COLLEGE of AMERICAN PATHOLOGISTS

Laboratory Quality Solutions

Surveys and Anatomic Pathology Education Programs

2024

Performance you can measure.
Accuracy you can trust.

A Journey of Impact, Partnership, and Limitless Potential

For 75 years, we have been on a remarkable journey filled with resilience, innovation, and an unwavering commitment to transforming patients' lives. At the heart of this expedition, we celebrate the unsung heroes—the laboratory professionals who have helped shape the CAP's proficiency testing/external quality assessment (PT/EQA) programs and revolutionize patient care.

As we commemorate seven and half decades of excellence, we also honor the profound influence that the committees under our Council on Scientific Affairs have had on the development of our surveys and anatomic pathology education programs.

Over the years, our programs have undergone a remarkable evolution. In our first few decades, we pioneered surveys for all major laboratory disciplines. Later years brought unprecedented growth and innovation as we expanded both our product offerings and participation from laboratories worldwide.

Today, we are proud to offer more than 700 PT programs—including innovations that helped tackle emerging viruses and diseases such as mpox, SARS-CoV-2, and Zika, to name but a few.

So as we embark on the next 75 years, let us forge ahead, continue striving for the best possible outcomes for our patients, and revel in the promise of limitless potential—*together*.

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2024 Surveys and Anatomic Pathology Education Programs

Our PT/EQA resources are with you every step of the way.

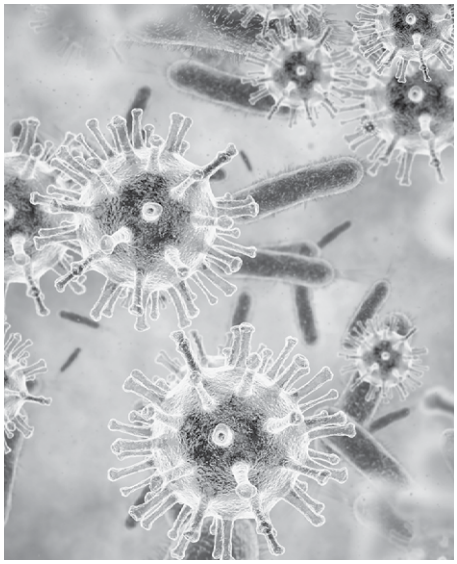
Now everything you need is all in one place.
With the CAP's new **PT/EQA resources**, you can:

- Learn the basics of the process and how to get started in our customer portal, e-LAB Solutions Suite.
- Find detailed information in our updated manual.
- Understand how to get the most out of your evaluations and participant summary reports.
- Read frequently asked questions (FAQs) pertaining to performance and interpretation.

It's a great place to continue your quality journey.

Explore all the CAP's PT/EQA resources at cap.org. Bookmark this page in your browser.

1 New Developments



As laboratory medicine changes, the CAP supports your needs.

- Review online whole slide images of immunohistochemistry stains for breast cancer predictive markers HER2 and ER (HERI).
- Perform PT/EQA for sexually transmitted infections using molecular multiplex methodology (STIM).
- Compare cardiac marker performance across instruments including high-sensitivity troponin I and T, CK-MB, and myoglobin (HCRQ).

New Developments

2024 New Programs

Quality Management Tools			
Subsection	**Name**	**Program Code**	**Page**
Short-Term Quality Studies and Competency Assessments	Rates and Turnaround Times for Investigation and Reporting of Suspected Transfusion Reactions	QP241	25
Short-Term Quality Studies and Competency Assessments	Technical Competency Assessment of Body Fluid Review for up to 25 Technologists	QPB25	26

Quality Cross Check			
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Quality Cross Check	Quality Cross Check—High-Sensitivity Cardiac Markers	HCRQ	41
Quality Cross Check	Quality Cross Check—Critical Care Blood Gas With Hematocrit	AQHQ	44
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Blood Gas, Critical Care, and Oximetry			
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Blood Gas	Critical Care Blood Gas With Hematocrit	AQH	94
Blood Gas	Critical Care Blood Gas, i-STAT	AQIS	95

Instrumentation Verification Tools			
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Calibration Verification/Linearity	Cystatin C Calibration Verification/Linearity	LN49	135

Hematology and Clinical Microscopy			
Subsection	**Name**	**Program Code**	**Page**
Hematology	Blood Cell Identification, Virtual	BCPV	142

Microbiology

Subsection	Name	Program Code	Page
Microbiology	Sexually Transmitted Infection Detection, Molecular	STIM	191
Virology	Monkeypox Virus	MPOX	202
Virology	SARS-CoV-2 Molecular, 5 Challenge	COVM	203
Virology	SARS-CoV-2 Antigen, 5 Challenge	CVAG	203

Genetics and Molecular Pathology

Subsection	Name	Program Code	Page
Biochemical and Molecular Genetics	CAP/ACMG Acylcarnitine Quantitation for Inherited Metabolic Disorders	BGL4	261

Anatomic Pathology

Subsection	Name	Program Code	Page
Immunohistochemistry Predictive Markers	HER2 and ER Immunohistochemistry Interpretation Only	HERI	300
Immunohistochemistry Predictive Markers	Navigating Multimodality Biomarker Assessment	NMBA/NMB1	302

2023 New Programs

2 Continuing Education

We support laboratory professionals. Maintain your certification with Surveys continuing education (CE).

- Offer your staff more than 100 CE credits.
- Advance skills with education activities developed by more than 600 physicians and doctoral scientists with expertise in pathology and laboratory medicine.
- Meet certification and licensure requirements with CE across multiple disciplines.

Continuing Education

Continuing Education Programs

Your laboratory demonstrates its commitment to quality by choosing CAP Surveys programs. You'll find the same level of quality in the CAP Continuing Education Programs.

CME (Continuing Medical Education for Physicians)

Accreditation

The College of American Pathologists (CAP) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

CME Category 1

The CAP designates these educational activities for a maximum of the stated number of *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CE (Continuing Education for Nonphysicians)

The CAP designates these educational activities for a maximum of the stated number of credits of continuing education. Participants should claim only the credit commensurate with the extent of their participation in the activity.

The American Society for Clinical Pathology (ASCP) Board of Certification (BOC) Certification Maintenance Program (CMP) accepts these activities to meet its continuing education requirements.

This activity is approved for continuing education credit in California and Florida.

Cytotechnologists may apply the credits from the PAP Education (PAPCE/PAPJE/PAPKE/PAPLE/PAPME), NGC, FNAG, FNA, and TICP programs toward the required educational activities for the American Society of Cytopathology (ASC) Continuing Education Credit Program (CECC) and the International Academy of Cytology (IAC).

This activity is eligible for continuing medical education (CME) credit or continuing education (CE) credit.

Surveys Continuing Education Activities

When your laboratory participates in CAP Surveys, every member of your team can enroll in education activities and earn continuing education (CE) credit at no additional charge. Simply follow these steps:

1. Establish a free Web account.
2. Complete a reading provided in the Participant Summary or Final Critique.
3. Answer online learning assessment questions.
4. Claim CE certificate.

Each member of your staff can access the Surveys education activities for a maximum of 12 months.

Surveys Educational Activities

Program Name	Program Code	Discipline	Catalog Page(s)
General Chemistry	C1, C3/C3X, C4, CZ/CZX/CZ2X, Z	Chemistry	56-58
Endocrinology	K/KK	Chemistry	84
Quality Cross Check—Whole Blood Glucose	WBGQ	Chemistry/Quality Cross Check	39
Blood Gas	AQ, AQH, AQIS	Chemistry	94, 95
Coagulation—Limited	CGB, CGL, CGDF	Coagulation	166
Anticoagulant Monitoring	APXBN, DBGN, FNPX, RVBN	Coagulation	169
Platelet Aggregation	PF	Coagulation	170
Platelet Function	PF1	Coagulation	170
Hematology—Basic	HE	Hematology and Clinical Microscopy	140
Blood Cell Identification, Photographs Blood Cell Identification, Virtual	BCP, BCPV	Hematology and Clinical Microscopy	142
Hematology Automated Differential Series	FH1-FH4, FH9-FH10, FH13, FH16-FH17	Hematology and Clinical Microscopy	140
Virtual Peripheral Blood Smear	VPBS	Hematology and Clinical Microscopy	149
Bone Marrow Cell Differential	BMD	Hematology and Clinical Microscopy	145
Flow Cytometry	FL3, FL5, FL6, FL8, BALL	Immunology and Flow Cytometry	224-225, 227
Bacteriology	D	Microbiology	177
Mycology and Aerobic Actinomycetes	F	Microbiology	194
Limited Bacteriology	D1, D2, D3, D5, D6, D8, MC3, MC4, RMC	Microbiology	179-180, 182-183
Embryology	EMB	Reproductive Medicine	163
Sperm Count, Motility, Morphology, and Viability	SMCD, SM1CD, SM2CD	Reproductive Medicine	162
Semen Analysis	SC, SC1, PV, PV1, SM, SV, ASA	Reproductive Medicine	162
Toxicology	AL1, AL2, ETB	Toxicology	106-107
Transfusion Medicine	J, JE1, EXM, EXM2, J1, JAT, JATE1	Transfusion Medicine	232-234

Surveys Self-Reported Training Opportunities

When your laboratory participates in CAP Surveys, *every member of your team* can receive self-reported training opportunities.

Self-Reported Training Opportunities*

Program Name	Program Code	Source	Catalog Page(s)
Quality Management Tools			
Rates and Turnaround Times for Investigation and Reporting of Suspected Transfusion Reactions	QP241	Data Analysis and Critique	25
Technical Competency Assessment of Body Fluid Review	QPB10, QPB25	Data Analysis and Critique	26
Technical Competency Assessment of Peripheral Blood Smears	QPC10, QPC25	Data Analysis and Critique	27
Technical Competency Assessment of Gram Stains	QPD10, QPD25	Data Analysis and Critique	28
Hematology and Clinical Microscopy			
Blood Cell Identification, Photographs/Virtual	BCP, BCPV	Participant Summary	142
Bone Marrow Cell Differential	BMD	Participant Summary	145
Expanded Virtual Peripheral Blood Smear	EHE1	Participant Summary	149
Hematology Automated Differential Series	FH1-FH4, FH9-FH10, FH13, FH16-FH17	Participant Summary	140
Hematology—Basic	HE	Participant Summary	140
Hemoglobinopathy	HG	Participant Summary	147
Virtual Body Fluid	VBF	Participant Summary	153
Virtual Peripheral Blood Smear	VPBS	Participant Summary	149
Clinical Microscopy	CMP, CMMP, CMP1	Participant Summary	151-152
Microbiology			
Blood Parasite	BP	Participant Summary/Final Critique	198
Expanded Bacteriology	DEX	Participant Summary/Final Critique	178
Yeast	F1	Participant Summary/Final Critique	194
Parasitology	P	Participant Summary/Final Critique	197
Ticks, Mites, and Other Arthropods	TMO	Participant Summary	198
Worm Identification	WID	Participant Summary	198
Toxicology			
Drug Monitoring for Pain Management	DMPM	Participant Summary	112

*Notes:

- CAP Self-Reported Training Opportunities do not offer CE credit, but can be used toward fulfilling requirements for certification maintenance by agencies such as the American Society for Clinical Pathology (ASCP). Please verify with your certifying agency to determine your education requirements.
- These opportunities are subject to change. Refer to the Participant Summary/Final Critique for availability.

Continuing Certification (CC)

Continuing Certification (CC) is the board certification program that involves continuous professional development and ensures that an American Board of Pathology (ABPath) board-certified pathologist is committed to lifelong learning and competency in a specialty and/or subspecialty.

There are six competency categories defined by the American Board of Medical Specialties (ABMS) and endorsed by the ABPath to fulfill specific CC requirements. They are listed below with their descriptions.

All CAP education activities providing CME credits meet the CC Part II: Lifelong Learning requirements. Some programs will meet the requirements for CC Improvement in Medical Practice (IMP) (formerly Part IV) at the laboratory or the individual levels. Programs that meet IMP are identified within the description of the program. Visit the CAP website for the current list of programs that meet the requirements for CC Part II and IMP.

Interpersonal and Communication Skills
Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates.

Medical Knowledge
Demonstrate knowledge of established and evolving biomedical, clinical, and cognate sciences and the application of this knowledge to pathology.

Practice-Based Learning and Improvement
Demonstrate ability to investigate and evaluate diagnostic and laboratory practices in your own laboratory, appraise and assimilate scientific evidence, and improve laboratory practices and patient care.

Patient Care
Demonstrate a satisfactory level of diagnostic competence and provide appropriate and effective consultation in the context of pathology services.

Professionalism
Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diverse patient population.

Systems-Based Practice
Demonstrate understanding of and contribution to local, regional, and national health care systems, and support health care in systems-based practice definition.

Education Programs

Program Name	Program Code	Maximum *AMA PRA CME Category 1 Credits* Annually	Maximum CE Credits Annually	Format	Catalog Page
Autopsy Pathology*	AUP/AUP1	12.5	12.5	Online (DigitalScope®)	304
Clinical Pathology Improvement Program*	CPIP/CPIP1	15	NA	Online	14
Digital Slide Program—Dermatopathology*	DPATH/DPATH1	15	NA	Online (DigitalScope)	305
Digital Slide Program in FNA*	FNA/FNA1	10	10	Online (DigitalScope)	313
Fine-Needle Aspiration Glass Slide	FNAG/FNAG1	10	10	Glass Slides	314
Forensic Pathology*	FR/FR1	12.5	12.5	Online	316
Hematopathology Online Education*	HPATH/HPATH1	12.5	12.5	Online (DigitalScope)	150
Informatics Essentials for Pathologists*	ICBE/ICBE1	4	NA	Online	15
Nongynecologic Cytopathology Education**	NGC/NGC1	25	25	Glass Slides With Online Cases (DigitalScope)	312
Navigating Multimodality Biomarker Assessment*	NMBA/NMB1	4	4	Online (DigitalScope)	302
Neuropathology Program*	NP/NP1	10	NA	Online (DigitalScope)	307
Gynecologic Cytopathology PAP Education Program***	PAPCE/APAPCE PAPJE/APAPJE PAPKE/APAPKE PAPLE/APAPLE PAPME/APAPME Series 1 or 2	8	8	Glass Slides	309
Glass Slide Cytopathology PAP PT Program (With Glass Slide PAP Education)***	PAPCPT/APAPCPT PAPJPT/APAPJPT PAPKPT/APAPKPT PAPLPT/APAPLPT PAPMPT/APAPMPT	8	8	Glass Slides	308
Performance Improvement Program in Surgical Pathology	PIP/PIP1	40	NA	Glass Slides With Online Cases (DigitalScope)	285
Online Performance Improvement Program in Surgical Pathology*	PIPW/PIPW1	40	NA	Online (DigitalScope)	284
Nongynecologic Cytopathology Intraoperative Touch Imprint/Crush Preparation Program*	TICP/TICP1	10	10	Online (DigitalScope)	311
Virtual Biopsy Program*	VBP/VBP1	25	NA	Online (DigitalScope)	286

*Program is available for purchase online. Go to cap.org and choose the Education tab.
**NGC provides up to 20 CME/CE credits for the glass slides and 5 CME/CE credits for the online slide portion of the program.
***PAP provides up to 8 CME/CE credits for the glass slides.

System Requirements

DigitalScope is a web-based whole slide image (WSI) retrieval and viewing system. **The current version DSv6.0 does not require Microsoft Silverlight.** DigitalScope is supported by the latest Chrome and Firefox releases, and the last two major Edge and Safari versions.

Find current information on system requirements on cap.org; click **Browser and Operating System Requirements** at the bottom of the homepage. Download speeds and appearance will vary depending on your internet connection, browser, and computer power.

Navigating Multimodality Biomarker Assessment NMBA/NMB1

NEW

Program Name	Program Code	Cases per Mailing
	NMBA/NMB1	
Multimodality biomarker assessment case analysis	▮	2

Biomarkers can be tested through a variety of methodologies (eg, flow cytometry, immunohistochemistry, next generation sequencing, PCR-based testing, karyotype, FISH, clinical chemistry). Each modality has different technical strengths and weaknesses, along with varied analytical and clinical specifications such as sensitivity and specificity. Results may not be clearly concordant across the modalities. This program will challenge pathologists to resolve discrepancies between different methods or "multimodality" biomarker testing.

Program Information

- NMBA - Online program, whole slide images powered by DigitalScope technology (if available); NMBA provides CME or CE for one pathologist or laboratory professional
- NMB1 - Reporting option with CME or CE credit for each additional pathologist or laboratory professional (within the same institution); must order in conjunction with program NMBA
- Two mailings per year with two cases each mailing
- Earn a maximum of 4 CME credits (AMA PRA Category 1 Credits) per pathologist and a maximum of 4 CE credits per laboratory professional per year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CME CE credit

Access CPIP cases when and where it's convenient via PC or personal mobile device.

Pathologists can keep abreast of current scientific knowledge with interactive, case-based learning to address both common and esoteric issues faced in the laboratory.

CPIP supports pathologists who do principally clinical pathology as well as those who do primarily anatomic pathology but cover clinical pathology. A diverse portfolio of real-life case scenarios, including images and clinical background, help pathologists to stay current on issues and advances in the laboratory.

CPIP is designed for pathologists, by pathologists. Each case is developed and peer-reviewed, ensuring learnings are practical and easily applied to work. Thought-provoking questions with feedback and multiple choice knowledge checks assess and confirm diagnostic skills. Participants may apply 1.25 CME credits for each CPIP toward the ABPath's Continuing Certification (CC) requirements.

Clinical Pathology Improvement Program CPIP/CPIP1

Program Name	Program Code	Cases per Year
	CPIP/CPIP1	
Online cases in clinical pathology	▮	12

Consider CPIP for:

- Medical directors seeking to continuously improve the clinical pathology knowledge and collective skills of their pathology team
- Pathologists with clinical and/or laboratory management responsibilities
- Pathologists seeking CME CC credits in clinical pathology
- Subspecialty clinical pathologists who need to keep current

Discipline	Case Schedule (subject to change)	Month 2024
Hematology	Peripheral blood smear review - WBCs	January
Laboratory Management	Risk management strategies	February
Chemistry	Preanalytical inferences in core laboratory assays	March
Transfusion Medicine	ABO testing	April
Transfusion Medicine	Regulatory aspects of blood banking	May
Laboratory Management	CLIA director responsibilities and risks	June
Chemistry	Interpretation of iron studies	July
Microbiology	Blood parasite review and diagnosis	August
Hematology	Peripheral blood smear review - RBCs	September
Microbiology	Gram stain interpretation	October
Molecular Pathology	Liquid biopsy	November
Transfusion Medicine	Transfusion reactions	December

To learn more visit cap.org and search CPIP.

Program Information

- CPIP - One online clinical laboratory case per month
- CPIP1 - Additional pathologist (within the same institution) reporting option with CME credit; must order in conjunction with CPIP
- Earn a maximum of 15 CME credits *(AMA PRA Category 1 Credits™)* per year
- Twelve cases per year; your CAP shipping contact will be notified via email when the activity is available

Informatics Essentials for Pathologists (ICBE/ICBE1)

Every pathologist, no matter their background or career track, will take a leadership role in the laboratory, whether as section head, project leader, or laboratory medical director. The pathologist's role involves guiding a complex interface between technology, staff, workflow processes, and data management. The Informatics Essentials for Pathologists program prepares pathologists to keep current on technology challenges faced by pathologists in their practice. With a focus on practical application of informatics principles to real-life scenarios, this case-based program offers content authored by pathologists, for pathologists. It helps pathologists apply their learnings to their decisions to implement meaningful changes for present and future problems. Issues in practice addressed include topics such as artificial intelligence and machine learning, cybersecurity, software implementations and upgrades, laboratory test ordering issues, regulatory compliance, and analysis of patient population data through laboratory testing. Participants may earn CME credits for each case completed.

Informatics Essentials for Pathologists ICBE/ICBE1

Program Name	Program Code	Cases per Year
	ICBE/ICBE1	
Online cases in clinical informatics	▮	4 (One per quarter. See below.)

Additional Information

Consider the ICBE program if you are a:

- Medical director seeking to improve the informatics knowledge and collective skills of the pathology team
- Pathologist with an interest in learning informatics for leadership roles
- Pathologist with informatics and/or laboratory management responsibilities
- Pathologist with section head responsibility wanting to use informatics to improve operations in their team
- Pathologist seeking CME credits in clinical informatics

Case Schedule*	Month 2024
Recommendations for implementing effective clinical decision support for laboratory ordering and resulting	February
Best practices for deployment of artificial intelligence/machine learning-based tools in the clinical lab	May
Mitigating risk during EHR downtimes	August
Tips for installing and using middleware effectively	November

*Subject to change

To learn more, visit cap.org and search Informatics.

Program Information

- ICBE - One online clinical informatics case per quarter
- ICBE1 - Reporting option with CME credit for each additional pathologist (within the same institution); must order in conjunction with ICBE
- Earn a maximum of 4 CME credits *(AMA PRA Category 1 Credits)* per year
- Four cases per year; your CAP shipping contact will be notified via email when the activity is available

Competency Assessment Hub

A single platform for maintaining your staff competency records and providing CE credits

Competency Assessment Hub helps laboratories ensure they meet CLIA competency assessment requirements and fulfill laboratory professional continuing education (CE) needs. Built on MediaLab's platform, the CAP's Competency Assessment Hub helps keep you in compliance and avoid being cited for a deficiency by managing your personnel's competency assessment performance and records.

- **Customizing tools** The question bank lets you design your own assessment courses to match your laboratory's written procedures. ChecklistBuilder, CourseBuilder, and Compass competency assessments can ensure convenient documentation for all six areas of competency as defined by CLIA and the CAP Laboratory Accreditation Program.
- **Intuitive reporting** With just a few clicks, administrators can stay on top of documentation and records to track progress toward required dates and training for all staff members.
- **Instrument-specific checklists** More than 130 standard checklists help you meet your laboratory's documentation needs.
- **High-quality Pro courses** Your laboratory staff can earn PACE CE credits in a variety of disciplines and courses.
- **Easy online access** The Competency Assessment Hub is cloud based, so it's available 24/7 from any PC, laptop, or tablet—wherever you have an Internet connection.

Add Safety & Compliance Courses Especially Developed for the Laboratory

As an add-on option, Competency Assessment Hub offers a package of nine complementary safety and compliance courses with PACE CE credits—**including two new ethics courses.** The package is appropriate for annual laboratory-specific compliance training and for clinical laboratory science students prior to clinical rotations. These courses include:

- OSHA Bloodborne Pathogens
- OSHA Hazard Communication and Chemical Hygiene
- OSHA Electrical Safety
- OSHA Fire Safety
- OSHA Formaldehyde
- Tuberculosis Awareness for Healthcare Workers
- Medical Error Prevention: Patient Safety
- Ethics and Code of Conduct in Healthcare **NEW**
- HIPAA Privacy and Security Rules **NEW**

With the Competency Assessment Hub, you can keep your laboratory organized and inspection-ready every day of the year. Choose the Competency Assessment Hub subscription that best fits your needs. Please refer to the ordering information and course descriptions on the following pages. For more information, visit cap.org and choose Competency Assessment Hub from the Education Main Page via the Education tab.

Number of Users*	Competency Assessment Hub	Competency Assessment Hub With Optional Safety & Compliance Courses**
2 to 50	CA0050	CA0050 + XCA0050
51 to 250	CA0250	CA0250 + XCA0250

*For subscriptions for single users or more than 250 users, please contact the CAP for more information.
**Safety & Compliance Course subscriptions require a standard Competency Assessment Hub subscription.

2024 Pro Courses

Blood Bank/Transfusion Medicine

- ABO typing discrepancies
- Antibody screen and identification
- Direct antiglobulin test
- Blood components—storage, handling, and selection
- Transfusion reactions
- Quality control in the blood bank laboratory

Chemistry

- Cardiac biomarkers
- Liver and renal testing
- Electrolytes, acid base, and anion gap
- Clinical toxicology
- Therapeutic drug monitoring
- Chemistry QC, calibration, and reportable range

Hematology/Coagulation

- Erythrocyte morphology
- Erythrocyte inclusions
- White blood cells
- White blood cell inclusions
- Common coagulation tests
- Platelet testing, morphology, and disorders

Histology

- Immunohistochemistry—part 1
- Immunohistochemistry—part 2
- Special stains
- Histology specimen handling
- Quality management in histology
- Safety issues in the histology laboratory

Immunology

- Hepatitis testing
- Qualitative HIV testing
- Human chorionic gonadotropin and fetal fibronectin
- Rapid serology kit tests
- Molecular amplification methods for detection of infectious diseases
- Monitoring the testing process in immunology

Microbiology

- Gram stain: organism detection and differentiation
- Urine and body fluid cultures
- Genital tract pathogens
- Blood cultures
- Microbiology of the gastrointestinal tract
- The microbiology of wounds

Phlebotomy/Specimen Processing

- Venipuncture
- Challenges of phlebotomy: pediatric blood collection, alternate sites, and difficult draws
- Phlebotomy professionalism and ethics
- Common pitfalls in specimen processing
- Specimen collection for workplace urine drug testing programs and forensic drug and alcohol testing
- General specimen handling and transportation requirements

Point-of-Care Testing

CE credit

Urine dipstick

- Whole blood prothrombin time and INR (PT/INR) testing
- Whole blood glucose testing
- Cardiac biomarkers
- Blood gas testing
- Provider-performed microscopy and limited waived testing

Quality Programs/Management

- New instrument method validation
- Monitoring the quality control program
- Document control
- Investigating occurrences (occurrence reports, root cause analysis, and corrective action)
- Competency evaluation
- Development and implementation of a quality management program

Safety

- General laboratory safety
- Bloodborne pathogens
- Laboratory waste and spill management
- Fire and electrical safety
- Hazardous chemicals
- SARS-CoV-2/COVID: biosafety precautions
- Ergonomics

Urinalysis/Body Fluids

- Physical and chemical urinalysis
- Microscopic urinalysis—part 1
- Microscopic urinalysis—part 2, crystals and casts
- Cerebrospinal fluid analysis
- Serous and synovial fluids
- Semen analysis

Safety & Compliance Courses

OSHA Bloodborne Pathogens Addresses the OSHA Bloodborne Pathogens standard as it applies to clinical and medical laboratories. Covers major bloodborne pathogens, including hepatitis B and HIV. Focuses on proper handling of sharps, personal protective equipment (PPE), engineering controls such as microbiological safety cabinets, and proper work practices like handwashing.

OSHA Hazard Communication and Chemical Hygiene Describes the OSHA Chemical Hygiene Standard and helps satisfy OSHA requirements for annual training. Explains Haz-Com, the National Fire Protection Agency diamond, the Safety Data Sheet, and common-sense laboratory safety rules applied to clinical laboratory practice.

OSHA Electrical Safety Addresses electrical safety and electrical hazards commonly found in the clinical laboratory. Covers prevention and safety measures, fighting electrical fires, and treatment of electrical injuries.

OSHA Fire Safety Teaches the basics of fire safety in the clinical laboratory, including classes of fire and key acronyms, such as PASS and RACE. Addresses fire prevention, drills, and firefighting techniques.

OSHA Formaldehyde Covers essentials for any laboratory that uses formaldehyde or formalin. Shares facts about formaldehyde, safety risks, proper handling procedure, monitoring, spill clean-up, and personal protective equipment.

Tuberculosis Awareness for Health Care Workers Provides background information about spread of tuberculosis, purified protein derivative (PPD) testing procedures, CDC guidelines, and methods of control.

Medical Error Prevention: Patient Safety Includes potential causes of medical errors in the clinical laboratory, important legislation and definitions, and steps laboratory professionals can take to reduce the impact of medical errors in their workplace. Serves as an ideal part of an effective medical error reduction program. Appropriate for both experienced and newer laboratory personnel.

Ethics and Code of Conduct in Health Care Designed to guide health care employees on the importance of ethics and code of conduct by outlining privacy and patient health information regulations, conflict of interest, professional competence, effective communication, and more.

HIPAA Privacy and Security Rules Addresses the Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy regulations and treatment of protected health information (PHI) in a succinct manner. Content is directed at laboratory staff, from desk personnel to phlebotomists to medical technologists. Includes technical and physical safeguards, minimum necessary standard, administrative requirements, and authorization.

QM*Ed*™ Online Educational Courses

Tailored education and quality tools developed with pathologist input

Quality Management Educational Resources (QM*Ed*) courses will help you:

- Build a quality management system (QMS) – one piece at a time – that sustains your continuous improvement and Lean efforts.
- Self-assess your current QMS against international quality standards.
- Interpret ISO 15189 requirements.
- Perform internal audits using tracer audit and process audit methods.
- Implement and refine occurrence management with root cause analysis.

Course Information

- Delivered online via interface that allows you to pause, resume where you left off, and learn at your own pace
- Mobile-friendly so that you can learn where and when you want
- Accessible a minimum of twelve months
- Includes continuing education (CE) credit
- Individual learners can use their own login and will have their own bookmarking when they leave and return to the course.

About the Courses

Risk Management *Order QMEDRISK*

Learn how different elements of the quality management system—internal audit, data analysis, etc—play a role in identifying and controlling risk. Learn best practices for managing risk, plus practical tools for all phases of the risk management process. Includes a case example showing how high-level risk assessment can be integrated into management review.

4 CE credits available

Quality Culture *Order QMEDOCUL*

This program—designed for laboratory medical directors, administrative directors, quality managers, and other leaders whose decisions affect the culture of their laboratory—provides an adaptable program for proactive culture change. Its unique Culture Assessment Tool helps laboratory leadership get a picture of where your organization is strong and where it needs to improve, then helps make culture change a reality. It also includes video commentary by CAP member pathologists.

4 CE credits available

Root Cause Analysis *Order QMEDROOT*

Designed for laboratory quality managers and implementation team members. Learn real-world methodology and tools to conduct and implement a root cause analysis, performing key steps based on a participant case study. Choose further examples based on your work setting (eg, hospital, reference laboratory, or contract research organization). Includes the RCA Performance and Feedback Toolkit, which an organization can use to guide and assess root cause analysis projects.

6 CE credits available

Mistake Proofing *Order QMEDMIST*

Increase your ability to design new processes, modify existing processes, minimize mistakes, and manage your risks. This Learn to design new and modify existing processes, minimize mistakes, and manage risks. The course methodology is focused on five main categories of mistake-proofing tactics, with examples taken from laboratory medicine. It includes video commentary by CAP member pathologists who have experience using Lean and other process improvement techniques.

4 CE credits available

Internal Auditing *Order QMEDAUDT*

Improve your internal audit capability with a proven methodology for process, tracer, and laser audits. Learn to prepare for interviews, communicate findings to your quality management team, and use audits to drive process improvements. Includes detailed, real-world examples you can use to build your own audit plans, plus multimedia presentations of key concepts.

3 CE credits available

Management Review *Order QMEDMGMT*

Understand the ISO 15189 requirements for management review. CAP ISO 15189 assessors cover structuring review meetings, communicating results, and prompting strategic management decisions—all to benefit your organization's health.

2 CE credits available

Quality Manual Development *Order QMEDMANL*

Go beyond a quality plan—develop a manual that organizes and communicates your laboratory's quality management system. The course materials include a well-written and effective sample manual, which you can use to organize and create your own. Plus, the CAP's ISO 15189 assessors demonstrate how to link your quality policy to quality objectives and metrics.

2 CE credits available

Document Control *Order QMEDDOCU*

This "how-to" course details how to control documents to meet ISO 15189 requirements, how to accomplish document control even with minimal resources (such as spreadsheets), and how document control contributes to cost containment. The CAP's ISO 15189 assessors provide commentary on common pitfalls and best practices.

2 CE credits available

QMS Implementation Roadmap *Order QMEDROAD*

Outlines the practical steps necessary to build, implement, and maintain a quality management system that meets the ISO 15189 standard. Video recordings of the CAP's ISO 15189 assessors provide perspective on best practices and pitfalls. Designed for laboratory quality managers and implementation team members.

2 CE credits available

15189 Walkthrough *Order QMEDWALK*

This course summarizes each main clause of the ISO 15189 standard, clarifying its intent and key requirements. CAP assessors offer context in videos that also provide examples of how technical problems relate to fundamental deficiencies in the quality management system. This course, designed for laboratories considering implementation, is updated for the ISO 15189 2022 edition.

2 CE credits available

Make sure your laboratory team is ready to meet the challenges ahead. Add QM*Ed* courses to your order form. For more information, visit cap.org and search QM*Ed.*

Expand your expertise with Root Cause Analysis.

The QM*Ed* online course Root Cause Analysis was developed with pathologist input and is infused with real-world laboratory examples, giving you confidence in:

- Using root cause analysis tools
- Recognizing common pitfalls
- Performing key steps
- Applying best practices

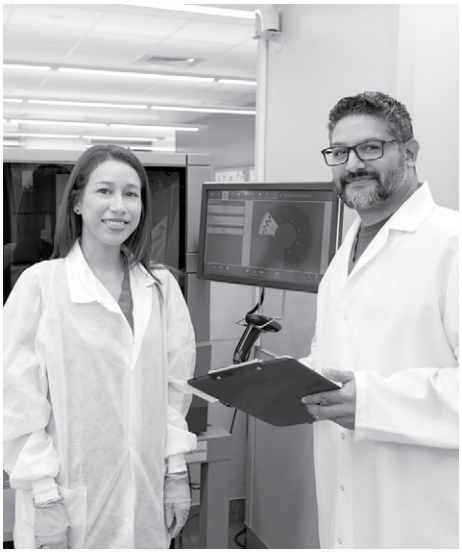
Includes a unique **Root Cause Analysis Toolkit**, which helps to communicate best practices and provide feedback to project teams—with the goal of solving problems permanently.

See the Continuing Education section.
Add QMEDROOT to your order.

"WOW! Very impressive training module. Probably the best self-taught module I have seen in years. Very systematic, very visual, very easy to follow … staying with tried and true textbook of Root Cause Analysis."

Jim Ellis
Managing Partner
MME Consulting, LLC

3 Quality Management Tools



Easily integrate quality improvement into your daily work processes.

Measure and document your process improvements with these convenient tools:

- Improve how you study and report suspected transfusion reactions (QP241).
- Streamline your efforts to assess technical competency of technologists who perform body fluid review (QPB10/QPB25).

Quality Management Tools

New Programs NEW

Discontinued Programs

Non-Physician Care Team Satisfaction With Clinical Laboratory Services (QP231)
Patient Identification Accuracy (QT1)
Gynecologic Cytology Outcomes: Biopsy Correlation Performance (QT5)

Quality Management Tools

Benchmark outside of your laboratory.

The CAP Quality Management Tools can improve your total testing process by providing a convenient solution to measure and document improvements to processes within your laboratory's quality management system.

- **Short-Term Quality Studies and Competency Assessments** provide opportunities to benchmark performance indicators, compare normative rates, and assist your laboratory in meeting checklist requirements.
- **Continuous Quality Monitors** examine performance indicators such as turnaround time and patient identification errors throughout the year.

Available for clinical pathology laboratories, Quality Management Tools examine preanalytic, analytic, and postanalytic phases, helping participants to:

- **Establish realistic goals** by comparing performance against institutions with comparable demographics.
- **Monitor progress** through unique and robust quality indicators on a periodic basis.
- **Make effective decisions** based on practical and in-depth quality management reports.
- **Improve efficiencies** to allow time for more patient-centric activities.
- **Easily integrate** quality improvement into your daily work processes.
- **Meet checklist requirements** of the CAP Laboratory Accreditation Program and standards of The Joint Commission.

Purchase combination packages and save.

2024 Short-Term Quality Studies and Competency Assessments	
Module/Package	**Program Code**
Individual Short-Term Quality Studies and Competency Assessments	QP241, QPB10, QPB25, QPC10, QPC25, QPD10, QPD25
Four Quality Management Tools (QP241, QPB10, QPC10, QPD10)	PRO

2024 Continuous Quality Monitors	
Module/Package	**Program Code**
Individual Continuous Quality Monitors	QT2, QT3, QT4, QT7, QT8, QT10, QT15, QT16, QT17
Clinical Pathology Module—Includes all nine Continuous Quality Monitors	QTC

Complement your quality management program needs with these clinical pathology studies.

Clinical Pathology Study	Testing Phase			Purpose					
Select from the following studies to support your quality improvement initiatives.	Preanalytic	Analytic	Postanalytic	Turnaround Time	Patient Safety	Microbiology	Transfusion Medicine	Chemistry/ Hematology	Customer Satisfaction
Rates and Turnaround Times for Investigation and Reporting of Suspected Transfusion Reactions (QP241)	▮	▮	▮	▮	▮		▮		▮
Technical Competency Assessment of Body Fluid Review (QPB10/QPB25)		▮			▮			▮	
Technical Competency Assessment of Peripheral Blood Smears (QPC10/QPC25)		▮			▮			▮	
Technical Competency Assessment of Gram Stains (QPD10/QPD25)		▮			▮	▮			
Blood Culture Contamination (QT2)	▮	▮				▮			
Laboratory Specimen Acceptability (QT3)	▮			▮	▮			▮	▮
In-Date Blood Product Wastage (QT4)			▮				▮		
Satisfaction With Outpatient Specimen Collection (QT7)	▮				▮				▮
Stat Test Turnaround Time Outliers (QT8)			▮	▮	▮			▮	▮
Critical Values Reporting (QT10)			▮		▮			▮	▮
Troponin Turnaround Times (QT15)	▮	▮	▮	▮	▮			▮	▮
Corrected Results (QT16)			▮		▮	▮	▮	▮	▮
Outpatient Order Entry Errors (QT17)	▮			▮	▮	▮		▮	▮

The CAP requires accredited laboratories to have a quality management plan that covers all areas of the laboratory and includes benchmarking key measures of laboratory performance (GEN.13806, GEN.20316, COM.04000). The Joint Commission requires accredited hospitals, laboratory staff and leaders to regularly collect and analyze performance data (PI.01.01.01, PI.03.01.01, LD.03.06.01, LD.03.07.01). CLIA requires laboratories to monitor, assess, and correct problems identified in preanalytic, analytic, and postanalytic systems (§493.1249, §493.1289, §493.1299).

Short-Term Quality Studies and Competency Assessments

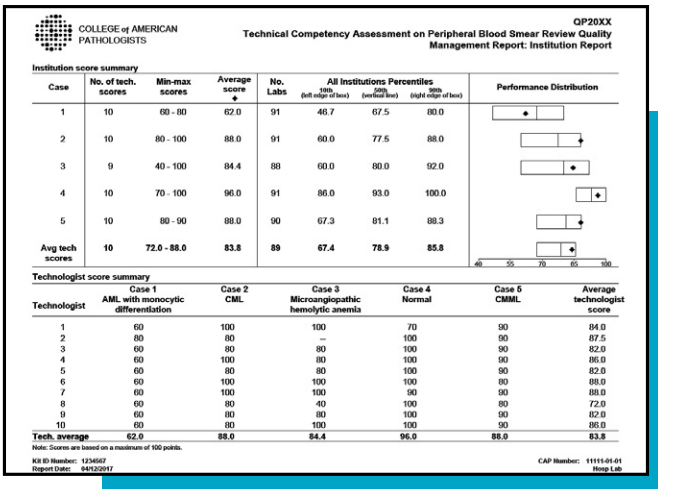
Implement quality monitoring—Use these short-term, comprehensive quality studies and competency assessments to learn how to start monitoring and measuring key processes that may not be commonly monitored in your laboratory. These assessments also analyze emerging industry trends and topics to keep your laboratory ahead of the curve.

Gain experience in data collection and analysis—Based on data collected and submitted during predetermined dates, the CAP provides personalized reports with the individual participant's performance compared against others.

Strengthen your quality assessment expertise—The CAP pathologist experts provide in-depth discussions and identify best practices for laboratories to strive for. In addition, consolidated results of the studies are carefully reviewed and analyzed to be published in the form of scientific articles for further analysis.

Participating laboratories receive:

- User Guide
- Templates and instructions for data collection
- Individual report and report interpretation guide
- Competency programs receive all-laboratories study results, institution results, individual results, and case information. Programs will receive Preliminary Summary Reports, Expanded Participant Summary Reports, or Data Analysis and Critique Reports that include data distributions and initial analysis of laboratory practices and commentaries from subject matter experts on improvement opportunities dependent on study type and complexity.



COLLEGE of AMERICAN PATHOLOGISTS

QP20XX

Technical Competency Assessment on Peripheral Blood Smear Review Quality Management Report: Institution Report

Institution score summary

Case	No. of tech. scores	Min-max scores	Average score	No. Labs	All Institutions Percentiles 10th (left edge of box)	50th (vertical line)	90th (right edge of box)	Performance Distribution
1	10	60 - 80	62.0	91	46.7	67.5	80.0	
2	10	80 - 100	88.0	91	60.0	77.5	88.0	
3	9	40 - 100	84.4	88	60.0	80.0	92.0	
4	10	70 - 100	96.0	91	86.0	93.0	100.0	
5	10	80 - 90	88.0	90	67.3	81.1	88.3	
Avg tech scores	10	72.0 - 88.0	83.8	89	67.4	78.9	85.8	

40 55 70 85 100

Technologist score summary

Technologist	Case 1 AML with monocytic differentiation	Case 2 CML	Case 3 Microangiopathic hemolytic anemia	Case 4 Normal	Case 5 CMML	Average technologist score
1	60	100	100	70	90	84.0
2	80	80	--	100	90	87.5
3	60	80	80	100	90	82.0
4	60	100	80	100	90	86.0
5	60	80	80	100	90	82.0
6	60	100	100	100	80	88.0
7	60	100	100	90	90	88.0
8	60	80	40	100	80	72.0
9	60	80	80	100	90	82.0
10	60	80	100	100	90	86.0
Tech. average	62.0	88.0	84.4	96.0	88.0	83.8

Note: Scores are based on a maximum of 100 points.

Kit ID Number: 1234567
Report Date: 04/12/2017

CAP Number: 11111-01-01
Hosp Lab

NEW

Rates and Turnaround Times for Investigation and Reporting of Suspected Transfusion Reactions QP241

Introduction

Adverse reactions are an inevitable consequence of allogeneic blood product transfusions. Fortunately, as laboratories have increased the scrutiny of patient specimen identification, blood typing, and crossmatch procedures, hemolytic transfusion reactions—the most serious form of adverse reaction—have become very rare.

Laboratories are tasked with investigating and categorizing all suspected transfusion reactions. The triad of clerical check, examination for hemolysis, and repeat typing has been the standard for the investigation of a suspected hemolytic reaction for many years. However, data are lacking regarding the scope of current investigations for more recently described reaction types such as transfusion related acute lung injury (TRALI) and sepsis due to bacterial contamination. In addition, while standards require a prompt investigation, multi-institutional data regarding turnaround time for investigation and reporting are lacking.

Objectives

Participation in this study will help laboratories and managers:

- Optimize their processes for investigation and reporting of suspected transfusion reactions
- Determine normative rates of various reaction types
- Address applicable CAP Laboratory Accreditation Program, The Joint Commission, Clinical Laboratory Improvement Amendments (CLIA), and Association for the Advancement of Blood & Biotherapies (AABB) laboratory accreditation and regulatory requirements.*

Data Collection

Participants will prospectively record up to 50 suspected transfusion reaction events submitted to their transfusion service during a three-month study period. The type of testing performed as part of the investigation, the reaction type determined following investigation, the time of reaction report, the time of initial laboratory investigation, and the time of the final interpretive report by the pathologist will all be collected as part of the prospective aspect of the study. Laboratories will be asked to provide the total number of products transfused during the study period and annually. They will also be asked to provide the rates of specific reaction types identified during the most recent fiscal or calendar year as part of the study's retrospective aspect.

