**Search Query:** What are the effective laboratory practices to reduce specimen rejection/ unacceptable specimens across healthcare settings?

**Search Strategy:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Database** | **Strategy** | **Results** | **Date Run** |
| MedlineOVID | ((Specimen\* OR sample\*) ADJ3 (reject\* OR inappropriate\* OR non-steril\* OR contaminate\* OR improper\* OR insufficient\* OR sufficient\* OR mishandl\* OR clot\* OR inadequate\* OR error\* OR unsuitable OR poor OR unacceptable OR mislabel\* OR hemolysis OR delay\* OR mistake\* OR quality OR inaccura\* OR inappropriate\*)).ti,ab. OR ((preanalytic\* OR pre-analytic\*) ADJ3 (error\* OR mistake\* OR reject\*)).ti,ab. AND[Laboratories, Hospital/](http://www.ncbi.nlm.nih.gov/pubmed/25351356) OR Clinical Laboratory Techniques/ OR Specimen Handling/ OR Diagnostic Errors/ OR Delayed Diagnosis/ OR Diagnostic Tests, Routine/ OR Laboratories/ OR Phlebotomy/ OR Blood Specimen Collection/ OR Urine Specimen Collection/ OR Quality Control/ OR Quality Assurance, Health Care/ OR Health Care Costs/ OR Cost-Benefit Analysis/ OR "length of stay"/ OR (lab? OR laborator\* OR diagnostic\* OR diagnos?s OR misdiagnos?s).ti,ab. OR ((specimen OR sample OR urine OR blood) ADJ3 (handl\* OR collection\* OR storage OR transportation OR container\* OR temperature OR timing)).ti,ab. OR (reduc\* adj3 (mistake\* or error\*)).ti,ab. OR ((control\* OR assur\* OR improv\*) ADJ2 quality).ti,ab. OR ((preanalytic\* OR pre-analytic\*) ADJ3 (monitor\* OR control\*)).ti,ab. OR (health care ADJ cost\*).ti,ab. OR (hospital ADJ2 (release\* OR stay OR length OR cost\*)).ti,ab.Limit 1980-Limit English | 5886*After removal of duplication*5885 | 03/17/2015 |
| EmbaseOVID | ((Specimen\* OR sample\*) ADJ3 (reject\* OR inappropriate\* OR non-steril\* OR contaminate\* OR improper\* OR insufficient\* OR sufficient\* OR mishandl\* OR clot\* OR inadequate\* OR error\* OR unsuitable OR poor OR unacceptable OR mislabel\* OR hemolysis OR delay\* OR mistake\* OR quality OR inaccura\* OR inappropriate\*)).ti,ab. OR ((preanalytic\* OR pre-analytic\*) ADJ3 (error\* OR mistake\* OR reject\*)).ti,ab. AND [Hospital Laboratory/](http://www.ncbi.nlm.nih.gov/pubmed/25351356) OR Diagnostic Procedures/ OR Laboratory Diagnosis/ OR Diagnostic Error/ OR Delayed Diagnosis/ OR Diagnostic Test/ OR Laboratory/ OR Phlebotomy/ OR Blood Sampling/ OR Urinalysis/ OR Quality Control/ OR "Health Care Cost"/ OR "Cost Benefit Analysis"/ OR "length of stay"/ OR (lab? OR laborator\* OR diagnostic\* OR diagnos?s OR misdiagnos?s).ti,ab. OR ((specimen OR sample OR urine OR blood) ADJ3 (handl\* OR collection\* OR storage OR transportation OR container\* OR temperature OR timing)).ti,ab. OR (reduc\* adj3 (mistake\* or error\*)).ti,ab. OR ((control\* OR assur\* OR improv\*) ADJ2 quality).ti,ab. OR ((preanalytic\* OR pre-analytic\*) ADJ3 (monitor\* OR control\*)).ti,ab. OR (health care ADJ cost\*).ti,ab. OR (hospital ADJ2 (release\* OR stay OR length OR cost\*)).ti,ab.Limit 1980-Limit English | 8777*After removal of duplication*4608 | 03/17/2015 |
