**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 Technology  University of Maryland School of Medicine  Clinical Director, Core Laboratories and Point of Care Services  University of Maryland Medical Center | **David. R. West, PhD**  Professor, Department of Family Medicine  School of Medicine  University of Colorado Anschutz Medical Campus |
| **Julie Gayken, MT(ASCP), CLC(AMT)**  Senior Director of Laboratory Services  HealthPartners and Regions Hospital | **Sharon Geaghan, MD**  Associate Professor, Departments of Pathology and Pediatrics  Stanford University School of Medicine |
| **Christine Litwin, MD**  Professor of Pathology Clinical Microbiology and Immunology Medical Director  Georgia Health Sciences University | **Thomas S. Lorey, MD**  Medical Director, Regional Reference Laboratory  Kaiser Permanente Northern California Region |
| **Sajal Chattopadhyay** Economic Advisor Community Guide Branch Division of Epidemiology, Analysis, and Library Services Centers for Disease Control and Prevention | **James H. Nichols, Ph.D., DABCC, FACB**  Professor of Clinical Pathology, Microbiology and Immunology  Medical Director, Clinical Chemistry  Vanderbilt University School of Medicine |
| **Mary Nix, MS, MT(ASCP)SBB, PMP**  Health Scientist Administrator  National 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 Laboratories  Department of Pathology  University of Utah |
| **Jennifer Rhamy, MBA, MA, MT(ASCP)SBB, HP**  Director, Regional Blood Donor Center  St. Mary’s Hospital, Grand Junction | **Melissa Singer, MT(ASCP)** *ex officio*  Centers for Medicare and Medicaid Services  Center for Clinical Standards and Quality  Survey and Certification Group  Division 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** |
| Medline  OVID | ((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 |
| Embase  OVID | ((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,ab  Limit 1980-  Limit English | 22  *After removal of duplication*  20 | 03/18/2015 |