Performance Indicators

- Rate of transfusion reaction during the study period
- Rate of transfusion reaction during the most recent fiscal or calendar year
- Turnaround time from report of reaction to completion of initial laboratory investigation
- Turnaround time from report of reaction to verification of final report by pathologist

Applicable Requirements

*Participation in this study helps laboratories meet:

- CAP Laboratory Accreditation Transfusion Medicine Checklist statements including TRM.32900 (records include information about bacteriologic studies when indicated), TRM.41750 (reporting of transfusion reactions and incidents), TRM.41850 (investigation of suspected hemolytic transfusion reaction), TRM.42110 (written policies and procedures related to transfusion-related acute lung injury [TRALI])
- The Joint Commission standards QSA.05.19.03 (EP3: laboratory evaluation of the suspected transfusion-related adverse event immediately upon notification), QSA.05.24.03, QSA.05.03.01 (EP1, EP2)
- CLIA §493.1103(b), §493.1103(d), 493.1271(e)(1); §493.1271(b), §493.1105(a)(3)(ii)
- AABB: standards 7.5.1 (recognition of and response to transfusion reactions) and 7.5.2 (laboratory evaluation and reporting of transfusion reactions)

This is a one-time study conducted in the first quarter.

Technical Competency Assessment of Body Fluid Review QPB10/QPB25 NEW

Introduction

Laboratories receive a variety of body fluids for evaluation that technologists review. Technical staff must maintain their identification skills of these specimens, and laboratories are required to provide education and to assess competency and consistency of reporting morphology amongst staff of body fluid cell identification amongst staff on an annual basis.

Objectives

This study will assess the effectiveness of educational and practical experience policies and procedures dedicated to the laboratory's efforts in maintaining technologist skills in the performance of accurate body fluid cell counts and identification of other body fluid features. Results of this study will assist individuals, the laboratory director, and manager with areas to focus on for improvement and education.

The study will help management meet applicable Clinical Laboratory Improvement Amendments (CLIA), CAP Laboratory Accreditation, and The Joint Commission laboratory requirements for personnel competency requirements and consistency of reporting amongst staff.*

Data Collection

Technologists will access a series of online, whole slide images to assess their ability to perform cell differentials on Wright-stained body fluids and identify miscellaneous cells and inclusions in cytocentrifuged preparations. Participants will provide additional information about their competency assessment programs, continuing education, and professional background. Information will be collected from each site regarding minimum qualifications and experience requirements of their technologists, their ongoing educational programs and requirements, as well as relevant procedures and policies.

Performance Indicators

- Individual technologist score (%) based on a standardized competency assessment method to determine a technologist's ability to identify various WBC types, microorganisms, and other items with cells present in normal and abnormal cases in comparison to consensus responses
- Overall laboratory score based on the facility's individual technologist performance(s)
- Reports are provided at institution and technologist levels. A summary of responses to the general questions will be provided for participants.

Program Information

To meet your staff technical competency assessment requirements:

- Result forms for up to 10 technologists (QPB10)
- Result forms for up to 25 technologists (QPB25)
- Multiple kits may be purchased to accommodate quantity needed.

***Applicable Requirements**

- CLIA personnel requirements (Subpart M, 42 CFR §493.1)
- CAP Laboratory Accreditation Program Checklist statements GEN.55500 Competency Assessment of Testing Personnel, and HEM.35566, consistency of morphologic observation among personnel performing blood fluid cell differentials at least annually
- The Joint Commission Standards HR. 01.05.03, 01.06.01, 01.07.01, LD.04.05.03, and 04.05.05 regarding in-service training, continuing education, competency, and evaluation of hospital personnel

This is a one-time study conducted in the second quarter.

Technical Competency Assessment of Peripheral Blood Smears QPC10/QPC25

Introduction

The widespread use of automated white blood cell (WBC) differential counts and computer generated whole slide imaging has decreased the time that the technical staff dedicates to morphological assessment of blood cells. However, technologists must maintain their morphological skills and laboratories are required to provide education and assess competency in this area on a regular basis.

Objectives

This study will help assess the effectiveness of educational and practical experience policies and procedures dedicated to the laboratory's efforts in maintaining technologist skills in the performance of accurate WBC differential counts and other peripheral blood smear morphological assessments. The evaluation provided will assist in the construction of individual educational programs for the technical staff and show areas that need focused review and improvement. The study will help management meet applicable CLIA, CAP Laboratory Accreditation, and The Joint Commission laboratory requirements for personnel competency requirements and consistency of reporting amongst staff.*

Data Collection

A series of online, whole slide images of Wright-Giemsa stained peripheral blood smears using DigitalScope® technology will be available to each participating institution to assess technologists' performance on WBC differential counts and morphology assessment. Technologists will provide information about their continuing education and professional background. Information will be collected from each site regarding their institution's minimum continuing education requirements for their technologists in hematology and relevant procedures and policies related to peripheral blood smear assessment.

Performance Indicators

- Individual technologist score (%) based on a standardized competency assessment method to determine a technologist's ability to identify various WBC types, red blood cell morphology, and platelet morphology in normal and abnormal cases
- Overall laboratory score based on the facility's individual technologist performance(s)

Reports are provided at institution and technologist levels. A summary of responses to the general questions will be provided for participants.

Program Information

To meet your staff technical competency assessment requirements:

- Result forms for up to 10 technologists (QPC10)
- Result forms for up to 25 technologists (QPC25)
- Multiple kits may be purchased to accommodate quantity needed.

***Applicable Requirements**

- CLIA personnel requirements (Subpart M, 42 CFR §493.1)
- CAP Laboratory Accreditation Program Checklist statements GEN.55500 Competency Assessment of Testing Personnel
- HEM.34400, consistency of morphologic observation among personnel performing blood cell microscopy at least annually
- The Joint Commission Standards HR. 01.05.03, 01.06.01, 01.07.01, LD.04.05.03, and 04.05.05 regarding in-service training, continuing education, competency, and evaluation of hospital personnel

This is a one-time study conducted in the third quarter.

Technical Competency Assessment of Gram Stains QPD10/QPD25

Introduction

Gram stain is a commonly performed bacterial stain in clinical microbiology laboratories. It is often the starting point guiding microbiological workup and initial clinical diagnosis and therapy. It is important for technologists who read Gram stains to provide an accurate interpretation based on reaction type and microscopic morphology in order to provide presumptive identifications and quantification of bacteria and fungi in clinical specimens.

Objectives

This study will help assess the effectiveness of educational and practical experience policies and procedures dedicated to the laboratory's efforts in maintaining technologist skills in the morphological assessment of Gram stains. Participation in this study will help management assess the technologist's ability to evaluate Gram stains using online, whole slide images. These cases provide a standardized review and evaluation for each technologist. The study will help management meet applicable CLIA, CAP Laboratory Accreditation, and The Joint Commission laboratory requirements for personnel competency requirements and consistency of reporting amongst staff.*

Data Collection

A series of online, whole slide images of Gram stained smears using DigitalScope technology will be provided to each participating institution to assess technologists' ability to detect various microorganisms. Technologists will provide information about their work experience related to Gram stains, continuing education, and professional background. Information will be collected from each laboratory site to provide information about their continuing education requirements in microbiology, and relevant laboratory procedures and policies related to Gram stain assessment.

Performance Indicators

- Individual technologist score (%) for each Gram stain case, and overall based on a standardized competency assessment method
- Overall laboratory score based on the facility's individual technologist performance(s)

Reports are provided at institution and technologist levels. A summary of responses to the general questions will be provided for participants.

Program Information

To meet your staff technical competency assessment requirements:

- Result forms for up to 10 technologists (QPD10)
- Result forms for up to 25 technologists (QPD25)
- Multiple kits may be purchased to accommodate quantity needed.

***Participation in this study helps laboratories meet:**

- CLIA personnel requirements (Subpart M, 42 CFR §493.1)
- CAP Laboratory Accreditation Program Microbiology Checklist statement MIC.11060, Culture Result Reporting: Personnel performing Gram stains for this purpose are subject to competency assessment
- CAP Laboratory Accreditation Program Microbiology Checklist statement MIC.11350, Morphologic Observation Evaluation: The laboratory evaluates consistency of morphologic observation among personnel performing Gram, trichrome and other organism stains at least annually
- CAP Laboratory Accreditation Program Checklist statement GEN.55500, Competency Assessment of Testing Personnel
- The Joint Commission Standards HR. 01.05.03, 01.06.01, 01.07.01, LD.04.05.03, and 04.05.05 regarding in-service training, continuing education, competency, and evaluation of hospital personnel

This is a one-time study conducted in the late third quarter.

Continuous Quality Monitors

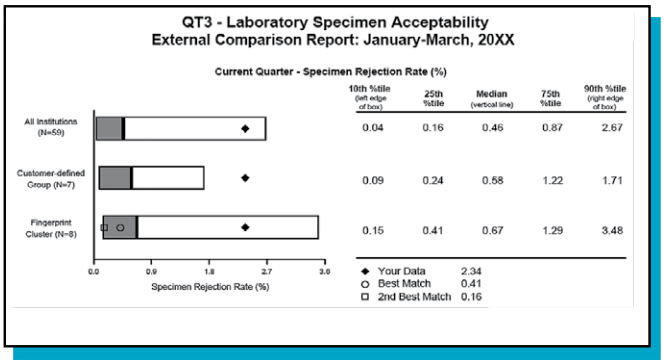
Use these programs to:

- Identify and continuously monitor quality improvement over time.
- Measure the effectiveness and impact of implemented changes in key processes.

How It Works

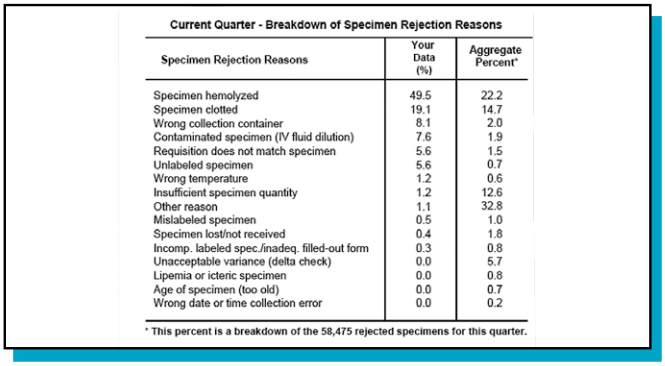
Step 1:

Establish realistic benchmarks by comparing your laboratory to others like yours.



Step 2:

Identify improvement opportunities.



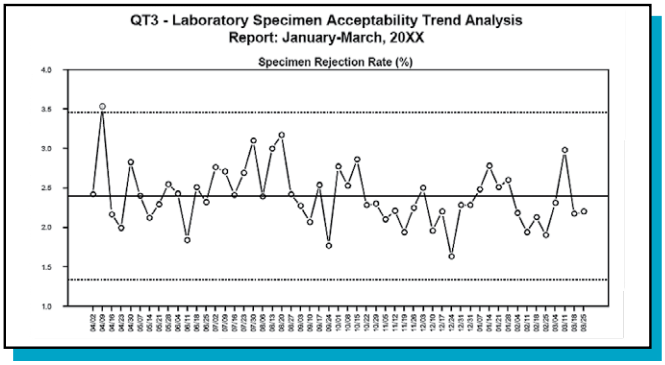
Current Quarter - Breakdown of Specimen Rejection Reasons

Specimen Rejection Reasons	Your Data (%)	Aggregate Percent*
Specimen hemolyzed	49.5	22.2
Specimen clotted	19.1	14.7
Wrong collection container	8.1	2.0
Contaminated specimen (IV fluid dilution)	7.6	1.9
Requisition does not match specimen	5.6	1.5
Unlabeled specimen	5.6	0.7
Wrong temperature	1.2	0.6
Insufficient specimen quantity	1.2	12.6
Other reason	1.1	32.8
Mislabeled specimen	0.5	1.0
Specimen lost/not received	0.4	1.8
Incomp. labeled spec./inadeq. filled-out form	0.3	0.8
Unacceptable variance (delta check)	0.0	5.7
Lipemia or icteric specimen	0.0	0.8
Age of specimen (too old)	0.0	0.7
Wrong date or time collection error	0.0	0.2

* This percent is a breakdown of the 58,475 rejected specimens for this quarter.

Step 3:

Monitor improvement over time to ensure accurate results, patient safety, and quality patient care.



The individual reports include performance of quality indicators over time, benchmarking information, trends, and suggested areas for improvement.

Participating laboratories receive:

- User Guide
- Templates and instructions for data collection
- Quarterly reports that include fingerprint clusters, customer-defined groups, and all institution comparisons
- An opportunity to connect with your counterparts enrolled in the same program through the Peer Directory

Blood Culture Contamination QT2

Despite advances in blood culture practices and technology, false-positive blood culture results due to contaminants continue to be a critical problem. Blood culture contamination rate, the primary indicator of preanalytic performance in microbiology, is associated with increased length of hospital stay, additional expense, and the administration of unnecessary antibiotics.

The CAP and other accrediting organizations require you to monitor and evaluate key indicators of quality for improvement opportunities. Use this monitor to help meet CAP Laboratory Accreditation Checklist statements MIC.22630 and MIC.22635: "The laboratory must determine and regularly review the number of contaminated cultures. Tracking the contamination rate and providing feedback to units and persons drawing cultures is one method that has been shown to reduce contamination rates." This will also help laboratories meet The Joint Commission Standard QSA 04.07.01 EP3.

Objective

Determine the rate of blood culture contamination using standardized criteria for classifying contaminants.

Data Collection

On a monthly basis, participants will tabulate the total number of blood cultures processed and the total number of contaminated blood cultures. Blood cultures from neonatal patients are tabulated separately. For the purposes of this study, participants will consider a blood culture to be contaminated if they find one or more of the following organisms in only one of a series of blood culture specimens: Coagulase-negative *Staphylococcus; Micrococcus;* Alpha-hemolytic viridans group streptococci; *Propionibacterium acnes*; *Corynebacterium* sp. (diptheroids); or *Bacillus* sp. Participants have the option to monitor institution-specific subgroups, for example, a specific department or patient population.

Performance Indicators

- Neonatal contamination rate (%)
- Other contamination rate (%)
- Overall contamination rate (%)

Laboratory Specimen Acceptability QT3

A substantial amount of rework, diagnostic and therapeutic delay, and patient inconvenience can result from specimen rejection. Patient redraws may result from unlabeled, mislabeled, and incompletely labeled specimens; clotted and/or hemolyzed specimens; or insufficient specimen quantity. By continuously monitoring specimen acceptability, collection, and transport, laboratories can promptly identify and correct problems. Enrollment in this study may assist the laboratory in monitoring compliance with CAP Laboratory Accreditation Program General Checklist statement GEN.40825: "There is a system to positively identify all patient specimens, specimen types, and aliquots at all times."

Objective

Identify and characterize unacceptable blood specimens that are submitted to the chemistry and hematology/coagulation sections of the clinical laboratory for testing.

Data Collection

This monitor includes all blood specimens submitted for testing to the chemistry and hematology departments of the clinical laboratory. On a weekly basis, participants will record the total number of specimens received, the number of rejected specimens, and the primary reason each specimen was rejected.

Performance Indicator

- Specimen rejection rate (%)

Performance Breakdown

- Breakdown of reasons for rejection (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

In-Date Blood Product Wastage QT4

Blood for transfusion is a precious resource. At a minimum, wastage of blood that is not out-of-date represents a financial loss to the health care system. More ominously, systemic wastage of blood may reflect an environment of care that is out of control and may pose risks to patient safety.

Enrollment in this program assists laboratories in meeting regulatory requirements as follows:

- CAP Laboratory Accreditation Program Checklist statements: TRM.40875 that requires the transfusion service medical director to monitor and audit transfusion practices to ensure the appropriate use of blood; TRM.30800, Disposition Records; and TRM.32275, Component Records, regarding recording the use of each blood or component product from receipt to final disposition.
- The Joint Commission Standards QSA.05.02.01, adequate blood and blood components; QSA.05.03.03, requirements for policies and procedures for returning unused blood products to blood transfusion services; and QSA.05.22.01, records of blood product disposition.
- AABB Standards for Blood Banks and Transfusion Services assessment 8.2 that requires transfusing facilities to have a peer-review program that monitors transfusion practices for blood components.

Objective

Compare the rates of blood product wastage (ie, units discarded in-date) in participating hospitals and track rates of improvement over time.

Data Collection

On a monthly basis, participants will use blood bank records to obtain information on the total number of units transfused for each type of blood component. Participants will track the number and type of blood units that are wasted in-date and the circumstances of wastage. This monitor includes the following types of blood components: whole blood (allogeneic), red blood cells (allogeneic), frozen plasma, platelet concentrates, single donor platelets, and cryoprecipitate.

Performance Indicators

- Overall blood wastage rate (%)
- Wastage rates by blood component type (%)

Performance Breakdown

- Breakdown of circumstances of wastage (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Satisfaction With Outpatient Specimen Collection QT7

Specimen collection is one of the few areas of laboratory medicine that involves direct outpatient contact. As a result, patient satisfaction with this service is a vital indicator of quality laboratory performance. The CAP's Laboratory Accreditation Program requires measurement of patient satisfaction with laboratory services (Checklist statement GEN.20335). Use this monitor to help meet this requirement.

Objective

Assess patient satisfaction with outpatient phlebotomy services by measuring patients' assessments of laboratory service hours, waiting time, comfort level, professionalism and courtesy, and privacy.

Data Collection

On a monthly basis, participants will provide copies of a standardized questionnaire in English and Spanish to a minimum of 25 outpatients (maximum of 99 outpatients) using predetermined data collection criteria. This monitor includes any outpatient undergoing venipuncture. This monitor excludes patients seen in the emergency department, ambulatory surgery area, urgent care facility, chest pain center, 23-hour short-stay facility, employee health department, outpatient health screening fair/promotion, dialysis center, nursing home, or extended care facility.

Performance Indicators

- Satisfaction scores and satisfaction rates (% of patients rating 4 or 5) for the following categories:
  - Overall experience
  - Waiting time
  - Patient comfort
  - Professionalism and courtesy
  - Patient privacy
  - Laboratory hours of operation

Stat Test Turnaround Time Outliers QT8

The stat test turnaround time (TAT) outlier rate, expressed as a percentage of tests missing target reporting times, is a measure of outcomes that evaluates how well the laboratory meets patient and clinician needs. This monitor helps meet CAP Laboratory Accreditation Program Checklist statement GEN.20316: "The QM program includes monitoring key indicators of quality in the preanalytic, analytic, and postanalytic phases."

Objective

Monitor the frequency that stat test TAT intervals exceed institutional stat test TAT expectations.

Data Collection

Before beginning data collection, participants will establish a specimen receipt-to-report deadline for emergency department (ED) stat potassium tests. On six predetermined days per month, participants will monitor the TAT of up to 10 randomly selected ED stat potassium tests on each of three, eight-hour shifts (up to 180 tests per month) and track the number of ED stat potassium results reported later than the established reporting deadline. This monitor includes stat potassium tests ordered as part of a panel and excludes stat potassium levels that are requested on body fluids other than blood, as part of timed or protocol studies, or after the specimen arrives in the laboratory.

Performance Indicator

- Stat test TAT outlier rate (%)

Performance Breakdowns

- Breakdown of outliers by shift (%)
- Breakdown of outliers by day of week (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Critical Values Reporting QT10

Laboratories commonly refer to critical values as results requiring immediate notification to the physician or caregiver for necessary patient evaluation or treatment. Regulations from agencies and accreditors such as the CMS, The Joint Commission (National Patient Safety Goal NPSG.02.03.01), and the CAP Laboratory Accreditation Program (Checklist statement GEN.20316, COM.30000, COM.30100) mandate that laboratories develop and implement an alert system for critical values. Use this monitor to document compliance with your laboratory's alert plan.

Objective

Evaluate the documentation of successful critical values reporting in the general laboratory for inpatients and outpatients.

Data Collection

On a monthly basis, participants will evaluate 120 inpatient and 120 outpatient critical values. Data collection will include general chemistry, hematology, and coagulation analytes on the critical values list. Retrospectively, participants will record the total number of critical values monitored and the number with documentation of successful notification. In addition, participants will provide the number of critical values that were not communicated within three hours, the number of failed notifications due to laboratory oversight, and the number of successful notifications to licensed caregivers. This monitor will exclude critical values for cardiac markers, drugs of abuse, therapeutic drug levels, urinalysis, blood gases, point-of-care tests, and tests performed at reference laboratories.

Performance Indicators

- Total critical values reporting rate (%)
- Inpatient critical values reporting rate (%)
- Outpatient critical values reporting rate (%)
- Failed notification (< 3 hours) rate (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Troponin Turnaround Times QT15

Patients presenting to the emergency department (ED) with chest pain must be evaluated quickly. Rapid serum troponin measurement is an important part of ED practice that can provide decisive information for patient management. Reducing delays in troponin testing has been reported to result in shorter length of stay in the ED and more rapid initiation of anti-ischemic treatment. EDs and chest pain centers should, therefore, have effective procedures for ensuring optimal turnaround time (TAT) for troponin testing and a process for ongoing monitoring to ensure that performance meets expectations.

QT15 has multiple time intervals to help pinpoint process time challenges. Laboratories may use this monitor to help meet CAP Laboratory Accreditation Program Checklist statement GEN.20316 QM Indicators of Quality. The American College of Cardiology and the American Heart Association recommend troponin as the preferred diagnostic biomarker in their Acute Coronary Syndromes guideline.

Objectives

This study will assist participating laboratories to determine and monitor:

- The median TATs for processes from order time through result availability, with up to five time intervals within the total testing process
- The percent compliance for troponin results with their institution's established deadline

Data Collection

Six days per month, collect data from nine patients presenting to the ED with chest pain and tested for troponin level. Data includes time of troponin test order, specimen collection, laboratory receipt, and result availability. Participants are not required to provide data from each TAT component. Participants will select TAT metrics that they wish to monitor, with the option to monitor all metrics.

Participants will also complete a questionnaire about clinical and laboratory practices related to troponin testing.

Performance Indicators

Median TATs for the following time intervals:

- Test order to specimen collection
- Specimen collection to laboratory receipt
- Laboratory receipt to result availability
- Specimen collection to result availability
- Test order to result availability

Compliance (%) with institutional threshold for the following time intervals:

- Specimen collection to result availability
- Test order to result availability

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Corrected Results QT16

The CAP developed this monitor in recognition of the importance of timely detection and correction of erroneous laboratory results. Accuracy in laboratory results is critical to the effectiveness of a physician's plan of care for a patient.
An erroneous result can delay or alter patient treatment; therefore, detection of erroneous results should be a priority in every laboratory and should be monitored as a key quality indicator. Help measure your compliance with CLIA 493.1299, Postanalytic Systems Quality Assessment, and help meet CAP Laboratory Accreditation Program Checklist statements GEN.20316, 41310, 41312, and The Joint Commission standard 02.12.01, Elements of Performance 9 and 10, with this monitor.

Objective

Monitor the number of corrected test results within individual institutions and compare performance with that of all institutions and those institutions similar to yours.

Data Collection

On a monthly basis, participants will monitor the number of corrected test results and the total number of billable tests for that month. Include test results for all patients in all care settings with the following exclusions: anatomic pathology tests, narrative physician-interpreted tests (eg, bone marrow biopsies and peripheral smear reports), and point-of-care tests.

Performance Indicator

- Test result correction rate (per 10,000 billable tests)

Outpatient Order Entry Errors QT17

Order accuracy bears an obvious relationship to the quality of laboratory testing. When the laboratory fails to complete a requested test, it delays the diagnostic evaluation, consumes resources, causes patient inconvenience, and may prolong therapy. When the laboratory completes a test that was not requested, the cost of care increases, patients may be subjected to unnecessary phlebotomy, and laboratory efficiency declines. Use this monitor to help meet CAP Laboratory Accreditation Program Checklist statements GEN.20316, 40700, 40725, 40750 for test order and related information accuracy and meet The Joint Commission Standard DC.01.02.01: The laboratory performs testing based on written laboratory test orders.

Objective

Measure the incidence of incorrectly interpreted and entered outpatient physician test orders into the laboratory information system, compare performance across institutions, and track performance over time.

Data Collection

On six preselected weekdays per month, participants will compare eight outpatient requisitions or order sheets to the orders entered into the laboratory's information system to determine if any order entry errors occurred.

This monitor includes test order review from ambulatory outpatients seen in offices and clinics operated by your laboratory services, private physician offices, nursing homes, extended care facilities, and free-standing phlebotomy areas. Also included are send-out tests, chemistry, hematology, microbiology, immunology, toxicology, and urinalysis tests on outpatients. Order entry error categories include requesting physician errors, incorrect and extra test orders, missing test orders and diagnosis codes, test priority errors, and copy or fax result errors.

This monitor excludes tests performed in transfusion medicine or anatomic pathology and also excludes tests from the following patient care settings: inpatient, emergency department, ambulatory surgery, urgent care, chest pain center, 23-hour short-stay facility, employee health department, outpatient screening fair/promotion, and dialysis center.

Performance Indicators

- Overall outpatient order entry error rate (%)
- Order entry error rates by type (%)

Performance Breakdown

- Breakdown of error types (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Performance at a Glance.

The CAP's Performance Analytics Dashboard provides valuable insights into your laboratory's performance with a single comprehensive view of your CAP PT results and accreditation status.

Simplify analysis and reporting of PT performance data

- Quickly spot unacceptable results for follow up to mitigate risk of inaccurate patient test results
- Review three years of PT results to identify trends and early indicators of potential problems

Prepare for your next CAP accreditation inspection

- Manage risk and compliance by identifying areas of improvement based on past deficiencies
- Review PT performance data to ensure appropriate corrective action has been taken for each unacceptable result

Monitor performance of your laboratory or system from a single dashboard

- Benchmark laboratory performance
- Export PT performance from across individual laboratories or the system for quality review meetings

View your laboratory's Performance Analytics Dashboard by accessing e-LAB Solutions Suite (ELSS) from cap.org.

Learn more on cap.org.

4 Quality Cross Check

Test multiple instruments at one time—Quality Cross Check is not PT and not subject to CMS restrictions.

- Simplify biannual instrument comparability studies—receive customized reports that include peer group evaluations and instrument comparability statistics.
- Evaluate multiple instruments performing tests for high-sensitivity cardiac markers (HCRQ).

New Programs NEW

Discontinued Programs

Perform instrument comparability and stay in compliance

Quality Cross Check is a convenient solution to monitor instrument performance and assess comparability across multiple instruments in your laboratory and to identify potential issues before they affect patient results.

How It Works

- Receive three challenges in each of two mailings a year.
- Report up to three instruments for each challenge (and report up to 30 instruments for Quality Cross Check—Whole Blood Glucose).
- Receive a custom report package that includes peer group comparison and instrument comparability statistics for each reported analyte.

Stay in Compliance

In August 2015, the Centers for Medicare & Medicaid Services (CMS) reiterated that laboratories are not permitted to test proficiency testing (PT) samples on multiple instruments unless that is how the laboratory tests patient specimens.

The CMS interpretation was expanded beyond regulated analytes to include analytes not listed in Subpart I of the Clinical Laboratory Improvement Amendments regulations, including waived methods.

Quality Cross Check complements your existing CAP programs to monitor multiple instrument performance and is compliant with the CMS directive.

Monitoring Performance of Glucose Meters

Beginning in 2017, PT for waived whole blood glucose on glucose meters was no longer required for laboratories accredited by the CAP. Laboratories are required to perform alternative performance assessment.

In response to this change, the CAP introduced the Quality Cross Check—Whole Blood Glucose program (WBGQ). Participants in this program will enjoy the benefits of Quality Cross Check and have the ability to report up to 30 instruments for each challenge.

General Chemistry and Therapeutic Drug Monitoring

Quality Cross Check—Chemistry and Therapeutic Drug Monitoring CZQ

Analyte	Program Code	Challenges per Shipment
	CZQ	
See program CZ analytes on pages 56-58	▮	3

This program does not meet regulatory requirements for proficiency testing; see program CZ on pages 56-58. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 5.0-mL liquid serum specimens in duplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Quality Cross Check—B-Type Natriuretic Peptides BNPQ

Analyte	Program Code	Challenges per Shipment
	BNPQ	
BNP	▮	3
NT-proBNP	▮	3

This program does not meet regulatory requirements for proficiency testing; see program BNP or BNP5 on page 61. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 1.5-mL liquid specimens
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Quality Cross Check—Whole Blood Glucose WBGQ

Analyte	Program Code	Challenges per Shipment
	WBGQ	
Glucose	▮	3

The CAP Accreditation Programs require all accredited laboratories performing waived whole blood glucose testing using glucose meters to perform alternative performance assessment. This program can be used to meet alternative performance assessment requirements.

Program Information

- Three 2.0-mL whole blood specimens
- Report up to 30 instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Quality Cross Check—Body Fluid Chemistry FLDQ

Analyte	Program Code	Challenges per Shipment
	FLDQ	
Albumin	▮	3
Amylase	▮	3
CA19-9	▮	1
Carcinoembryonic antigen (CEA)	▮	1
Cholesterol	▮	3
Creatinine	▮	3
Glucose	▮	3
Lactate	▮	3
Lactate dehydrogenase (LD)	▮	3
pH	▮	3
Protein, total	▮	3
Triglycerides	▮	3
Urea nitrogen	▮	1

This program does not meet regulatory requirements for proficiency testing; see program FLD on page 74. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 3.0-mL simulated liquid body fluid specimens in duplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Quality Cross Check—Hemoglobin A_{1c} GHQ

Analyte	Program Code	Challenges per Shipment
	GHQ	
Hemoglobin A_{1c}	▮	3

This program does not meet regulatory requirements for proficiency testing; see program GH5 on page 65. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 0.8-mL previously frozen liquid specimens in triplicate
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—Cardiac Markers CRTQ

Analyte	Program Code	Challenges per Shipment
	CRTQ	
CK-MB, immunochemical	▮	3
Myoglobin	▮	3
Troponin I	▮	3

This program does not meet regulatory requirements for proficiency testing; see program CRT on page 62. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 2.0-mL liquid serum specimens
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—High-Sensitivity Cardiac Markers HCRQ

NEW

Analyte/Procedure	Program Code	Challenges per Shipment
	HCRQ	
CK-MB, immunochemical	▮	3
Myoglobin	▮	3
High-sensitivity troponin I	▮	3
High-sensitivity troponin T	▮	3

This program does not meet regulatory requirements for proficiency testing; see program HCRT on page 62. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 2.0-mL liquid specimens
- Report up to three instruments.
- Two shipments per year

Endocrinology

Quality Cross Check—Parathyroid Hormone PTHQ

Analyte	Program Code	Challenges per Shipment
	PTHQ	
Parathyroid hormone (PTH)	▮	3

This program does not meet regulatory requirements for proficiency testing; see program ING on page 88. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 5.0-mL lyophilized serum specimens in duplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Blood Gas, Critical Care, and Oximetry

Quality Cross Check—Blood Oximetry SOQ

Analyte	Program Code	Challenges per Shipment
	SOQ	
Carboxyhemoglobin	▮	3
Hematocrit, estimated	▮	3
Hemoglobin, total	▮	3
Methemoglobin	▮	3
Oxyhemoglobin	▮	3

This program does not meet regulatory requirements for proficiency testing; see program SO on page 97. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 1.2-mL liquid specimens in triplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Quality Cross Check—Critical Care Blood Gas AQQ, AQHQ, AQSQ

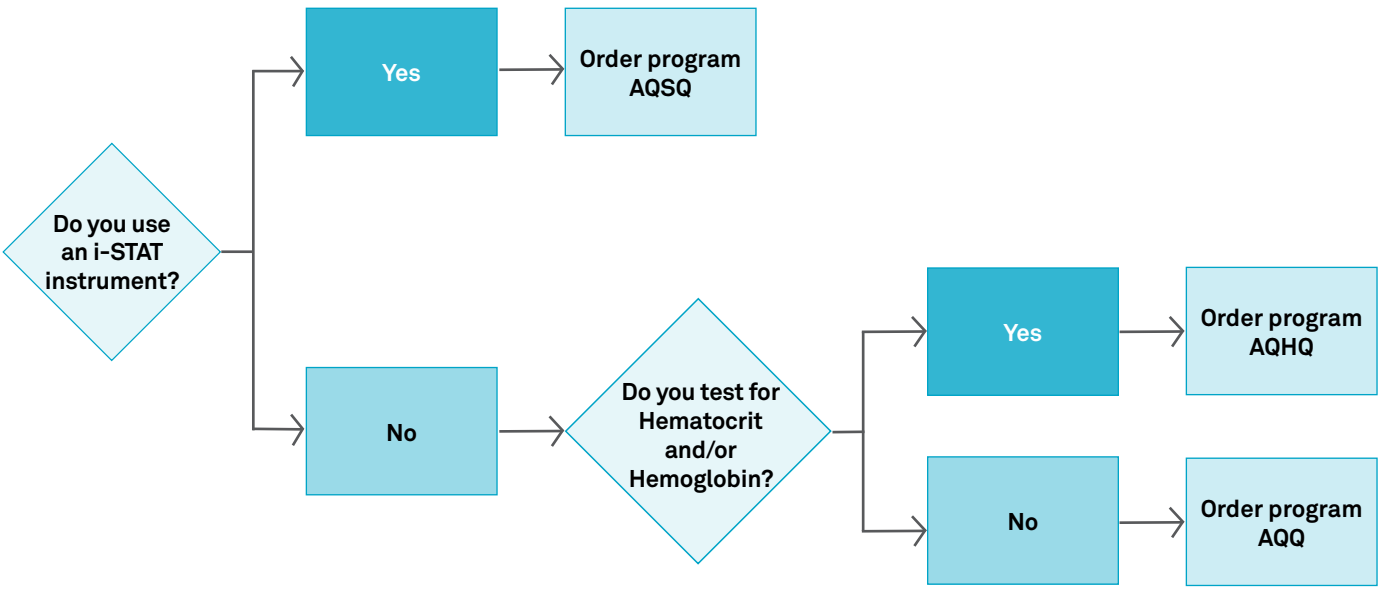
Analyte	Program Code			Challenges per Shipment
	AQQ	AQHQ NEW	AQSQ NEW	
Calcium, ionized	▮	▮	▮	3
Chloride	▮	▮	▮	3
Hematocrit		▮	▮	3
Hemoglobin, estimated		▮	▮	3
Lactate	▮	▮	▮	3
Magnesium, ionized	▮	▮		3
pCO_2	▮	▮	▮	3
pH	▮	▮	▮	3
pO_2	▮	▮	▮	3
Potassium	▮	▮	▮	3
Sodium	▮	▮	▮	3
tCO_2 (measured)			▮	3
Creatinine	▮	▮	▮	3
Glucose	▮	▮	▮	3
Urea nitrogen (BUN)	▮	▮	▮	3

Program Information

- AQQ - Three 2.5-mL specimens in triplicate; appropriate for all methods except i-STAT®
- AQHQ - Three 2.5-mL specimens in triplicate and three 2.5-mL specimens for hematocrit testing in triplicate; appropriate for all methods except i-STAT
- AQSQ - Three 1.7-mL specimens in triplicate for i-STAT methods only
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Additional Information

- It is not appropriate to report hemoglobin and hematocrit results by co-oximetry in these programs.
- These programs do no meet regulatory requirements for proficiency testing; see programs AQ, AQH, and AQIS on pages 94-95. For additional information about the Quality Cross Check program, see page 38.



Hematology and Clinical Microscopy

Quality Cross Check—Hematology FH3Q, FH4Q, FH9Q, FH13Q

Analyte/Procedure	Program Code				Challenges per Shipment
	FH3Q	FH4Q	FH9Q	FH13Q	
Hematocrit	▮	▮	▮	▮	3
Hemoglobin	▮	▮	▮	▮	3
Immature granulocyte parameter			▮		3
Immature platelet function (IPF)%			▮		3
Large unstained cells (LUC)		▮			3
MCV, MCH, MCHC	▮	▮	▮	▮	3
MPV	▮	▮	▮	▮	3
Nucleated red blood cell count (nRBC)	▮		▮	▮	3
Platelet count	▮	▮	▮	▮	3
RDW	▮	▮	▮	▮	3
Red blood cell count	▮	▮	▮	▮	3
WBC differential	▮	▮	▮	▮	3
White blood cell count	▮	▮	▮	▮	3

These programs do not meet regulatory requirements for proficiency testing; see the FH Series on page 140. For additional information about the Quality Cross Check program, see page 38.

Program Information

- FH3Q, FH4Q, FH9Q, FH13Q - Three 2.5-mL whole blood specimens in vials with pierceable caps
- Report up to three instruments.
- For method compatibility, see instrument matrix on page 141.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Quality Cross Check—Reticulocyte RTQ, RT3Q, RT4Q

Instrument/Method	Program Code			Challenges per Shipment
	RTQ	RT3Q	RT4Q	
Abbott Alinity hq, Abbott Cell-Dyn 4000, Sapphire, Siemens ADVIA 120/2120, and all other automated and manual methods	▮			3
Coulter Gen-S™, HmX, LH 500, LH 700 series, MAXM, STKS, UniCel DxH series		▮		3
Sysmex XE-2100, XE-2100C, XE-2100D, XE-2100DC, XE-2100L, XE-5000, XN-L series, XN-series (includes RL App), XT-2000i, XT-4000i			▮	3

These programs do not meet regulatory requirements for proficiency testing; see the RT Series on page 146. For additional information about the Quality Cross Check program, see page 38.

Program Information

- RTQ - Three 1.0-mL stabilized red blood cell specimens
- RT3Q - Three 3.0-mL stabilized red blood cell specimens
- RT4Q - Three 2.0-mL stabilized red blood cell specimens
- Includes percentage and absolute result reporting
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—Urinalysis CMQ

Analyte	Program Code	Challenges per Shipment
	CMQ	
Bilirubin	▮	3
Blood or hemoglobin	▮	3
Glucose	▮	3
hCG urine, qualitative	▮	3
Ketones	▮	3
Leukocyte esterase	▮	3
Nitrite	▮	3
Osmolality	▮	3
pH	▮	3
Protein, qualitative	▮	3
Reducing substances	▮	3
Specific gravity	▮	3
Urobilinogen	▮	3

This program does not meet regulatory requirements for proficiency testing; see programs CMP and CMP1 on page 151. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 10.0-mL liquid urine specimens for use with all instruments
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—Occult Blood OCBQ

Analyte	Program Code	Challenges per Shipment
	OCBQ	
Occult blood	▮	3

This program does not meet regulatory requirements for proficiency testing; see program OCB on page 158. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 2.0-mL simulated fecal specimens
- Report up to three instruments.
- Two shipments per year

Coagulation

Quality Cross Check—Coagulation CGLQ

Analyte	Program Code	Challenges per Shipment
	CGLQ	
Activated partial thromboplastin time	▮	3
Fibrinogen	▮	3
Prothrombin time	▮	3
D-dimer	▮	2
Fibrin(ogen) degradation products, plasma	▮	1
Fibrin(ogen) degradation products, serum	▮	1

This program does not meet regulatory requirements for proficiency testing; see program CGL on page 166. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 1.0-mL lyophilized plasma specimens in triplicate, two 1.0-mL lyophilized plasma specimens, and one 2.0-mL serum specimen
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—Activated Clotting Time Series CTQ, CT1Q, CT2Q, CT3Q, CT5Q

Instrument/Cartridge	Program Code					Challenges per Shipment
	CTQ	CT1Q	CT2Q	CT3Q	CT5Q	
Helena Actalyke C-ACT®	▮					3
Helena Actalyke MAX-ACT	▮					
IL GEM Hemochron 100/ACT+				▮		
IL GEM Hemochron 100/ACT-LR			▮			
IL Hemochron® CA510/FTCA510	▮					3
IL Hemochron FTK-ACT	▮					3
IL Hemochron P214/P215	▮					3
IL Hemochron Signature Elite/ Hemochron Jr./ACT+				▮		3
IL Hemochron Signature Elite/ Hemochron Jr./ACT-LR			▮			3
i-STAT Celite® and Kaolin ACT					▮	3
Medtronic Hemotec ACT/ACTII/ACT Plus® HR-ACT		▮				3
Medtronic Hemotec ACT/ACTII/ACT Plus LR-ACT		▮				3
Medtronic Hemotec ACT/ACTII/ACT Plus R-ACT		▮				3
Medtronic Hepcon HMS Plus		▮				3

These programs do not meet regulatory requirements for proficiency testing; see programs CT-CT3 and CT5 on page 169. For additional information about the Quality Cross Check program, see page 38.

Program Information

- CTQ - Three 3.0-mL lyophilized whole blood specimens in triplicate with corresponding diluents
- CT1Q - Three 1.7-mL lyophilized whole blood specimens in triplicate with corresponding diluents
- CT2Q - Three 0.5-mL lyophilized whole blood/ diluent ampules in triplicate
- CT3Q - Three 0.5-mL lyophilized whole blood/ diluent ampules in triplicate
- CT5Q - Three 1.7-mL lyophilized whole blood specimens in triplicate with corresponding diluents
- Report up to three instruments.
- Two shipments per year

Microbiology

Quality Cross Check—SARS-CoV-2 Molecular COV2Q

Analyte	Program Code	Challenges per Shipment
	COV2Q	
SARS-CoV-2	▮	3

This program does not meet regulatory requirements for proficiency testing; see program COV2 on page 202. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 3.2-mL non-infectious liquid specimens that contain the whole SARS-CoV-2 genome
- Designed for molecular techniques
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—SARS-CoV-2 Antigen COVAQ

Analyte	Program Code	Challenges per Shipment
	COVAQ	
SARS-CoV-2 antigen	▮	3

This program does not meet regulatory requirements for proficiency testing; see program COVAG on page 203. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 0.5-mL simulated respiratory specimens in triplicate
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—Nucleic Acid Amplification, Respiratory Limited ID3Q

Analyte	Program Code	Challenges per Shipment
	ID3Q	
Influenza A virus	▮	3
Influenza B virus	▮	3
Respiratory syncytial virus (RSV)	▮	3
SARS-CoV-2	▮	3

This program does not meet regulatory requirements for proficiency testing; see program ID3 on page 204. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 1.0-mL liquid specimens
- Designed for molecular multiplex panel users
- Report up to three instruments.
- Two shipments per year

Immunology

Quality Cross Check—SARS-CoV-2 Serology COVSQ

Analyte	Program Code	Challenges per Shipment
	COVSQ	
SARS-CoV-2 antibodies (Total, IgG, IgM)	▮	3

This program does not meet regulatory requirements for proficiency testing; see program COVS on page 222. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 1.0-mL serum specimens
- Report up to three instruments.
- Two shipments per year

Transfusion Medicine

Quality Cross Check—Transfusion Medicine JATQ		
Procedure	**Program Code**	**Challenges per Shipment**
	JATQ	
ABO grouping	▮	3
Antibody detection	▮	3
Rh typing	▮	3

This program does not meet regulatory requirements for proficiency testing; see program JAT on page 233. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 6.0-mL 13% -17% whole blood specimens
- May be used with automated and manual procedures
- Two shipments per year

5 Point-of-Care Programs

Keep your point-of-care (POC) instruments and staff operating at peak performance.

- Improve waived test results with POC Competency Challenges that evaluate instrument and method performance, troubleshoot issues, assess staff competency, and provide training information.
- Gain insights with the Point-of-Care Testing Toolkit, an ebook resource for all members of the team.

Point-of-Care Programs

POC Competency Challenges help POC coordinators streamline operator education (initial training and ongoing competency). These programs include standardized specimens that can be used not only to train operators and assess competency, but also to evaluate/troubleshoot instrument and method performance for waived and non-waived tests.

Expected results will be provided. These programs are not proficiency testing programs and participants will not return results to the CAP.

POC Competency Challenges have limited availability and stability.

POC Competency Challenges POC1, POC2, POC3, POC4

Program Name	Program Code				Challenges per Shipment
	POC1	POC2	POC3	POC4	
hCG Competency	▮				10
Glucose Competency		▮			10
Urine Dipstick Competency			▮		10
Strep Screen Competency				▮	10

Program Information

- POC1 - One positive 10.0-mL liquid urine specimen
- POC2 - One abnormal 2.0-mL whole blood specimen
- POC3 - One abnormal 10.0-mL liquid urine specimen
- POC4 - One 1.0-mL positive liquid specimen
- Each program provides material to test up to 10 staff.

POC Competency Challenges POC6, POC7, POC8, POC9

Program Name	Program Code				Challenges per Shipment
	POC6	POC7	POC8	POC9	
PT/INR, Roche CoaguChek Pro II, XS Plus, and XS Pro Competency	▮				10
Waived Chemistry, Glucose, and Hemoglobin Competency		▮			10
Influenza A/B Antigen Detection Competency			▮		10
Fecal Occult Blood Competency				▮	10

Program Information

- POC6 - One abnormal 0.3-mL lyophilized plasma specimen (five vials) and five corresponding diluents
- POC7 - One abnormal 2.5-mL whole blood specimen compatible with the HemoCue® B, HemoCue 201, and Stanbio HemoPoint® H2 instruments
- POC8 - One 1.5-mL positive liquid specimen for influenza A; one 1.5-mL positive liquid specimen for influenza B
- POC9 - One positive 2.0-mL fecal specimen
- Each program provides material to test up to 10 staff.