| CINAHL Ebsco | ((Specimen\* OR sample\*) N3 (reject\* OR inappropriate\* OR non-steril\* OR contaminate\* OR improper\* OR insufficient\* OR sufficient\* OR mishandl\* OR clot\* OR inadequate\* OR error\* OR unsuitable OR poor OR unacceptable OR mislabel\* OR hemolysis OR delay\* OR mistake\* OR quality OR inaccura\* OR inappropriate\*)) OR ((preanalytic\* OR pre-analytic\*) N3 (error\* OR mistake\* OR reject\*)) AND(MH [Laboratories, Hospital)](http://www.ncbi.nlm.nih.gov/pubmed/25351356) OR (MH Clinical Laboratory Techniques) OR (MH Specimen Handling) OR (MH Diagnostic Errors) OR (MH Delayed Diagnosis) OR (MH Diagnostic Tests, Routine) OR (MH Laboratories) OR (MH Phlebotomy) OR (MH Blood Specimen Collection) OR (MH Urine Specimen Collection) OR (MH Quality Control) OR (MH Quality Assurance, Health Care) OR (MH Health Care Costs) OR (MH Cost-Benefit Analysis) OR (MH "length of stay") OR (lab? OR laborator\* OR diagnostic\* OR diagnos?s OR misdiagnos?s) OR ((specimen OR sample OR urine OR blood) N3 (handl\* OR collection\* OR storage OR transportation OR container\* OR temperature OR timing)) OR (reduc\* N3 (mistake\* or error\*)) OR ((control\* OR assur\* OR improv\*) N2 quality) OR ((preanalytic\* OR pre-analytic\*) N3 (monitor\* OR control\*)) OR (health care N cost\*) OR (hospital N2 (release\* OR stay OR length OR cost\*))Limit 1980-Limit English | 676*After removal of duplication*134 | 03/18/2015 |
| Cochrane Library | ((Specimen\* OR sample\*) NEAR/3 (reject\* OR inappropriate\* OR non-steril\* OR contaminate\* OR improper\* OR insufficient\* OR sufficient\* OR mishandl\* OR clot\* OR inadequate\* OR error\* OR unsuitable OR poor OR unacceptable OR mislabel\* OR hemolysis OR delay\* OR mistake\* OR quality OR inaccura\* OR inappropriate\*)):ti,ab OR ((preanalytic\* OR pre-analytic\*) NEAR/3 (error\* OR mistake\* OR reject\*)):ti,ab AND[mh "[Laboratories, Hospital"]](http://www.ncbi.nlm.nih.gov/pubmed/25351356) OR [mh "Clinical Laboratory Techniques"] OR [mh "Specimen Handling"] OR [mh "Diagnostic Errors"] OR [mh "Delayed Diagnosis"] OR [mh "Diagnostic Tests, Routine"] OR [mh Laboratories] OR [mh Phlebotomy] OR [mh "Blood Specimen Collection"] OR [mh "Urine Specimen Collection"] OR [mh "Quality Control"] OR [mh "Quality Assurance, Health Care"] OR [mh "Health Care Costs"] OR [mh "Cost-Benefit Analysis"] OR [mh "length of stay"] OR (lab? OR laborator\* OR diagnostic\* OR diagnos?s OR misdiagnos?s):ti,ab OR ((specimen OR sample OR urine OR blood) NEAR/3 (handl\* OR collection\* OR storage OR transportation OR container\* OR temperature OR timing)):ti,ab OR (reduc\* NEAR/3 (mistake\* or error\*)):ti,ab OR ((control\* OR assur\* OR improv\*) NEAR/2 quality) OR ((preanalytic\* OR pre-analytic\*) NEAR/3 (monitor\* OR control\*)):ti,ab OR (health care NEAR/1 cost\*):ti,ab OR (hospital NEAR/2 (release\* OR stay OR length OR cost\*)):ti,abLimit 1980-Limit English | 22*After removal of duplication*20 | 03/18/2015 |