POC Competency Challenges POC10, POC11, POC12

Program Name	Program Code			Challenges per Shipment
	POC10	POC11	POC12	
Blood Gases Competency	▮			10
Blood Gases, i-STAT® Competency		▮		10
Point-of-Care Cardiac Markers Competency			▮	10

Program Information

- POC10 - One abnormal 2.5-mL aqueous blood gas specimen (10 vials) and one 2.5-mL hematocrit/hemoglobin specimen (10 vials)
- POC11 - One abnormal 2.5-mL aqueous specimen (10 vials) for blood gas and hematocrit/hemoglobin testing
- POC12 - One 1.5-mL plasma specimen (two vials); compatible with plasma-based tests, such as Alere Triage® and i-STAT instruments
- Each program provides material to test up to 10 staff.

Stay current with new advances in clinical pathology with CPIP

The Clinical Pathology Improvement Program (CPIP) provides peer-reviewed, interactive, case-based learning activities that cover a diverse portfolio of real-life clinical scenarios. Every month, a new online module with images and clinical details is released. As the case is solved in real time, new information is shared. Grow your skills with a full year of CPIP and earn up to 15 CME credits.

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POC Competency Challenges POC14, POC15, POC16

Program Name	Program Code			Challenges per Shipment
	POC14	POC15	POC16	
Medtronic ACT/ACT Plus®, i-STAT Competency	▮			5
Hemochron® Jr., IL GEM PCL ACT-LR Competency		▮		5
Hemochron Jr., Signature, IL GEM PCL ACT Competency			▮	5

Program Information

- POC14 - Five abnormal 1.7-mL lyophilized whole blood specimens with five corresponding diluents and one calcium chloride diluent vial; compatible with Medtronic Hemotec ACT/ACTII/ACT Plus, Medtronic Hepcon HMS/HMS Plus, and i-STAT Celine and Kaolin ACT
- POC15 - Five abnormal 0.5-mL lyophilized whole blood/diluent ampules; compatible with IL GEM PCL Plus ACT-LR and ITC Hemochron Jr., Signature ACT-LR
- POC16 - Five abnormal 0.5-mL lyophilized whole blood/diluent ampules; compatible with IL GEM PCL Plus ACT and ITC Hemochron Jr., Signature ACT+
- Each program provides material to test up to five staff.

6 General Chemistry and Therapeutic Drug Monitoring

When you transmit quantitative PT results directly to the CAP, less equals more.

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General Chemistry and Therapeutic Drug Monitoring

New Programs NEW

Discontinued Programs

Plasma Cardiac Markers, International (PCARI)

General Chemistry and Therapeutic Drug Monitoring

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

General Chemistry and Therapeutic Drugs C1, C3/C3X, C4, CZ/CZX/CZ2X, Z

Analyte	Program Code					Challenges per Shipment
	C1	C3/C3X	C4	CZ/CZX/ CZ2X	Z	
Alanine aminotransferase (ALT/SGPT)	■	■		■		5
Albumin	■	■		■		5
Alkaline phosphatase	■	■		■		5
Amylase	■	■		■		5
Aspartate aminotransferase (AST/SGOT)	■	■		■		5
Bilirubin, direct	■	■	■	■		5
Bilirubin, total*	■	■	■	■		5
Calcium	■	■	■	■		5
Chloride	■	■	■	■		5
Cholesterol, total	■	■	■	■		5
Cortisol	■	■		■		5
Creatine kinase (CK)	■	■		■		5
Creatinine	■	■	■	■		5
Glucose	■	■	■	■		5
HDL cholesterol	■	■	■	■		5
Human chorionic gonadotropin (hCG), quantitative	■	■	■	■		5
Iron	■	■		■		5
Lactate dehydrogenase (LD)	■	■		■		5
LDL cholesterol, measured	■	■	■	■		5
Lipoprotein (a)	■	■		■		5
Magnesium	■	■		■		5
Pancreatic amylase	■	■		■		5
Potassium	■	■	■	■		5
Protein, total	■	■		■		5
Sodium	■	■	■	■		5
Triiodothyronine (T3), free	■	■		■		5
Triiodothyronine (T3), total	■	■		■		5
T3, uptake and related tests	■	■		■		5

Continued on the next page

*General Chemistry and Therapeutic Drugs programs do not fulfill the neonatal bilirubin proficiency testing requirements for the CAP Accreditation Programs. See programs NB, NB2, on page 67.

Program Information

- C1, C3, C4, CZ, Z - Five 5.0-mL liquid serum specimens
- C3X, CZX - Five 5.0-mL liquid serum specimens in duplicate
- CZ2X - Five 5.0-mL liquid serum specimens in triplicate
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year
- For multiple instrument reporting options, see the Quality Cross Check program, CZQ, on page 58.

CE credit

General Chemistry and Therapeutic Drugs
C1, C3/C3X, C4, CZ/CZX/CZ2X, Z continued

Analyte	Program Code					Challenges per Shipment
	C1	C3/C3X	C4	CZ/CZX/ CZ2X	Z	
Thyroxine (T4), free	▮	▮		▮		5
Thyroxine (T4), total	▮	▮		▮		5
Thyroid-stimulating hormone (TSH)	▮	▮		▮		5
Triglycerides	▮	▮	▮	▮		5
Urea nitrogen (BUN)	▮	▮	▮	▮		5
Uric acid	▮	▮	▮	▮		5
Acid phosphatase		▮		▮		5
Ammonia		▮		▮		5
Apolipoprotein A1		▮		▮		5
Apolipoprotein B		▮		▮		5
Calcium, ionized		▮		▮		5
Carbon dioxide (CO_2)	▮	▮	▮	▮		5
Ferritin		▮		▮		5
Gamma glutamyl transferase (GGT)	▮	▮		▮		5
Iron binding capacity, total (measured)		▮		▮		5
Iron binding capacity, unsaturated (measured)		▮		▮		5
Lactate		▮		▮		5
Lipase		▮		▮		5
Osmolality		▮		▮		5
Phosphorus	▮	▮		▮		5
Prealbumin		▮		▮		5
Transferrin		▮		▮		5
Lithium	▮	▮		▮	▮	5
Acetaminophen				▮	▮	5
Amikacin				▮	▮	5
Caffeine				▮	▮	5
Carbamazepine				▮	▮	5
Carbamazepine, free				▮	▮	5
Digoxin				▮	▮	5
Digoxin, free				▮	▮	5
Disopyramide				▮	▮	5

Continued on the next page

Program Information

- C1, C3, C4, CZ, Z - Five 5.0-mL liquid serum specimens
- C3X, CZX - Five 5.0-mL liquid serum specimens in duplicate
- CZ2X - Five 5.0-mL liquid serum specimens in triplicate
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year
- For multiple instrument reporting options, see the Quality Cross Check program, CZQ, on page 58.

CE credit

General Chemistry and Therapeutic Drugs C1, C3/C3X, C4, CZ/CZX/CZ2X, Z continued

Analyte	Program Code					Challenges per Shipment
	C1	C3/C3X	C4	CZ/CZX/ CZ2X	Z	
Ethosuximide				▮	▮	5
Gentamicin				▮	▮	5
Lidocaine				▮	▮	5
Methotrexate				▮	▮	5
N-acetylprocainamide (NAPA)				▮	▮	5
Phenobarbital				▮	▮	5
Phenytoin				▮	▮	5
Phenytoin, free				▮	▮	5
Primidone				▮	▮	5
Procainamide				▮	▮	5
Quinidine				▮	▮	5
Salicylate				▮	▮	5
Theophylline				▮	▮	5
Tobramycin				▮	▮	5
Valproic acid				▮	▮	5
Valproic acid, free				▮	▮	5
Vancomycin				▮	▮	5

Program Information

- C1, C3, C4, CZ, Z - Five 5.0-mL liquid serum specimens
- C3X, CZX - Five 5.0-mL liquid serum specimens in duplicate
- CZ2X - Five 5.0-mL liquid serum specimens in triplicate
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year
- For multiple instrument reporting options, see the Quality Cross Check program, CZQ, below.

CE credit

Quality Cross Check—Chemistry and Therapeutic Drug Monitoring CZQ

Analyte	Program Code	Challenges per Shipment
	CZQ	
See program CZ analytes on pages 56-58	▮	3

This program does not meet regulatory requirements for proficiency testing; see program CZ on pages 56-58. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- Three 5.0-mL liquid serum specimens in duplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Accuracy-Based Lipids ABL

Analyte	Program Code	Challenges per Shipment
	ABL	
Apolipoprotein A1	▮	3
Apolipoprotein B	▮	3
Cholesterol*	▮	3
HDL cholesterol*	▮	3
Non-HDL cholesterol	▮	3
LDL cholesterol	▮	3
Lipoprotein(a)	▮	3
Triglycerides*	▮	3

*This analyte will be evaluated against the reference method.

Program Information

- Three 1.0-mL human serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Harmonized Thyroid ABTH

Analyte	Program Code	Challenges per Shipment
	ABTH	
Triiodothyronine (T3), free	▮	3
Triiodothyronine (T3), total	▮	3
Thyroxine (T4), free	▮	3
Thyroxine (T4), total	▮	3
Thyroid-stimulating hormone (TSH)	▮	3

Additional Information

- Analytes will be evaluated using harmonization.
- Specimens are collected by a modified application of Clinical and Laboratory Standards Institute Guideline CLSI C37-A, *Preparation and Validation of Commutable Frozen Human Serum Pools as Secondary Reference Materials for Cholesterol Measurement Procedures; Approved Guideline.*

Program Information

- Three 1.0-mL frozen human serum specimens
- Two shipments per year

CAP/AACC Immunosuppressive Drugs CS

Analyte	Program Code	Challenges per Shipment
	CS	
Cyclosporine	▮	3
Sirolimus (rapamycin)	▮	3
Tacrolimus	▮	3

Program Information

- Three 5.0-mL whole blood specimens
- For laboratories monitoring cyclosporine, sirolimus, and tacrolimus in transplant patients
- Two shipments per year

AACC

Antifungal Drugs Monitoring AFD

Procedure	Program Code	Challenges per Shipment
	AFD	
Fluconazole	▮	3
Itraconazole	▮	3
Posaconazole	▮	3
Voriconazole	▮	3

Program Information
- Three 2.0-mL serum specimens
- For laboratories performing quantitative analysis of antifungal agents
- Two shipments per year

Everolimus EV

Analyte	Program Code	Challenges per Shipment
	EV	
Everolimus	▮	3

Program Information
- Three 4.0-mL whole blood specimens
- Two shipments per year

Mycophenolic Acid MPA

Analyte	Program Code	Challenges per Shipment
	MPA	
Mycophenolic acid	▮	3

Program Information
- Three 5.0-mL lyophilized serum specimens
- Two shipments per year

Therapeutic Drug Monitoring—Extended ZE

Analyte	Program Code	Challenges per Shipment
	ZE	
Clozapine	▮	3
Gabapentin	▮	3
Lacosamide	▮	3
Lamotrigine	▮	3
Levetiracetam	▮	3
Oxcarbazepine	▮	3
Oxcarbazepine metabolite	▮	3
Pregabalin	▮	3
Rufinamide	▮	3
Teriflunomide	▮	3
Topiramate	▮	3
Zonisamide	▮	3

Program Information
- Three 5.0-mL serum specimens
- Two shipments per year

Therapeutic Drug Monitoring—Special ZT

Analyte	Program Code	Challenges per Shipment
	ZT	
Amitriptyline	▮	3
Desipramine	▮	3
Imipramine	▮	3
Nortriptyline	▮	3
Tricyclics, total (qualitative/ quantitative)	▮	3

Program Information

- Three 5.0-mL lyophilized serum specimens
- Two shipments per year

B-Type Natriuretic Peptides BNP, BNP5

Analyte	Challenges per Shipment	
	Program Code	
	BNP	BNP5
BNP	2	5
NT-proBNP	2	5

Program Information

- BNP - Two 1.0-mL liquid plasma specimens; two shipments per year
- BNP5 - Five 1.0-mL liquid plasma specimens; three shipments per year
- Conventional and International System of Units (SI) reporting offered

Additional Information

- The CAP Laboratory Accreditation Program requires all accredited laboratories performing non-waived testing for BNP and NT-proBNP to complete 15 proficiency testing challenges per year.
- For i-STAT®, Quidel Triage, and Pathfast, use Point-of-Care Cardiac Markers programs PCARM or PCARMX.
- For second instrument reporting options, see the Quality Cross Check program, BNPQ, below.

Quality Cross Check—B-Type Natriuretic Peptides BNPQ

Analyte	Program Code	Challenges per Shipment
	BNPQ	
BNP	▮	3
NT-proBNP	▮	3

Program Information

- Three 1.5-mL liquid specimens
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

This program does not meet regulatory requirements for proficiency testing; see program BNP or BNP5, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Cardiac Markers CRT, CRTI, HCRT, HCRTI

Analyte	Program Code				Challenges per Shipment
	CRT	CRTI	HCRT	HCRTI	
CK-MB, immunochemical	▮	▮	▮	▮	5
CK isoenzymes (CK-BB, **CK-MB**, CK-MM), electrophoretic		▮		▮	5
LD1, LD2, LD3, LD4, LD5, electrophoretic		▮		▮	5
LD1/LD2 ratio calculation and interpretation		▮		▮	5
Myoglobin	▮	▮	▮	▮	2
Troponin I	▮	▮			5
High-sensitivity troponin I			▮	▮	5
High-sensitivity troponin T			▮	▮	5

Program Information

- CRT - Five 2.0-mL liquid specimens
- CRTI - Ten 2.0-mL liquid specimens
- HCRT - Five 2.0-mL liquid specimens
- HCRTI - Ten 2.0-mL liquid specimens
- Three shipments per year

Quality Cross Check—High-Sensitivity Cardiac Markers HCRQ

NEW

Analyte/Procedure	Program Code	Challenges per Shipment
	HCRQ	
CK-MB, immunochemical	▮	3
Myoglobin	▮	3
High-sensitivity troponin I	▮	3
High-sensitivity troponin T	▮	3

This program does not meet regulatory requirements for proficiency testing; see program HCRT, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- Three 2.0-mL liquid specimens
- Report up to three instruments.
- Two shipments per year

Quality Cross Check—Cardiac Markers CRTQ

Analyte	Program Code	Challenges per Shipment
	CRTQ	
CK-MB, immunochemical	▮	3
Myoglobin	▮	3
Troponin I	▮	3

This program does not meet regulatory requirements for proficiency testing; see program CRT on page 62. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- Three 2.0-mL liquid serum specimens
- Report up to three instruments.
- Two shipments per year

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Up to 70% of laboratory errors occur prior to sample analysis and testing. Ensure everyone on your team is equipped to procure a quality blood specimen with this modern update to the classic reference guide.

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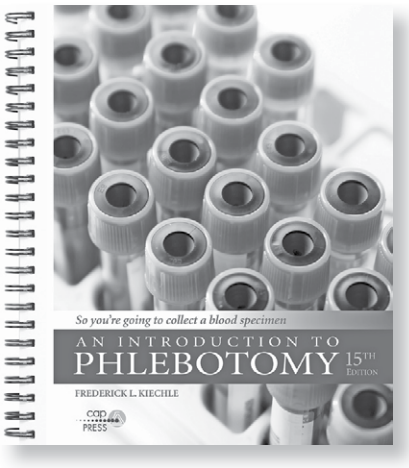

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Troponin Turnaround Times QT15

Patients presenting to the emergency department (ED) with chest pain must be evaluated quickly. Rapid serum troponin measurement is an important part of ED practice that can provide decisive information for patient management. Reducing delays in troponin testing has been reported to result in shorter length of stay in the ED and more rapid initiation of anti-ischemic treatment. EDs and chest pain centers should, therefore, have effective procedures for ensuring optimal turnaround time (TAT) for troponin testing and a process for ongoing monitoring to ensure that performance meets expectations.

QT15 has multiple time intervals to help pinpoint process time challenges. Laboratories may use this monitor to help meet CAP Laboratory Accreditation Program Checklist statement GEN.20316 QM Indicators of Quality. The American College of Cardiology and the American Heart Association recommend troponin as the preferred diagnostic biomarker in their Acute Coronary Syndromes guideline.

Objectives

This study will assist participating laboratories to determine and monitor:

- The median TATs for processes from order time through result availability, with up to five time intervals within the total testing process
- The percent compliance for troponin results with their institution's established deadline

Data Collection

Six days per month, collect data from nine patients presenting to the ED with chest pain and tested for troponin level. Data includes time of troponin test order, specimen collection, laboratory receipt, and result availability. Participants are not required to provide data from each TAT component. Participants will select TAT metrics that they wish to monitor, with the option to monitor all metrics.

Participants will also complete a questionnaire about clinical and laboratory practices related to troponin testing.

Performance Indicators

Median TATs for the following time intervals:

- Test order to specimen collection
- Specimen collection to laboratory receipt
- Laboratory receipt to result availability
- Specimen collection to result availability
- Test order to result availability

Compliance (%) with insitutional threshold for the following time intervals:

- Specimen collection to result availability
- Test order to result availability

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Hemoglobin A_{1c} GH2, GH5

Analyte	Challenges per Shipment	
	Program Code	
	GH2	GH5
Hemoglobin A_{1c}	3	5

Additional Information

- These programs will be evaluated against the National Glycohemoglobin Standardization Program (NGSP) reference method.
- The CAP Laboratory Accreditation Program requires all accredited laboratories performing non-waived testing for Hemoglobin A_{1c} to complete 15 proficiency testing challenges per year.
- For multiple instrument reporting options, see the Quality Cross Check program, GHQ, below.
- These programs have limited stability. Laboratories outside the US or Canada should consider purchase of GH5I, which has longer stability.

Program Information

- GH2 - Three 0.8-mL liquid human whole blood specimens; two shipments per year
- GH5 - Five 0.8-mL liquid human whole blood specimens; three shipments per year

Quality Cross Check—Hemoglobin A_{1c} GHQ

Analyte	Program Code	Challenges per Shipment
	GHQ	
Hemoglobin A_{1c}	▮	3

This program does not meet regulatory requirements for proficiency testing; see program GH5, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- Three 0.8-mL previously frozen liquid specimens in triplicate
- Report up to three instruments.
- Two shipments per year

Hemoglobin A_{1c} GH5I

Analyte	Program Code	Challenges per Shipment
	GH5I	
Hemoglobin A_{1c}	▮	5

Additional Information

- This program meets the proficiency testing requirements for the CAP's Accreditation Programs.
- This program will not be evaluated against the National Glycohemoglobin Standardization Program (NGSP) reference method. See program GH5 to be evaluated against the NGSP reference method.

Program Information

- Five 0.5-mL lyophilized specimens with a 3.0-mL dropper-tipped vial of diluent
- Designed for laboratories outside the US that have experienced significant shipping and receiving issues and require longer specimen stability
- Three shipments per year

Glycated Serum Albumin GSA

Analyte	Program Code	Challenges per Shipment
	GSA	
Glycated serum albumin	▮	3

Program Information
- Three 1.0-mL liquid serum specimens
- Two shipments per year

High-Sensitivity C-Reactive Protein HSCRP

Analyte	Program Code	Challenges per Shipment
	HSCRP	
High-sensitivity C-reactive protein	▮	3

Program Information
- Three 0.5-mL liquid serum specimens
- Two shipments per year

Homocysteine HMS

Analyte	Program Code	Challenges per Shipment
	HMS	
Homocysteine	▮	3

Program Information
- Three 1.0-mL serum specimens
- Two shipments per year

Ketones KET

Analyte	Program Code	Challenges per Shipment
	KET	
Beta-hydroxybutyrate	▮	2
Total ketones	▮	2

Program Information
- Two 2.0-mL serum specimens
- For semi-quantitative methods using the nitroprusside reaction for total ketones testing
- Two shipments per year

Chemistry—Limited, Waived LCW

Analyte	Program Code	Challenges per Shipment
	LCW	
Cholesterol	▮	3
Glucose	▮	3
HDL cholesterol	▮	3
LDL cholesterol	▮	3
Triglycerides	▮	3

Program Information
- Three 3.0-mL liquid serum specimens
- For use with waived methods such as the Cholestech LDX® and Roche Accu-Chek® Instant Plus
- The glucose specimens are not appropriate for use on other whole blood glucose meters.
- Two shipments per year

Neonatal Bilirubin NB, NB2

Analyte	Challenges per Shipment	
	Program Code	
	NB	NB2
Bilirubin, direct	2	2
Bilirubin, total	5	2

One human-based serum specimen will offer the value assigned using the reference method procedure (*Clin Chem.* 1985;31:1779-1789).

Program Information

- NB - Five 1.0-mL human serum specimens; three shipments per year
- NB2 - Two 1.0-mL human serum specimens; must order in conjunction with a five-challenge total bilirubin proficiency testing program to meet regulatory requirements; two shipments per year
- Conventional and International System of Units (SI) reporting offered

Point-of-Care Cardiac Markers PCARM/PCARMX

Analyte	Program Code		Challenges per Shipment
	PCARM	PCARMX	
BNP	▮	▮	5
CK-MB	▮	▮	5
D-dimer	▮	▮	2
Myoglobin	▮	▮	2
NT-proBNP	▮	▮	5
Troponin I	▮	▮	5

Program Information

- PCARM - Five 1.5-mL liquid EDTA plasma specimens for point-of-care instruments such as Quidel Triage, Pathfast, and i-STAT
- PCARMX - All PCARM specimens in duplicate
- Three shipments per year

Whole Blood Chemistry Compatibility Matrix

Whole Blood Analyzer/Method	Analyte	Compatible Survey Programs	Page
HemoCue®	Glucose	HCC	68
Roche Reflotron®	Cholesterol	C1, C4	56-58
	Glucose		56-58
Cholestech LDX®	Total cholesterol	LCW	66
	HDL cholesterol		66
	Triglycerides		66
	Glucose		66
Whole blood cholesterol meters	Cholesterol	C1, C4, LCW	56-58, 66
Whole blood glucose meters	Glucose	HCC2, WBGQ	68-69
Nova StatSensor®/ StatSensor Xpress™	Creatinine	WBCR	69

Waived Combination HCC, HCC2

Analyte	Program Code		Challenges per Shipment
	HCC	HCC2	
Hematocrit		▮	2
Hemoglobin	▮	▮	2
Urinalysis/urine hCG		▮	2
Whole blood glucose	▮	▮	2 (HCC)/3 (HCC2)

Program Information

- HCC - Two 2.5-mL whole blood specimens; two shipments per year
- HCC2 - Total of four shipments per year

  Hematocrit, hemoglobin, and urinalysis/urine hCG testing - Two 3.0-mL whole blood specimens and two 10.0-mL urine specimens; two shipments per year: A and C

  Whole blood glucose testing - Three 2.0-mL whole blood specimens; two shipments per year: B and D
- Conventional and International System of Units (SI) reporting offered
- To verify instrument compatibility for glucose, refer to the instrument matrix above.

Whole Blood Creatinine WBCR

Analyte	Program Code	Challenges per Shipment
	WBCR	
Creatinine	▮	5

Program Information

- Five 4.0-mL whole blood specimens
- For use with the Nova StatSensor/StatSensor Xpress
- Three shipments per year

Quality Cross Check—Whole Blood Glucose WBGQ

Analyte	Program Code	Challenges per Shipment
	WBGQ	
Glucose	▮	3

Program Information

- Three 2.0-mL whole blood specimens
- Report up to 30 instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

CE credit

The CAP Accreditation Programs require all accredited laboratories performing waived whole blood glucose testing using glucose meters to perform alternative performance assessment. This program can be used to meet alternative performance assessment requirements.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:

- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Chemistry/TDM, Validated Material

Validated Material	Program Code	Corresponding Program	Pages
Chemistry/TDM	CZVM	CZ	56-58

Program Information

- Five 5.0-mL liquid serum specimens

Urine Chemistry

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Urine Chemistry—General U

Analyte	Program Code	Challenges per Shipment
	U	
Amylase	▮	3
Calcium	▮	3
Chloride	▮	3
Creatinine	▮	3
Glucose	▮	3
Magnesium	▮	3
Nitrogen, total	▮	3
Osmolality	▮	3
Phosphorus	▮	3
Potassium	▮	3
Protein, total	▮	3
Sodium	▮	3
Urea nitrogen	▮	3
Uric acid	▮	3
Urine albumin, quantitative	▮	3
Urine albumin:creatinine ratio	▮	3

Program Information

- Six 15.0-mL urine specimens
- One mailing per year will include an additional educational specimen for uric acid testing for a total of seven challenges per year.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Accuracy-Based Urine ABU

Analyte	Program Code	Challenges per Shipment
	ABU	
Calcium	▮	3
Creatinine	▮	3
Protein, total	▮	3
Urine albumin, quantitative	▮	3
Urine albumin: creatinine ratio	▮	3

Program Information

- Three 5.0-mL human urine specimens
- Two shipments per year

Kidney Stone Risk Assessment KSA

Analyte	Program Code	Challenges per Shipment
	KSA	
Citrate	▮	3
Cystine	▮	3
Oxalate	▮	3

Program Information
- Three 13.5-mL liquid urine specimens
- Two shipments per year

Urine Chemistry—Special N/NX

Analyte	Program Code	Challenges per Shipment
	N/NX	
3-methoxytyramines	▮	3
5-hydroxyindoleacetic acid	▮	3
17-hydroxycorticosteroids	▮	3
17-ketosteroids	▮	3
Aldosterone	▮	3
Coproporphyrins	▮	3
Cortisol, urinary free	▮	3
Dopamine	▮	3
Epinephrine	▮	3
Homovanillic acid	▮	3
Metanephrine	▮	3
Norepinephrine	▮	3
Normetanephrine	▮	3
Uroporphyrin	▮	3
Vanillylmandelic acid	▮	3

Program Information
- N - Six 10.0-mL lyophilized urine specimens and three 10.0-mL liquid urine specimens
- NX - All lyophilized program N specimens in duplicate and three 10.0-mL liquid urine specimens
- Two shipments per year

Myoglobin, Urine MYG

Analyte	Program Code	Challenges per Shipment
	MYG	
Myoglobin, urine, qualitative and quantitative	▮	2

Program Information
- Two 1.0-mL urine specimens
- Two shipments per year

Porphobilinogen, Urine UPBG		
Analyte	**Program Code**	**Challenges per Shipment**
	UPBG	
Porphobilinogen	▮	3

Program Information
- Three 5.0-mL urine specimens
- For use with qualitative and quantitative methods
- Two shipments per year

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:
- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Urine Chemistry—General, Validated Material

Validated Material	Program Code	Corresponding Program	Page
Urine Chemistry	UVM	U	70

Program Information
- Six 15.0-mL urine specimens
- One mailing per year will include an additional specimen for uric acid testing.

Urinalysis Benchtop Reference Guide

- Thirty-four different cell identifications, including common and rare cells
- Detailed descriptions for each cell morphology
- Eight tabbed sections for easy reference
- A durable and water-resistant format to withstand years of benchtop use—5” x 6½”

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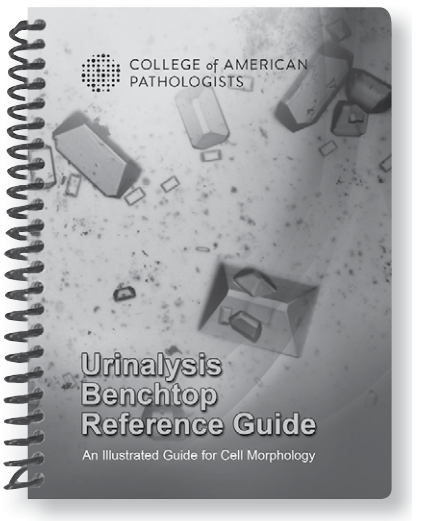

Item number: UABRG
Spiral bound; 38 pages; 34 images; 2014

Special Chemistry

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

1,5-Anhydroglucitol AG

Analyte	Program Code	Challenges per Shipment
	AG	
1,5-anhydroglucitol	▮	3

Program Information
- Three 1.0-mL liquid serum specimens
- Two shipments per year

Aldolase ADL

Analyte	Program Code	Challenges per Shipment
	ADL	
Aldolase	▮	2

Program Information
- Two 3.0-mL liquid serum specimens
- Two shipments per year

Angiotensin Converting Enzyme ACE

Analyte	Program Code	Challenges per Shipment
	ACE	
Angiotensin converting enzyme, quantitative	▮	2

Program Information
- Two 2.0-mL lyophilized serum specimens
- Two shipments per year

Body Fluid Chemistry FLD

Analyte	Program Code	Challenges per Shipment
	FLD	
Albumin	▮	3
Amylase	▮	3
CA19-9	▮	1
CEA	▮	1
Cholesterol	▮	3
Creatinine	▮	3
Glucose	▮	3
Lactate	▮	3
Lactate dehydrogenase (LD)	▮	3
pH	▮	3
Protein, total	▮	3
Triglycerides	▮	3
Urea nitrogen	▮	1

For multiple instrument reporting options, see the Quality Cross Check program, FLDQ, on page 75.

Program Information

- Three 3.0-mL simulated liquid body fluid specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Body Fluids Benchtop Reference Guide

- Thirty-six color images, including common and rare cells, crystals, and other cell inclusions
- Detailed descriptions of each cell including facts, cell morphology, and inclusions
- Nine tabbed sections for easy reference
  - Erythroid Series
  - Lymphoid Series
  - Myeloid Series
  - Mononuclear Phagocytic Series
  - Lining Cells
  - Miscellaneous Cells
  - Crystals
  - Microorganisms
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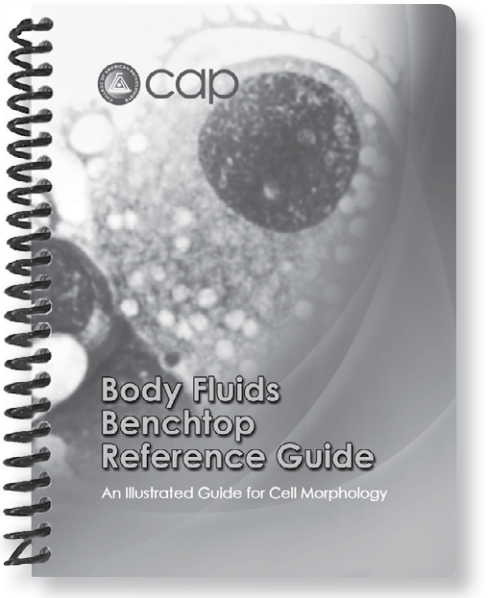


Item number: BFBRG
Spiral bound; 42 pages;
36 images; 2013

Quality Cross Check—Body Fluid Chemistry FLDQ

Analyte	Program Code	Challenges per Shipment
	FLDQ	
Albumin	▮	3
Amylase	▮	3
CA19-9	▮	1
Carcinoembryonic antigen (CEA)	▮	1
Cholesterol	▮	3
Creatinine	▮	3
Glucose	▮	3
Lactate	▮	3
Lactate dehydrogenase (LD)	▮	3
pH	▮	3
Protein, total	▮	3
Triglycerides	▮	3
Urea nitrogen	▮	1

This program does not meet regulatory requirements for proficiency testing; see program FLD on page 74. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- Three 3.0-mL simulated liquid body fluid specimens in duplicate
- Report up to three instruments
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Body Fluid Chemistry 2 FLD2

Analyte	Program Code	Challenges per Shipment
	FLD2	
Alkaline phosphatase	▮	3
Bilirubin	▮	3
Calcium	▮	3
Chloride	▮	3
Lipase	▮	3
Potassium	▮	3
Sodium	▮	3
Uric acid	▮	3

Program Information

- Three 3.0-mL liquid body fluid specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Cadmium CD

Analyte	Program Code	Challenges per Shipment
	CD	
Beta-2-microglobulin, urine	▮	3
Cadmium, urine	▮	3
Cadmium, whole blood	▮	3
Creatinine, urine	▮	3

This program meets the Occupational Safety and Health Administration (OSHA) guidelines for proficiency testing (OSHA standard-29 CFR 1910.1027AppF).

Program Information

- Three 6.0-mL whole blood specimens and three 12.0-mL urine specimens
- Conventional and International System of Units (SI) reporting offered
- Six shipments per year

Cerebrospinal Fluid Chemistry and Oligoclonal Bands M, OLI

Analyte	Program Code		Challenges per Shipment
	M	OLI	
Albumin, quantitative	▮	▮	3
Electrophoresis (albumin and gamma globulin)	▮	▮	3
Glucose	▮	▮	3
IgG, quantitative	▮	▮	3
Lactate	▮	▮	3
Lactate dehydrogenase (LD)	▮	▮	3
Protein, total	▮	▮	3
Oligoclonal bands		▮	3

Program Information

- M - Three 5.0-mL simulated liquid spinal fluid specimens
- OLI - Three 5.0-mL simulated liquid spinal fluid specimens and three 1.0-mL paired serum specimens; CSF IgG index and synthesis rate calculation challenges for each paired specimen and one online educational pattern interpretation each mailing
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Cystatin C CYS

Analyte	Program Code	Challenges per Shipment
	CYS	
Cystatin C	▮	2

Program Information

- Two 1.0-mL liquid serum specimens
- Two shipments per year

Fecal Calprotectin FCAL

Analyte	Program Code	Challenges per Shipment
	FCAL	
Fecal calprotectin	▮	3

Program Information
- Three 1.0-g simulated fecal specimens
- Two shipments per year

Fecal Fat FCFS

Analyte	Program Code	Challenges per Shipment
	FCFS	
Fecal fat, qualitative	▮	2

Program Information
- Two 10.0-g simulated fecal fat specimens
- For microscopic detection of neutral fats (triglycerides) and/or split fats (total free fatty acids)
- Two shipments per year

Fructosamine FT

Analyte	Program Code	Challenges per Shipment
	FT	
Fructosamine	▮	2

Program Information
- Two 1.0-mL liquid serum specimens
- Two shipments per year

Glucose-6-Phosphate Dehydrogenase G6PDS

Analyte	Program Code	Challenges per Shipment
	G6PDS	
G6PD, qualitative and quantitative	▮	2

Program Information
- Two 0.5-mL lyophilized hemolysate specimens
- Two shipments per year

NEW

H. pylori Breath Test HPBT

Analyte	Program Code	Challenges per Shipment
	HPBT	
H. pylori breath test	▮	2

Program Information
- Two gas bags for qualitative reporting with the Meridian BreathID
- Two shipments per year

Lipoprotein-Associated Phospholipase A_2 PLA

Analyte	Program Code	Challenges per Shipment
	PLA	
Lipoprotein-associated phospholipase (Lp-PLA_2) activity	▮	2

Program Information
- Two 2.0-mL lyophilized serum specimens
- Two shipments per year

Lipoprotein Electrophoresis LPE

Analyte/Procedure	Program Code	Challenges per Shipment
	LPE	
Lipoprotein electrophoresis	▮	2

Program Information
- Two 1.0-mL liquid specimens
- Two shipments per year

Protein Electrophoresis SPE, UBJP

Analyte	Program Code		Challenges per Shipment
	SPE	UBJP	
IgA, quantitation	▮		2
IgG, quantitation	▮		2
IgM, quantitation	▮		2
M-component (paraprotein) identification	▮		2
Protein, total	▮		2
Protein electrophoresis, serum	▮		2
Urine Bence Jones protein		▮	2

Program Information
- SPE - Two 1.0-mL lyophilized serum specimens; one online educational protein electrophoresis challenge per mailing
- UBJP - Two 10.0-mL urine specimens
- Two shipments per year

Lamellar Body Count LBC

Procedure	Program Code	Challenges per Shipment
	LBC	
Lamellar body count	▮	3

Program Information
- Three 2.0-mL simulated amniotic fluid specimens
- For use with LBC methods performed on all hematology analyzers
- Two shipments per year

Plasma Hemoglobin PHG

Analyte	Program Code	Challenges per Shipment
	PHG	
Plasma hemoglobin	▮	2

Program Information
- Two 2.0-mL liquid specimens
- Two shipments per year

Procalcitonin PCT

Analyte	Program Code	Challenges per Shipment
	PCT	
Procalcitonin	▮	3

Program Information
- Three 1.0-mL lyophilized serum specimens
- Two shipments per year

Pseudocholinesterase C7

Analyte	Program Code	Challenges per Shipment
	C7	
Pseudocholinesterase	▮	1

Program Information
- One 2.0-mL lyophilized serum specimen
- Three shipments per year

Salivary Cortisol SALC

Analyte	Program Code	Challenges per Shipment
	SALC	
Salivary cortisol	▮	3

Program Information
- Three 2.0-mL synthetic oral fluid specimens
- Two shipments per year

Accuracy-Based Testosterone, Estradiol ABS

Analyte	Program Code	Challenges per Shipment
	ABS	
Albumin	▮	3
Cortisol	▮	3
Estradiol	▮	3
Follicle-stimulating hormone (FSH)	▮	3
Luteinizing hormone (LH)	▮	3
Prostate-specific antigen (PSA), total	▮	3
Sex hormone-binding globulin (SHBG)	▮	3
Testosterone	▮	3
Thyroid-stimulating hormone (TSH)	▮	3

The Centers for Disease Control and Prevention (CDC) will set target values for testosterone and estradiol using the established reference methods.

Program Information
- Three 1.0-mL human serum specimens
- Two shipments per year

Total Bile Acids TBLA

Analyte	Program Code	Challenges per Shipment
	TBLA	
Total bile acids	▮	3

Program Information
- Three 5.0-mL liquid serum specimens
- Two shipments per year

Trace Metals R

Analyte	Program Code	Challenges per Shipment
	R	
Aluminum	▮	3
Chromium	▮	3
Copper	▮	3
Manganese	▮	3
Selenium	▮	3
Zinc	▮	3

Program Information

- Three 6.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Trace Metals, Urine TMU

Analyte	Program Code	Challenges per Shipment
	TMU	
Aluminum	▮	2
Arsenic	▮	2
Chromium	▮	2
Cobalt	▮	2
Copper	▮	2
Lead	▮	2
Manganese	▮	2
Mercury	▮	2
Selenium	▮	2
Thallium	▮	2
Zinc	▮	2

Program Information

- Two 25.0-mL urine specimens
- Conventional and International System of Units (SI) reporting offered
- For laboratories that monitor trace metals at normal and toxic levels
- Two shipments per year

Trace Metals, Whole Blood TMWB

Analyte	Program Code	Challenges per Shipment
	TMWB	
Aluminum	▮	3
Arsenic, total	▮	3
Chromium	▮	3
Cobalt	▮	3
Copper	▮	3
Manganese	▮	3
Mercury	▮	3
Selenium	▮	3
Thallium	▮	3
Zinc	▮	3

Program Information

- Three 6.0-mL whole blood specimens
- Conventional and International System of Units (SI) reporting offered
- For laboratories that monitor trace metals at normal and toxic levels
- Two shipments per year

Sweat Analysis Series SW1, SW2, SW4

Analyte	Program Code	Challenges per Shipment
	SW1, SW2, SW4	
Chloride	▮	3
Conductivity	▮	3

For method compatibility, see chart below.

Program Information

- SW1, SW2, SW4 - Three 5.0-mL simulated liquid human sweat specimens
- Two shipments per year

Sweat Analysis Series Compatibility Matrix

Method/Procedure	Program Code			Materials Included
	SW1	SW2	SW4	
Orion direct electrode	▮			Precut 2-cm diameter Whatman filter papers
ELITechGroup and Nanoduct® Systems		▮		22-gauge blunt-tipped needles
All other methodologies			▮	No additional materials provided

Viscosity V

Analyte	Program Code	Challenges per Shipment
	V	
Viscosity	▮	2

Program Information

- Two 10.0-mL serum specimens
- Two shipments per year

Soluble Transferrin Receptor STFR

Analyte	Program Code	Challenges per Shipment
	STFR	
Soluble transferrin receptor (sTfR)	▮	3

Program Information

- Three 2.5-mL liquid human serum specimens
- Two shipments per year

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:

- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Cerebrospinal Fluid, Validated Material

Validated Material	Program Code	Corresponding Program	Page
Cerebrospinal Fluid	MVM	M	76

Program Information

- Three 5.0-mL simulated liquid spinal fluid specimens

7 Endocrinology

Gain more value from your accreditation program.

CAP accreditation is more than "something to check off your list." It is an opportunity to enhance your laboratory's quality and operational efficiency while mitigating risk.

- The CAP offers complimentary educational material and support, including highly-trained medical technologists who are available to answer questions.
- The peer inspection model creates a collegial opportunity for shared best practices, collaboration, and professional development.

Discontinued Programs

Sex Hormones (DY)

Endocrinology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Ligand—General K/KK

Analyte	Program Code	Challenges per Shipment
	K/KK	
Alpha-fetoprotein (AFP)	▮	5
Carcinoembryonic antigen (CEA)	▮	5
Cortisol	▮	5
Ferritin	▮	5
Folate, serum	▮	5
Human chorionic gonadotropin (hCG), quantitative	▮	5
Immunoglobulin E (IgE)	▮	5
Prostate-specific antigen (PSA), total	▮	5
p2PSA	▮	5
Prostate-specific antigen, complexed (cPSA)	▮	5
Prostate-specific antigen (PSA), free	▮	5
Prostatic acid phosphatase (PAP)	▮	5
Triiodothyronine (T3), free	▮	5
Triiodothyronine (T3), total	▮	5
T3 uptake and related tests	▮	5
Thyroxine (T4), free	▮	5
Thyroxine (T4), total	▮	5
Thyroid-stimulating hormone (TSH)	▮	5
Vitamin B_{12}	▮	5

Program Information

- K - Five 5.0-mL liquid serum specimens
- KK - Five 5.0-mL liquid serum specimens in duplicate
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit

MMA and Active B_{12} MMA

Analyte/Procedure	Program Code	Challenges per Shipment
	MMA	
Active vitamin B_{12}	▮	3
Methylmalonic acid	▮	3

Program Information

- Three 1.0-mL lyophilized serum specimens
- Two shipments per year

B-Type Natriuretic Peptides BNP, BNP5

Analyte	Challenges per Shipment	
	Program Code	
	BNP	BNP5
BNP	2	5
NT-proBNP	2	5

Additional Information

- The CAP Laboratory Accreditation Program requires all accredited laboratories performing non-waived testing for BNP and NT-proBNP to complete 15 proficiency testing challenges per year.
- For i-STAT®, Quidel Triage, and Pathfast, use Point-of-Care Cardiac Markers programs PCARM or PCARMX.
- For second instrument reporting options, see the Quality Cross Check program, BNPQ, below.

Program Information

- BNP - Two 1.0-mL liquid plasma specimens; two shipments per year
- BNP5 - Five 1.0-mL liquid plasma specimens; three shipments per year
- Conventional and International System of Units (SI) reporting offered

Quality Cross Check—B-Type Natriuretic Peptides BNPQ

Analyte	Program Code	Challenges per Shipment
	BNPQ	
BNP	▮	3
NT-proBNP	▮	3

This program does not meet regulatory requirements for proficiency testing; see program BNP or BNP5, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- Three 1.5-mL liquid specimens
- Report up to three instruments
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Sex Hormones Y/YY

Analyte	Program Code	Challenges per Shipment
	Y/YY	
11-deoxycortisol	▮	3
17-hydroxyprogesterone	▮	3
Androstenedione	▮	3
DHEA sulfate	▮	3
Estradiol	▮	3
Estriol, unconjugated (uE3)	▮	3
Follicle-stimulating hormone (FSH)	▮	3
Growth hormone (GH)	▮	3
IGF-1 (somatomedin C)	▮	3
Luteinizing hormone (LH)	▮	3
Progesterone	▮	3
Prolactin	▮	3
Testosterone	▮	3
Testosterone, bioavailable (measured)	▮	3
Testosterone, free (measured)	▮	3
Sex hormone-binding globulin (SHBG)	▮	3

Program Information

- Y - Three 5.0-mL liquid serum specimens in duplicate
- YY - Three 5.0-mL liquid serum specimens in triplicate
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Antimüllerian Hormone AMH

Analyte	Program Code	Challenges per Shipment
	AMH	
Antimüllerian hormone	▮	3

Program Information

- Three 1.0-mL lyophilized serum specimens
- Two shipments per year

25-OH Vitamin D, Total VITD

Analyte	Program Code	Challenges per Shipment
	VITD	
25-OH vitamin D, total	▮	3

Program Information

- Three 1.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Bone and Growth BGS

Analyte	Program Code	Challenges per Shipment
	BGS	
IGF-1 (somatomedin C)	▮	3
Osteocalcin	▮	3

Program Information

- Three 1.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Accuracy-Based Vitamin D ABVD

Analyte	Program Code	Challenges per Shipment
	ABVD	
25-OH vitamin D (D2 and D3)	▮	3
Calcium	▮	3

Additional Information

- The Centers for Disease Control and Prevention (CDC) will establish reference targets using isotope-dilution LC-MS/MS method.
- Specimens are collected by a modified application of Clinical and Laboratory Standards Institute Guideline CLSI C37-A, *Preparation and Validation of Commutable Frozen Human Serum Pools as Secondary Reference Materials for Cholesterol Measurement Procedures; Approved Guideline.*

Program Information

- Three 1.0-mL liquid human serum specimens
- Serum is from multi-donor endogenous pools.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Bone and Mineral Metabolism, Urine BU

Analyte	Program Code	Challenges per Shipment
	BU	
Creatinine	▮	2
Deoxypyridinoline (DPD)	▮	2
N-telopeptide (NTx)	▮	2

Program Information

- Two 2.0-mL lyophilized human urine specimen
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Bone Markers and Vitamins BMV1, BMV2, BMV3, BMV4, BMV5, BMV6

Analyte	Program Code						Challenges per Shipment
	BMV1	BMV2	BMV3	BMV4	BMV5	BMV6	
1,25-dihydroxy vitamin D	▮						3
Bone-specific alkaline phosphatase		▮					3
Vitamin A			▮				3
Vitamin E, total				▮			3
C-telopeptide					▮		3
N-telopeptide						▮	3

Program Information

- BMV1-4 - Three 5.0-mL liquid serum specimens for each program
- BMV5, BMV6 - Three 1.0-mL liquid serum specimens for each program
- Two shipments per year

Insulin, Gastrin, C-Peptide, and PTH ING

Analyte	Program Code	Challenges per Shipment
	ING	
C-peptide	▮	3
Gastrin	▮	3
Insulin	▮	3
Parathyroid hormone (PTH)	▮	3

Program Information

- Three 5.0-mL lyophilized serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Accuracy-Based Glucose, Insulin, and C-Peptide ABGIC

Analyte	Program Code	Challenges per Shipment
	ABGIC	
C-peptide	▮	3
Glucose	▮	3
Insulin	▮	3

Program Information

- Three 1.0-mL serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Additional Information

- Target values are based upon the isotope-dilution gas chromatography-mass spectrometry reference measurement procedure for glucose performed by the CDC Reference Laboratory, Division of Laboratory Sciences, Centers for Disease Control and Prevention (Atlanta, GA).
- Target values for C-peptide are established by isotope-dilution mass spectrometry, performed at the University of Missouri, Diabetes Diagnostic Laboratory.

Quality Cross Check—Parathyroid Hormone PTHQ

Analyte	Program Code	Challenges per Shipment
	PTHQ	
Parathyroid hormone (PTH)	▮	3

This program does not meet regulatory requirements for proficiency testing; see program ING on page 88. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- Three 5.0-mL lyophilized serum specimens in duplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Second Trimester Maternal Screening FP/FPX

Analyte	Program Code	Challenges per Shipment
	FP/FPX	
Alpha-fetoprotein (AFP), amniotic fluid	▮	2
Alpha-fetoprotein (AFP), serum	▮	5
Dimeric inhibin A (DIA)	▮	5
Estriol, unconjugated (uE3)	▮	5
Human chorionic gonadotropin (hCG), quantitative	▮	5

The CAP designed these programs for laboratories using AFP and hCG for prenatal screening purposes only. For all other applications, see program K or KK on page 84.

Program Information

- FP - Five 1.0-mL serum specimens; two 1.0-mL simulated amniotic fluid specimens
- FPX - All program FP serum specimens in duplicate; two 1.0-mL simulated amniotic fluid specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

First Trimester Maternal Screening FP1T, FP1B

Analyte	Program Code		Challenges per Shipment
	FP1T	FP1B	
Total hCG	▮		5
Free beta hCG		▮	5
PAPP-A	▮	▮	5

The CAP designed these programs for laboratories using hCG for prenatal screening purposes only. For all other applications, see program K or KK on page 84.

Program Information

- FP1T, FP1B - Five 1.0-mL serum specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

Noninvasive Prenatal Testing NIPT

Analyte	Program Code	Challenges per Shipment
	NIPT	
Cell-free DNA screening for fetal aneuploidy	▮	3

Noninvasive prenatal testing is an exercise and is not considered proficiency testing. This exercise may be used to meet the requirements for alternative assessment.

Program Information
- Three liquid specimens
- Two shipments per year

Erythropoietin EPO

Analyte	Program Code	Challenges per Shipment
	EPO	
Erythropoietin	▮	2

Program Information
- Two 1.5-mL serum specimens
- Two shipments per year

Fetal Fibronectin FF

Analyte	Program Code	Challenges per Shipment
	FF	
Fetal fibronectin	▮	2

Program Information
- Two 1.2-mL liquid specimens
- Two shipments per year

Red Blood Cell Folate FOL

Analyte	Program Code	Challenges per Shipment
	FOL	
RBC folate	▮	2

Program Information
- Two 2.0-mL lyophilized whole blood specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

Renin and Aldosterone RAP

Analyte	Program Code	Challenges per Shipment
	RAP	
Aldosterone	▮	3
Renin	▮	3

Program Information

- Three 2.0-mL lyophilized plasma specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Tumor Markers TM/TMX

Analyte	Program Code	Challenges per Shipment
	TM/TMX	
Adrenocorticotropic hormone (ACTH)	▮	3
Beta-2 microglobulin	▮	3
CA 15-3	▮	3
CA 19-9	▮	3
CA 27.29	▮	3
CA 72-4	▮	3
CA 125	▮	3
Calcitonin	▮	3
Thyroglobulin	▮	3

Program Information

- TM - Three 2.0-mL liquid serum specimens
- TMX - All program TM specimens in duplicate
- Two shipments per year

Human Epididymis Protein 4 HUEP

Analyte	Program Code	Challenges per Shipment
	HUEP	
Human epididymis protein 4	▮	3

Program Information

- Three 1.0-mL lyophilized serum specimens
- Two shipments per year

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:

- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Endocrinology, Validated Materials

Validated Material	Program Code	Corresponding Program	Page
Ligand—General	KVM	K	84
Sex Hormones	YVM	Y	86

Program Information

- KVM - Five 5.0-mL liquid serum specimens; three shipments per year
- YVM - Three 5.0-mL liquid serum specimens in duplicate; two shipments per year

Test Ordering Program—Lead your organization in laboratory stewardship

With immense pressure to provide fast, accurate results with limited resources, your laboratory will benefit from the CAP's Test Ordering Program.

Guide this effort in your organization and

- Find ways to use your resources more efficiently.
- Build your laboratory stewardship programs.
- Review your testing patterns for efficacy and utility.

The resources of the Test Ordering Program, now available to CAP customers, include analytical tools, the latest expert-written recommendations, and suggested interventions.

8 Blood Gas, Critical Care, and Oximetry

Our programs closely mimic patient testing to ensure accuracy.

- Test specimen levels that reflect clinical decision points.
- Our newly reconfigured programs better meet today's blood gas laboratory needs.

New Programs NEW

Discontinued Programs

Blood Gas, Critical Care, and Oximetry

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Critical Care Blood Gas AQ, AQH

Analyte	Program Code		Challenges per Shipment
	AQ	AQH NEW	
Calcium, ionized	▮	▮	2
Chloride	▮	▮	5
Hematocrit		▮	5
Hemoglobin, estimated		▮	5
Lactate	▮	▮	2
Magnesium, ionized	▮	▮	2
pCO_2	▮	▮	5
pH	▮	▮	5
pO_2	▮	▮	5
Potassium	▮	▮	5
Sodium	▮	▮	5
tCO_2	▮	▮	5
Creatinine	▮	▮	5
Glucose	▮	▮	5
Urea nitrogen (BUN)	▮	▮	5

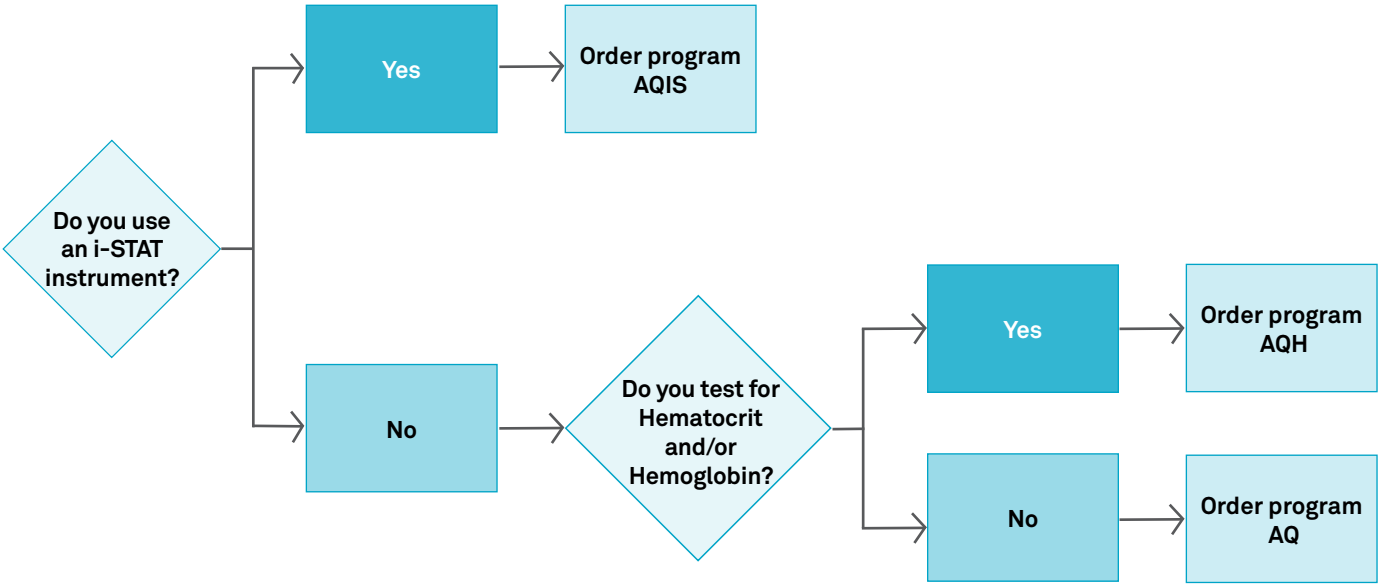
For multiple instrument reporting options, see the Quality Cross Check programs, AQQ and AQHQ, on page 96.

It is not appropriate to report hemoglobin and hematocrit results by co-oximetry in these programs.

Program Information

- AQ - Five 2.5-mL aqueous specimens in duplicate; appropriate for all methods except i-STAT
- AQH - Five 2.5-mL aqueous specimens in duplicate and five 2.5-mL specimens for hematocrit testing in duplicate; appropriate for all methods except i-STAT
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit



Critical Care Blood Gas, i-STAT AQIS

NEW

Analyte	Program Code	Challenges per Shipment
	AQIS	
Calcium, ionized	▮	2
Chloride	▮	5
Hematocrit	▮	5
Hemoglobin, estimated	▮	5
Lactate	▮	2
pCO_2	▮	5
pH	▮	5
pO_2	▮	5
Potassium	▮	5
Sodium	▮	5
tCO_2	▮	5
Creatinine	▮	5
Glucose	▮	5
Urea nitrogen (BUN)	▮	5

For multiple instrument reporting options, see the Quality Cross Check program, AQSQ, on page 96.

Program Information

- AQIS - Five specimens in duplicate for i-STAT only
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit

Quality Cross Check—Critical Care Blood Gas AQQ, AQHQ, AQSQ

Analyte	Program Code			Challenges per Shipment
	AQQ	AQHQ NEW	AQSQ NEW	
Calcium, ionized	▮	▮	▮	3
Chloride	▮	▮	▮	3
Hematocrit		▮	▮	3
Hemoglobin, estimated		▮	▮	3
Lactate	▮	▮	▮	3
Magnesium, ionized	▮	▮		3
pCO_2	▮	▮	▮	3
pH	▮	▮	▮	3
pO_2	▮	▮	▮	3
Potassium	▮	▮	▮	3
Sodium	▮	▮	▮	3
tCO_2 (measured)			▮	3
Creatinine	▮	▮	▮	3
Glucose	▮	▮	▮	3
Urea nitrogen (BUN)	▮	▮	▮	3

Program Information

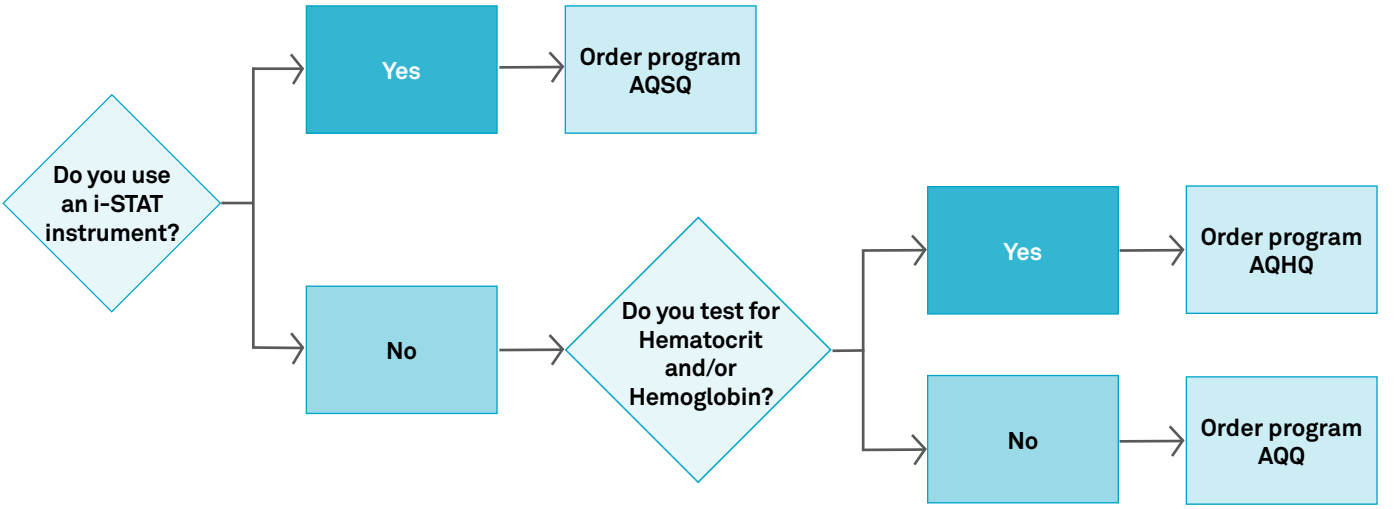
- AQQ - Three 2.5-mL specimens in triplicate; appropriate for all methods except i-STAT®
- AQHQ - Three 2.5-mL specimens in triplicate and three 2.5-mL specimens for hematocrit testing in triplicate; appropriate for all methods except i-STAT
- AQSQ - Three 1.7-mL specimens in triplicate for i-STAT methods only
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Additional Information

- It is not appropriate to report hemoglobin and hematocrit results by co-oximetry in these programs.
- These programs do no meet regulatory requirements for proficiency testing; see programs AQ, AQH, and AQIS on pages 94-95. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.



Blood Oximetry SO

Analyte	Program Code	Challenges per Shipment
	SO	
Carboxyhemoglobin	▮	5
Hematocrit, estimated	▮	5
Hemoglobin, total	▮	5
Methemoglobin	▮	5
Oxyhemoglobin	▮	5

Program Information

- Five 1.8-mL stabilized human hemoglobin solution specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

Additional Information

- This program is not compatible with Oxicom-2000, -2100, or -3000 whole blood oximeters.
- For multiple instrument reporting options, see the Quality Cross Check program, SOQ, below.

Quality Cross Check—Blood Oximetry SOQ

Analyte	Program Code	Challenges per Shipment
	SOQ	
Carboxyhemoglobin	▮	3
Hematocrit, estimated	▮	3
Hemoglobin, total	▮	3
Methemoglobin	▮	3
Oxyhemoglobin	▮	3

Program Information

- Three 1.2-mL liquid specimens in triplicate
- Report up to three instruments.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

This program does not meet regulatory requirements for proficiency testing; see program SO, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

9 Toxicology

Simplify your life with the CAP online store.

You can order proficiency testing and quality improvement programs, learning opportunities, publications, and more right from your computer.

- Review your prepopulated quote.
- Add new programs based on your test menu.
- Manage your shipping and billing information.

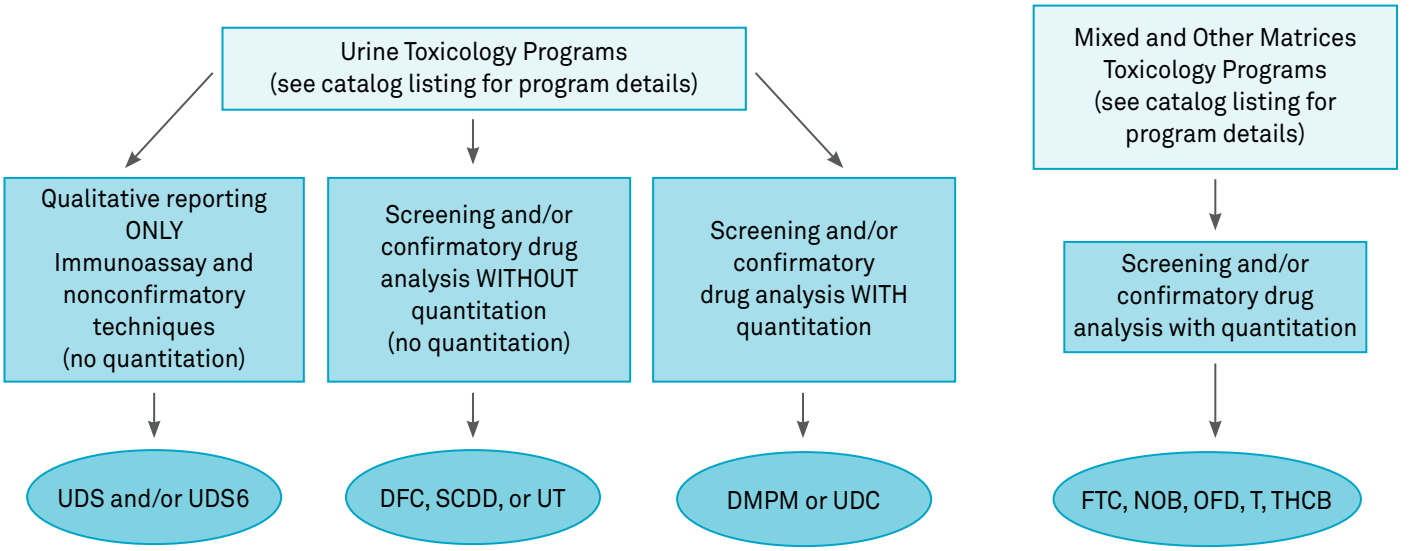
To get started, visit cap.org and select Shop at the top of the homepage.

New Analyte/Drug Additions NEW

Toxicology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Use this flowchart as a guide for ordering appropriate toxicology programs for your laboratory's testing menu.



Toxicology T

Analyte	Program Code	Challenges per Shipment
	T	
See drug listing on next page	▮	5

Program Information

- A total of five specimens consisting of 20.0-mL liquid serum and 50.0-mL liquid urine specimens
- For laboratories performing qualitative and quantitative drug analysis on serum and qualitative analysis on urine specimens
- Three shipments per year

Urine Toxicology UT

Analyte	Program Code	Challenges per Shipment
	UT	
See drug listing on next page	▮	5

Program Information

- Five 50.0-mL liquid urine specimens
- For laboratories performing qualitative drug analysis with qualitative confirmatory testing
- Three shipments per year

T and UT Programs Drug Listing

Challenges will include a mix of drugs from the list below.

6-acetylmorphine (6-AM)
7-aminoclonazepam
7-aminoflunitrazepam
7-hydroxymitragynine
Acetaminophen
Alpha-hydroxyalprazolam
Alprazolam
Amitriptyline
Amphetamine
Amphetamine group
Aripiprazole
Atenolol
Atropine
Barbiturate group
Benzodiazepine group
Benzoylecgonine
Brompheniramine
Buprenorphine
Bupropion
Butalbital
Cannabinoids
Carbamazepine
Carbamazepine-10, 11-epoxide
Carisoprodol
Chlordiazepoxide
Chlorpheniramine
Citalopram
Clomipramine
Clonazepam
Clozapine
Cocaethylene
Cocaine
Codeine
Cyclobenzaprine
Delta-9-THC (serum only)
Delta-9-THC-COOH
Demoxepam
Desipramine
Desmethylclomipramine
Desmethylcyclobenzaprine*
Dextromethorphan
Diazepam
Dihydrocodeine
Diltiazem
Diphenhydramine
Doxepin
Doxylamine
Duloxetine
Ecgonine methyl ester
Ephedrine
Fentanyl
Flunitrazepam
Fluoxetine
Gabapentin
Hydrocodone
Hydromorphone
Hydroxybupropion
Hydroxyzine
Ibuprofen
Imipramine
Ketamine
Lamotrigine
Levetiracetam
Levorphanol
Lidocaine
Lorazepam
Meperidine
Mephedrone
Meprobamate
Meta-chlorophenylpiperazine (m-CPP)
Methadone
Methadone metabolite (EDDP)
Methamphetamine
Methylenedioxy-amphetamine (MDA)
Methylenedioxy-methamphetamine (MDMA)
Methylenedioxy-pyrovalerone (MDPV)
Methylphenidate
Metoprolol
Mirtazapine
Mitragynine (Kratom)
Morphine
N-desmethyltramadol
Naproxen
Norbuprenorphine
Norchlordiazepoxide
Norclomipramine
Norcodeine
Norcyclobenzaprine*
Nordiazepam
Nordoxepin
Norfentanyl
Norfluoxetine
Norketamine
Normeperidine
Normirtazapine
Nornaloxone
Noroxycodone
Norpropoxyphene
Norsertraline
Nortrimipramine
Nortriptyline
Norverapamil
O-desmethyltramadol
Olanzapine
Opiate group
Oxazepam
Oxycodone
Oxymorphone
Paroxetine
Pentobarbital
Phencyclidine
Pheniramine
Phenobarbital
Phentermine
Phenylephrine
Phenytoin
Pregabalin
Propoxyphene
Propranolol
Pseudoephedrine
Quetiapine
Salicylates
Sertraline
Tapentadol
Temazepam
Topiramate
Tramadol
Trazodone
Tricyclic group
Trimipramine
Valproic acid
Venlafaxine
Verapamil
Zolpidem

*Same compound

CAP/AACC Urine Drug Testing, Screening UDS, UDS6

Analyte	Program Code	
	Challenges per Shipment	
	UDS	UDS6 Limited
6-acetylmorphine (6-AM)	5	3
Acetaminophen	5	3
Amphetamine	5	3
Amphetamine/methamphetamine group	5	3
Barbiturate group	5	3
Benzodiazepine group	5	3
Benzoylecgonine/cocaine metabolites	5	3
Buprenorphine and metabolites	5	3
Cannabinoids	5	3
Ethanol	5	3
Fentanyl	5	3
Hydrocodone	5	3
Lysergic acid diethylamide (LSD)	5	3
Meperidine	5	3
Meprobamate/carisoprodol	5	3
Methadone	5	3
Methadone metabolite (EDDP)	5	3
Methamphetamine	5	3
Methaqualone	5	3
Methylenedioxymethamphetamine (MDMA)	5	3
Opiate group	5	3
Oxycodone	5	3
Phencyclidine	5	3
Propoxyphene	5	3
Tramadol	5	3
Tricyclic group	5	3

Program Information

- UDS - Five 10.0-mL liquid urine specimens; three shipments per year
- UDS6 - Three 10.0-mL liquid urine specimens; two shipments per year
- For laboratories performing drugs of abuse testing on urine specimens using immunoassay or other non-confirmatory techniques only
- Participants will have access to the AACC quarterly newsletter, *Clinical & Forensic Toxicology News*.

AACC

Urine Drug Adulterant/Integrity DAI

Analyte	Program Code	Challenges per Shipment
	DAI	
Creatinine	▮	3
Glutaraldehyde	▮	3
Nitrite	▮	3
Oxidants	▮	3
pH	▮	3
Specific gravity	▮	3

Program Information

- Three 25.0-mL urine specimens
- Two shipments per year

Give the CAP's complimentary Sample Exchange Registry service a try!

Sign up for this unique and complimentary service for those rare analytes for which proficiency testing is not yet available. This service now includes all clinical laboratory disciplines.

- The CAP connects laboratories performing testing for which no formal proficiency testing is available.
- There is no charge for this service.
- Participate at any time, no contract required.
- A minimum of three laboratories performing the same analyte test must participate before the CAP can facilitate the sample exchange.
- Each individual laboratory will receive its own results along with an anonymized summary report for all participants.

Visit cap.org and from the Laboratory Improvement tab, choose Proficiency Testing > Sample Exchange Registry.

CAP/AACC Forensic Urine Drug Testing, Confirmatory UDC

Analyte	Program Code	Challenges per Shipment
	UDC	
6-acetylmorphine (6-AM)	▮	10
Alpha-hydroxyalprazolam	▮	10
Amphetamine	▮	10
Benzoylecgonine	▮	10
Buprenorphine	▮	10
Butalbital	▮	10
Codeine	▮	10
Delta-9-THC-COOH	▮	10
Fentanyl	▮	10
Hydrocodone	▮	10
Hydromorphone	▮	10
Lorazepam	▮	10
Methadone	▮	10
Methadone metabolite (EDDP)	▮	10
Methamphetamine	▮	10
Methaqualone	▮	10
Methylenedioxyamphetamine (MDA)	▮	10
Methylenedioxyethylamphetamine (MDEA)	▮	10
Methylenedioxymethamphetamine (MDMA)	▮	10
Morphine	▮	10
Norbuprenorphine	▮	10
Nordiazepam	▮	10
Norfentanyl	▮	10
Norpropoxyphene	▮	10
Oxazepam	▮	10
Oxycodone	▮	10
Oxymorphone	▮	10
Phencyclidine	▮	10
Phenobarbital	▮	10
Propoxyphene	▮	10
Secobarbital	▮	10
Temazepam	▮	10
Adulterant/Integrity Indicator		
Creatinine	▮	10
pH	▮	10
Specific gravity	▮	10

Program Information

- Ten 50.0-mL liquid urine specimens
- For laboratories that perform both screening and confirmatory testing, including quantitation, for drugs of abuse in urine specimens; laboratories are asked to report creatinine, pH, and specific gravity for each specimen to ensure specimen adulteration has not occurred
- Participants will have access to the AACC quarterly newsletter, *Clinical & Forensic Toxicology News*.
- Four shipments per year

AACC

Oral Fluid for Drugs of Abuse OFD

Analyte	Program Code	Challenges per Shipment
	OFD	
Amphetamine Group	▮	5
Amphetamine	▮	5
Methamphetamine	▮	5
Methylenedioxyamphetamine (MDA)	▮	5
Methylenedioxymethamphetamine (MDMA)	▮	5
Benzodiazepine Group	▮	5
Alprazolam	▮	5
Diazepam	▮	5
Nordiazepam	▮	5
Oxazepam	▮	5
Temazepam	▮	5
Buprenorphine	▮	5
Buprenorphine and norbuprenorphine	▮	5
Cocaine and/or metabolite	▮	5
Benzoylecgonine	▮	5
Cocaine	▮	5
Cannabinoids	▮	5
Delta-9-THC	▮	5
Delta-9-THC-COOH	▮	5
Cotinine	▮	5
Fentanyl and/or metabolite	▮	5
Fentanyl	▮	5
Norfentanyl	▮	5
Methadone	▮	5
Opiate Group	▮	5
6-acetylmorphine (6-AM)	▮	5
Codeine	▮	5
Hydrocodone	▮	5
Hydromorphone	▮	5
Morphine	▮	5
Oxycodone	▮	5
Oxymorphone	▮	5
Phencyclidine (PCP)	▮	5

Program Information

- Five 2.0-mL oral fluid specimens
- For laboratories performing drug screening, confirmation, and quantitation
- Four shipments per year

Vitreous Fluid, Postmortem VF

Analyte	Program Code	Challenges per Shipment
	VF	
Acetone	▮	3
Chloride	▮	3
Creatinine	▮	3
Ethanol	▮	3
Glucose	▮	3
Potassium	▮	3
Sodium	▮	3
Vitreous urea nitrogen	▮	3

Program Information

- Three 5.0-mL synthetic vitreous fluid specimens
- For forensic and other toxicology laboratories that perform quantitative analysis of vitreous fluid
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Serum Drug Screening SDS

Analyte	Program Code	Challenges per Shipment
	SDS	
Acetaminophen, quantitative	▮	3
Acetone, semiquantitative and qualitative	▮	3
Barbiturate group, qualitative	▮	3
Benzodiazepine group, qualitative	▮	3
Salicylate, quantitative	▮	3
Total tricyclic antidepressants, qualitative	▮	3

Program Information

- Three 2.0-mL serum specimens
- For laboratories that perform serum drug screening using immunoassay or other screening techniques
- Two shipments per year

CAP/AACC Alcohol/Volatiles AL1, AL2

Analyte	Program Code		Challenges per Shipment
	AL1 Whole Blood	AL2 Serum	
Acetone, quantitative	▮	▮	5
Ethanol, quantitative	▮	▮	5
Ethylene glycol, qualitative and quantitative	▮	▮	5
Isopropanol, quantitative	▮	▮	5
Methanol, quantitative	▮	▮	5

Program Information

- AL1 - Five 5.0-mL liquid whole blood specimens; conventional reporting
- AL2 - Five 2.0-mL liquid serum specimens; conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit AACC

Ethanol Biomarkers ETB

Analyte	Program Code	Challenges per Shipment
	ETB	
Ethyl glucuronide (EtG), qualitative and quantitative	▮	3
Ethyl sulfate (EtS), quantitative	▮	3

Program Information

- Three 10.0-mL synthetic urine specimens
- Two shipments per year

CE credit

CAP/AACC Blood Lead BL

Analyte	Program Code	Challenges per Shipment
	BL	
Lead	▮	5

This program meets the Occupational Safety and Health Administration (OSHA) requirements for proficiency testing [OSHA lead standards-29 CFR 1910.1025(j)(2)(iii)].

Program Information

- Five 6.0-mL liquid nonhuman whole blood specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

AACC

Cadmium CD

Analyte	Program Code	Challenges per Shipment
	CD	
Beta-2-microglobulin, urine	▮	3
Cadmium, urine	▮	3
Cadmium, whole blood	▮	3
Creatinine, urine	▮	3

This program meets the Occupational Safety and Health Administration (OSHA) guidelines for proficiency testing (OSHA standard-29 CFR 1910.1027AppF).

Program Information

- Three 6.0-mL whole blood specimens and three 12.0-mL urine specimens
- Conventional and International System of Units (SI) reporting offered
- Six shipments per year

Nicotine and Tobacco Alkaloids NTA

Analyte	Program Code	Challenges per Shipment
	NTA	
Cotinine	▮	3
Nicotine	▮	3

Program Information

- Three 25.0-mL urine specimens
- Designed for laboratories that qualitatively and/or quantitatively test for anabasine, cotinine, and/or nicotine in urine
- Two shipments per year

Trace Metals R

Analyte	Program Code	Challenges per Shipment
	R	
Aluminum	▮	3
Chromium	▮	3
Copper	▮	3
Manganese	▮	3
Selenium	▮	3
Zinc	▮	3

Program Information

- Three 6.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Trace Metals, Urine TMU

Analyte	Program Code	Challenges per Shipment
	TMU	
Aluminum	▮	2
Arsenic	▮	2
Chromium	▮	2
Cobalt	▮	2
Copper	▮	2
Lead	▮	2
Manganese	▮	2
Mercury	▮	2
Selenium	▮	2
Thallium	▮	2
Zinc	▮	2

Program Information

- Two 25.0-mL urine specimens
- Conventional and International System of Units (SI) reporting offered
- For laboratories that monitor trace metals at normal and toxic levels
- Two shipments per year

Trace Metals, Whole Blood TMWB

Analyte	Program Code	Challenges per Shipment
	TMWB	
Aluminum	▮	3
Arsenic, total	▮	3
Chromium	▮	3
Cobalt	▮	3
Copper	▮	3
Manganese	▮	3
Mercury	▮	3
Selenium	▮	3
Thallium	▮	3
Zinc	▮	3

Program Information

- Three 6.0-mL whole blood specimens
- Conventional and International System of Units (SI) reporting offered
- For laboratories that monitor trace metals at normal and toxic levels
- Two shipments per year

Forensic Toxicology, Criminalistics FTC		
Analyte	**Program Code**	**Challenges per Shipment**
	FTC	
See drug listing below	▮	5

Program Information

- Five 20.0-mL whole blood specimens
- For crime and hospital laboratories that have forensic toxicology divisions performing qualitative and quantitative analysis of drugs in whole blood specimens
- Three shipments per year

FTC Program Drug Listing

Challenges will include a mix of drugs from the list below.

6-acetylmorphine (6-AM)
7-aminoclonazepam
7-aminoflunitrazepam
7-hydroxymitragynine
Acetaminophen
Alpha-hydroxyalprazolam
Alprazolam
Amitriptyline
Amphetamine
Aripiprazole
Atenolol
Atropine
Benzoylecgonine
Brompheniramine
Buprenorphine
Bupropion
Butalbital
Carbamazepine
Carbamazepine-10, 11-epoxide
Carisoprodol
Chlordiazepoxide
Chlorpheniramine
Citalopram
Clomipramine
Clonazepam
Clozapine
Cocaethylene
Cocaine
Codeine
Cyclobenzaprine*
Delta-9-THC
Delta-9-THC-COOH
Demoxepam
Desipramine
Desmethylclomipramine
Desmethylsertraline
Dextromethorphan
Diazepam
Dihydrocodeine
Diltiazem
Diphenhydramine
Doxepin
Doxylamine
Duloxetine
Ecgonine ethyl ester
Ecgonine methyl ester
Ephedrine
Fentanyl*
Flunitrazepam
Fluoxetine
Gabapentin
Gamma-hydroxybutyrate (GHB)
Hydrocodone
Hydromorphone
Hydroxybupropion
Hydroxyzine
Ibuprofen
Imipramine
Ketamine
Lamotrigine
Levetiracetam
Lidocaine
Lorazepam
Lysergic acid diethylamide (LSD)
Meperidine*
Mephedrone
Meprobamate
Methadone
Methadone metabolite (EDDP)
Methamphetamine
Methylenedioxyamphetamine (MDA)
Methylenedioxymethamphetamine (MDMA)
Methylenedioxypyrovalerone (MDPV)
Methylphenidate
Metoprolol
Midazolam
Mirtazapine
Mitragynine (Kratom)
Morphine*
N-desmethyltramadol
Naproxen
Norbuprenorphine
Norchlordiazepoxide
Norclomipramine
Norcodeine
Norcyclobenzaprine
Nordiazepam
Nordoxepin
Norfentanyl
Norfluoxetine
Norketamine
Normeperidine
Normirtazapine
Noroxycodone
Norpropoxyphene
Norsertraline
Nortrimipramine
Nortriptyline
Norverapamil
O-desmethyltramadol
Olanzapine
Oxazepam
Oxycodone
Oxymorphone
Paroxetine
Pentobarbital
Phencyclidine
Phenethylamine
Pheniramine
Phenobarbital
Phentermine
Phenylephrine
Phenytoin
Pregabalin
Propoxyphene
Propranolol
Pseudoephedrine
Quetiapine
Quinine
Ranitidine
Ritalinic acid
Salicylate
Sertraline
Strychnine
Tapentadol
Temazepam
Topiramate
Tramadol
Trazodone
Trimipramine
Valproic acid
Venlafaxine
Verapamil
Zolpidem

*and/or metabolite(s)

Synthetic Cannabinoid/Designer Drugs SCDD

Analyte	Program Code	Challenges per Shipment
	SCDD	
Synthetic cannabinoid/designer drugs	▮	3

Synthetic cannabinoids and designer drug stimulants are widespread and constantly changing in respect to the available chemical moieties. In order to stay contemporary, the CAP has decided to modify the compounds in this program in accordance with the appearance and prevalence of new compounds.

Program Information

- Three 10.0-mL urine specimens
- For laboratories that perform screening and confirmatory testing for the compounds found in this program
- Two shipments per year

SCDD Program Drug Listing

Challenges will include a mix of drugs.

For the most current list of drugs, please go to cap.org. Under the Laboratory Improvement tab, click on Catalog and Ordering Information. The list is located under the PT Order Supplements header.

Novel Opioids and Benzodiazepines NOB

Analyte	Program Code	Challenges per Shipment
	NOB	
Novel opioids and benzodiazepines	▮	3

Program Information

- Three 15.0-mL whole blood specimens
- For forensic and toxicology laboratories that perform qualitative and/or quantitative analysis of synthetic opioids and benzodiazepines
- Two shipments per year

NOB Program Drug Listing

Challenges will include a mix of drugs.

For the most current list of drugs, please go to cap.org. Under the Laboratory Improvement tab, click on Catalog and Ordering Information. The list is located under the PT Order Supplements header.

Blood Cannabinoids THCB

Analyte	Program Code	Challenges per Shipment
	THCB	
Delta-8-THC NEW	▮	3
Delta-9-THC	▮	3
Delta-9-THC-COOH	▮	3
11-hydroxy-THC	▮	3

Program Information

- Three 10.0-mL whole blood specimens
- For toxicology laboratories that perform qualitative and/or quantitative analysis of cannabinoids in blood
- Two shipments per year

Antifungal Drugs Monitoring AFD

Analyte	Program Code	Challenges per Shipment
	AFD	
Fluconazole	▮	3
Itraconazole	▮	3
Posaconazole	▮	3
Voriconazole	▮	3

Program Information

- Three 2.0-mL serum specimens
- For laboratories performing quantitative analysis of antifungal agents
- Two shipments per year

Clinical Toxicology Testing: A Guide for Laboratory Professionals, Second Edition

This book is a practical guide to directing hospital toxicology laboratory operations. This edition features expanded sections on testing in the clinical setting, methodologies, and more user-friendly information on specific analytes. It provides the reader with a comprehensive view of what is needed—and expected—when offering a clinical toxicology service.

Contents include:

- Toxicology testing in the clinical setting, including new chapters on pediatric testing and chronic opioid therapy
- Toxicokinetics and methodologies, with new and expanded information on laboratory-developed tests, screening assays, targeted tests, and oral fluids and alternative matrices
- Specific analytes, including novel psychoactive substances and the use of medical cannabis
- Appendices on such useful topics as urine and serum screens, therapeutic drug monitoring, and proficiency testing

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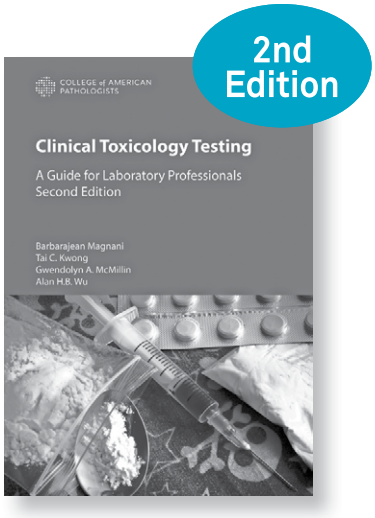

Item number: PUB227
Softcover; 2020

Drug Monitoring for Pain Management DMPM

Analyte	Program Code	Challenges per Shipment
	DMPM	
See drug listing below	▮	3

Program Information

- Three 40.0-mL urine specimens
- For laboratories offering qualitative, confirmatory, and/or quantitative urine drug analysis for pain management
- Includes clinical cases and questions along with detailed descriptions of how to interpret test results
- Two shipments per year

DMPM Program Drug Listing

Challenges will include a mix of drugs from the list below.

Amphetamine group
6-acetylmorphine (6-AM)
7-aminoclonazepam
Alpha-hydroxyalprazolam
Alprazolam
Amphetamine
Barbiturate group
Benzodiazepine group
Benzoylecgonine
Buprenorphine
Buprenorphine and/or metabolites
Butalbital
Cannabinoids
Carisoprodol
Carisoprodol and/or metabolites
Clonazepam
Cocaine
Cocaine and/or metabolites
Codeine
Delta-9-THC-COOH
Diazepam
Fentanyl
Fentanyl and/or metabolites
Gabapentin
Hydrocodone
Hydromorphone
l-Amphetamine
l-Methamphetamine
Lorazepam
Meperidine
Meperidine and/or metabolites
Meprobamate
Methadone
Methadone metabolite (EDDP)
Methamphetamine
Methylenedioxyamphetamine (MDA)
Methylenedioxymethamphetamine (MDMA)
Morphine
N-desmethyltramadol
Naloxone NEW
Norbuprenorphine
Nordiazepam
Norfentanyl
Norhydrocodone
Normeperidine
Noroxycodone
Noroxymorphone
Norpropoxyphene
O-desmethyltramadol
Opiate group
Oxazepam
Oxycodone
Oxymorphone
Phenobarbital
Pregabalin
Propoxyphene
Propoxyphene and/or metabolites
Tapentadol
Tapentadol-O-sulfate
Temazepam
Tramadol
Tramadol and/or metabolites

Drug-Facilitated Crime DFC		
Analyte	**Program Code**	**Challenges per Shipment**
	DFC	
See drug listing below	▮	3

Program Information

- Three 25.0-mL urine specimens
- For laboratories performing qualitative urine drug analysis with confirmation testing
- Designed for laboratories performing testing for drugs associated with drug-facilitated crimes, which target drugs at much lower concentrations than in other toxicology programs
- Two shipments per year

DFC Program Drug Listing

Challenges will include a mix of drugs from the list below.

4-hydroxytriazolam
7-aminoclonazepam
7-aminoflunitazepam
Alpha-hydroxyalprazolam
Amitriptyline
Amobarbital
Amphetamine
Benzoylecgonine
Bromazepam
Brompheniramine
Butalbital
Carisoprodol
Chlorpheniramine
Citalopram/escitalopram
Clobazam
Clonidine
Clozapine
Codeine
Cyclobenzaprine
Delta-9-THC-COOH
Desipramine
Dextromethorphan
Diphenhydramine
Doxepin
Doxylamine
Estazolam
Etizolam
Fentanyl
Fluoxetine
Gabapentin
Gamma hydroxybutyrate (GHB)
Hydrocodone
Hydromorphone
Hydroxyzine
Imipramine
Ketamine
Lorazepam
Meperidine
Meprobamate
Meta-chlorophenylpiperazine (m-CPP)
Methadone
Methadone metabolite (EDDP)
Methamphetamine
Methylenedioxyamphetamine (MDA)
Methylenedioxymethamphetamine (MDMA)
Midazolam
Morphine
Norbuprenorphine
Nordoxepin
Norfentanyl
Norfluoxetine
Norketamine
Normeperidine
Norpropoxyphene
Norsertraline
Nortriptyline
Norvenlafaxine
O-desmethyltramadol
Oxazepam
Oxycodone
Oxymorphone
Paroxetine
Pentobarbital
Phencyclidine (PCP)
Phenobarbital
Phenytoin
Promethazine
Propoxyphene
Quetiapine
Scopolamine
Secobarbital
Sertraline
Tapentadol
Temazepam
Tetrahydrozoline
Topiramate
Tramadol
Valproic acid
Venlafaxine
Zaleplon
Ziprasidone
Zolpidem
Zopiclone/Eszopiclone

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:

- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Toxicology, Validated Material

Validated Material	Program Code	Corresponding Program	Page
Urine Drug Testing, Screening	UDSM	UDS	102

Program Information

- Five 10.0-mL liquid urine specimens
- Three shipments per year

Hematology Benchtop Reference Guide

- More than 50 different cell identifications, including common and rare cells
- Detailed descriptions for each cell morphology
- Six tabbed sections for easy reference
  - Erythrocytes
  - Erythrocyte Inclusions
  - Granulocytic (Myeloid) and Monocytic Cells
  - Lymphocytic Cells
  - Platelets and Megakaryocytic Cells
  - Microorganisms and Artifacts
- A durable and water-resistant format to withstand years of benchtop use—5” x 6½”

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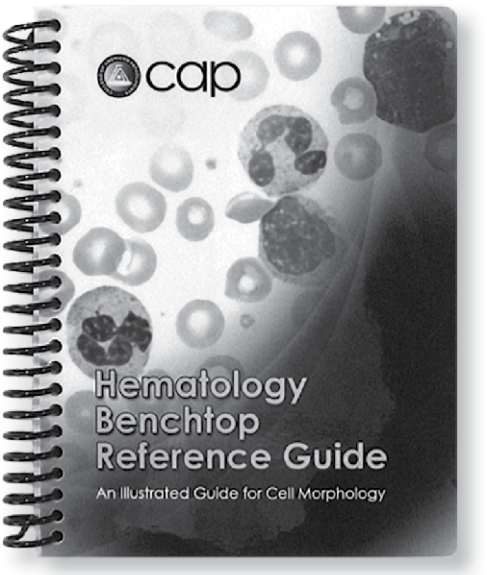


Item number: HBRG
Spiral bound; 60 pages;
50+ images; 2012

10 Accuracy-Based Programs

The CAP's Accuracy-Based Programs do what proficiency testing can't.

- Verify the accuracy of your test results against a gold standard.
- Accuracy-Based Programs use challenge specimens that are matrix-related, bias-free, and have target values traceable to certified reference materials.
- Only the CAP's Accuracy-Based Programs allow laboratories to compare their test results with reference method results.

Accuracy-Based Programs

Accuracy-Based Programs

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Accuracy-Based Lipids ABL

Analyte	Program Code	Challenges per Shipment
	ABL	
Apolipoprotein A1	▮	3
Apolipoprotein B	▮	3
Cholesterol*	▮	3
HDL cholesterol*	▮	3
Non-HDL cholesterol	▮	3
LDL cholesterol	▮	3
Lipoprotein(a)	▮	3
Triglycerides*	▮	3

*This analyte will be evaluated against the reference method.

Program Information

- Three 1.0-mL human serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Accuracy-Based Vitamin D ABVD

Analyte	Program Code	Challenges per Shipment
	ABVD	
25-OH vitamin D (D2 and D3)	▮	3
Calcium	▮	3

Additional Information

- The Centers for Disease Control and Prevention (CDC) will establish reference targets using isotope-dilution LC-MS/MS method.
- Specimens are collected by a modified application of Clinical and Laboratory Standards Institute Guideline CLSI C37-A, *Preparation and Validation of Commutable Frozen Human Serum Pools as Secondary Reference Materials for Cholesterol Measurement Procedures; Approved Guideline.*

Program Information

- Three 1.0-mL liquid human serum specimens
- Serum is from multi-donor endogenous pools.
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Accuracy-Based Testosterone, Estradiol ABS

Analyte	Program Code	Challenges per Shipment
	ABS	
Albumin	▮	3
Cortisol	▮	3
Estradiol	▮	3
Follicle-stimulating hormone (FSH)	▮	3
Luteinizing hormone (LH)	▮	3
Prostate-specific antigen (PSA), total	▮	3
Sex hormone-binding globulin (SHBG)	▮	3
Testosterone	▮	3
Thyroid-stimulating hormone (TSH)	▮	3

The Centers for Disease Control and Prevention (CDC) will set target values for testosterone and estradiol using the established reference methods.

Program Information

- Three 1.0-mL human serum specimens
- Two shipments per year

Accuracy-Based Urine ABU

Analyte	Program Code	Challenges per Shipment
	ABU	
Calcium	▮	3
Creatinine	▮	3
Protein, total	▮	3
Urine albumin, quantitative	▮	3
Urine albumin: creatinine ratio	▮	3

Program Information

- Three 5.0-mL human urine specimens
- Two shipments per year

Creatinine Accuracy
Calibration Verification/Linearity LN24

Analyte	Program Code	
	LN24	LN24 Target Range
Creatinine	▮	0.6–4.0 mg/dL
Estimated glomerular filtration rate (eGFR)	▮	

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

eGFR results will be evaluated with a calculation verification comparison.

The College of American Pathologists (CAP) and the National Kidney Disease Education Program (NKDEP) have an initiative to harmonize clinically reported creatinine values. This initiative is analogous to what the federal health agencies and the clinical laboratory community did to improve the accuracy of cholesterol and glycohemoglobin testing.

Program Information

- Six 1.0-mL human serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Harmonized Thyroid ABTH

Analyte	Program Code	Challenges per Shipment
	ABTH	
Triiodothyronine (T3), free	▮	3
Triiodothyronine (T3), total	▮	3
Thyroxine (T4), free	▮	3
Thyroxine (T4), total	▮	3
Thyroid-stimulating hormone (TSH)	▮	3

Additional Information

- Analytes will be evaluated using harmonization.
- Specimens are collected by a modified application of Clinical and Laboratory Standards Institute Guideline CLSI C37-A, *Preparation and Validation of Commutable Frozen Human Serum Pools as Secondary Reference Materials for Cholesterol Measurement Procedures; Approved Guideline.*

Program Information

- Three 1.0-mL frozen human serum specimens
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Hemoglobin A_{1c} Accuracy Calibration Verification/Linearity LN15

Analyte	Program Code	
	LN15	LN15 Target Range
Hemoglobin A_{1c}	▮	5%–12%

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

CAP-assigned target values are derived from Hemoglobin A_{1c} measurements assayed by National Glycohemoglobin Standardization Program (NGSP) secondary reference laboratories.

Program Information

- Six 0.8-mL liquid human whole blood specimens
- Two shipments per year

Hemoglobin A_{1c} GH2, GH5

Analyte	Challenges per Shipment	
	Program Code	
	GH2	GH5
Hemoglobin A_{1c}	3	5

Additional Information

- These programs will be evaluated against the National Glycohemoglobin Standardization Program (NGSP) reference method.
- The CAP Laboratory Accreditation Program requires all accredited laboratories performing non-waived testing for Hemoglobin A_{1C} to complete 15 proficiency testing challenges per year.
- For multiple instrument reporting options, see the Quality Cross Check program, GHQ on page 65.
- These programs have limited stability. Laboratories outside the US or Canada should consider purchase of GH5I, which has longer stability.

Program Information

- GH2 - Three 0.8-mL liquid human whole blood specimens; two shipments per year
- GH5 - Five 0.8-mL liquid human whole blood specimens; three shipments per year

Accuracy-Based Glucose, Insulin, and C-Peptide ABGIC

Analyte	Program Code	Challenges per Shipment
	ABGIC	
C-peptide	▮	3
Glucose	▮	3
Insulin	▮	3

Additional Information

- Target values are based upon the isotope-dilution gas chromatography-mass spectrometry reference measurement procedure for glucose performed by the CDC Reference Laboratory, Division of Laboratory Sciences, Centers for Disease Control and Prevention (Atlanta, GA).
- Target values for C-peptide are established by isotope-dilution mass spectrometry performed at the University of Missouri, Diabetes Diagnostic Laboratory.

Program Information

- Three 1.0-mL serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Validated Materials

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:

- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Chemistry, Validated Materials

Validated Material	Validated Material Code	Corresponding Program	Page
General Chemistry and Therapeutic Drugs	CZVM	CZ	56-58
Cerebrospinal Fluid	MVM	M	76
Urine Chemistry—General	UVM	U	70

Coagulation—Limited, Validated Material

Validated Material	Validated Material Code	Corresponding Program	Page
Coagulation—Limited	CGM	CGL	166

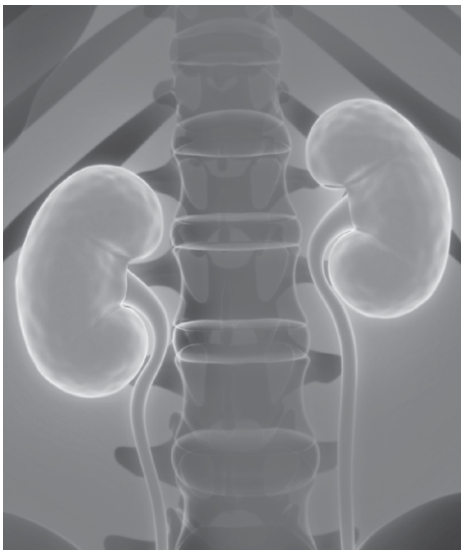
Endocrinology, Validated Materials

Validated Material	Validated Material Code	Corresponding Program	Page
Ligand—General	KVM	K	84
Sex Hormones	YVM	Y	86

Toxicology, Validated Material

Validated Material	Validated Material Code	Corresponding Program	Page
Urine Drug Testing, Screening	UDSM	UDS	102

11 Instrumentation Verification Tools



Ensure your instrument and method are performing to their optimal levels.

Verify your analytical measurement range for Cystatin C using our newest calibration verification/ linearity program (LN49).

Instrumentation Verification Tools

New Programs NEW

Discontinued Programs

Troponin T Calibration Verification/Linearity (LN27)

Calibration Verification/Linearity

The CAP CVL Program

The CAP is your trusted calibration verification and linearity partner. Our CVL program will help you meet both CLIA regulations and CAP Laboratory Accreditation Program requirements for calibration and analytical measurement range verification under 42 CFR 493.1255(bX3). Do not let instrument problems impact your patient results; use the calibration verification and linearity studies to ensure your instrument and method are performing to their optimal levels.

With your enrollment in the CAP CVL program you will receive:

- **Testing Kit**
  - Kit Instructions—Contain important information to help you complete testing and accurately report your results
  - Specimens—The majority of CAP CVL programs offer human-based materials to closely mimic your patient results
- **Customized Report Package**
  - Executive Summary—A quick overview of both your calibration verification and linearity results for all reported analytes
  - Calibration Verification Evaluation
  - Linearity Evaluation
    - Rapid result turnaround is complimentary for most CVL programs. View your expedited linearity evaluations within two business days of submission by logging into e-LAB Solutions Suite.
  - Linearity Troubleshooting Report
  - Participant Summary—A summary of laboratory performance that includes peer group statistics and enhanced diagnostic information for early insight into potential problems
- **Additional Tools**
  - Calibration Verification/Linearity Program User's Guide—Get assistance in interpreting your evaluations and reports as well as helpful troubleshooting information with suggested actions. Also available online by logging into e-LAB Solutions Suite
  - Calibration Verification Troubleshooting Guide—The guide provides suggested actions if you receive a calibration verification result of Different, or if your evaluation result is Verified over a range that does not include all of your reported results
  - Calibration Verification/Linearity Surveys Investigation Checklist for Problematic Results—Interpretative checklists are included to help with troubleshooting and documentation

Your Total Calibration Verification/Linearity (CVL) Solution

CVL Program	Page No.	Corresponding Proficiency Testing Program	Page No.
LN2 - Chemistry, Lipid, Enzyme CVL	124	C1, C3/C3X, C4, CZ/CZX/CZ2X	56-58
LN2BV - Chemistry, Lipid, Enzyme all Beckman (except AU), Vitros CVL	124		
LN3 - Therapeutic Drug Monitoring CVL	125	CZ/CZX/CZ2X/Z	56-58
LN5 - Ligand CVL	125	K/KK	84
LN5S - Ligand all Siemens ADVIA (Centaur, CP, and XP) and Atellica IM CVL	125		
LN6 - Urine Chemistry CVL	126	U	70
LN7 - Immunology CVL	126	IG/IGX	216
LN8 - Reproductive Endocrinology CVL	127	Y/YY	86
LN9 - Hematology CVL	127	FH series, HE	140
LN11 - Serum Ethanol CVL	127	AL2	106
LN12 - C-Reactive Protein CVL	128	CRP	216
LN13, LN13C - Blood Gas/Critical Care CVL	128	AQ, AQH, AQIS	94-95
LN15 - Hemoglobin A_{1c} Accuracy CVL	128	GH2, GH5	65
LN16 - Homocysteine CVL	129	HMS	66
LN17 - Whole Blood Glucose CVL	129	N/A	
LN18, LN19 - Reticulocyte CVL	129	RT, RT2, RT3, RT4	146
LN20 - Urine Albumin CVL	130	U	70
LN21 - High-Sensitivity C-Reactive Protein CVL	130	HSCRP	66
LN22 - Flow Cytometry CVL	130	FL	224
LN23 - Prostate-Specific Antigen CVL	130	K/KK	84
LN24 - Creatinine Accuracy CVL	131	C1, C3/C3X, C4, CZ/CZX/CZ2X	56-58
LN25 - Troponin I CVL	131	CRT, CRTI	62
LN30 - B-Type Natriuretic Peptides CVL	131	BNP, BNP5	61
LN31 - Immunosuppressive Drugs CVL	132	CS	59
LN32 - Ammonia CVL	132	C1, C3/C3X, CZ/CZX/CZ2X	56-58
LN33 - Serum Myoglobin CVL	132	CRT, CRTI	62
LN34 - Tumor Markers CVL	132	TM/TMX	91
LN35 - Thrombophilia CVL	133	CGS2	168
LN36 - Heparin CVL	133	CGS4	168
LN37 - von Willebrand Factor Antigen CVL	133	CGS3	168
LN38 - CMV Viral Load CVL	133	VLS, VLS2	206
LN39 - HIV Viral Load CVL	133	HIVG, HV2	206
LN40 - Vitamin D CVL	134	VITD	86
LN41 - Procalcitonin CVL	134	PCT	78
LN42 - D-Dimer CVL	134	CGL, CGDF	166
LN44 - Fibrinogen CVL	134	CGL	166
LN45 - HCV Viral Load CVL	133	HCV2	205
LN46 - C-Peptide/Insulin CVL	135	ING	88
LN47 - High-Sensitivity Troponin T CVL	135	HCRT, HCRTI	62
LN48 - High-Sensitivity Troponin I CVL	135	HCRT, HCRTI	62
LN49 - Cystatin C CVL NEW	135	CYS	76

All CVL programs provide individual evaluation reports by analytes, an executive summary, and graphical plots for linearity and calibration verification.

Chemistry, Lipid, Enzyme Calibration Verification/Linearity LN2, LN2BV

Analyte	Program Code	LN2	LN2BV		Units
	LN2, LN2BV	(All Instruments)	All Beckman (except AU)	Vitros	
Albumin	▮	1.5–9.0			g/dL
Calcium	▮	4.0–18.0			mg/dL
Chloride	▮	60–180			mmol/L
CO_2	▮	7–42			mmol/L
Creatinine	▮	0.8–34.0			mg/dL
Glucose	▮	20–750			mg/dL
Iron	▮	10–950			µg/dL
Magnesium	▮	0.5–9.0			mg/dL
Osmolality	▮	200–600			mOsm/kg H_2O
Phosphorus	▮	0.5–22.0			mg/dL
Potassium	▮	1.5–13.0			mmol/L
Protein	▮	1.5–12.0			g/dL
Sodium	▮	65–195			mmol/L
Urea nitrogen/Urea	▮	5–170			mg/dL
Uric acid	▮	1–25			mg/dL
Alkaline phosphatase	▮	25–1,800	25–1,000	25–1,100	U/L
ALT (SGPT)	▮	10–900	10–650	30–700	U/L
Amylase	▮	30–1,800	30–900	30–800	U/L
AST (SGOT)	▮	10–900	10–500	10–700	U/L
Creatine kinase	▮	25–2,000	25–1,200	25–700	U/L
CK-2 (MB) mass	▮	1–250	1–300	1–200	ng/mL
Gamma glutamyl transferase	▮	10–1,400	10–900	10–1,100	U/L
Lactate dehydrogenase	▮	50–1,800	50–700	185–3,000	U/L
Lipase	▮	20–1,200	20–190	150–2,500	U/L
Bilirubin, direct	▮	0.1–10.0			mg/dL
Bilirubin, total	▮	0.2–25.0			mg/dL
Cholesterol	▮	35–625			mg/dL
HDL	▮	7–120			mg/dL
Triglycerides	▮	20–700			mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Seven 5.0-mL liquid serum specimens for basic chemistry, six 3.0-mL liquid serum specimens for direct and total bilirubin, seven 2.0-mL liquid serum specimens for lipids, and seven 5.0-mL liquid serum specimens for enzymes
- LN2 – Appropriate for most major instruments
- LN2BV – Appropriate for Beckman (except AU) and Vitros instruments only
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Therapeutic Drug Monitoring Calibration Verification/Linearity LN3

Analyte	Program Code	
	LN3	LN3 Target Ranges
Acetaminophen	▮	20–350 µg/mL
Amikacin	▮	2–45 µg/mL
Carbamazepine	▮	2–25 µg/mL
Digoxin	▮	0.5–4.4 ng/mL
Gentamicin	▮	1–11 µg/mL
Lidocaine	▮	1–10 µg/mL
Lithium	▮	0.3–4.0 mmol/L
Phenobarbital	▮	8–80 µg/mL
Phenytoin	▮	5–35 µg/mL
Salicylate	▮	7–90 mg/dL
Theophylline	▮	5–35 µg/mL
Tobramycin	▮	1–10 µg/mL
Valproic acid	▮	15–140 µg/mL
Vancomycin	▮	7–85 µg/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Six 4.0-mL liquid serum specimens
- A seventh 4.0-mL liquid serum specimen for acetaminophen, carbamazepine, and vancomycin
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Ligand Calibration Verification/Linearity LN5, LN5S

Analyte	Program Code	Target Ranges	
	LN5, LN5S*	LN5 Target Ranges	LN5S Target Ranges
AFP	▮	1.0–900.0 ng/mL	
CEA	▮	0.5–750.0 ng/mL	0.6–90.0 ng/mL
Cortisol	▮	1–65 µg/dL	
Ferritin	▮	2–1,100 ng/mL	
Folate	▮	1.3–20.0 ng/mL	
Human chorionic gonadotropin (hCG)	▮	5–14,000 mIU/mL	
Triidothyronine (T3), total	▮	0.5–7.0 ng/mL	
Thyroxine (T4), total	▮	1–80 µg/dL	
Thyroid-stimulating hormone (TSH)	▮	0.01–100.00 µIU/mL	
Vitamin B_{12}	▮	100–2,200 pg/mL	

*The LN5S CVL will allow Siemens ADVIA (Centaur, XP, and CP) and Atellica IM users to report other major instruments for analytes other than CEA, if needed.

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- LN5 - Eight 4.0-mL liquid serum specimens; appropriate for most major instruments except Siemens ADVIA (Centaur, XP, and CP) and Atellica IM users
- LN5S - Thirteen 4.0-mL liquid serum specimens; appropriate for Siemens ADVIA (Centaur, XP, and CP) and Atellica IM users
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Urine Chemistry Calibration Verification/Linearity LN6

Analyte	Program Code	
	LN6	LN6 Target Ranges
Amylase	▮	40–2,500 U/L
Calcium	▮	5–30 mg/dL
Chloride	▮	20–300 mmol/L
Creatinine	▮	20–540 mg/dL
Glucose	▮	25–640 mg/dL
Osmolality	▮	30–1,800 mOsm/kg H_20
Phosphorus	▮	15–225 mg/dL
Potassium	▮	7–225 mmol/L
Protein, total	▮	10–210 mg/dL
Sodium	▮	20–310 mmol/L
Urea nitrogen/Urea	▮	20–2,000 mg/dL
Uric acid	▮	6–200 mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Twenty 4.0-mL liquid simulated urine specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Immunology Calibration Verification/Linearity LN7

Analyte	Program Code	
	LN7	LN7 Target Ranges
Alpha-1 antitrypsin	▮	35–500 mg/dL
Complement C3	▮	21–420 mg/dL
Complement C4	▮	5–125 mg/dL
IgA	▮	32–650 mg/dL
IgG	▮	160–3,800 mg/dL
IgM	▮	25–550 mg/dL
Transferrin	▮	50–750 mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Seven 2.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Reproductive Endocrinology Calibration Verification/Linearity LN8

Analyte	Program Code	
	LN8	LN8 Target Ranges
Estradiol	▮	25–4,500 pg/mL
Follicle-stimulating hormone (FSH)	▮	3–190 mIU/mL
Human chorionic gonadotropin (hCG)	▮	5–8,000 mIU/mL
Luteinizing hormone (LH)	▮	2–190 mIU/mL
Progesterone	▮	1–50 ng/mL
Prolactin	▮	3–315 ng/mL
Testosterone	▮	20–1,500 ng/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Seven 4.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Hematology Calibration Verification/Linearity LN9

Analyte	Program Code	
	LN9	LN9 Target Ranges
Hemoglobin	▮	1.0–22.5 g/dL
Platelet count	▮	10–4,200 x 10^9/L
RBC count	▮	0.3–7.5 x 10^{12}/L
WBC count	▮	0.5–350.0 x 10^9/L

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Twenty 3.0-mL liquid specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Serum Ethanol Calibration Verification/Linearity LN11

Analyte	Program Code	
	LN11	LN11 Target Range
Serum ethanol	▮	15–550 mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Seven 3.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

C-Reactive Protein Calibration Verification/Linearity LN12

Analyte	Program Code	
	LN12	LN12 Target Range
C-reactive protein	▮	7–316 mg/L

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Not appropriate for reporting high-sensitivity C-reactive protein (hsCRP). For reporting hsCRP, use LN21 on page 130.

Program Information

- Seven 1.0-mL liquid serum specimens
- Two shipments per year

Blood Gas/Critical Care Calibration Verification/Linearity LN13, LN13C

Analyte	Program Code		Program Code	
	LN13	LN13 Target Ranges	LN13C	LN13C Target Ranges
pCO_2	▮	12–91 mm Hg	▮	12–91 mm Hg
pH	▮	6.83–7.82	▮	6.83–7.82
pO_2	▮	18–490 mm Hg	▮	18–490 mm Hg
Calcium, ionized			▮	0.15–3.30 mmol/L
Chloride			▮	62–148 mmol/L
Glucose			▮	10–465 mg/dL
Lactate			▮	0.2–18.0 mmol/L
Potassium			▮	0.5–10.7 mmol/L
Sodium			▮	83–172 mmol/L

Program Information

- LN13, LN13C - Ten 2.5-mL ampules of aqueous specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Hemoglobin A_{1c} Accuracy Calibration Verification/Linearity LN15

Analyte	Program Code	
	LN15	LN15 Target Range
Hemoglobin A_{1c}	▮	5%–12%

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

CAP-assigned target values are derived from Hemoglobin A_{1c} measurements assayed by National Glycohemoglobin Standardization Program (NGSP) secondary reference laboratories.

Program Information

- Six 0.8-mL liquid human whole blood specimens
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Homocysteine Calibration Verification/Linearity LN16

Analyte	Program Code	
	LN16	LN16 Target Range
Homocysteine	▮	5–65 µmol/L

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Six 1.0-mL liquid serum specimens
- Two shipments per year

Whole Blood Glucose Calibration Verification/Linearity LN17

Analyte	Program Code	
	LN17	LN17 Target Range
Whole blood glucose	▮	50–400 mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Five 2.0-mL liquid whole blood specimens
- Report up to 10 different ancillary testing sites or instruments
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Reticulocyte Calibration Verification/Linearity LN18, LN19

Instrument/Method	Program Code		Program Code	
	LN18	LN18 Target Range	LN19	LN19 Target Range
Coulter Gen-S™, LH 500, LH 700 series, and UniCel DxH			▮	0.3%–27.0%
All other instruments	▮	0.3%–24.0%		

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- LN18 - Five 2.5-mL liquid whole blood specimens with pierceable caps
- LN19 - Five 3.0-mL liquid whole blood cell specimens with pierceable caps
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Urine Albumin Calibration Verification/Linearity LN20

Analyte	Program Code	
	LN20	LN20 Target Ranges
Urine albumin	▮	10–350 mg/L
Urine creatinine	▮	20–500 mg/dL
Urine albumin/creatinine ratio	▮	

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

The urine albumin/creatinine ratio results will be evaluated with a calculation verification comparison.

Program Information
- Six 5.0-mL urine specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

High-Sensitivity C-Reactive Protein Calibration Verification/Linearity LN21

Analyte	Program Code	
	LN21	LN21 Target Range
High-sensitivity C-reactive protein	▮	0.5–18.0 mg/L

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 1.0-mL liquid serum specimens
- For high-sensitivity methods only
- Two shipments per year

Flow Cytometry Calibration Verification/Linearity LN22

Analyte	Program Code	
	LN22	LN22 Target Ranges
CD3+	▮	50%–70% positive
CD3+ T lymphocytes absolute	▮	350–4,000 cells/µL
CD3+/CD4+	▮	1%–40% positive
CD3+/CD4+ T lymphocytes absolute	▮	6–2,000 cells/µL
CD3+/CD8+	▮	25%–40% positive
CD3+/CD8+ T lymphocytes absolute	▮	250–1,600 cells/µL

Program Information
- Seven 1.0-mL liquid whole blood specimens
- Two shipments per year

Prostate-Specific Antigen Calibration Verification/Linearity LN23

Analyte	Program Code	
	LN23	LN23 Target Range
Prostate-specific antigen	▮	0.1–90.0 ng/mL

Program Information
- Twelve 1.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Creatinine Accuracy Calibration Verification/Linearity LN24

Analyte	Program Code	
	LN24	LN24 Target Range
Creatinine	▮	0.6–4.0 mg/dL
Estimated glomerular filtration rate (eGFR)	▮	

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

eGFR results will be evaluated with a calculation verification comparison.

The College of American Pathologists (CAP) and the National Kidney Disease Education Program (NKDEP) have an initiative to harmonize clinically reported creatinine values. This initiative is analogous to what the federal health agencies and the clinical laboratory community did to improve the accuracy of cholesterol and glycohemoglobin testing.

Program Information

- Six 1.0-mL human serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Troponin I Calibration Verification/Linearity LN25

Analyte	Program Code	
	LN25	LN25 Target Range
Troponin I	▮	0.1–65.0 ng/mL

LN25 is not appropriate for reporting high-sensitivity troponin. For reporting high-sensitivity troponin I, use LN48 on page 135.

Program Information

- LN25 - Seven 2.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

B-Type Natriuretic Peptides Calibration Verification/Linearity LN30

Analyte	Program Code	
	LN30	LN30 Target Ranges
BNP	▮	18–5,000 pg/mL
NT-proBNP	▮	35–25,000 pg/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Six 1.0-mL liquid plasma specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Immunosuppressive Drugs Calibration Verification/Linearity LN31

Analyte	Program Code	
	LN31	LN31 Target Ranges
Cyclosporine	▮	60–1,200 ng/mL
Tacrolimus	▮	1.5–30.0 ng/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Seven 2.0-mL liquid whole blood hemolysate specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Ammonia Calibration Verification/Linearity LN32

Analyte	Program Code	
	LN32	LN32 Target Range
Ammonia	▮	13–900 µmol/L

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Seven 2.0-mL aqueous specimens
- Two shipments per year

Serum Myoglobin Calibration Verification/Linearity LN33

Analyte	Program Code	
	LN33	LN33 Target Range
Myoglobin	▮	25–900 ng/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Seven 1.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Tumor Markers Calibration Verification/Linearity LN34

Analyte	Program Code	
	LN34	LN34 Target Ranges
CA 125	▮	1–1,000 U/mL
CA 15-3	▮	2–190 U/mL
CA 19-9	▮	10–900 U/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Seven 3.0-mL liquid serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Coagulation Calibration Verification/Linearity LN35, LN36, LN37

Analyte	Program Code			
	LN35	LN36	LN37	Target Ranges
Antithrombin activity	▮			10%–130%
Protein C activity	▮			10%–100%
Heparin, low molecular weight		▮		0.1–2.0 U/mL
Heparin, unfractionated		▮		0.1–1.3 U/mL
von Willebrand factor antigen			▮	5%–140%

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

The LN35, LN36, and LN37 CVL programs meet the CAP Accreditation requirements HEM.38009, 38010, and 38011.

Program Information

- LN35, LN37 - Six 1.0-mL frozen plasma specimens per mailing
- LN36 - Twelve 1.0-mL frozen plasma specimens per mailing, which include six for low molecular weight heparin and six for unfractionated heparin
- Two shipments per year; ships on dry ice

Viral Load Calibration Verification/Linearity LN38, LN39, LN45

Analyte	Program Code			
	LN38	LN39	LN45	Target Ranges
CMV viral load	▮			316.0–1.0M IU/mL
HIV viral load		▮		50.0–5.0M IU/mL
HCV viral load			▮	50.0-280.0M IU/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- LN38 - Six 1.5-mL liquid plasma specimens
- LN39 - Six 2.5-mL plasma specimens
- LN45 - Seven 2.5-mL frozen DNA specimens
- Two shipments per year; LN45 ships on dry ice

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Vitamin D Calibration Verification/Linearity LN40

Analyte	Program Code	
	LN40	LN40 Target Range
25-OH vitamin D, total	▮	10–135 ng/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 1.0-mL serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Procalcitonin Calibration Verification/Linearity LN41

Analyte	Program Code	
	LN41	LN41 Target Range
Procalcitonin	▮	0.3–175.0 ng/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 1.0-mL frozen serum specimens
- Two shipments per year; ships on dry ice

D-Dimer Calibration Verification/Linearity LN42

Analyte	Program Code	
	LN42	LN42 Target Range
D-dimer	▮	220–5,500 ng/mL FEU

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 1.0-mL plasma specimens
- Two shipments per year

Fibrinogen Calibration Verification/Linearity LN44

Analyte	Program Code	
	LN44	LN44 Target Range
Fibrinogen	▮	80–900 mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 1.0-mL frozen plasma specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year; ships on dry ice

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

C-Peptide/Insulin Calibration Verification/Linearity LN46

Analyte	Program Code	
	LN46	LN46 Target Ranges
C-peptide	▮	0.2–35.0 ng/mL
Insulin	▮	0.6–800.0 µIU/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Seven 2.0-mL frozen serum specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

High-Sensitivity Troponin T Calibration Verification/Linearity LN47

Analyte	Program Code	
	LN47	LN47 Target Range
High-sensitivity troponin T	▮	10–9,000 ng/L

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 2.0-mL serum specimens
- Two shipments per year

High-Sensitivity Troponin I Calibration Verification/Linearity LN48

Analyte	Program Code	
	LN48	LN48 Target Range
High-sensitivity troponin I	▮	10–25,000 ng/L

Program Information
- Six 2.0-mL serum specimens
- Two shipments per year

NEW

Cystatin C Calibration Verification/Linearity LN49

Analyte/Procedure	Program Code	
	LN49	Target Range
Cystatin C	▮	0.5 - 8.0 mg/L
Estimated glomerular filtration rate (eGFR)	▮	

eGFR results will be evaluated with a calculation verification comparison.

Program Information
- Six 1.0-mL liquid serum specimens
- Two shipments per year

Please note that the ranges listed are an estimate of the values recovered. Some instruments may recover lower or higher values than the ranges listed.

Instrumentation Quality Management Programs

Instrumentation I			
Challenges	**Program Code**		
	I		
	A Shipment	**B Shipment**	**C Shipment**
Adjustable micropipette calibration verification/linearity	▮		▮
Analytical balance check	▮		▮
Gravimetric pipette calibration	▮		▮
Microtiter plate linearity	▮		▮
Refractometer calibration	▮		▮
Spectrophotometer (stray light check)	▮		▮
Absorbance check – UV wavelength		▮	
Fluorescent intensity check – fluorescent microscopes		▮	
Ocular micrometer calibration		▮	
Osmometer study		▮	
Peak absorbance measurement		▮	
pH meter check		▮	
Photometric calibration – visible wavelength		▮	

WARNING: The Instrumentation (I) program specimens may contain corrosive or toxic substances, environmental hazards, or irritants.

Program Information

- Designed to assess instruments not routinely challenged during the proficiency testing process
- Includes appropriate materials to assess important functional parameters, including accuracy and linearity
- Three shipments per year

The CAP is your trusted calibration verification and linearity partner, offering a comprehensive menu of programs for diagnostic confidence.

- **Expedited results**—View your linearity evaluation for most CVL programs within two business days of data submission.
- **Customized report package**—Let our team of biostatisticians perform the statistical analysis of your results so you do not have to.
- **Objective Assessment**—Maximize confidence in instrument calibration by using peer group data for a view beyond your laboratory.

See the Instrumentation Verification Tools section of this catalog to determine programs that best fit your laboratory's CVL needs.

Interfering Substance IFS

Analyte	Program Code		
	IFS		
	Bilirubin Interferent	Hemoglobin Interferent	Lipid Interferent
Alanine aminotransferase (ALT/SGPT)	▮	▮	▮
Albumin	▮	▮	▮
Alkaline phosphatase	▮	▮	▮
Amylase	▮	▮	▮
Aspartate aminotransferase (AST/SGOT)	▮	▮	▮
Calcium	▮	▮	▮
Chloride	▮	▮	▮
CK-2 (MB) mass	▮	▮	▮
Creatine kinase (CK)	▮	▮	▮
Creatinine	▮	▮	▮
Gamma glutamyl transferase (GGT)	▮	▮	▮
Glucose	▮	▮	▮
Iron	▮	▮	▮
Lactate dehydrogenase (LD)	▮	▮	▮
Lipase	▮	▮	▮
Magnesium	▮	▮	▮
Osmolality	▮	▮	▮
Phosphorus	▮	▮	▮
Potassium	▮	▮	▮
Protein, total	▮	▮	▮
Sodium	▮	▮	▮
Urea nitrogen (BUN)	▮	▮	▮
Uric acid	▮	▮	▮

The material expires December 1, 2024.

Program Information

- Eighteen 10.0-mL liquid serum specimens
- Designed for verifiying manufacturing interference specifications and investigating discrepant results caused by interfering substances
- Submit results any time prior to the material's expiration date.
- One shipment per year

Serum Carryover SCO

Analyte	Program Code
	SCO
Creatinine	▮
hCG	▮
Lactate dehydrogenase (LD)	▮
Phenytoin	▮

Program Information

- One 10.0-mL liquid serum specimen (low level) and one 5.0-mL liquid serum specimen (high level)
- Designed to screen for instrument sample probe carryover
- One shipment per year

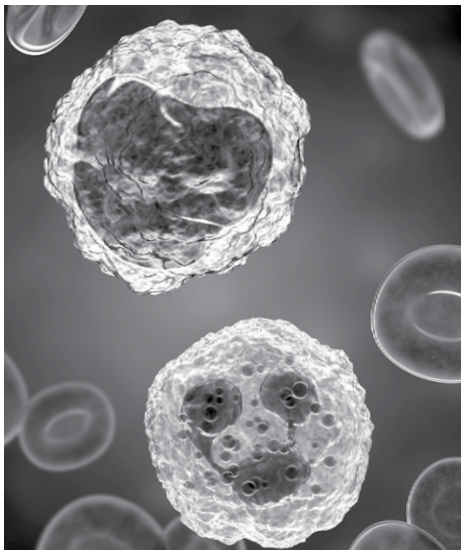
Urine Toxicology Carryover UTCO

Analyte	Program Code
	UTCO
Benzoylecgonine	▮
Delta-9-THC-COOH	▮
Opiates	▮
Amphetamine	▮

Program Information

- Two 40.0-mL urine specimens (low and high levels)
- Designed to screen for instrument sample probe carryover
- One shipment per year

12 Hematology and Clinical Microscopy



Meet requirements and obtain continuing education for blood cell identification cost effectively.

- Provide your team convenient online access to blood cell identification images (BCPV).

Hematology and Clinical Microscopy

New Programs NEW

Discontinued Programs

Hematology Basic With Blood Cell Identification (HEP)
Hematology Automated Differential Series With Blood Cell Identification (FH1P-FH4P, FH9P-FH10P, FH13P, FH16P-FH17P)
Blood Cell Identification, Limited (BCP2)

Hematology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Hematology—Basic HE

Analyte/Procedure	Program Code	Challenges per Shipment
	HE	
Hematocrit	▮	5
Hemoglobin	▮	5
MCV, MCH, and MCHC	▮	5
MPV	▮	5
Platelet count	▮	5
RDW	▮	5
Red blood cell count	▮	5
White blood cell count	▮	5

Program Information

- Five 3.0-mL whole blood specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit

Hematology Automated Differential Series FH1-FH4, FH9-FH10, FH13, FH16-FH17

Analyte/Procedure	Program Code	Challenges per Shipment
	FH1-FH4, FH9-FH10, FH13, FH16-FH17	
Hematocrit	▮	5
Hemoglobin	▮	5
Immature granulocyte (IG)	▮	5 (FH9 and FH17)
Immature platelet fraction (IPF)/reticulated platelet (RP)	▮	5 (FH9 and FH17)
Large unstained cell (LUC)	▮	5 (FH4 only)
MCV, MCH, and MCHC	▮	5
MPV	▮	5
Nucleated red blood cell count (nRBC)	▮	5 (FH3, FH9, FH13, FH16, and FH17)
Platelet count	▮	5
RDW	▮	5
Red blood cell count	▮	5
White blood cell count	▮	5
WBC differential	▮	5

For multiple instrument reporting options, see the Quality Cross Check programs, FH3Q, FH4Q, FH9Q, and FH13Q, on page 142.

Program Information

- FH1-4, FH10, FH16-17 - Five 2.5-mL whole blood specimens in vials with pierceable caps
- FH9, FH13 - Five 2.0-mL whole blood specimens in vials with pierceable caps
- For method compatibility, see instrument matrix on page 141.
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit

Hematology Automated Differential Series, Instrument Matrix

Instrument	FH and FHQ Series								
	FH1	FH2	FH3/ FH3Q	FH4/ FH4Q	FH9/ FH9Q	FH10	FH13/ FH13Q	FH16/ FH3Q	FH17
Abbott Cell-Dyn® 1200, 1400, 1600, 1700, Emerald™	▮								
Horiba ABX 9000+, 9018+, 9020+	▮								
Sysmex K-series, K-1000/KCP-1, KX-21/21N, pocH-100i, XP-series	▮								
CDS/Medonic M-series		▮							
Coulter® Ac·T, diff/diff 2™ MD 2/8/10/16, ONYX™, S880, S-plus V, ST, STKR, T-series		▮							
Drew Scientific DC-18, I-1800, DREW3, EXCELL 10/16/18		▮							
Horiba ABX Micros		▮							
Mindray BC-2800, 3000/3200 series		▮							
Siemens ADVIA® 360		▮							
Abbott Cell-Dyn 3000, 3500, 3700, 4000, Emerald 22/AL, Ruby™, Sapphire™			▮						
Biosystems HA3/HA5			▮						
Drew Scientific EXCELL 22, 2280			▮						
Orphee Mythic 18, 22 AL, 22 OT, 60			▮						
Siemens ADVIA 560			▮						
Siemens ADVIA 120, 120 w/SP1, 2120				▮					
Abbott Alinity hq, Sysmex XE-2100, XE-2100C, XE-2100D, XE-2100DC, XE-2100D/L (Blood Center), XE-2100L, XE-5000, XN-series (includes RL App), XN-L series, XS-500i, XS-800i, XS-1000i, XS-1000i-AL, XS-1000iC, XT-1800i, XT-2000i, XT-4000i					▮				
Coulter Ac·T 5diff (AL, CP, OV)						▮			
DIRUI BF series						▮			
Horiba ABX Pentra 60, 80, 120, Pentra DF Nexus						▮			
Coulter LH 750, LH 755, LH 780, LH 785, UniCel DxH series (except DxH 500 series)							▮		
Coulter DxH 500 series								▮	
Horiba Yumizen H500/550, H1500/2500								▮	
Mindray BC-700, BC-720, BC-760, BC-780, BC-6000, BC-6000Plus, BC-6100, BC-6100Plus, BC-6200, BC-6200Plus, BC-6600, BC-6600Plus, BC-6700, BC-6800, BC-6800Plus, BC-7500 CRP									▮

Quality Cross Check—Hematology FH3Q, FH4Q, FH9Q, FH13Q

Analyte/Procedure	Program Code				Challenges per Shipment
	FH3Q	FH4Q	FH9Q	FH13Q	
Hematocrit	▮	▮	▮	▮	3
Hemoglobin	▮	▮	▮	▮	3
Immature granulocyte parameter			▮		3
Immature platelet function (IPF)%			▮		3
Large unstained cells (LUC)		▮			3
MCV, MCH, MCHC	▮	▮	▮	▮	3
MPV	▮	▮	▮	▮	3
Nucleated red blood cell count (nRBC)	▮		▮	▮	3
Platelet count	▮	▮	▮	▮	3
RDW	▮	▮	▮	▮	3
Red blood cell count	▮	▮	▮	▮	3
WBC differential	▮	▮	▮	▮	3
White blood cell count	▮	▮	▮	▮	3

These programs do not meet regulatory requirements for proficiency testing; see the FH Series on page 140. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- FH3Q, FH4Q, FH9Q, FH13Q - Three 2.5-mL whole blood specimens in vials with pierceable caps
- Report up to three instruments.
- For method compatibility, see instrument matrix on page 141
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Blood Cell Identification, Photographs BCP

Procedure	Program Code	Challenges per Shipment
	BCP	
Blood cell identification	▮	5
Educational challenge(s)	▮	5

Program Information

- Ten images, each available as photographs and online images
- Three shipments per year

CE credit

NEW

Blood Cell Identification, Virtual BCPV

Analyte/Procedure	Program Code	Challenges per Shipment
	BCPV	
Blood cell identification	▮	5
Educational challenge	▮	5

Program Information

- Ten online images
- Three shipments per year

CE credit

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Technical Competency Assessment of Peripheral Blood Smears QPC10/QPC25

Introduction

The widespread use of automated white blood cell (WBC) differential counts and computer generated whole slide imaging has decreased the time that the technical staff dedicates to morphological assessment of blood cells. However, technologists must maintain their morphological skills and laboratories are required to provide education and assess competency in this area on a regular basis.

Objectives

This study will help assess the effectiveness of educational and practical experience policies and procedures dedicated to the laboratory's efforts in maintaining technologist skills in the performance of accurate WBC differential counts and other peripheral blood smear morphological assessments. The evaluation provided will assist in the construction of individual educational programs for the technical staff and show areas that need focused review and improvement. The study will help management meet applicable CLIA, CAP Laboratory Accreditation, and The Joint Commission laboratory requirements for personnel competency requirements and consistency of reporting amongst staff.*

Data Collection

A series of online, whole slide images of Wright-Giemsa stained peripheral blood smears using DigitalScope® technology will be available to each participating institution to assess technologists' performance on WBC differential counts and morphology assessment. Technologists will provide information about their continuing education and professional background. Information will be collected from each site regarding their institution's minimum continuing education requirements for their technologists in hematology and relevant procedures and policies related to peripheral blood smear assessment.

Performance Indicators

- Individual technologist score (%) based on a standardized competency assessment method to determine a technologist's ability to identify various WBC types, red blood cell morphology, and platelet morphology in normal and abnormal cases
- Overall laboratory score based on the facility's individual technologist performance(s)

Reports are provided at institution and technologist levels. A summary of responses to the general questions will be provided for participants.

Program Information

To meet your staff technical competency assessment requirements:

- Result forms for up to 10 technologists (QPC10)
- Result forms for up to 25 technologists (QPC25)
- Multiple kits may be purchased to accommodate quantity needed.

***Applicable Requirements**

- CLIA personnel requirements (Subpart M, 42 CFR §493.1)
- CAP Laboratory Accreditation Program Checklist statements GEN.55500 Competency Assessment of Testing Personnel
- HEM.34400, consistency of morphologic observation among personnel performing blood cell microscopy at least annually
- The Joint Commission Standards HR. 01.05.03, 01.06.01, 01.07.01, LD.04.05.03, and 04.05.05 regarding in-service training, continuing education, competency, and evaluation of hospital personnel

This is a one-time study conducted in the third quarter.

Blood Parasite BP

Procedure	Program Code	Challenges per Shipment
	BP	
Blood parasite identification (thin/thick film sets*)	▮	5

*This program will include corresponding thick films when available.

Program Information

- Five Giemsa-stained blood film sets, photographs, and/or online images
- Percent parasitemia reporting is provided when appropriate for educational purposes.
- A variety of blood parasites, including *Plasmodium, Babesia, Trypanosoma,* and filarial worms
- Three shipments per year

Bone Marrow Cell Differential BMD

Procedure	Program Code	Challenges per Shipment
	BMD	
Bone marrow differential	▮	1
Bone marrow cell identification	▮	5

Additional Information

- Examine an online, whole slide image that includes a manual 500 count bone marrow differential and annotated cells for identification.
- Recognize and integrate problem-solving skills through the use of interpretive questions found throughout the discussion.
- Evaluate cell morphology and identify specific cells in bone marrow.
- See system requirements on page 12.

Program Information

- One online bone marrow aspirate whole slide image that includes five annotated cells for identification
- Powered by DigitalScope® technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CE credit

Erythrocyte Sedimentation Rate ESR, ESR1, ESR2, ESR3

Procedure	Program Code				Challenges per Shipment
	ESR	ESR1	ESR2	ESR3	
All methods except the ALCOR, Alifax®, Sedimat 15®, and Sedimat 15 Plus	▮				3
Sedimat 15, Sedimat 15 Plus		▮			3
Alifax			▮		3
ALCOR iSED®, miniiSED®				▮	3

Program Information

- ESR, ESR1 - Three 6.0-mL whole blood specimens
- ESR2 - Three 3.0-mL latex bead specimens
- ESR3 - Three 3.5-mL whole blood specimens
- Two shipments per year

Fetal Red Cell Detection HBF

Procedure	Program Code	Challenges per Shipment
	HBF	
Kleihauer-Betke and flow cytometry	▮	2
Rosette fetal screen	▮	2
Acid elution whole slide image	▮	1

Program Information

- Two 1.2-mL liquid whole blood specimens
- Not designed for F cell quantitation
- Two online, whole slide images per year with optional grids for cell counting
- Powered by DigitalScope technology
- Two shipments per year

Reticulocyte Series RT, RT2, RT3, RT4

Instrument/Method	Program Code				Challenges per Shipment
	RT	RT2	RT3	RT4	
Abbott Alinity hq, Abbott Cell-Dyn 4000, Sapphire, Siemens ADVIA 120/2120, and all other automated and manual methods	▮				3
Abbott Cell-Dyn 3500, 3700, Ruby		▮			3
Coulter Gen-S™, HmX, LH 500, LH 700 series, MAXM, STKS, UniCel DxH series			▮		3
Sysmex XE-2100, XE-2100C, XE-2100D, XE-2100DC, XE-2100L, XE-5000, XN-L series, XN-series (includes RL App), XT-2000i, XT-4000i				▮	3
Pierceable caps			▮	▮	3

For specific program testing components, see reticulocyte matrix below.

Program Information

- RT, RT2 - Three 1.0-mL stabilized red blood cell specimens
- RT3 - Three 3.0-mL stabilized red blood cell specimens
- RT4 - Three 2.0-mL stabilized red blood cell specimens
- Two shipments per year

Reticulocyte, Matrix

Program Code	Reticulocyte count, percent	Absolute reticulocyte count	Immature Reticulocyte Fraction (IRF)	Reticulocyte Hemoglobin Concentration (CHr)	Reticulocyte Hemoglobin (RET-He)
RT/RTQ	▮	▮	▮	▮	
RT2	▮	▮			
RT3/RT3Q	▮	▮	▮		
RT4/RT4Q	▮	▮	▮		▮

Quality Cross Check—Reticulocyte RTQ, RT3Q, RT4Q

Instrument/Method	Program Code			Challenges per Shipment
	RTQ	RT3Q	RT4Q	
Abbott Alinity hq, Abbott Cell-Dyn 4000, Sapphire, Siemens ADVIA 120/2120, and all other automated and manual methods	▮			3
Coulter Gen-S™, HmX, LH 500, LH 700 series, MAXM, STKS, UniCel DxH series		▮		3
Sysmex XE-2100, XE-2100C, XE-2100D, XE-2100DC, XE-2100L, XE-5000, XN-L series, XN-series (includes RL App), XT-2000i, XT-4000i			▮	3

These programs do not meet regulatory requirements for proficiency testing; see the RT Series on page 146. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- RTQ - Three 1.0-mL stabilized red blood cell specimens
- RT3Q - Three 3.0-mL stabilized red blood cell specimens
- RT4Q - Three 2.0-mL stabilized red blood cell specimens
- Includes percentage and absolute result reporting
- Report up to three instruments.
- Two shipments per year

Hemoglobinopathy HG

Procedure	Program Code	Challenges per Shipment
	HG	
Hemoglobin identification and quantification	▮	4
Educational dry challenges	▮	2
Hemoglobin A_2 quantitation	▮	4
Hemoglobin F quantitation	▮	1
Sickling test, qualitative	▮	4

Program Information

- Four 0.5-mL stabilized red blood cell specimens
- Two educational dry challenges (case histories, electrophoresis patterns, and clinical interpretation questions)
- Two shipments per year

Rapid Total White Blood Cell Count RWBC

Procedure	Program Code	Challenges per Shipment
	RWBC	
Rapid total white blood cell count	▮	5

Program Information

- Five 2.0-mL whole blood specimens
- For use with the HemoCue WBC instrument
- Three shipments per year

Sickle Cell Screening SCS

Procedure	Program Code	Challenges per Shipment
	SCS	
Sickling test, qualitative	▮	3

Program Information

- Three 1.0-mL whole blood specimens
- Two shipments per year

Transfusion-Related Cell Count TRC

Procedure	Program Code	Challenges per Shipment
	TRC	
Platelet count (platelet-rich plasma)	▮	5
WBC count	▮	4
Dry challenge	▮	2

WBC counts must be performed using a Nageotte chamber, fluorescence microscopy, or by flow cytometry.

Program Information

- Five 1.2-mL suspensions of platelet-rich plasma
- Two 1.0-mL vials leukocyte-reduced platelet material
- Two 1.0-mL vials leukocyte-reduced red blood cells
- Three shipments per year

Waived Combination HCC, HCC2

Analyte	Program Code		Challenges per Shipment
	HCC	HCC2	
Hematocrit		▮	2
Hemoglobin	▮	▮	2
Urinalysis/urine hCG		▮	2
Whole blood glucose	▮	▮	2 (HCC)/3 (HCC2)

Program Information

- HCC - Two 2.5-mL whole blood specimens; two shipments per year
- HCC2 - Total of four shipments per year

  Hematocrit, hemoglobin, and urinalysis/urine hCG testing - Two 3.0-mL whole blood specimens and two 10.0-mL urine specimens; two shipments per year: A and C

  Whole blood glucose testing - Three 2.0-mL whole blood specimens; two shipments per year: B and D
- Conventional and International System of Units (SI) reporting offered
- To verify instrument compatibility for glucose, refer to the instrument matrix on page 68.

Virtual Peripheral Blood Smear VPBS

Procedure	Program Code	Challenges per Shipment
	VPBS	
WBC differential	▮	3
Platelet estimate	▮	3
RBC morphology	▮	3
Blood cell identification	▮	15

Additional Information

- Examine online, whole slide images that include a manual 100 white blood cell differential count and annotated cells for identification.
- Evaluate and identify red blood cell (RBC) morphology and identify specific white blood cells (WBC) in peripheral blood.
- Recognize and integrate problem-solving skills through the use of interpretive questions found throughout the discussion.
- See system requirements on page 12.

Program Information

- Three online, peripheral blood whole slide images that include 15 annotated cells for identification
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CE credit

Expanded Virtual Peripheral Blood Smear EHE1

Procedure	Program Code	Challenges per Shipment
	EHE1	
WBC differential	▮	2
Platelet estimate	▮	2
RBC morphology	▮	2
Blood cell identification	▮	10

Additional Information

- More challenging and/or complex testing than the Virtual Peripheral Blood Smear (VPBS) program
- Examine online, whole slide images that include a manual 100 white blood cell differential count and annotated cells for identification.
- Comprehensive case studies
- Recognize and integrate problem-solving skills through the use of interpretive questions found throughout the discussion.
- Evaluate and identify red blood cell (RBC) morphology and identify specific white blood cells (WBC) in peripheral blood.
- See system requirements on page 12.

Program Information

- Two online, peripheral blood whole slide images that include 10 annotated cells for identification
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Hematopathology Online Education HPATH/HPATH1

Program	Program Code	Challenges per Shipment
	HPATH/HPATH1	
Hematopathology online case review	▮	5

Additional Information

HPATH prepares pathologists, hematopathologists, and hematologists to succeed by providing ongoing diagnostic learning in hematopathology.

- Clinical history and relevant laboratory data
- At least one online, whole slide image of peripheral blood, bone marrow, spleen, lymph node, or other tissue
- Results of ancillary studies such as immunohistochemistry, flow cytometry, FISH, karyotyping, and molecular studies, where appropriate
- Case discussion and discussion of differential diagnoses
- Each case includes assessment questions.
- See system requirements on page 12.

Program Information

- HPATH - Five diagnostic challenges/online, whole slide images with clinical history; reporting with CME credit is available for one pathologist/ hematologist; for additional pathologist/hematologist, order HPATH1
- HPATH1 - Reporting option with CME credit for each additional pathologist/ hematologist (within the same institution); must order in conjunction with program HPATH
- Earn a maximum of 12.5 CME credits (*AMA PRA Category 1 Credits™*) per pathologist and a maximum of 12.5 CE credits per hematologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Clinical Microscopy

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

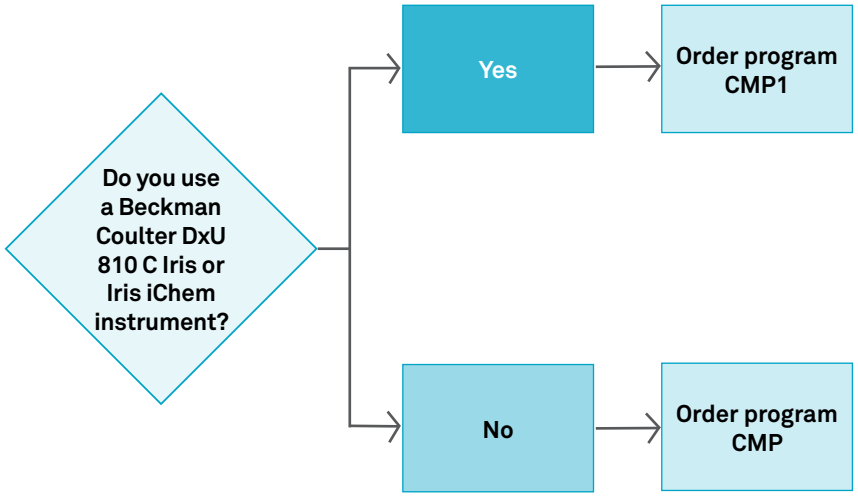
Urinalysis and Clinical Microscopy CMP, CMP1

Analyte/Procedure	Program Code		Challenges per Shipment
	CMP	CMP1	
Bilirubin	▮	▮	3
Blood or hemoglobin	▮	▮	3
Body fluid photographs	▮	▮	3
Glucose	▮	▮	3
hCG urine, qualitative	▮	▮	3
Ketones	▮	▮	3
Leukocyte esterase	▮	▮	3
Nitrite	▮	▮	3
Osmolality	▮	▮	3
pH	▮	▮	3
Protein, qualitative	▮	▮	3
Reducing substances	▮	▮	3
Specific gravity	▮	▮	3
Urine sediment photographs	▮	▮	3
Urobilinogen	▮	▮	3

For multiple instrument reporting options, see the Quality Cross Check program, CMQ, on page 152.

Program Information

- CMP - Three 10.0-mL liquid urine specimens; for use with all instruments except Beckman Coulter DxU 810c Iris and Iris iChem; six images, each available as photographs and online images
- CMP1 - Three 10.0-mL liquid urine specimens; for use with Beckman Coulter DxU 810c Iris and Iris iChem instruments only, urinalysis; six images, each available as photographs and online images
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year



Quality Cross Check—Urinalysis CMQ

Analyte	Program Code	Challenges per Shipment
	CMQ	
Bilirubin	▮	3
Blood or hemoglobin	▮	3
Glucose	▮	3
hCG urine, qualitative	▮	3
Ketones	▮	3
Leukocyte esterase	▮	3
Nitrite	▮	3
Osmolality	▮	3
pH	▮	3
Protein, qualitative	▮	3
Reducing substances	▮	3
Specific gravity	▮	3
Urobilinogen	▮	3

Program Information

- Three 10.0-mL liquid urine specimens for use with all instruments
- Report up to three instruments.
- Two shipments per year

This program does not meet regulatory requirements for proficiency testing; see programs CMP and CMP1 on page 151. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments, and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Clinical Microscopy Miscellaneous Photopage CMMP

Procedure	Program Code	Challenges per Shipment
	CMMP	
Fern test (vaginal)	▮	1
KOH preparation (skin)	▮	1
Nasal smear	▮	1
Pinworm preparation	▮	1
Spermatozoa	▮	1
Stool for leukocytes	▮	1
Urine sediment photographs	▮	3
Vaginal wet preparation photographs (for clue cells, epithelial cells, trichomonas, or yeast)	▮	1

Program Information

- Ten images, each available as photographs and online images
- Two shipments per year

Amniotic Fluid Leakage AFL

Procedure	Program Code	Challenges per Shipment
	AFL	
pH interpretation	▮	3

Program Information

- Three 2.0-mL liquid specimens
- For use with nitrazine paper and the Amniotest™
- Two shipments per year

Automated Body Fluid Series ABF1, ABF2, ABF3

Procedure	Program Code			Challenges per Shipment
	ABF1	ABF2	ABF3	
Red blood cell fluid count	▮	▮	▮	2
Total nucleated cell/WBC fluid count	▮	▮	▮	2

For method compatibility, see instrument matrix below.

Program Information

- ABF1-3 - Two 3.0-mL simulated body fluid specimens
- Two shipments per year

Automated Body Fluid, Instrument Matrix

Instrument	ABF Series		
	ABF1	ABF2	ABF3
Advanced Instruments GloCyte, Siemens ADVIA 120/2120 series	▮		
Beckman Coulter LH 700 series, Unicel DxH series		▮	
Sysmex XE-2100, XE-2100C, XE-2100D, XE-2100DC, XE-2100L, XE-5000, XN-series, XN-L series, XT-1800i, XT-2000i, XT-4000i		▮	
Beckman Coulter iQ200, DxU 800 Iris series			▮

Virtual Body Fluid VBF

Procedure	Program Code	Challenges per Shipment
	VBF	
Body fluid cell differential	▮	2
Body fluid cell identification	▮	10

Additional Information

- Examine online, whole slide images that include a manual differential count and annotated cells for identification.
- Evaluate cell morphology and identify specific cells in a body fluid.
- See system requirements on page 12.

Program Information

- Two online, whole slide body fluid images that include 10 annotated cells for identification
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Technical Competency Assessment of Body Fluid Review QPB10/QPB25 NEW

Introduction

Laboratories receive a variety of body fluids for evaluation that technologists review. Technical staff must maintain their identification skills of these specimens, and laboratories are required to provide education and to assess competency and consistency of reporting morphology amongst staff of body fluid cell identification amongst staff on an annual basis.

Objectives

This study will assess the effectiveness of educational and practical experience policies and procedures dedicated to the laboratory's efforts in maintaining technologist skills in the performance of accurate body fluid cell counts and identification of other body fluid features. Results of this study will assist individuals, the laboratory director, and manager with areas to focus on for improvement and education.

The study will help management meet applicable Clinical Laboratory Improvement Amendments (CLIA), CAP Laboratory Accreditation, and The Joint Commission laboratory requirements for personnel competency requirements and consistency of reporting amongst staff.*

Data Collection

Technologists will access a series of online, whole slide images to assess their ability to perform cell differentials on Wright-stained body fluids and identify miscellaneous cells and inclusions in cytocentrifuged preparations. Participants will provide additional information about their competency assessment programs, continuing education, and professional background. Information will be collected from each site regarding minimum qualifications and experience requirements of their technologists, their ongoing educational programs and requirements, as well as relevant procedures and policies.

Performance Indicators

- Individual technologist score (%) based on a standardized competency assessment method to determine a technologist's ability to identify various WBC types, microorganisms, and other items with cells present in normal and abnormal cases in comparison to consensus responses
- Overall laboratory score based on the facility's individual technologist performance(s)
- Reports are provided at institution and technologist levels. A summary of responses to the general questions will be provided for participants.

Program Information

To meet your staff technical competency assessment requirements:

- Result forms for up to 10 technologists (QPB10)
- Result forms for up to 25 technologists (QPB25)
- Multiple kits may be purchased to accommodate quantity needed.

***Applicable Requirements**

- CLIA personnel requirements (Subpart M, 42 CFR §493.1)
- CAP Laboratory Accreditation Program Checklist statements GEN.55500 Competency Assessment of Testing Personnel, and HEM.35566, consistency of morphologic observation among personnel performing blood fluid cell differentials at least annually
- The Joint Commission Standards HR. 01.05.03, 01.06.01, 01.07.01, LD.04.05.03, and 04.05.05 regarding in-service training, continuing education, competency, and evaluation of hospital personnel

This is a one-time study conducted in the second quarter.

Automated Urine Microscopy UAA, UAA1

Analyte	Program Code		Challenges per Shipment
	UAA	UAA1	
Casts, semiquantitative/ qualitative	▮	▮	2
Crystals, semiquantitative/ qualitative	▮		2
Epithelial cells, semiquantitative/qualitative		▮	2
Red blood cells, quantitative/ qualitative	▮	▮	2
White blood cells, quantitative/ qualitative	▮	▮	2

For method compatibility, see instrument matrix below.

Program Information

- UAA - Two 10.0-mL liquid urine specimens for use with Beckman Coulter Iris and Roche instruments
- UAA1 - Two 12.0-mL liquid urine specimens for use with Sysmex instruments
- Two shipments per year

Automated Urine Microscopy, Instrument Matrix

Instrument	UAA, UAA1	
	UAA	UAA1
Beckman Coulter DxU 800 Iris series	▮	
Beckman Coulter iQ200	▮	
DIRUI FUS	▮	
Roche cobas u701	▮	
77 Elektronika		▮
ARKRAY Aution Hybrid		▮
Siemens Atellica UAS 800		▮
Sysmex UF 50, 100, 500i, 1000i, 3000/4000/5000, Sysmex UX 2000		▮

Crystals BCR, BFC, URC

Procedure	Program Code			Challenges per Shipment
	BCR	BFC	URC	
Bile crystal identification	▮			2
Body fluid crystal identification		▮		2
Urine crystal identification			▮	2

Program Information

- BCR - Two photographs
- BFC - Two 1.5-mL simulated body fluid specimens (eg, synovial fluid)
- URC - Two 1.5-mL urine specimens
- Two shipments per year

Dipstick Confirmatory DSC

Analyte	Program Code	Challenges per Shipment
	DSC	
Bilirubin	▮	2
Protein	▮	2

Program Information
- Two 12.0-mL liquid urine specimens
- For use with methods to confirm positive bilirubin and protein dipstick results
- Two shipments per year

Fecal Fat FCFS

Analyte	Program Code	Challenges per Shipment
	FCFS	
Fecal fat, qualitative	▮	2

Program Information
- Two 10.0-g simulated fecal fat specimens
- For microscopic detection of neutral fats (triglycerides) and/or split fats (total free fatty acids)
- Two shipments per year

Fetal Hemoglobin APT

Analyte	Program Code	Challenges per Shipment
	APT	
Fetal hemoglobin (gastric fluid or stool)	▮	2

Program Information
- Two 1.2-mL simulated body fluid specimens
- Two shipments per year

Gastric Occult Blood GOCB

Analyte	Program Code	Challenges per Shipment
	GOCB	
Gastric occult blood	▮	3
Gastric pH	▮	3

Program Information
- Three 2.0-mL simulated gastric fluid specimens
- Two shipments per year

Glucose-6-Phosphate Dehydrogenase G6PDS

Analyte	Program Code	Challenges per Shipment
	G6PDS	
G6PD, qualitative and quantitative	▮	2

Program Information
- Two 0.5-mL lyophilized hemolysate specimens
- Two shipments per year

Hemocytometer Fluid Count HFC

Procedure	Program Code	Challenges per Shipment
	HFC	
Cytopreparation differential	▮	3
Red blood cell fluid count	▮	3
Total nucleated cell/WBC fluid count	▮	3

This program has limited stability. Laboratories outside the US or Canada should consider purchase of HFCI, which has longer stability.

Program Information

- Three 1.0-mL simulated body fluid specimens
- Two shipments per year

Hemocytometer Fluid Count, International HFCI

Procedure	Program Code	Challenges per Shipment
	HFCI	
Body fluid differential	▮	2
Red blood cell fluid count	▮	3
Total nucleated cell/WBC fluid count	▮	3

Additional Information

- This program meets the CAP's Accreditation Program requirements.
- Examine online, whole slide images that include a manual differential count.
- See system requirements on page 12.

Program Information

- Three 2.0-mL simulated body fluid specimens; two online, whole slide images for 2- and 5-part differential
- Powered by DigitalScope technology
- Designed for laboratories outside the US or Canada that have experienced significant shipping and receiving issues and need longer program stability
- Two shipments per year

Lamellar Body Count LBC

Procedure	Program Code	Challenges per Shipment
	LBC	
Lamellar body count	▮	3

Program Information

- Three 2.0-mL simulated amniotic fluid specimens
- For use with LBC methods performed on all hematology analyzers
- Two shipments per year

Occult Blood OCB

Analyte	Program Code	Challenges per Shipment
	OCB	
Occult blood	▮	3

For multiple instrument reporting options, see the Quality Cross Check program, OCBQ, below.

Program Information
- Three 2.0-mL simulated fecal specimens
- Two shipments per year

Quality Cross Check—Occult Blood OCBQ

Analyte	Program Code	Challenges per Shipment
	OCBQ	
Occult blood	▮	3

This program does not meet regulatory requirements for proficiency testing; see program OCB, above. For additional information about the Quality Cross Check program, see page 38.

Program Information
- Three 2.0-mL simulated fecal specimens
- Report up to three instruments.
- Two shipments per year

The Quality Cross Check Program:
- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Fetal Membranes/Preterm Labor ROM1

Procedure	Program Code	Challenges per Shipment
	ROM1	
Fetal membranes/preterm labor	▮	3

Program Information
- Three 0.5-mL simulated vaginal specimens for methods such as Actim PROM, AmniSure, Clinical Innovations, and PartoSure
- Two shipments per year

Special Clinical Microscopy SCM1, SCM2

Analyte/Procedure	Program Code		Challenges per Shipment
	SCM1	SCM2	
Urine hemosiderin, Prussian blue	▮		3
Urine eosinophils, Wright stain		▮	3

Program Information
- SCM1, SCM2 - Three images, each available as photographs and online images
- Two shipments per year

Ticks, Mites, and Other Arthropods TMO

Procedure	Program Code	Challenges per Shipment
	TMO	
Tick, mite, and arthropod identification	▮	3

Program Information
- Three images, each available as photographs and online images
- Two shipments per year

Urine hCG UHCG

Procedure	Program Code	Challenges per Shipment
	UHCG	
Urine hCG, qualitative	▮	5

Program Information
- Five 1.0-mL urine specimens
- Three shipments per year

Urine Albumin and Creatinine, Semiquant UMC

Analyte/Procedure	Program Code	Challenges per Shipment
	UMC	
Creatinine, semiquantitative	▮	2
Urine albumin (microalbumin): creatinine ratio	▮	2
Urine albumin (microalbumin), semiquantitative/qualitative	▮	2

For quantitative reporting, refer to program U, page 70.

Program Information
- Two 3.0-mL liquid urine specimens
- For use with dipstick and semiquantitative methods only
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Worm Identification WID

Procedure	Program Code	Challenges per Shipment
	WID	
Worm identification	▮	3

Program Information
- Three images, each available as photographs and online images
- Two shipments per year

Bone Marrow Benchtop Reference Guide

With more than 60 different identifications and a detailed description for each cell morphology, this illustrated guide is an affordable, convenient way to identify various cell types quickly and confidently. Plus, its rugged construction makes it well suited for heavy use at the benchtop.

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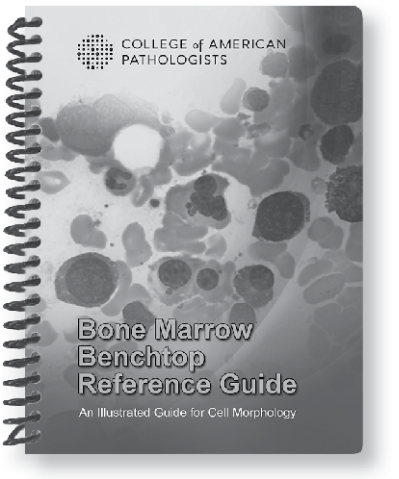

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13 Reproductive Medicine

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- For many of our PT/EQA programs, each member of a participating laboratory has complimentary enrollment to online CE activities.
- Advance skills with education activities developed by more than 600 physicians and doctoral scientists with expertise in pathology and laboratory medicine.

Reproductive Medicine

Andrology and Embryology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Semen Analysis SC, SC1, PV, PV1, SM, SV, ASA

Procedure	Program Code							Challenges per Shipment
	SC	SC1	PV	PV1	SM	SV	ASA	
Sperm count and presence/absence (manual methods)	▮							2
Sperm count (automated methods)		▮						2
Postvasectomy sperm count and presence/absence (manual methods)			▮					2
Postvasectomy sperm count (automated methods)				▮				2
Sperm morphology					▮			2
Sperm viability						▮		2
Antisperm antibody IgG							▮	2

Program Information

- SC - Two 0.3-mL stabilized sperm specimens
- SC1 - Two 1.0-mL stabilized sperm specimens
- PV - Two 0.3-mL stabilized sperm specimens with counts appropriate for postvasectomy testing
- PV1 - Two 1.0-mL stabilized sperm specimens with counts appropriate for postvasectomy testing
- SM - Two prepared slides for staining
- SV - Two eosin-nigrosin-stained slides
- ASA - Two 0.3-mL serum specimens
- Two shipments per year

CE credit

Sperm Count, Motility, Morphology, and Viability SMCD, SM1CD, SM2CD

Procedure	Program Code			Challenges per Shipment
	SMCD	SM1CD	SM2CD	
Sperm count	▮			2
Sperm motility/forward progression	▮			2
Sperm classification		▮		10
Sperm morphology		▮		2
Sperm viability			▮	2

Program Information

- SMCD - Online video clips of sperm available for hemocytometer, Makler, and disposable chambers
- SM1CD, SM2CD - Two online challenges that may be viewed as whole slide images powered by DigitalScope® technology
- Two online activites per year; your CAP shipping contact will be notified via email when the activity is available

CE credit

Embryology EMB

Procedure	Program Code	Challenges per Shipment
	EMB	
Embryo transfer and quality assessment (three- and five-day-old embryos)	▮	4

Program Information

- Two online sets of five video clips
- Two online activites per year; your CAP shipping contact will be notified via email when the activity is available

CE credit

Sex Hormones Y/YY

Analyte	Program Code	Challenges per Shipment
	Y/YY	
11-deoxycortisol	▮	3
17-hydroxyprogesterone	▮	3
Androstenedione	▮	3
DHEA sulfate	▮	3
Estradiol	▮	3
Estriol, unconjugated (uE3)	▮	3
Follicle-stimulating hormone (FSH)	▮	3
Growth hormone (GH)	▮	3
IGF-1 (somatomedin C)	▮	3
Luteinizing hormone (LH)	▮	3
Progesterone	▮	3
Prolactin	▮	3
Testosterone	▮	3
Testosterone, bioavailable (measured)	▮	3
Testosterone, free (measured)	▮	3
Sex hormone-binding globulin (SHBG)	▮	3

Program Information

- Y - Three 5.0-mL liquid serum specimens in duplicate
- YY - Three 5.0-mL liquid serum specimens in triplicate
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Antimüllerian Hormone AMH

Analyte	Program Code	Challenges per Shipment
	AMH	
Antimüllerian hormone	▮	3

Program Information

- Three 1.0-mL lyophilized serum specimens
- Two shipments per year

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Bone Marrow Benchtop Reference Guide (BMBRG)

Hematology Benchtop Reference Guide (HBRG)

Urinalysis Benchtop Reference Guide (UABRG)

Body Fluids Benchtop Reference Guide (BFBRG)

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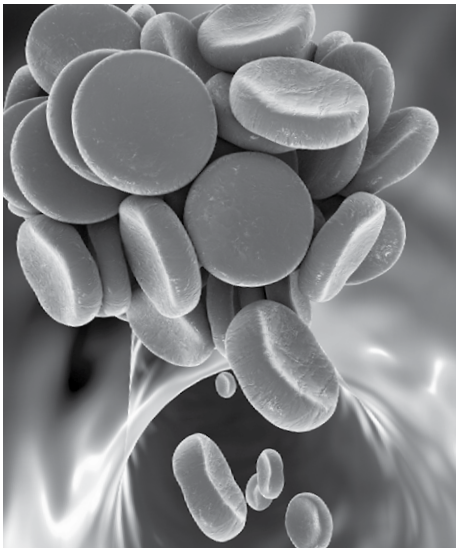
14 Coagulation



Provide for patient care and safety.

The CAP continues to support laboratory quality initiatives through the development, maintenance, and enhancement of effective proficiency testing programs for coagulation, including our newest programs:

- Expanded Coagulation Factors (ECF).
- Viscoelastic Testing—Whole Blood (VES1).

Coagulation

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Coagulation—Limited CGB, CGL, CGDF

Analyte	Program Code			Challenges per Shipment
	CGB	CGL	CGDF	
Activated partial thromboplastin time	▮	▮		5
Fibrinogen		▮		5
International normalized ratio (INR)*	▮	▮		5
Prothrombin time	▮	▮		5
D-dimer		▮	▮	2
Fibrin(ogen) degradation products, plasma		▮	▮	1
Fibrin(ogen) degradation products, serum		▮	▮	1
Fibrin monomer		▮	▮	2

*Participants reporting INR results will receive a special evaluation to assess the INR calculation.

For multiple instrument reporting options, see the Quality Cross Check program, CGLQ, below.

Program Information

- CGB - Five 1.0-mL lyophilized plasma specimens
- CGL - Seven 1.0-mL lyophilized plasma specimens and one 2.0-mL serum specimen
- CGDF - One 2.0-mL serum specimen; two 1.0-mL lyophilized plasma specimens
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

CE credit

Quality Cross Check—Coagulation CGLQ

Analyte	Program Code	Challenges per Shipment
	CGLQ	
Activated partial thromboplastin time	▮	3
Fibrinogen	▮	3
Prothrombin time	▮	3
D-dimer	▮	2
Fibrin(ogen) degradation products, plasma	▮	1
Fibrin(ogen) degradation products, serum	▮	1

This program does not meet regulatory requirements for proficiency testing; see program CGL, above. For additional information about the Quality Cross Check program, see page 38.

Program Information

- Three 1.0-mL lyophilized plasma specimens in triplicate, two 1.0-mL lyophilized plasma specimens, and one 2.0-mL serum specimen
- Report up to three instruments.
- Two shipments per year

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Coagulation—Extended CGE/CGEX

Analyte	Program Code	Challenges per Shipment
	CGE/CGEX	
See analyte listing below	▮	2

Program Information

- CGE - Two 1.0-mL lyophilized plasma specimens (three vials each)
- CGEX - Two 1.0-mL lyophilized plasma specimens (five vials each)
- Two shipments per year

Coagulation Analyte Listing (Quantitative Results)

50:50 mixing study, PT and aPTT
Activated partial thromboplastin time
Activated protein C resistance
Alpha-2-antiplasmin
Antithrombin activity/antigen
Dilute prothrombin time
Factors II, V, VII, VIII, IX, X, XI, XII, and XIII
Fibrinogen antigen
Heparin-induced thrombocytopenia (HIT)
Plasminogen activator inhibitor
Plasminogen activity/antigen
Prekallikrein
Protein C
Protein S
Prothrombin time
Reptilase time
Thrombin time

Expanded Coagulation Factors ECF

Analyte/Procedure	Program Code	Challenges per Shipment
	ECF	
Factor II	▮	3
Factor V	▮	3
Factor VII	▮	3
Factor VIII clot based	▮	3
Factor VIII chromogenic	▮	3
Factor IX	▮	3
Factor IX chromogenic	▮	3
Factor X clot based	▮	3
Factor X chromogenic	▮	3
Factor XI	▮	3
Factor XII	▮	3
Factor XIII	▮	3
Fibrinogen antigen	▮	3
Reptilase time	▮	3
Thrombin time	▮	3

Program Information

- Three 1.0-mL lyophilized plasma specimens (three vials each)
- Two shipments per year

Coagulation Special Testing Series CGS1, CGS2, CGS3, CGS4, CGS5, CGS7

Module/Analyte	Challenges per Shipment					
	Program Code					
	CGS1	CGS2	CGS3	CGS4	CGS5	CGS7
Activated partial thromboplastin time*	2		2	3		
International normalized ratio (INR)	2			3		
Prothrombin time*	2			3		
Lupus Anticoagulant and Mixing Studies Module						
Dilute prothrombin time	2					
Dilute Russell's viper venom time	2					
Lupus anticoagulant sensitive aPTT (confirmation and screen)	2					
50:50 mixing studies, PT and aPTT	2					
Thrombophilia Module						
Activated protein C resistance		2				
Antithrombin (activity, antigen)		2				
Protein C (activity, antigen)		2				
Protein S (activity, free antigen, total antigen)		2				
von Willebrand Factor Antigen Module						
Factor VIII assay			2			
von Willebrand factor (antigen, activity, multimers)			2			
Factor VIII inhibitor			2			
Heparin Module						
Heparin activities using methodologies including Anti-Xa (unfractionated, low molecular weight, and hybrid curve)				3		
Thrombin time				3		
Heparin-induced Thrombocytopenia Module						
Appropriate with methods such as Immucor Lifecodes PF4 IgG and Immucor Lifecodes PF4 Enhanced® assays					2	
ADAMTS13 Module						
ADAMTS13 (activity, inhibitor screen, titer, and anti-ADAMTS13 IgG)						3

*Not appropriate for meeting regulatory requirements, see page 166.

Program Information

- CGS1, CGS2, CGS3 - Two 2.0-mL lyophilized plasma specimens
- CGS4 - Three 1.0-mL lyophilized plasma specimens
- CGS5 - Two 60.0-µL serum specimens
- CGS7 - Three 1.0-mL lyophilized plasma specimens in duplicate
- Two shipments per year

Apixaban, Dabigatran, Fondaparinux, Rivaroxaban Anticoagulant Monitoring APXBN, DBGN, FNPX, RVBN

Analyte	Program Code				Challenges per Shipment
	APXBN	DBGN	FNPX	RVBN	
Activated partial thromboplastin time*	▮	▮	▮	▮	3
Prothrombin time*	▮	▮	▮	▮	3
Thrombin time		▮			3
Apixaban	▮				3
Dabigatran		▮			3
Fondaparinux			▮		3
Rivaroxaban				▮	3

*Not appropriate for meeting regulatory requirements, see page 166.

Program Information

- APXBN, DBGN, FNPX, RVBN - Three 1.0-mL lyophilized plasma specimens
- Two shipments per year

CE credit

Activated Clotting Time Series CT, CT1, CT2, CT3, CT5

Instrument/Cartridge	Program Code					Challenges per Shipment
	CT	CT1	CT2	CT3	CT5	
Helena Actalyke C-ACT	▮					3
Helena Actalyke MAX-ACT	▮					3
IL GEM Hemochron 100/ACT+				▮		3
IL GEM Hemochron 100/ACT-LR			▮			3
IL Hemochron CA 510/FTCA510	▮					3
IL Hemochron FTK-ACT	▮					3
IL Hemochron P214/P215	▮					3
IL Hemochron Signature Elite/ Hemochron Jr./ACT+				▮		3
IL Hemochron Signature Elite/ Hemochron Jr./ACT-LR			▮			3
i-STAT® Celite® and Kaolin ACT					▮	3
Medtronic Hemotec ACT/ACTII/ACT Plus® HR-ACT		▮				3
Medtronic Hemotec ACT/ACTII/ACT Plus LR-ACT		▮				3
Medtronic Hemotec ACT/ACTII/ACT Plus R-ACT		▮				3
Medtronic Hepcon HMS Plus		▮				3

For multiple instrument reporting options, see the Quality Cross Check programs, CTQ-CT3Q, and CT5Q, on page 170.

Program Information

- CT - Three 3.0-mL lyophilized whole blood specimens with corresponding diluents
- CT1 - Three 1.7-mL lyophilized whole blood specimens with corresponding diluents
- CT2 - Three 0.5-mL lyophilized whole blood/ diluent ampules
- CT3 - Three 0.5-mL lyophilized whole blood/ diluent ampules
- CT5 - Three 1.7-mL lyophilized whole blood specimens with corresponding diluents
- Two shipments per year

Quality Cross Check—Activated Clotting Time Series CTQ, CT1Q, CT2Q, CT3Q, CT5Q

Instrument/Cartridge	Program Code					Challenges per Shipment
	CTQ	CT1Q	CT2Q	CT3Q	CT5Q	
Helena Actalyke C-ACT®	▮					3
Helena Actalyke MAX-ACT	▮					
IL GEM Hemochron 100/ACT+				▮		
IL GEM Hemochron 100/ACT-LR			▮			
IL Hemochron® CA510/FTCA510	▮					3
IL Hemochron FTK-ACT	▮					3
IL Hemochron Signature Elite/ Hemochron Jr./ACT+				▮		3
IL Hemochron Signature Elite/ Hemochron Jr./ACT-LR			▮			3
IL Hemochron P214/P215	▮					3
i-STAT Celite® and Kaolin ACT					▮	3
Medtronic Hemotec ACT/ACTII/ACT Plus® HR-ACT		▮				3
Medtronic Hemotec ACT/ACTII/ACT Plus LR-ACT		▮				3
Medtronic Hemotec ACT/ACTII/ACT Plus R-ACT		▮				3
Medtronic Hepcon HMS Plus		▮				3

These programs do not meet regulatory requirements for proficiency testing; see programs CT-CT3 and CT5 on page 169. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics

Program Information

- CTQ - Three 3.0-mL lyophilized whole blood specimens in triplicate with corresponding diluents
- CT1Q - Three 1.7-mL lyophilized whole blood specimens in triplicate with corresponding diluents
- CT2Q - Three 0.5-mL lyophilized whole blood/ diluent ampules in triplicate
- CT3Q - Three 0.5-mL lyophilized whole blood/ diluent ampules in triplicate
- CT5Q - Three 1.7-mL lyophilized whole blood specimens in triplicate with corresponding diluents
- Report up to three instruments.
- Two shipments per year

Platelet Function PF, PF1

Instrument/Method	Program Code		Challenges per Shipment
	PF	PF1	
Platelet aggregation	▮		2
PFA-100, PFA-200		▮	2
Helena Plateletworks®		▮	2

These programs require the draw of a normal donor sample.

Program Information

- PF, PF1 - Five 3.2% sodium citrate vacuum tubes; two 10.0-mL plastic tubes
- Two shipments per year

CE credit

Viscoelastic Studies VES

Instrument	Program Code	Challenges per Shipment
	VES	
TEG® 5000, TEG 6s, ROTEM® *delta*	▮	2

Program Information
- Two 1.0-mL lyophilized plasma specimens
- Two shipments per year

Viscoelastic Testing—Whole Blood VES1

Instrument	Program Code	Challenges per Shipment
	VES1	
Hemosonics Quantra®, ROTEM *sigma*, ROTEM *delta*	▮	2

This program requires the draw of a normal donor sample.

Program Information
- Four 3.2% sodium citrate vaccum tubes; two 4.0-mL pierceable cap tubes
- Two shipments per year

Coagulation Calibration Verification/Linearity LN35, LN36, LN37

Analyte	Program Code			
	LN35	LN36	LN37	Target Ranges
Antithrombin activity	▮			10%–130%
Protein C activity	▮			10%–100%
Heparin, low molecular weight		▮		0.1–2.0 U/mL
Heparin, unfractionated		▮		0.1–1.3 U/mL
von Willebrand factor antigen			▮	5%–140%

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

The LN35, LN36, and LN37 CVL programs meet the CAP Accreditation requirements HEM.38009, 38010, and 38011.

Program Information
- LN35, LN37 - Six 1.0-mL frozen plasma specimens per mailing
- LN36 - Twelve 1.0-mL frozen plasma specimens per mailing, which include six for low molecular weight heparin and six for unfractionated heparin
- Two shipments per year; ships on dry ice

D-Dimer Calibration Verification/Linearity LN42

Analyte	Program Code	
	LN42	LN42 Target Range
D-dimer	▮	220–5,500 ng/mL FEU

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- Six 1.0-mL plasma specimens
- Two shipments per year

Fibrinogen Calibration Verification/Linearity LN44

Analyte	Program Code	
	LN44	LN44 Target Range
Fibrinogen	▮	80–900 mg/dL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information

- Six 1.0-mL frozen plasma specimens
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year; ships on dry ice

Drug-Specific Platelet Aggregation PIA/PIAX

Procedure	Program Code		Challenges per Shipment
	PIA	PIAX	
Aspirin assay	▮	▮	3
PRU test	▮	▮	3

Program Information

- PIA - Three lyophilized specimens with diluents
- PIAX - All program PIA specimens in duplicate
- For use with the Accumetrics VerifyNow® System
- Kit includes sufficient material to perform one assay; multiple assay reporting requires the purchase of PIAX.
- Two shipments per year

Whole Blood Coagulation
WP3, WP4, WP6, WP9, WP10

Analyte	Challenges per Shipment				
	Program Code				
	WP3	WP4	WP6	WP9	WP10
International normalized ratio (INR)	5	5	5	5	3
Prothrombin time	5	5	5	5	–

For method compatibility, see instrument matrix below.

Program Information

- WP3 - Five 1.0-mL lyophilized plasma specimens with corresponding diluents
- WP4, WP6 - Five 0.5-mL unitized lyophilized blood specimens
- WP9 - Five 0.3-mL lyophilized plasma specimens
- Three shipments per year
- WP10 - Three 0.3-mL lyophilized plasma specimens with corresponding diluents; two shipments per year

Whole Blood Coagulation, Instrument Matrix

Instrument	Program Code				
	WP3	WP4	WP6	WP9	WP10
CoaguSense™	▮				
IL GEM PCL		▮	▮		
ITC Hemochron Jr. Signature/Signature+, Signature Elite and Jr. II – citrated cuvette		▮			
ITC Hemochron Jr. Signature/Signature+, Signature Elite and Jr. II – noncitrated cuvette			▮		
i-STAT/i-STAT PTplus	▮				
Roche CoaguChek XS Plus, XS Pro, and CoaguChek Pro II				▮	
Roche CoaguChek XS System					▮
Siemens Xprecia Stride				▮	

Platelet Mapping PLTM

Analyte	Program Code	Challenges per Shipment
	PLTM	
AA % aggregation/inhibition	▮	2
ADP % aggregation/inhibition	▮	2

This program requires the draw of a normal donor sample.

Program Information

- One 3.2% sodium citrate and two heparin vacuum tubes; two 3.5-mL plastic tubes; one vial of 0.2M $CaCl_2$
- For use with the Haemonetics Platelet Mapping® assay
- Two shipments per year

Improve the reliability of your patient results with CAP Survey Validated Materials

Use the same material that is sent in the Surveys program to:

- Identify and troubleshoot instrument/method problems.
- Correlate results with other laboratories or instruments.
- Document correction of problems identified in Surveys.
- Utilize material with confirmed results as an alternative external quality control.
- Identify potential proficiency testing failures.

Each laboratory receives a Survey Participant Summary, which includes readily available results.

Coagulation—Limited, Validated Material

Validated Material	Program Code	Corresponding Program	Page
Coagulation	CGM	CGL	166

Program Information

- Seven 1.0-mL lyophilized plasma specimens and one 2.0-mL serum specimen; three shipments per year
- One 1.0-mL liquid plasma specimen will replace one 1.0-mL lyophilized plasma specimen for D-dimer testing in one shipment per year.

15 Microbiology

Microbiology testing is changing at a rapid pace—so is our proficiency testing.

Explore our newest proficiency testing programs supporting the emerging needs of microbiology laboratories.

- Multiplex PCR panel for sexually transmitted infections including *Neisseria gonorrhea, Chlamydia trachomatis, Mycoplasma genitalium,* and *Trichomonas vaginalis* (STIM)
- Monkeypox virus proficiency testing for US laboratories (MPOX)

Microbiology

New Programs NEW

Microbiology

- Participants must report a minimum of five specimens, three times per year to meet CLIA requirements for each of the subspecialties of microbiology (Bacteriology, Mycobacteriology*, Mycology, Parasitology, and Virology), for regulated testing.
  *Mycobacteriology requires five specimens, two times per year.
- CLIA regulated tests are bolded.
- If any of the tests performed become(s) waived by the FDA mid-year, your laboratory is responsible for maintaining five challenges per test event for the remaining non-waived tests in that subspecialty.

Guide to Molecular Microbiology Testing

Use this flowchart as a guide for ordering the appropriate Molecular Microbiology programs for your laboratory's testing menu. Participants must report five specimens for each mailing to meet CLIA requirements for the subspecialties of microbiology. See the following pages for more detailed information about each program.

Do you perform molecular testing on *Chlamydia* or GC only?	Do you perform nucleic acid amplification other than GC?	Do you perform viral load testing only?	Do you perform molecular multiplexing?
↓ YES	↓ YES	↓ YES	↓ YES
Select from the following: ▪ **HC6, HC6X, HC7** *Chlamydia*/GC Nucleic Acid Amplification (page 191)	Select from the following: ▪ **ID1, ID1T, ID2, ID5 , IDN, IDO** Nucleic Acid Amplification (pages 201, 204-205, 207) ▪ **D1** Throat Culture (page 179) ▪ **MRS2M, MRS5M** MRSA Screen, Molecular (pages 187-188) ▪ **BOR** *Bordetella pertussis/ parapertussis* (page 185) ▪ **CDF5** *C. difficile* Detection (page 186) ▪ **MGEN** *Mycoplasma genitalium* (page 190) ▪ **TVAG** *Trichomonas vaginalis* (page 192) ▪ **VBDM** Zika (page 206) ▪ **COV2, COVM** SARS-CoV-2 (pages 202-203)	Select from the following: ▪ **HV2** HIV Viral Load (page 206) ▪ **HCV2, HBVL, HBVL5** Hepatitis Viral Load (page 205) ▪ **VLS, VLS2** Viral Load (page 206)	Select from the following: ▪ **ID3** Nucleic Acid Amplification, Respiratory Limited (page 204) ▪ **IDM5, IDME** Meningitis/Encephalitis Panel (page 209) ▪ **IDPN** Infectious Disease Pneumonia Panel (page 211) ▪ **IDR** Infectious Disease Respiratory Panel (page 210) ▪ **GIP, GIP5** Gastrointestinal Panel (page 212) ▪ **BCM** Bacterial Blood Culture (page 184) ▪ **MVP** Molecular Vaginal Panel (page 190) ▪ **STIM** Sexually Transmitted Infection Detection (page 191)

Bacteriology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Guide for Ordering Regulated Bacteriology Programs

Procedure	Program Code					
	D	D2	RMC	D3	MC4	D1
Bacterial identification	▮	▮	▮	▮	▮	▮
Gram stain	▮	▮	▮	▮		
Antimicrobial susceptibility testing	▮	▮	▮			
Bacterial antigen detection	▮		▮		▮	

Participants must report five specimens for each mailing to meet CLIA requirements for the subspecialty of bacteriology. See the following pages for more detailed information about each program.

Bacteriology D

Procedure	Program Code	Challenges per Shipment
	D	
Antimicrobial susceptibility testing	▮	1 graded, 1 ungraded
Bacterial antigen detection	▮	2
Bacterial identification	▮	5
Gram stain	▮	1

Additional Information

Antigen detection challenges will be included in the following shipments:

- Shipment A: *C. difficile* antigen/toxin* and spinal fluid meningitis panel
- Shipment B: Spinal fluid meningitis panel and Group A *Streptococcus*
- Shipment C: *C. difficile* antigen/toxin* and Group A *Streptococcus*

*CMS has clarified that the *C. difficile* toxin test is not subject to CLIA regulations; therefore, toxin results will not be sent to CMS. Only *C. difficile* antigen results will be sent.

Program Information

- Five swab specimens with diluents in duplicate for culture
- Culture sources may include wounds, blood, respiratory, urines, stools, and anaerobes on a rotational basis.
- Two specimens for bacterial antigen detection from the following:
  - One swab for Group A *Streptococcus*
  - One 1.0-mL lyophilized specimen for spinal fluid meningitis testing
  - One 0.5-mL lyophilized specimen for *Clostridioides (Clostridium) difficile*, for use with rapid or molecular testing methods
- Three shipments per year

CE credit

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Expanded Bacteriology DEX

Analyte	Program Code	Challenges per Shipment
	DEX	
Bacterial identification	▮	2

Additional Information

Expanded Bacteriology (DEX) is an educational opportunity that provides:

- Culture and susceptibility testing challenges for microbiology laboratories that perform complete identification and susceptibility of bacterial isolates including less common or problematic bacteria
- More exposure to emerging bacterial pathogens and novel resistance mechanisms
- Ability to recognize and identify organisms that exhibit multiple drug-resistance patterns
- Recovery and identification of mixed pathogens such as yeast, aerobic, and anaerobic bacteria in cultures containing multiple organisms

Program Information

- Two swab specimens in duplicate with diluents to perform bacterial identification and susceptibility (when directed)
- Three shipments per year

Microbiology Bench Tools Competency MBT

Procedure	Program Code	Challenges per Shipment
	MBT	
Bacterial identification	▮	6
Antimicrobial susceptibility testing	▮	2

Additional Information

Microbiology Bench Tools Competency (MBT) is a supplemental module for competency assessment and an educational resource for microbiology laboratories. The module:

- Provides organisms that challenge the basic elements of testing at the microbiology bench, including direct observation, monitoring, recording, and reporting of test results
- Can be used for both competency and educational purposes, including teaching and training pathology residents, new employees, and medical and MT/MLT students
- Provides identification and susceptibility results for supervisor use

This is not a proficiency testing program and participants will not return results to the CAP.

Program Information

- Six swab specimens with diluents for bacterial identification and susceptibility
- Culture sources will vary with each shipment.
- Results will be provided with the kit to assess personnel competency.
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

GC, Throat, and Urine Cultures D1, D2, D3

Procedure	Program Code			Challenges per Shipment
	D1	D2	D3	
Antimicrobial susceptibility testing		▮		1
Bacterial identification	▮	▮	▮	5
Gram stain		▮	▮	1
Culture source:	Throat	Urine	Cervical	
Microbiologic level:	Presence or absence of Group A *Streptococcus* determination	Organisms identified to the extent of your laboratory's protocol	Presence or absence of *Neisseria gonorrhoeae* determination	

Program Information

- D1- Five swab specimens with diluents in duplicate
- D2 - Five loop specimens with diluents in duplicate, with one susceptibility challenge, and one Gram stain challenge
- D3 - Five loop specimens with diluents in duplicate, and one Gram stain challenge
- Throat swabs compatible with molecular- and culture-based methods
- Three shipments per year

CE credit

BIOHAZARD

Identify microorganisms quickly and confidently.

Gram Stain Benchtop Reference Guide is an illustrated guide to gram-positive and gram-negative organisms. Its rugged construction is well suited for students and medical technologists for heavy use at the benchtop.

Features include:

- Theory and application of the Gram stain
- Detailed descriptions of microbial morphology, quantitation, and indicators of pathology
- Examples of more than 35 gram-positive and gram-negative organisms found in blood, body fluids, CSF, urine, and the genital and respiratory tracts
- Seven tabbed sections for easy reference

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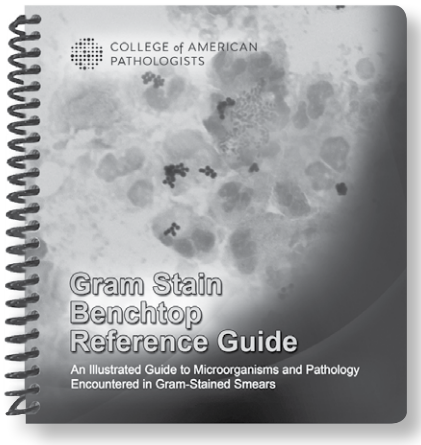

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BIOHAZARD Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Routine Microbiology Combination RMC

Procedure	Program Code	Challenges per Shipment
	RMC	
Antimicrobial susceptibility testing	▮	1
GC culture	▮	2
Gram stain	▮	2
Group A *Streptococcus* antigen detection*	▮	1
Throat culture	▮	3
Urine culture	▮	3

*If your laboratory uses a waived method for Group A *Streptococcus*, these results will not count toward the required five challenges for the subspecialty of bacteriology.

Program Information

- Five loop specimens with diluents in duplicate, three swab specimens with diluents in duplicate, and one swab specimen for bacterial antigen detection
- Urine culture will have one susceptibility challenge.
- Throat swabs compatible with molecular- and culture-based methods
- Three shipments per year

CE credit BIOHAZARD

Urine Colony Count MC3, MC4

Procedure	Challenges per Shipment	
	Program Code	
	MC3	MC4
Urine colony count/**urine culture identification**	2	5
Group A *Streptococcus* antigen detection*		3
Throat culture		3

*If your laboratory uses a waived method for Group A *Streptococcus*, these results will not count toward the required five challenges for the subspecialty of bacteriology.

Program Information

- MC3 - Two urine specimens with diluents
- MC4 - Five urine specimens with diluents, three swab specimens with diluents in duplicate, and three swab specimens for bacterial antigen detection
- Throat swabs compatible with molecular- and culture-based methods
- Three shipments per year

CE credit BIOHAZARD

Gram Stain D5

Procedure	Program Code	Challenges per Shipment
	D5	
Gram stain	▮	5

Program Information

- Five air-dried, methanol-fixed unstained glass slides
- Three shipments per year

CE credit

BIOHAZARD Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Technical Competency Assessment of Gram Stains QPD10/QPD25

Introduction

Gram stain is a commonly performed bacterial stain in clinical microbiology laboratories. It is often the starting point guiding microbiological workup and initial clinical diagnosis and therapy. It is important for technologists who read Gram stains to provide an accurate interpretation based on reaction type and microscopic morphology in order to provide presumptive identifications and quantification of bacteria and fungi in clinical specimens.

Objectives

This study will help assess the effectiveness of educational and practical experience policies and procedures dedicated to the laboratory's efforts in maintaining technologist skills in the morphological assessment of Gram stains. Participation in this study will help management assess the technologist's ability to evaluate Gram stains using online, whole slide images. These cases provide a standardized review and evaluation for each technologist. The study will help management meet applicable CLIA, CAP Laboratory Accreditation, and The Joint Commission laboratory requirements for personnel competency requirements and consistency of reporting amongst staff.*

Data Collection

A series of online, whole slide images of Gram stained smears using DigitalScope technology will be provided to each participating institution to assess technologists' ability to detect various microorganisms. Technologists will provide information about their work experience related to Gram stains, continuing education, and professional background. Information will be collected from each laboratory site to provide information about their continuing education requirements in microbiology, and relevant laboratory procedures and policies related to Gram stain assessment.

Performance Indicators

- Individual technologist score (%) for each Gram stain case, and overall based on a standardized competency assessment method
- Overall laboratory score based on the facility's individual technologist performance(s)

Reports are provided at institution and technologist levels. A summary of responses to the general questions will be provided for participants.

Program Information

To meet your staff technical competency assessment requirements:

- Result forms for up to 10 technologists (QPD10)
- Result forms for up to 25 technologists (QPD25)
- Multiple kits may be purchased to accommodate quantity needed.

***Participation in this study helps laboratories meet:**

- CLIA personnel requirements (Subpart M, 42 CFR §493.1)
- CAP Laboratory Accreditation Program Microbiology Checklist statement MIC.11060, Culture Result Reporting: Personnel performing Gram stains for this purpose are subject to competency assessment
- CAP Laboratory Accreditation Program Microbiology Checklist statement MIC.11350, Morphologic Observation Evaluation: The laboratory evaluates consistency of morphologic observation among personnel performing Gram, trichrome and other organism stains at least annually
- CAP Laboratory Accreditation Program Checklist statement GEN.55500, Competency Assessment of Testing Personnel
- The Joint Commission Standards HR. 01.05.03, 01.06.01, 01.07.01, LD.04.05.03, and 04.05.05 regarding in-service training, continuing education, competency, and evaluation of hospital personnel

This is a one-time study conducted in the late third quarter.

Virtual Gram Stain Competency VGS1, VGS2

Procedure	Program Code		Challenges per Shipment
	VGS1	VGS2	
Virtual gram stain basic	▮		3
Virtual gram stain advanced		▮	3

Additional Information

- Virtual Gram Stain Basic Competency (VGS1) is for general and new laboratory technologists/technicians. Participants will assess the quality of specimens and stains and will report artifacts and detailed gram-positive and gram-negative morphology. Challenges will include specimens such as CSF, body fluids, and positive blood cultures.
- Virtual Gram Stain Advanced Competency (VGS2) is for experienced laboratory technologists/technicians and microbiologists. Participants will receive challenging images of sputum, body fluids, and other specimens to assess the quality, quantity, and typical morphology of both gram-positive and gram-negative organisms appropriate for the site.
- See system requirements on page 12.

Program Information

- Three online, whole slide images
- Results included in the kit to assess personnel competency
- Powered by DigitalScope® technology
- Two shipments per year

Rapid Group A Strep Antigen Detection D6

Procedure	Program Code	Challenges per Shipment
	D6	
Group A *Streptococcus* antigen detection*	▮	5

*If your laboratory uses a waived method for Group A *Streptococcus*, these results will not count toward the required five challenges for the subspecialty of bacteriology.

Program Information

- Five swab specimens
- Not compatible with molecular- and culture-based methods
- Three shipments per year

CE credit

Rapid Group A Strep Antigen Detection, Waived D9

Procedure	Program Code	Challenges per Shipment
	D9	
Group A *Streptococcus* antigen detection	▮	2

Program Information

- Two swab specimens
- Not compatible with molecular- and culture-based methods
- Two shipments per year

Group B Strep Detection D8

Analyte	Program Code	Challenges per Shipment
	D8	
Group B *Streptococcus*	▮	5

Program Information

- Five swab specimens with diluents
- Compatible with molecular- and culture-based methods
- Three shipments per year

Bacterial Antigen Detection LBAS, SBAS

Procedure	Program Code		Challenges per Shipment
	LBAS	SBAS	
Legionella pneumophila antigen detection	▮		2
Streptococcus pneumoniae antigen detection		▮	2

Program Information

- LBAS, SBAS - Two 0.5-mL liquid simulated clinical specimens
- Two shipments per year

Blood Culture BCS

Procedure	Program Code	Challenges per Shipment
	BCS	
Blood culture bacterial detection and identification	▮	2

Program Information

- Two specimens with diluents for inoculation of blood culture bottles
- Two shipments per year

Blood Culture, *Staphylococcus aureus* BCS1

Analyte	Program Code	Challenges per Shipment
	BCS1	
Staphylococcus aureus/MRSA	▮	3

Program Information

- Three specimens with diluents for inoculation of blood culture bottles
- Compatible with molecular methods for detection of *S. aureus*/MRSA from positive blood culture bottles
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Bacterial Blood Culture, Molecular BCM

Procedure	Program Code	Challenges per Shipment
	BCM	
Blood culture bacterial identification	▮	5

Additional Information

- This program is for the identification of gram-positive and gram-negative organisms, including common resistance mechanisms isolated from blood culture bottles.
- This program is not for the inoculation of blood culture bottles.

Program Information

- Five 1.0-mL simulated blood culture fluid specimens
- For laboratories using molecular multiplex panels
- Three shipments per year

Blood Culture Contamination QT2

Despite advances in blood culture practices and technology, false-positive blood culture results due to contaminants continue to be a critical problem. Blood culture contamination rate, the primary indicator of preanalytic performance in microbiology, is associated with increased length of hospital stay, additional expense, and the administration of unnecessary antibiotics.

The CAP and other accrediting organizations require you to monitor and evaluate key indicators of quality for improvement opportunities. Use this monitor to help meet CAP Laboratory Accreditation Checklist statements MIC.22630 and MIC.22635: "The laboratory must determine and regularly review the number of contaminated cultures. Tracking the contamination rate and providing feedback to units and persons drawing cultures is one method that has been shown to reduce contamination rates." This will also help laboratories meet The Joint Commission Standard QSA 04.07.01 EP3.

Objective

Determine the rate of blood culture contamination using standardized criteria for classifying contaminants.

Data Collection

On a monthly basis, participants will tabulate the total number of blood cultures processed and the total number of contaminated blood cultures. Blood cultures from neonatal patients are tabulated separately. For the purposes of this study, participants will consider a blood culture to be contaminated if they find one or more of the following organisms in only one of a series of blood culture specimens: Coagulase-negative *Staphylococcus; Micrococcus;* Alpha-hemolytic viridans group streptococci; *Propionibacterium acnes*; *Corynebacterium* sp. (diptheroids); or *Bacillus* sp. Participants have the option to monitor institution-specific subgroups, for example, a specific department or patient population.

Performance Indicators

- Neonatal contamination rate (%)
- Other contamination rate (%)
- Overall contamination rate (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Bordetella pertussis/parapertussis, Molecular BOR

Analyte	Program Code	Challenges per Shipment
	BOR	
Bordetella pertussis	▮	3
Bordetella parapertussis	▮	3

Program Information

- Three swab specimens
- Designed for molecular techniques
- Two shipments per year

Carbapenemase Detection CRE

Procedure	Program Code	Challenges per Shipment
	CRE	
Resistance mechanism detection	▮	3

Program Information

- Three swab specimens containing live organisms
- Designed for molecular and phenotypic testing methods
- Challenge isolates may include Enterobacterales, *Pseudomonas*, or *Acinetobacter*.
- Two shipments per year

Carbapenem-resistant Organisms CRO

Analyte	Program Code	Challenges per Shipment
	CRO	
KPC	▮	3
IMP	▮	3
NDM	▮	3
OXA-48	▮	3
VIM	▮	3

Program Information

- Three 130-µL specimens
- Designed for molecular techniques
- Compatible with Cepheid GeneXpert
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Campylobacter CAMP

Analyte	Program Code	Challenges per Shipment
	CAMP	
Campylobacter	▮	2

Program Information
- Two swabs with diluents in duplicate
- For use with rapid antigen, culture-based testing, and molecular methods
- Two shipments per year

C. difficile, 2 Challenge CDF2

Analyte	Program Code	Challenges per Shipment
	CDF2	
Clostridioides (Clostridium) difficile antigen/toxin	▮	2

Program Information
- Two 0.5-mL lyophilized specimens, for use with rapid or molecular testing methods
- Two shipments per year

C. difficile, 5 Challenge CDF5

Analyte	Program Code	Challenges per Shipment
	CDF5	
***Clostridioides (Clostridium) difficile* antigen**/toxin	▮	5

CMS has clarified that the *C. difficile* toxin test is not subject to CLIA regulations; therefore, toxin results will not be sent to CMS. Only *C. difficile* antigen results will be sent.

Program Information
- Five 0.5-mL lyophilized specimens, for use with rapid or molecular testing methods
- Three shipments per year

C. trachomatis Antigen Detection HC1, HC3

Procedure	Program Code		Challenges per Shipment
	HC1	HC3	
***C. trachomatis* antigen detection (DFA)**	▮		5
***C. trachomatis* antigen detection (EIA)**		▮	5

Program Information
- HC1 - Five 5-well slide specimens for the detection of chlamydial elementary bodies by DFA
- HC3 - Five 2.0-mL liquid specimens for *Chlamydia* antigen testing by EIA
- Three shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Fecal Lactoferrin FLAC

Analyte	Program Code	Challenges per Shipment
	FLAC	
Fecal lactoferrin	▮	3

Program Information
- Three 0.5-mL simulated stool specimens
- For use with rapid methods
- Two shipments per year

Helicobacter pylori Antigen, Stool HPS

Procedure	Program Code	Challenges per Shipment
	HPS	
Helicobacter pylori antigen	▮	2

Program Information
- Two 0.5-mL fecal suspensions
- Two shipments per year

Methicillin-resistant *Staphylococcus aureus* Screen, 2 Challenge MRS

Procedure	Program Code	Challenges per Shipment
	MRS	
MRSA/MSSA detection	▮	2

Program Information
- Two swab specimens with diluents
- For laboratories performing culture-based testing only or using culture and molecular testing
- Two shipments per year

MRSA Screen, Molecular, 2 Challenge MRS2M

Procedure	Program Code	Challenges per Shipment
	MRS2M	
MRSA/MSSA/SA detection	▮	2

Program Information
- Two swab specimens (in duplicate)
- For use with molecular methods that detect *mecA*
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Methicillin-resistant *Staphylococcus aureus* Screen, 5 Challenge MRS5

Procedure	Program Code	Challenges per Shipment
	MRS5	
MRSA/MSSA **detection**	▮	5

Program Information

- Five swab specimens with diluents
- For laboratories performing culture-based testing only or using culture and molecular testing
- Three shipments per year

MRSA Screen, Molecular, 5 Challenge MRS5M

Procedure	Program Code	Challenges per Shipment
	MRS5M	
MRSA/MSSA/SA **detection**	▮	5

Program Information

- Five swab specimens (in duplicate)
- For use with molecular methods that detect *mecA*
- Three shipments per year

Laboratory Preparedness Exercise LPX

Analyte	Program Code	Challenges per Shipment
	LPX	
Bacterial identification	▮	3

The Laboratory Preparedness Exercise (LPX) was developed as a collaborative effort between the College of American Pathologists, the Centers for Disease Control and Prevention (CDC), and the Association of Public Health Laboratories (APHL). Laboratories will be sent live organisms that either exhibit characteristics of bioterrorism agents or demonstrate epidemiologic importance and will be expected to respond following Laboratory Response Network Sentinel Laboratory Guidelines if a bioterrorism agent is suspected. All agents provided are excluded from the CDC's select agent list. These may include strains of *Bacillus anthracis, Yersinia pestis, Francisella tularensis,* and *Brucella abortus* that have been modified and are safe for testing in a laboratory that contains a certified Class II Biological Safety Cabinet and is capable of handling Category A and B agents.

Program Information

- Three swab specimens with diluents
- Not available to customers outside the US due to US export law restrictions
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Rapid Urease RUR

Analyte	Program Code	Challenges per Shipment
	RUR	
Urease	▮	3

Program Information

- Three simulated gastric biopsy specimens
- For use with methods such as CLOTEST®
- Two shipments per year

Stool Pathogen SP, SPN, SP1

Analyte	Program Code			Challenges per Shipment
	SP	SPN	SP1	
Adenovirus 40/41	▮	▮		2
C. difficile antigen/toxin	▮	▮		2
Rotavirus	▮	▮		2
Shiga toxin	▮			2
Norovirus			▮	1

Program Information

- SP - Two 1.0-mL liquid specimens; for use with rapid or molecular testing methods; not available to customers outside the US due to US export law restrictions
- SPN - Two 1.0-mL liquid specimens; for use with rapid or molecular testing methods; intended for laboratories outside the US
- SP1 - One 1.0-mL liquid specimen compatible with molecular methods only
- Two shipments per year

Shiga Toxin ST

Analyte	Program Code	Challenges per Shipment
	ST	
Shiga toxin	▮	2

Program Information

- Two 0.5-mL liquid specimens
- For use with direct shiga toxin testing only; not compatible with culture methods, cytotoxicity assays, or PCR
- Not available to customers outside the US due to US export law restrictions
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Bacterial Vaginosis BV

Procedure	Program Code	Challenges per Shipment
	BV	
Bacterial vaginosis detection	▮	3

Program Information
- Three 1.0-mL liquid specimens
- For OSOM® BVBlue users
- Two shipments per year

Vaginitis Screen VS, VS1

Analyte	Program Code		Challenges per Shipment
	VS*	VS1**	
Candida sp.	▮		5
Gardnerella vaginalis	▮		5
Trichomonas vaginalis	▮	▮	5

*The biohazard warning applies to program VS.
**Molecular users are encouraged to use *Trichomonas vaginalis*, Molecular (TVAG), on page 192.

Program Information
- VS - Five swabs for DNA probe technology; BD Affirm™ VP III probe detection method; three shipments per year

- VS1 - Five swabs for methods such as Sekisui OSOM *Trichomonas* Rapid Test, *Trichomonas vaginalis*; three shipments per year

Mycoplasma genitalium, Molecular MGEN

Analyte	Program Code	Challenges per Shipment
	MGEN	
Mycoplasma genitalium	▮	3

Program Information
- Three 1.0-mL liquid specimens
- Designed for molecular techniques
- Two shipments per year

Molecular Vaginal Panel MVP

Analyte	Program Code	Challenges per Shipment
	MVP	
Candida species group	▮	5
Candida krusei	▮	5
Candida glabrata	▮	5
Trichomonas vaginalis	▮	5
Bacterial vaginosis	▮	5

Program Information
- Five 1.0-mL liquid simulated vaginal specimens
- Designed for molecular methods such as BD MAX and Hologic
- Three shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

C. trachomatis and *N. gonorrhoeae* by NAA HC6, HC6X, HC7

Procedure	Program Code		Challenges per Shipment
	HC6*, HC6X*	HC7	
Nucleic acid amplification (NAA)	▮		5
Nucleic acid amplification (NAA/DNA)		▮	5

*The biohazard warning applies to programs HC6 and HC6X.

Program Information

- HC6 - Three swab specimens and two 1.0-mL liquid simulated urine specimens
- HC6X - Three swab specimens and two 1.0-mL liquid simulated urine specimens in duplicate
- Three shipments per year

- HC7 - Five 1.5-mL simulated body fluid specimens; designed for Cepheid users
- Three shipments per year

Sexually Transmitted Infection Detection, Molecular STIM

NEW

Analyte	Program Code	Challenges per Shipment
	STIM	
Chlamydia trachomatis	▮	5
Neisseria gonorrhoeae	▮	5
Mycoplasma genitalium	▮	5
Trichomonas vaginalis	▮	5

Program Information

- Five 2-mL simulated urogenital specimens
- Designed for molecular multiplex methods
- Three shipments per year

Vaginitis Screen, Virtual Gram Stain VS2

Procedure	Program Code	Challenges per Shipment
	VS2	
Interpretation of gram-stained vaginal smears	▮	3

See system requirements on page 12.

Program Information

- Three online, whole slide images
- Powered by DigitalScope technology
- Two activities per year; your CAP shipping contact will be notified via email when the activity is available

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Trichomonas vaginalis, Molecular TVAG

Analyte	Program Code	Challenges per Shipment
	TVAG	
Trichomonas vaginalis	▮	3

Program Information

- Three 1.5-mL liquid specimens
- Designed for molecular techniques
- Two shipments per year

Vancomycin-resistant *Enterococcus* VRE

Procedure	Program Code	Challenges per Shipment
	VRE	
Vancomycin-resistant *Enterococcus* (VRE) detection	▮	2

Program Information

- Two swabs with diluents
- For use with molecular methods and culture-based testing
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Mycobacteriology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Mycobacteriology E

Procedure	Program Code	Challenges per Shipment
	E	
Acid-fast smear	▮	1
Antimycobacterial susceptibility testing	▮	1 graded, 1 ungraded
Mycobacterial identification*	▮	5

*This procedure requires identification of *Mycobacterium tuberculosis*.

Program Information

- Five simulated clinical isolates with diluents and one specimen for performing an acid-fast bacillus smear
- Identification may be performed by culture or molecular methods.
- Two shipments per year

Mycobacteriology—Limited E1

Procedure	Program Code	Challenges per Shipment
	E1	
Acid-fast smear	▮	5
Mycobacterial culture	▮	5

Program Information

- Five simulated specimens for acid-fast smears and/or for the determination of the presence or absence of acid-fast bacillus by culture
- Two shipments per year

Molecular MTB Detection and Resistance MTR5, MTBR

Procedure	Challenges per Shipment	
	Program Code	
	MTR5	MTBR
Mycobacterium tuberculosis detection	5	3
Rifampin resistance	5	3

Program Information

- MTR5 - Five 1.25-mL simulated sputum specimens for use with molecular methods
- MTBR - Three 1.25-mL simulated sputum specimens for use with molecular methods
- Not suitable for culture
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Mycology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Mycology and Aerobic Actinomycetes F

Procedure	Program Code	Challenges per Shipment
	F	
Antifungal susceptibility testing	▮	1
Cryptococcal antigen detection	▮	2 per year
Mold and yeast identification	▮	5

Program Information

- Five loops for culture with diluents in duplicate and one 1.0-mL simulated cerebrospinal fluid specimen (A and B shipments only)
- Identification of yeasts, molds, and aerobic actinomycetes may be performed by molecular- and culture-based methods.
- Three shipments per year

Yeast F1

Procedure	Program Code	Challenges per Shipment
	F1	
Antifungal susceptibility testing	▮	1
Cryptococcal antigen detection	▮	1
Yeast identification	▮	5

Program Information

- Five loops for culture with diluents in duplicate and one 1.0-mL simulated cerebrospinal fluid specimen (A and B shipments only)
- Identification of yeast may be performed by molecular- and culture-based methods.
- Three shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Candida Culture F3

Procedure	Program Code	Challenges per Shipment
	F3	
Yeast identification	▮	5

Program Information

- Five loops for culture with diluents in duplicate
- For laboratories identifying *Candida* sp. only
- Identification of *Candida* species may be performed by culture, molecular, and rapid methods.
- Three shipments per year

Yeast Blood Culture, Molecular YBC

Procedure	Program Code	Challenges per Shipment
	YBC	
Blood culture yeast identification	▮	5

Additional Information

- This program is for identification of fungal organisms such as yeast isolated from blood culture bottles.
- This program is not for the inoculation of blood culture bottles.

Program Information

- Five 1.0-mL simulated blood culture fluid specimens
- For laboratories using molecular multiplex panels
- Three shipments per year

Cryptococcal Antigen Detection CRYP

Procedure	Program Code	Challenges per Shipment
	CRYP	
Cryptococcal antigen	▮	5

Program Information

- Five 1.0-mL simulated cerebrospinal fluids
- Three shipments per year

Galactomannan FGAL

Analyte	Program Code	Challenges per Shipment
	FGAL	
Galactomannan - *Aspergillus*	▮	3

Program Information

- Three liquid specimens
- For use with methods such as Bio-Rad Platelia™
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Fungal Serology FSER

Procedure	Program Code	Challenges per Shipment
	FSER	
Serological detection of specific fungal antibodies	▮	3

Program Information
- Three serum specimens
- For use with immunodiffusion methods
- Designed for the detection of IgG antibodies to *Aspergillus*, *Blastomyces*, *Coccidioides*, and *Histoplasma*
- Two shipments per year

Fungal Smear FSM

Procedure	Program Code	Challenges per Shipment
	FSM	
KOH preparation/calcofluor white	▮	3

Program Information
- Three unstained slides
- Two shipments per year

India Ink IND

Procedure	Program Code	Challenges per Shipment
	IND	
India ink	▮	2

Program Information
- Two liquid specimens
- Two shipments per year

Pneumocystis jirovecii PCP1, PCP2, PCP4

Procedure	Program Code			Challenges per Shipment
	PCP1	PCP2	PCP4	
PCP – Calcofluor white stain	▮			3
PCP – DFA stain		▮		3
PCP – GMS stain			▮	3

Program Information
- Three images, each available as photographs and online images for *Pneumocystis jirovecii*
- Two shipments per year

Parasitology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Parasitology P, P3, P4, P5

Procedure	Challenges per Shipment			
	Program Code			
	P	P3	P4	P5
Fecal suspension (wet mount)	2	5	2	
Fecal suspension (*Giardia* and *Cryptosporidium* immunoassays and/or modified acid-fast stain)	2	1	1	5
Giemsa-stained blood smear	1			
Preserved slide (for permanent stain)	2		3	

Additional Information

- The proficiency testing materials used for the Parasitology programs contain formalin as a preservative.
- Modified acid-fast stain results do not meet CLIA requirements for parasite identification.
- Number of specimen types are indicated in chart.

Program Information

- P - Five specimens consisting of thin and thick films for blood and tissue parasite identification, preserved slides for permanent stain, 0.75-mL fecal suspensions for direct wet mount examination, photographs, and/or online images; two 0.75-mL fecal suspensions for *Giardia* and *Cryptosporidium* immunoassays and/or modified acid-fast stain
- P3 - Five 0.75-mL fecal suspensions for direct wet mount examination, photographs, and/or online images; one 0.75-mL fecal suspension for *Giardia* and *Cryptosporidium* immunoassays and/or modified acid-fast stain
- P4 - Five specimens consisting of 0.75-mL fecal suspensions for direct wet mount examination, preserved slides for permanent stain, photographs, and/or online images; one 0.75-mL fecal suspension for *Giardia* and *Cryptosporidium* immunoassays and/or modified acid-fast stain
- P5 - Five 0.75-mL fecal suspensions for *Giardia* and *Cryptosporidium* immunoassays and/or modified acid-fast stain
- Three shipments per year

Blood Parasite BP

Procedure	Program Code	Challenges per Shipment
	BP	
Blood parasite identification (thin/thick film sets*)	▮	5

*This program will include corresponding thick films when available.

Program Information
- Five Giemsa-stained blood film sets, photographs, and/or online images
- Percent parasitemia reporting is provided when appropriate for educational purposes.
- A variety of blood parasites, including *Plasmodium, Babesia, Trypanosoma,* and filarial worms
- Three shipments per year

Rapid Malaria RMAL

Procedure	Program Code	Challenges per Shipment
	RMAL	
Rapid malaria detection	▮	3
Plasmodium falciparum only	▮	3

This program detects *Plasmodium falciparum* specific histidine-rich protein 2 (HRP2). May not be compatible with methods that use pLDH enzyme detection for mixed malaria infections.

Program Information
- Three 0.5-mL antigen specimens
- Two shipments per year

Expanded Parasitology PEX

Procedure	Program Code	Challenges per Shipment
	PEX	
Parasite identification	▮	3

This program provides an educational opportunity to challenge laboratory professionals' competency in the identification of parasites utilizing photo images.

Program Information
- Three images, each available as photographs and online images
- Two shipments per year

Ticks, Mites, and Other Arthropods TMO

Procedure	Program Code	Challenges per Shipment
	TMO	
Tick, mite, and arthropod identification	▮	3

Program Information
- Three images, each available as photographs and online images
- Two shipments per year

Worm Identification WID

Procedure	Program Code	Challenges per Shipment
	WID	
Worm identification	▮	3

Program Information
- Three images, each available as photographs and online images
- Two shipments per year

Virology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Guide for Ordering Regulated Virology Programs

Program Code	Procedure	
	Viral Identification	Viral Antigen Detection
VR1	▮	
VR2		▮
VR4		▮
HC4	▮	
ID3	▮	
ID5	▮	
COVM	▮	
CVAG		▮

Guide to Virology Testing

Use this flowchart as a guide for ordering the appropriate Virology programs for your laboratory's testing menu. For the subspecialty of virology, participants must test five specimens per mailing. If you have any questions, please call the Customer Contact Center at 800-323-4040 or 847-832-7000 (Country code: 1) Option 1.

For Comprehensive Virology Culture Testing → Select **VR1** (page 200)

For Virology Antigen Testing by Immunofluorescence → Select **VR2** (page 200)

For Viral Serology Testing → Select **VR3, VR3M** (page 213)

For Virology Antigen by EIA or Latex Agglutination → Select **VR4, CVAG** (pages 200, 203)

For Herpes Simplex Virus Culture Testing → Select **HC4** (page 201)

For Viral Load Testing → Select **HV2, HCV2, HBVL, HBVL5, VLS, VLS2** (pages 205-206)

For Nucleic Acid Amplification → Select **COV2, COVM, ID1, ID1T, ID2, ID3, ID5, MPOX, VBDM** (pages 201-206)

Virology Culture VR1

Procedure	Program Code	Challenges per Shipment
	VR1	
Chlamydia trachomatis culture	▮	1
Viral isolation/identification	▮	5

Program Information

- Five 0.5-mL specimens for viral culture and one 0.5-mL specimen for *Chlamydia trachomatis* culture
- Three shipments per year

Virology Antigen Detection (DFA) VR2

Analyte/Procedure	Program Code	Challenges per Shipment		
	VR2	A	B	C
Adenovirus antigen	▮	1	1	
Cytomegalovirus antigen	▮	1	1	
Herpes simplex virus (HSV) antigen	▮		1	1
Influenza A antigen	▮	1		1
Influenza B antigen	▮		1	
Parainfluenza antigen	▮	1		1
Respiratory syncytial virus (RSV) antigen	▮	1		1
Varicella-zoster antigen	▮		1	1
Educational challenge	▮	1		

Program Information

- Five 5-well slide specimens
- Three shipments per year

Virology Antigen Detection (Non-DFA) VR4

Analyte	Program Code	Challenges per Shipment
	VR4	
Adenovirus (Not 40/41) antigen	▮	5
Influenza A antigen	▮	5
Influenza B antigen	▮	5
Respiratory syncytial virus (RSV) antigen	▮	5
Rotavirus antigen	▮	5

Program Information

- Five 1.5-mL specimens
- For use with enzyme immunoassay and/or latex agglutination methods
- Specimens not designed for molecular methods
- Three shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Herpes Simplex Virus HC4

Procedure	Program Code	Challenges per Shipment
	HC4	
Herpes simplex virus culture	▮	5

Program Information
- Five 0.5-mL lyophilized specimens
- Three shipments per year

Human Papillomavirus HPV

Analyte	Program Code	Challenges per Shipment
	HPV	
Human papillomavirus	▮	2

For laboratories using Digene, SurePath, and/or ThinPrep collection media, see page 310.

Program Information
- Two simulated cervical specimens contained in Digene transport media
- For Digene Hybrid Capture only
- Two shipments per year

Nucleic Acid Amplification, Viruses ID1, ID1T

Analyte	Program Code		Challenges per Shipment
	ID1	ID1T	
Cytomegalovirus	▮		1
Enterovirus	▮		1
Epstein-Barr virus	▮		1
Herpes simplex virus	▮		1
Human herpesvirus 6	▮		1
Human herpesvirus 8	▮		1
Parvovirus B19	▮		1
Varicella-zoster virus	▮		1
BK virus		▮	1
JC virus		▮	1

Program Information
- ID1- Eight 1.0-mL liquid specimens
- ID1T - Two 1.0-mL liquid specimens
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Monkeypox Virus MPOX

NEW

Procedure	Program Code	Challenges per Shipment
	MPOX	
Monkeypox virus detection	▮	3

This program is only available to customers within the US.

Program Information

- Three 1.0-mL simulated body fluid specimens that contain whole killed virus
- A549 cells included in each specimen
- For laboratories using molecular tests
- Two shipments per year

SARS-CoV-2 Molecular COV2

Analyte	Program Code	Challenges per Shipment
	COV2	
SARS-CoV-2	▮	3

For multiple instrument reporting options, see the Quality Cross Check program, COV2Q, below.

Program Information

- Three 1.5-mL liquid simulated respiratory specimens
- Designed for molecular techniques
- Whole genome with sequence targets across all the assay platforms
- Qualitative and quantitative reporting options available
- Two shipments per year

Quality Cross Check—SARS-CoV-2 Molecular COV2Q

Analyte	Program Code	Challenges per Shipment
	COV2Q	
SARS-CoV-2	▮	3

This program does not meet regulatory requirements for proficiency testing; see program COV2, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- Three 3.2-mL non-infectious liquid specimens that contain the whole SARS-CoV-2 genome
- Designed for molecular techniques
- Report up to three instruments.
- Two shipments per year

SARS-CoV-2 Molecular, 5 Challenge COVM

NEW

Analyte	Program Code	Challenges per Shipment
	COVM	
SARS-CoV-2	▮	5

For multiple instrument reporting options, see the Quality Cross Check program COV2Q, on page 202.

Program Information

- Five 1.5-mL liquid simulated respiratory specimens
- Designed for molecular techniques
- Whole genome with sequence targets across all the assay platforms
- Qualitative and quantitative reporting options available
- Three shipments per year

SARS-CoV-2 Antigen COVAG

Analyte	Program Code	Challenges per Shipment
	COVAG	
SARS-CoV-2 antigen	▮	3

For multiple instrument reporting options, see the Quality Cross Check program COVAQ, below.

Program Information

- Three 0.5-mL simulated respiratory specimens
- Designed for antigen test
- Two shipments per year

SARS-CoV-2 Antigen, 5 Challenge CVAG

NEW

Analyte	Program Code	Challenges per Shipment
	CVAG	
SARS-CoV-2 antigen	▮	5

For multiple instrument reporting options, see the Quality Cross Check program COVAQ, below.

Program Information

- Five 0.5 mL simulated respiratory specimens
- Designed for antigen test
- Three shipments per year

Quality Cross Check—SARS-CoV-2 Antigen COVAQ

Analyte	Program Code	Challenges per Shipment
	COVAQ	
SARS-CoV-2 antigen	▮	3

This program does not meet regulatory requirements for proficiency testing; see program COVAG, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- Three 0.5-mL simulated respiratory specimens in triplicate
- Report up to three instruments.
- Two shipments per year

SARS-CoV-2 Serology COVS

Analyte	Program Code	Challenges per Shipment
	COVS	
SARS-CoV-2 antibody (total, IgG, IgM, and IgA)	■	3

For multiple instrument reporting options, see the Quality Cross Check program, COVSQ, on page 222.

Program Information

- Three 0.5-mL serum specimens
- Appropriate for assays that detect antibodies to nucleocapsid, spike, combined antigen (nucleocapsid and spike), and the receptor binding domain of the spike protein
- Two shipments per year

Nucleic Acid Amplification, Respiratory ID2

Analyte	Program Code	Challenges per Shipment
	ID2	
Adenovirus	■	1
Coronavirus/Rhinovirus*	■	1
Human metapneumovirus	■	1
Influenza virus*	■	1
Parainfluenza virus	■	1
Respiratory syncytial virus (RSV)	■	1

*Coronavirus/Rhinovirus and Influenza virus will be included in the following shipments:

- Shipment A: Coronavirus and Influenza A (does not include SARS-CoV-2)
- Shipment B: Rhinovirus and Influenza B

Program Information

- Six 1.0-mL liquid specimens
- Two shipments per year

Nucleic Acid Amplification, Respiratory Limited ID3

Analyte	Program Code	Challenges per Shipment
	ID3	
Influenza A virus	■	5
Influenza B virus	■	5
Respiratory syncytial virus (RSV)	■	5
SARS-CoV-2*	■	5

*SARS-CoV-2 does not contain human genome material or sequences from human RNase P gene.

For multiple instrument reporting options, see the Quality Cross Check program, ID3Q, see page 205.

Program Information

- Five 1.0-mL liquid specimens
- Designed for molecular multiplex panel users
- Three shipments per year

Quality Cross Check—Nucleic Acid Amplification, Respiratory Limited ID3Q

Analyte	Program Code	Challenges per Shipment
	ID3Q	
Influenza A virus	▮	3
Influenza B virus	▮	3
Respiratory syncytial virus (RSV)	▮	3
SARS-CoV-2	▮	3

This program does not meet regulatory requirements for proficiency testing; see program ID3, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- Three 1.0-mL liquid specimens
- Designed for molecular multiplex panel users
- Report up to three instruments.
- Two shipments per year

HSV, VZV—Molecular ID5

Analyte	Program Code	Challenges per Shipment
	ID5	
Herpes simplex virus	▮	5
Varicella-zoster virus	▮	5

Program Information

- Five 1.0-mL liquid specimens
- Designed for molecular techniques
- Three shipments per year

Hepatitis Viral Load HCV2, HBVL, HBVL5

Procedure	Challenges per Shipment		
	Program Code		
	HCV2	HBVL	HBVL5
HCV genotyping	1		
HCV, qualitative	1		
HCV viral load	5		
HBV viral load		3	5

Program Information

- HCV2 - Five 1.5-mL liquid plasma specimens; three shipments per year
- HBVL - Three 1.5-mL plasma specimens; two shipments per year
- HBVL5 - Five 1.5-mL plasma specimens; three shipments per year

HIV Viral Load HV2, HIVG

Procedure	Program Code		Challenges per Shipment
	HV2	HIVG	
HIV-RNA viral load	▮		5
HIV genotyping*		▮	1

*HIV genotyping is for laboratories reporting reverse transcriptase, protease, and/or integrase mutations.

Program Information
- HV2 - Five 2.5-mL liquid specimens
- HIVG - One 1.0-mL liquid specimen
- Three shipments per year

Viral Load VLS, VLS2

Procedure	Program Code		Challenges per Shipment
	VLS	VLS2	
BK viral load	▮	▮	2
CMV viral load	▮	▮	2
EBV viral load	▮	▮	2
Adenovirus viral load		▮	2
HHV6 viral load		▮	2

Program Information
- VLS - Six 1.0-mL EDTA plasma specimens; two shipments per year
- VLS2 - Ten 2.0-mL EDTA plasma specimens; three shipments per year

Viral Load Calibration Verification/Linearity LN38, LN39, LN45

Analyte	Program Code			
	LN38	LN39	LN45	Target Ranges
CMV viral load	▮			316.0–1.0M IU/mL
HIV viral load		▮		50.0–5.0M IU/mL
HCV viral load			▮	50.0-280.0M IU/mL

View your expedited linearity evaluations within two business days by logging into e-LAB Solutions Suite.

Program Information
- LN38 - Six 1.5-mL liquid plasma specimens
- LN39 - Six 2.5-mL plasma specimens
- LN45 - Seven 2.5-mL frozen DNA specimens
- Two shipments per year; LN45 ships on dry ice

Vector-Borne Disease—Molecular VBDM

Analyte	Program Code	Challenges per Shipment
	VBDM	
Zika virus	▮	3

Program Information
- Three 1.5-mL liquid specimens
- Two shipments per year

Multidiscipline Microbiology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Guide for Ordering Regulated Molecular Multidiscipline Programs

Program Code	Procedure	
	Bacterial Identification	Viral Identification
IDR	▮	▮
GIP5	▮	▮
IDM5	▮	▮
IDPN	▮	▮

Nucleic Acid Amplification, Organisms IDO, IDN

Analyte/Procedure	Program Code		Challenges per Shipment
	IDO	IDN	
Bordetella pertussis/parapertussis	▮	▮	1
*Legionella pneumophila/Chlamydia pneumoniae**	▮	▮	1
Methicillin-resistant *Staphylococcus aureus*	▮	▮	1
Molecular typing (bacterial isolates)	▮	▮	1
Mycobacterium tuberculosis	▮		1
Mycoplasma pneumoniae	▮	▮	1
Vancomycin-resistant *Enterococcus*	▮	▮	1

**Legionella pneumophila/Chlamydia pneumoniae* will be included in the following shipments:

- Shipment A: *Chlamydia pneumoniae*
- Shipment B: *Legionella pneumophila*

Program Information

- IDO - Seven liquid or swab simulated clinical isolate specimens and two diluents
- IDN - Six liquid or swab simulated clinical isolate specimens and two diluents; designed for international laboratories that cannot receive MTB
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Joint Infection Panel JIP

Analyte	Program Code	Challenges per Shipment
	JIP	
Anaerococcus prevotii/vaginalis	▮	5
Bacteroides fragilis	▮	5
Candida albicans	▮	5
Citrobacter spp.	▮	5
Cutibacterium avidum/granulosum	▮	5
Enterobacter cloacae complex	▮	5
Enterococcus faecalis	▮	5
Enterococcus faecium	▮	5
Escherichia coli	▮	5
Finegoldia magna	▮	5
Haemophilus influenzae	▮	5
Kingella kingae	▮	5
Klebsiella aerogenes	▮	5
Klebsiella pneumoniae group	▮	5
Morganella morganii	▮	5
Neisseria gonorrhoeae	▮	5
Parvimonas micra	▮	5
Peptoniphilus spp.	▮	5
Peptostreptococcus anaerobius	▮	5
Proteus spp.	▮	5
Pseudomonas aeruginosa	▮	5
Salmonella spp.	▮	5
Serratia marcescens	▮	5
Staphylococcus aureus	▮	5
Staphylococcus lugdunensis	▮	5
Streptococcus agalactiae	▮	5
Streptococcus pneumoniae	▮	5
Streptococcus pyogenes	▮	5

Program Information

- Five 0.5-mL liquid specimens
- Designed for molecular multiplex panel users
- Program challenges may contain the following antimicrobial resistance genes on a rotational basis: CTX-M, IMP, KPC, *mecA/C* and MREJ, NDM, OXA-48-like, *vanA/B*, and VIM.
- Three shipments per year

Meningitis/Encephalitis Panel IDME, IDM5

Analyte	Challenges per Shipment	
	Program Code	
	IDME	IDM5
***Escherichia coli* K1**	3	5
Haemophilus influenzae	3	5
Listeria monocytogenes	3	5
Neisseria meningitidis	3	5
Streptococcus agalactiae	3	5
Streptococcus pneumoniae	3	5
Cytomegalovirus (CMV)	3	5
Enterovirus	3	5
Herpes simplex virus 1 (HSV-1)	3	5
Herpes simplex virus 2 (HSV-2)	3	5
Human herpesvirus 6 (HHV-6)	3	5
Human parechovirus	3	5
Varicella-zoster virus (VZV)	3	5
Cryptococcus neoformans/gattii	3	5

Note: Only IDM5 analytes in **bold** type will meet CMS requirements for bacteriology and virology identification. For programs that include more than one subspecialty of microbiology, per CLIA, your laboratory is required to test five specimens, three times a year, for each subspecialty your laboratory performs.

Program Information

- IDME - Three 1.0-mL liquid specimens; two shipments per year
- IDM5 - Five 1.0-mL liquid specimens; three shipments per year
- Designed for molecular multiplex panel users

Parasitology Benchtop Reference Guide

- More than 70 identifications for parasites commonly encountered in the clinical laboratory
- Detailed descriptions of the parasite morphology, ecology, and clinical significance
- Five tabbed sections for easy reference
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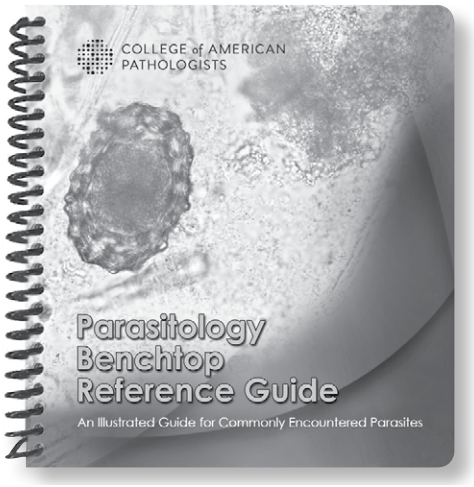

Item number: PBRG
Spiral bound; 98 pages;
70+ images and tables; 2014

Infectious Disease, Respiratory Panel IDR		
Analyte	**Program Code**	**Challenges per Shipment**
	IDR	
Adenovirus	▮	5
Bocavirus	▮	5
Bordetella (pertussis, parapertussis, bronchiseptica, holmesii)	▮	5
Chlamydia pneumoniae	▮	5
Coronavirus	▮	5
Human metapneumovirus	▮	5
Influenza A	▮	5
Influenza B	▮	5
Legionella pneumophila	▮	5
Mycoplasma pneumoniae	▮	5
Parainfluenza	▮	5
Respiratory syncytial virus (RSV)	▮	5
Rhinovirus/Enterovirus	▮	5
SARS-CoV-2*	▮	5

*SARS-CoV-2 specimens do not contain human genome material or sequences from the human RNase P gene.

For programs that include more than one subspecialty of microbiology, per CLIA, your laboratory is required to test five specimens, three times a year, for each subspecialty your laboratory performs.

Program Information

- Five 1.0-mL liquid specimens
- Designed for molecular multiplex panel users
- Three shipments per year

Color Atlas of Mycology

Built on more than 15 years of proficiency testing data, this resource book assists in the laboratory identification of fungi using the most recent taxonomic classifications. This book merges in vitro mycology (colonies on plated media/LPAB preparations) with in vivo mycology (histology/cytology).

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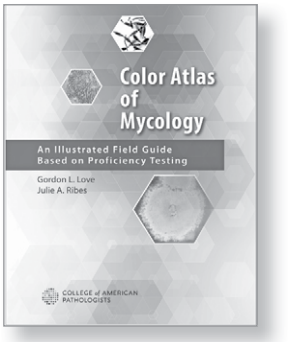

Item number: PUB226
Hardcover; 800+ images and tables; 2018

Infectious Disease, Pneumonia Panel IDPN

Analyte	Program Code	Challenges per Shipment
	IDPN	
***Acinetobacter calcoaceticus-baumannii* complex**	▮	5
Adenovirus	▮	5
Coronavirus*	▮	5
Chlamydia pneumoniae	▮	5
***Enterobacter cloacae* complex**	▮	5
Escherichia coli	▮	5
Haemophilus influenzae	▮	5
Human metapneumovirus	▮	5
Rhinovirus/Enterovirus	▮	5
Influenza A	▮	5
Influenza B	▮	5
Klebsiella aerogenes	▮	5
Klebsiella oxytoca	▮	5
***Klebsiella pneumoniae* group**	▮	5
Legionella pneumophila	▮	5
Moraxella catarrhalis	▮	5
Mycoplasma pneumoniae	▮	5
Parainfluenza virus	▮	5
***Proteus* spp.**	▮	5
Pseudomonas aeruginosa	▮	5
Respiratory syncytial virus (RSV)	▮	5
Serratia marcescens	▮	5
Staphylococcus aureus	▮	5
Streptococcus agalactiae	▮	5
Streptococcus pneumoniae	▮	5
Streptococcus pyogenes	▮	5

*Laboratories performing SARS-CoV-2 testing, see the COV2 program on page 202.

Includes antimicrobial resistance genes, as appropriate. For programs that include more than one subspecialty of microbiology, per CLIA, your laboratory is required to test five specimens, three times a year, for each subspecialty your laboratory performs.

Program Information

- Five 1.0-mL liquid specimens
- Designed for molecular multiplex panel users
- Three shipments per year

Gastrointestinal Panel GIP, GIP5

Analyte	Challenges per Shipment	
	Program Code	
	GIP	GIP5
Adenovirus	3	5
Astrovirus	3	5
Campylobacter	3	5
Clostridioides (Clostridium) difficile, toxin A/B	3	5
Cryptosporidium	3	5
Cyclospora cayetanensis	3	5
Entamoeba histolytica	3	5
Enteroaggregative *E. coli* (EAEC)	3	5
Enteropathogenic *E. coli* (EPEC)	3	5
Enterotoxigenic *E. coli* (ETEC) LT/ST	3	5
***Escherichia coli* O157**	3	5
Giardia duodenalis (lamblia)	3	5
Norovirus GI/GII	3	5
Plesiomonas shigelloides	3	5
Rotavirus A	3	5
Salmonella	3	5
Sapovirus	3	5
Shiga-like toxin producing *E. coli* (STEC) *stx1/stx2*	3	5
***Shigella*/Enteroinvasive *E. coli* (EIEC)**	3	5
Shigella	3	5
***Vibrio cholerae/Vibrio* group**	3	5
Yersinia enterocolitica	3	5

Note: Only GIP5 analytes in **bold** type will meet CMS requirements for bacteriology and virology identification. For programs that include more than one subspecialty of microbiology, per CLIA, your laboratory is required to test five specimens, three times a year, for each subspecialty your laboratory performs.

Program Information

- GIP - Three 1.0-mL simulated stool specimens; two shipments per year
- GIP5 - Five 1.0-mL simulated stool specimens; three shipments per year
- Designed for molecular multiplex panel users
- Not available to customers outside the US due to US export law restrictions

Infectious Disease Serology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Infectious Disease Serology VR3, VR3M

Analyte	Program Code		Challenges per Shipment
	VR3	VR3M	
Cytomegalovirus (CMV) – IgG, IgM, and total antibodies	▮		1
Epstein-Barr virus (EBV) – VCA – IgG, IgM EBNA – IgG, IgM, and total antibodies EA – IgG	▮		1
Helicobacter pylori – IgG, IgA, and total antibodies	▮		1
Herpes simplex virus (HSV) – IgG antibody	▮		1
Mycoplasma pneumoniae – IgG, IgM, and total antibodies	▮		1
Mumps – IgG		▮	1
Rubeola virus (English measles) – IgG antibody	▮		1
Toxoplasma gondii – IgG, IgM, and total antibodies	▮		1
Varicella-zoster virus – IgG and total antibodies	▮		1

Program Information

- VR3 - Eight 0.5-mL lyophilized defibrinated plasma specimens
- VR3M - One 0.5-mL lyophilized defibrinated plasma specimen
- Two shipments per year

Tick-Transmitted Diseases TTD

Analyte	Program Code	Challenges per Shipment
	TTD	
Antibodies to tick-transmitted disease organisms	▮	3

Program Information

- Three 0.4-mL liquid specimens
- Designed for the detection of antibodies to *Borrelia burgdorferi*, *Babesia microti*, and *Anaplasma phagocytophilum*
- Two shipments per year

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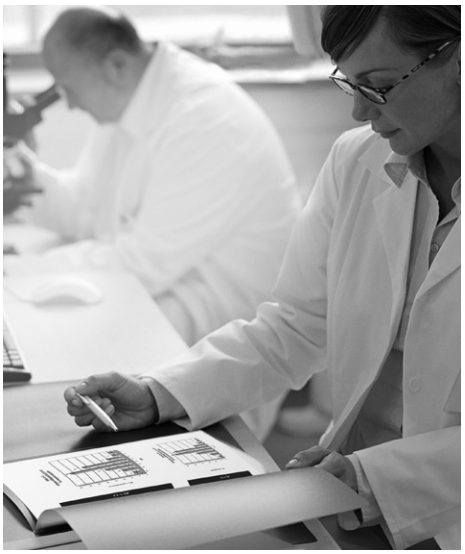
16 Immunology and Flow Cytometry



Immunology and Flow Cytometry

Program Changes

Immunology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Immunology
ANA, ASO, CRP, HCG, IM, RF/RFX, RUB/RUBX, IL

Analyte	Program Code								Challenges per Shipment
	ANA	ASO	CRP	HCG	IM	RF/ RFX	RUB/ RUBX	IL	
Antinuclear antibody (ANA)*	▮							▮	5
Antistreptolysin O (ASO)*		▮						▮	5
C-reactive protein, qualitative/quantitative			▮					▮	2
hCG, serum, qualitative/ quantitative				▮				▮	5
Infectious mononucleosis					▮			▮	5
Rheumatoid factor*						▮		▮	5
Rubella (IgG)*							▮	▮	5

*These CLIA-required analytes may be reported as qualitative, titer, or quantitative. The quantitative results are not reported to CMS.

Program Information

- ANA, RUB - Five 0.5-mL serum specimens
- ANA - Three online educational pattern interpretation challenges per year
- ASO, HCG, RF - Five 1.0-mL serum specimens
- CRP - Two 0.5-mL serum specimens; not appropriate for high-sensitivity CRP (hsCRP) methods
- IM - Five 0.6-mL serum specimens
- RFX - All program RF specimens in duplicate
- RUBX - All program RUB specimens in duplicate
- IL - All immunology specimens except RFX and RUBX
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

Immunology, General IG/IGX

Analyte	Program Code	Challenges per Shipment
	IG/IGX	
Alpha-1 antitrypsin	▮	5
Complement C3	▮	5
Complement C4	▮	5
Haptoglobin	▮	5
IgA	▮	5
IgE	▮	5
IgG	▮	5
IgM	▮	5
Total kappa/lambda ratio	▮	5

Program Information

- IG - Ten 1.0-mL serum specimens
- IGX - All program IG specimens in duplicate
- Conventional and International System of Units (SI) reporting offered
- Three shipments per year

Immunology, Special and *H. pylori* IgG Antibody S2, S4, S5

Analyte	Program Code			Challenges per Shipment
	S2 Special	S4 Special, Limited	S5 *H. pylori* IgG Antibody	
Anticentromere antibody	▮			2
Anti-DNA antibody double-stranded	▮	▮		2
Antiglomerular basement membrane (GBM), IgG antibody	▮			2
Antimitochondrial antibody	▮			2
Antineutrophil cytoplasmic antibody (ANCA, anti-MPO, anti-PR3)	▮			2
Anti-RNP antibody	▮			2
Anti-Ro52 antibody	▮			2
Anti-Ro60 antibody	▮			2
Anti-Sm antibody	▮			2
Anti-Sm/RNP antibody	▮			2
Antismooth muscle antibody	▮			2
Anti-SSA antibody	▮			2
Anti-SSB antibody	▮			2
Anti-SSA/SSB antibody	▮			2
Antithyroglobulin antibody	▮	▮		2
Antithyroid peroxidase antibody/ Antithyroid microsomal antibody	▮	▮		2
Ceruloplasmin	▮	▮		2
Haptoglobin	▮	▮		2
Helicobacter pylori, IgG antibody	▮	▮	▮	2
IgD	▮	▮		2
IgG	▮	▮		2
IgG subclass proteins	▮	▮		2
Prealbumin (transthyretin)	▮	▮		2
Total kappa/lambda ratio	▮	▮		2
Transferrin	▮	▮		2

Program S2 is not appropriate for antimitochondrial antibody assays that are specific for the M2 antibody. Refer to program H on page 218.

Program Information

- S2 - Twenty-two (0.5- to 1.0-mL) serum specimens
- S4 - Eight (0.5- to 1.0-mL) serum specimens
- S5 - Two 1.0-mL serum specimens
- Two shipments per year

Infectious Mononucleosis, Waived IMW

Analyte	Program Code	Challenges per Shipment
	IMW	
Infectious mononucleosis, waived	▮	3

Program Information

- Three 0.6-mL serum specimens
- Two shipments per year

Alpha-2-Macroglobulin A2MG

Analyte	Program Code	Challenges per Shipment
	A2MG	
Alpha-2-macroglobulin	▮	3

Program Information
- Three 0.5-mL serum specimens
- Two shipments per year

Antichromatin Antibody ACA

Analyte	Program Code	Challenges per Shipment
	ACA	
Antichromatin antibody	▮	3

Program Information
- Three 0.5-mL serum specimens
- Two shipments per year

Antifilamentous Actin IgG Antibody FCN

Analyte	Program Code	Challenges per Shipment
	FCN	
Antifilamentous actin (f-actin) IgG antibody	▮	3

Program Information
- Three 0.5-mL serum specimens
- Two shipments per year

Antihistone Antibody AHT

Analyte	Program Code	Challenges per Shipment
	AHT	
Antihistone antibody	▮	3

Program Information
- Three 0.5-mL serum specimens
- Two shipments per year

Antimitochondrial M2 Antibody H

Analyte	Program Code	Challenges per Shipment
	H	
Antimitochondrial M2 antibody (AMA-M2)	▮	2

Program Information
- Two 1.0-mL serum specimens
- Two shipments per year

Autoimmune Gastritis Markers APC

Analyte	Program Code	Challenges per Shipment
	APC	
Antiparietal cell antibody	▮	2
Anti-intrinsic factor antibody	▮	2

Program Information
- Two 1.0-mL serum specimens
- Two shipments per year

Antiphospholipid Antibody ACL

Analyte	Program Code	Challenges per Shipment
	ACL	
Anticardiolipin antibody (polyclonal, IgG, IgM, and IgA)	▮	3
Beta-2-glycoprotein I (polyclonal, IgG, IgM, and IgA)	▮	3

Program Information
- Three 0.5-mL lyophilized serum specimens
- Two shipments per year

Antiphosphatidylserine Antibody APS

Analyte	Program Code	Challenges per Shipment
	APS	
Anticardiolipin antibody (polyclonal, IgG, IgM, and IgA)	▮	3
Antiphosphatidylserine antibody (IgG, IgM, and IgA)	▮	3
Beta-2-glycoprotein I (polyclonal, IgG, IgM, and IgA)	▮	3
Antiphosphatidylserine/prothrombin antibody (aPS/PT)	▮	3

Program Information
- Three 0.5-mL lyophilized serum specimens
- Two shipments per year

Antiribosomal P Antibody ARP

Analyte	Program Code	Challenges per Shipment
	ARP	
Antiribosomal P antibody	▮	3

Program Information
- Three 0.5-mL serum specimens
- Two shipments per year

Anti-*Saccharomyces cerevisiae* Antibody ASC

Analyte	Program Code	Challenges per Shipment
	ASC	
Anti-*Saccharomyces cerevisiae* antibody (IgG and IgA)	▮	2

Program Information
- Two 1.0-mL serum specimens
- Two shipments per year

Celiac Serology CES/CESX

Analyte	Program Code		Challenges per Shipment
	CES	CESX	
Antiendomysial antibody (IgA and IgG)	▮	▮	3
Antiendomysial antibody screen (IgA and IgG)	▮	▮	3
Antigliadin antibody (IgA and IgG)	▮	▮	3
Antideamidated gliadin peptide (DGP) antibody (IgA and IgG)	▮	▮	3
Anti-DGP antibody screen (IgA and IgG)	▮	▮	3
Antitissue transglutaminase (tTG) antibody (IgA and IgG)	▮	▮	3
Anti-DGP and anti-tTG antibody screen (IgA and IgG)	▮	▮	3

Program Information

- CES - Three 0.3-mL serum specimens
- CESX - All program CES specimens in triplicate
- Two shipments per year

Cyclic Citrullinated Peptide Antibody (Anti-CCP) CCP

Analyte	Program Code	Challenges per Shipment
	CCP	
Anti-CCP	▮	2
Rheumatoid factor isotypes (IgA, IgM, and IgG)	▮	2

Program Information

- Two 1.0-mL serum specimens
- Two shipments per year

Cytokines CTKN

Analyte	Program Code	Challenges per Shipment
	CTKN	
Interleukin (IL)-1 beta	▮	3
IL-2	▮	3
IL-6	▮	3
IL-8	▮	3
IL-10	▮	3
Tumor necrosis factor (TNF)-alpha	▮	3
Vascular endothelial growth factor (VEGF)	▮	3

Program Information

- Fifteen 1.0- to 3.0-mL lyophilized serum specimens
- Two shipments per year

Diagnostic Allergy SE

Analyte/Procedure	Program Code	Challenges per Shipment
	SE	
IgE, multiallergen screen, qualitative	▮	5
IgE, total	▮	5
Specific allergens	▮	25

Program Information
- Five 2.0-mL serum specimens
- Includes common allergens from North America as well as less frequently tested allergens
- Three shipments per year

High-Sensitivity C-Reactive Protein HSCRP

Analyte	Program Code	Challenges per Shipment
	HSCRP	
High-sensitivity C-reactive protein	▮	3

Program Information
- Three 0.5-mL liquid serum specimens
- Two shipments per year

Liver-Kidney Microsomal Antibody (Anti-LKM) LKM

Analyte	Program Code	Challenges per Shipment
	LKM	
Anti-LKM	▮	2

Program Information
- Two 0.3-mL serum specimens
- Two shipments per year

M. tuberculosis-Stimulated Infection Detection QF

Analyte	Program Code	Challenges per Shipment
	QF	
M. tuberculosis	▮	2

This program is appropriate for the QIAGEN QuantiFERON®-TB Gold and Gold Plus, DiaSorin Liaison QuantiFERON-TB Gold Plus, and SD Biosensor Standard methods.

Program Information
- Two 1.0-mL lyophilized serum specimens and one lyophilized mitogen control
- Two shipments per year

Rheumatic Disease Special Serologies RDS

Analyte	Program Code	Challenges per Shipment
	RDS	
Anti-Jo-1 (antihistidyl t-RNA synthetase)	▮	1
Anti-Scl-70 (anti-DNA topoisomerase)	▮	1

Program Information
- Two 1.0-mL serum specimens
- Two shipments per year

SARS-CoV-2 Serology COVS

Analyte	Program Code	Challenges per Shipment
	COVS	
SARS-CoV-2 antibody (total, IgG, IgM, and IgA)	▮	3

For multiple instrument reporting options, see the Quality Cross Check program, COVSQ, below.

Program Information

- Three 0.5-mL serum specimens
- Appropriate for assays that detect antibodies to nucleocapsid, spike, combined antigen (nucleocapsid and spike), and the receptor binding domain of the spike protein
- Two shipments per year

Quality Cross Check—SARS-CoV-2 Serology COVSQ

Analyte	Program Code	Challenges per Shipment
	COVSQ	
SARS-CoV-2 antibodies (Total, IgG, IgM)	▮	3

This program does not meet regulatory requirements for proficiency testing; see program COVS, above. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- Three 1.0-mL serum specimens
- Report up to three instruments.
- Two shipments per year

Syphilis Serology G

Analyte	Program Code	Challenges per Shipment
	G	
Syphilis	▮	5

Use with VDRL, RPR, MHA-TP/TP-PA/PK-TP/TPHA, EIA, CMIA, multiplex flow immunoassay, TP-LIA IgG, FTA-ABS, and USR methods. Laboratories performing syphilis serology on CSF specimens may also use this program.

Program Information

- Five 1.5-mL serum specimens
- Three shipments per year

Total Hemolytic Complement CH50

Analyte	Program Code	Challenges per Shipment
	CH50	
Total hemolytic complement, 50% lysis	▮	2

Program Information
- Two 0.5-mL lyophilized serum specimens
- Two shipments per year

Viscosity V

Analyte	Program Code	Challenges per Shipment
	V	
Viscosity	▮	2

Program Information
- Two 10.0-mL serum specimens
- Two shipments per year

Serum Free Light Chains SFLC

Analyte	Program Code	Challenges per Shipment
	SFLC	
Kappa serum free light chain	▮	3
Lambda serum free light chain	▮	3
Kappa/lambda serum free light chain ratio and ratio interpretation	▮	3

Program Information
- Three 1.0-mL serum specimens
- Two shipments per year

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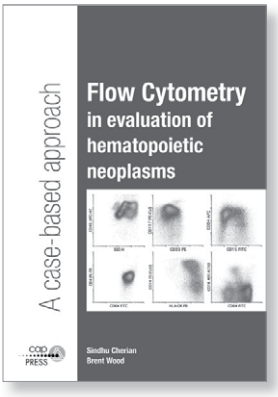

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Flow Cytometry

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Flow Cytometry FL, FL1, FL2

Procedure	Program Code			Challenges per Shipment
	FL	FL1	FL2	
DNA content and cell cycle analysis	▮		▮	3
Lymphocyte immunophenotyping	▮	▮		3

These programs are not appropriate for hematology analyzers with monoclonal antibody analysis.

Program Information

- FL1 - Three 1.5-mL whole blood specimens
- FL2 - Three 1.1-mL specimens; two fixed cell line specimens and one calibrator for DNA content and cell cycle analysis
- FL - All program FL1 and FL2 specimens
- Three shipments per year

Flow Cytometry—Immunophenotypic Characterization of Leukemia/Lymphoma FL3

Procedure	Program Code	Challenges per Shipment
	FL3	
Leukemia/lymphoma	▮	2

Additional Information

- FL3 is suitable for laboratories that perform technical and interpretive components of leukemia/lymphoma specimens or laboratories that perform the technical component only. This program satisfies proficiency testing requirements for laboratories performing general analysis of leukemia/lymphoma specimens.
- Laboratories that provide only interpretation (without technical component) should order FL5.
- This program has stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

Program Information

- Two 1.1-mL specimens containing a cell line/whole blood mixture simulating leukemia/lymphoma; online images of tissue sections, bone marrow, and/or peripheral blood smears with clinical histories as clinically relevant and/or available
- Online, whole slide images powered by DigitalScope® technology (if applicable)
- Two shipments per year

Flow Cytometry, CD34+ FL4

Analyte	Program Code	Challenges per Shipment
	FL4	
CD34+	▮	2

Program Information

- Two 1.5-mL stabilized human CD34+ specimens
- Two shipments per year

Flow Cytometry, Interpretation Only FL5

Procedure	Program Code	Challenges per Shipment
	FL5	
Flow cytometry, interpretation only of leukemia/lymphoma	▮	3

Additional Information

- FL5 is suitable for laboratories that provide only interpretation of flow data with technical component performed at an outside laboratory.
- FL5 may be ordered by laboratories that perform both technical and interpretation components that are interested in obtaining additional interpretive material.

Program Information

- Three online cases consisting of gated dot plots, clinical histories, and pertinent laboratory data, as well as images of tissue sections, bone marrow, and/or peripheral blood smears as clinically relevant and/or available
- Online, whole slide images powered by DigitalScope technology (if applicable)
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CE credit

Flow Cytometry—Post-Immunotherapy Analysis FL6

Procedure	Program Code	Challenges per Shipment
	FL6	
Post-immunotherapy flow cytometry analysis	▮	3

Additional Information

- Program FL6 is appropriate for laboratories that perform flow cytometry analysis on specimens from patients treated with immunotherapy regimens that cause immunophenotypic changes to normal and/or neoplastic cells. These include anti-CD20 (rituximab), anti-CD19 (CAR T19), and anti-CD38 therapies (daratumumab), among others.
- Participation in this program alone does not satisfy proficiency testing requirements for laboratories performing more general analysis of leukemia/lymphoma specimens.

Program Information

- Three online cases consisting of gated dot plots, clinical histories, and pertinent laboratory data, as well as images of tissue sections, bone marrow, and/or peripheral blood smears as clinically relevant and/or available
- Online, whole slide images powered by DigitalScope technology (if applicable)
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CE credit

Hematopathology Online Education HPATH/HPATH1

Program	Program Code	Challenges per Shipment
	HPATH/HPATH1	
Hematopathology online case review	▮	5

Additional Information

HPATH prepares pathologists, hematopathologists, and hematologists to succeed by providing ongoing diagnostic learning in hematopathology.

- Clinical history and relevant laboratory data
- At least one online, whole slide image of peripheral blood, bone marrow, spleen, lymph node, or other tissue
- Results of ancillary studies such as immunohistochemistry, flow cytometry, FISH, karyotyping, and molecular studies, where appropriate
- Case discussion and discussion of differential diagnoses
- Each case includes assessment questions.
- See system requirements on page 12.

Program Information

- HPATH - Five diagnostic challenges/online, whole slide images with clinical history; reporting with CME credit is available for one pathologist/ hematologist; for additional pathologist/hematologist, order HPATH1
- HPATH1 - Reporting option with CME credit for each additional pathologist/ hematologist (within the same institution); must order in conjunction with program HPATH
- Earn a maximum of 12.5 CME credits (*AMA PRA Category 1 Credits™*) per pathologist and a maximum of 12.5 CE credits per hematologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Flow Cytometry—T-Cell Subsets Analysis FL7

Procedure	Program Code	Challenges per Shipment
	FL7	
T-cell subsets analysis	▮	2

Program FL7 is appropriate for laboratories that perform T-cell subset analysis for immunodeficiency and immune dysregulation. Reporting will include percentages and absolute counts for naïve and memory T cells, recent thymic emigrants, TCR alpha/beta and TCR gamma/delta T cells, and double negative (TCRalpha/beta+CD3+CD4-CD8-) T cells. Participants may include information on additional markers used in their panel to assess memory T-cell subsets.

Program Information

- Two 3.0-mL whole blood specimens
- Two shipments per year

Flow Cytometry—B-ALL Measurable (Minimal) Residual Disease BALL

Analyte	Program Code	Challenges per Shipment
	BALL	
B-ALL measurable (minimal) residual disease	▮	3

Additional Information

- Program BALL is intended for laboratories that perform measurable (minimal) residual disease (MRD) testing (rare event analysis) for B lymphoblastic leukemia/lymphoma. The cases presented will be a mixture of Children's Oncology Group (COG) approved B-ALL MRD method and laboratory developed assays.
- Participation in this program alone does not satisfy PT requirements for laboratories performing more general analysis of leukemia/lymphoma specimens.
- This program has stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

Program Information

- Two 1.1-mL specimens containing a cell line/whole blood mixture simulating B lymphoblastic leukemia/lymphoma measurable (minimal) residual disease
- One online case consisting of gated dot plots
- Two shipments per year

CE credit

Flow Cytometry—Mature B-Cell Leukemia/Lymphoma Measurable (Minimal) Residual Disease FL8

Procedure	Program Code	Challenges per Shipment
	FL8	
Mature B-cell leukemia/lymphoma measurable (minimal) residual disease	▮	3

Additional Information

- Program FL8 is intended for laboratories that perform measurable (minimal) residual disease (MRD) testing (rare event analysis) for mature B-cell leukemia/lymphoma.
- Participation in this program alone does not satisfy PT requirements for laboratories performing more general analysis of leukemia/lymphoma specimens.
- This program has stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

Program Information

- Two 1.1-mL specimens containing a cell line/whole blood mixture simulating mature B-cell leukemia/lymphoma measurable (minimal) residual disease with clinical history and pertinent laboratory data
- One online case with clinical history and gated dot plots
- Two shipments per year

CE credit

Flow Cytometry—Plasma Cell Myeloma Measurable (Minimal) Residual Disease FL9

Procedure	Program Code	Challenges per Shipment
	FL9	
Plasma cell myeloma measurable (minimal) residual disease	▮	3

Additional Information

- Program FL9 is intended for laboratories that perform measurable (minimal) residual disease (MRD) testing (rare event analysis) for plasma cell myeloma.
- Participation in this program alone does not satisfy PT requirements for laboratories performing more general analysis of leukemia/lymphoma specimens.
- This program has stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

Program Information

- Two 4.5-mL specimens containing a cell line/whole blood mixture simulating plasma cell myeloma measurable (minimal) residual disease with clinical history and pertinent laboratory data
- One online case with clinical history and gated dot plots
- Two shipments per year

Flow Cytometry—Plasma Cell Neoplasms PCNEO

Analyte	Program Code	Challenges per Shipment
	PCNEO	
Plasma cell neoplasms	▮	3

Additional Information

- PCNEO is intended to supplement the FL3 program for laboratories performing both technical and interpretive components of leukemia/lymphoma analysis with specialized testing for plasma cells, including intracellular light chain (kappa/lambda) testing.
- Participation in this program alone does not satisfy PT requirements for laboratories performing more general analysis of leukemia/lymphoma specimens.
- This program has stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

Program Information

- One 1.1-mL specimen containing a cell line/whole blood mixture, simulating a plasma cell neoplasm with clinical history and pertinent laboratory data
- Two online cases consisting of gated dot plots, clinical histories, and pertinent laboratory data
- Each challenge includes online images of tissue sections, bone marrow, and/or peripheral blood smears as clinically relevant and/or available.
- Online, whole slide images powered by DigitalScope technology (if applicable)
- Two shipments per year

Flow Cytometry—Immunophenotypic Characterization of Paroxysmal Nocturnal Hemoglobinuria PNH

Analyte	Program Code	Challenges per Shipment
	PNH	
PNH RBC analysis	▮	2
PNH WBC analysis	▮	2

Program Information

- Two 0.5-mL whole blood specimens for RBC and WBC analysis
- Two shipments per year

Additional Information

- The PNH program complies with the recommendations from the *Guidelines for the Diagnosis and Monitoring of Paroxysmal Nocturnal Hemoglobinuria and Related Disorders by Flow Cytometry* for RBC and WBC analysis. Due to the unique nature of these human, donor-based materials, the shipping dates are subject to change. If this should occur, the CAP will provide notification prior to the originally scheduled shipping date.
- This program is appropriate for high-sensitivity testing (≤ 0.01% PNH type clone in red cells and/or granulocytes).

Fetal Red Cell Detection HBF

Procedure	Program Code	Challenges per Shipment
	HBF	
Kleihauer-Betke and flow cytometry	▮	2
Rosette fetal screen	▮	2
Acid elution whole slide image	▮	1

Program Information

- Two 1.2-mL liquid whole blood specimens
- Not designed for F cell quantitation
- Two online, whole slide images per year with optional grids for cell counting
- Powered by DigitalScope technology
- Two shipments per year

Rare Flow Antigen Validation RFAV1, RFAV2, RFAV3

Analyte	Program Code			Challenges per Shipment
	RFAV1	RFAV2	RFAV3	
CD1a	▮			1
CD103		▮		1
CD30			▮	1

Program Information

- RFAV1 - One 1.1-mL cell line specimen
- RFAV2 - One 1.0-mL stabilized specimen
- RFAV3 - One 1.1-mL cell line specimen
- Two shipments per year

Additional Information

- Programs RFAV1, RFAV2, and RFAV3 do not meet the regulatory requirements for proficiency testing.
- These programs meet the CAP Accreditation Checklist item FLO.23737, which requires semiannual testing of antigens.
- RFAV1 and RFAV3 have stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

ZAP-70/CD49d Analysis by Flow Cytometry ZAP70

Analyte	Program Code	Challenges per Shipment
	ZAP70	
Zeta-chain-associated protein kinase 70	▮	3
CD49d	▮	3

Program Information

- Three 1.1-mL cell line specimens
- Two shipments per year

Additional Information

- This program tests for intracellular ZAP-70 staining of a cell line. It allows for assessment of the laboratory's staining techniques and the antibody clone used for ZAP-70 detection.
- CD49d is an important prognostic marker for CLL by flow cytometry. This program allows assessment of the laboratory's ability to detect CD49d.
- Laboratories may perform testing on ZAP-70, CD49d, or both.
- This program has stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.

Color Atlas of Flow Cytometry

The *Color Atlas of Flow Cytometry* presents more than 70 cases from the CAP flow cytometry proficiency testing program, complete with over 270 images, photomicrographs, dot plots, survey data, and thorough discussions. Overviews of the hematopoietic disorders are also included with each section. Through peer-reviewed cases, practicing pathologists, medical technologists, residents, and students have an opportunity to identify and appreciate disease categories and specific disease entities that are particularly difficult to diagnose correctly in clinical practice.

Topics include:

- B lymphoblastic leukemia and immature B cells
- T lymphoblastic leukemia and immature T cells
- Myeloid neoplasms
- Mature B-cell neoplasms

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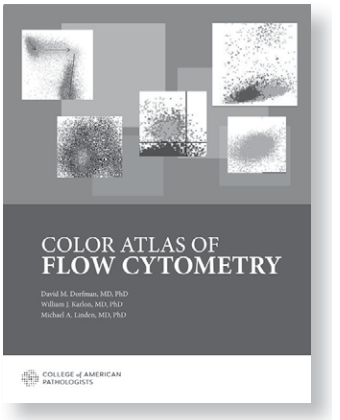

Item number: PUB230
Hardcover; 342 pages; 2023

17 Transfusion Medicine, Viral Markers, and Parentage Testing

As transfusion medicine continues to automate, the CAP continues to introduce new programs to support your evolving proficiency testing needs, such as:

- Direct Antiglobulin Testing—Automated (ADAT).

Transfusion Medicine, Viral Markers, and Parentage Testing

Transfusion Medicine

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Transfusion Medicine J, J1

Procedure	Program Code		Challenges per Shipment
	J	J1	
ABO grouping	▮	▮	5
Rh typing	▮	▮	5
Antibody detection	▮		5
Antibody identification	▮		5
Compatibility testing	▮		5
Red blood cell antigen typing	▮		1

Program Information

- J - Five 3.0-mL 3% red blood cell suspensions; five 3.0-mL corresponding serum specimens; one 3.0-mL donor red blood cell suspension
- J1 - Five 3.0-mL 3% red blood cell suspensions; five 3.0-mL corresponding serum specimens
- Three shipments per year

CE credit

Transfusion Medicine—Educational Challenge JE1

Procedure	Program Code	Challenges per Shipment
	JE1	
Educational challenge	▮	1

Program Information

- One educational challenge, which may consist of a dry challenge and/or wet specimen for ABO grouping, Rh typing, antibody detection, antibody identification, compatibility testing, antigen typing, and/or direct antiglobulin testing
- Must order in conjunction with program J.
- Three shipments per year

CE credit

Electronic Crossmatch EXM

Procedure	Program Code	Challenges per Shipment
	EXM	
Electronic crossmatch	▮	3

Program EXM assists laboratories in monitoring the performance of their electronic crossmatching system.

Program Information

- Three simulated, ISBT 128 labeled donor unit challenges and three corresponding red blood cell suspensions
- Must order in conjunction with program J.
- Three shipments per year

CE credit

Transfusion Medicine—Automated JAT

Procedure	Program Code	Challenges per Shipment
	JAT	
ABO grouping	▮	5
Antibody detection	▮	5
Antibody identification	▮	5
Compatibility testing	▮	5
Rh typing	▮	5

For multiple instrument reporting options, see the Quality Cross Check program, JATQ, on page 234.

Program Information

- Five bar-coded 4.0-mL 13%-17% whole blood specimens and one 4.0-mL 13%-17% whole blood specimen for compatibility testing
- Three shipments per year

CE credit

Transfusion Medicine—Automated Educational Challenge JATE1

Procedure	Program Code	Challenges per Shipment
	JATE1	
Educational challenge	▮	1

Program Information

- One educational challenge, which may consist of a dry challenge and/or wet specimen for ABO grouping, Rh typing, antibody detection, antibody identification, and/or compatibility testing
- Must order in conjunction with program JAT.
- Three shipments per year

CE credit

Electronic Crossmatch—Automated EXM2

Procedure	Program Code	Challenges per Shipment
	EXM2	
Electronic crossmatch	▮	3

Program EXM2 assists laboratories in monitoring the performance of their electronic crossmatching system.

Program Information

- Three simulated, ISBT 128 labeled donor unit challenges and three corresponding red blood cell suspensions
- Must order in conjunction with program JAT.
- Three shipments per year

CE credit

Quality Cross Check—Transfusion Medicine JATQ

Procedure	Program Code	Challenges per Shipment
	JATQ	
ABO grouping	▮	3
Antibody detection	▮	3
Rh typing	▮	3

This program does not meet regulatory requirements for proficiency testing; see program JAT on page 233. For additional information about the Quality Cross Check program, see page 38.

The Quality Cross Check Program:

- Provides a solution for monitoring performance across multiple instruments and is in compliance with the CMS directive regarding proficiency testing on multiple instruments.
- Simplifies instrument comparability efforts by providing custom reports with both peer group comparison and instrument comparability statistics.

Program Information

- Three 6.0-mL 13% -17% whole blood specimens
- May be used with automated and manual procedures
- Two shipments per year

NEW

Rates and Turnaround Times for Investigation and Reporting of Suspected Transfusion Reactions QP241

Introduction

Adverse reactions are an inevitable consequence of allogeneic blood product transfusions. Fortunately, as laboratories have increased the scrutiny of patient specimen identification, blood typing, and crossmatch procedures, hemolytic transfusion reactions—the most serious form of adverse reaction—have become very rare.

Laboratories are tasked with investigating and categorizing all suspected transfusion reactions. The triad of clerical check, examination for hemolysis, and repeat typing has been the standard for the investigation of a suspected hemolytic reaction for many years. However, data are lacking regarding the scope of current investigations for more recently described reaction types such as transfusion related acute lung injury (TRALI) and sepsis due to bacterial contamination. In addition, while standards require a prompt investigation, multi-institutional data regarding turnaround time for investigation and reporting are lacking.

Objectives

Participation in this study will help laboratories and managers:

- Optimize their processes for investigation and reporting of suspected transfusion reactions
- Determine normative rates of various reaction types
- Address applicable CAP Laboratory Accreditation Program, The Joint Commission, Clinical Laboratory Improvement Amendments (CLIA), and Association for the Advancement of Blood & Biotherapies (AABB) laboratory accreditation and regulatory requirements.*

Data Collection

Participants will prospectively record up to 50 suspected transfusion reaction events submitted to their transfusion service during a three-month study period. The type of testing performed as part of the investigation, the reaction type determined following investigation, the time of reaction report, the time of initial laboratory investigation, and the time of the final interpretive report by the pathologist will all be collected as part of the prospective aspect of the study. Laboratories will be asked to provide the total number of products transfused during the study period and annually. They will also be asked to provide the rates of specific reaction types identified during the most recent fiscal or calendar year as part of the study's retrospective aspect.

Performance Indicators

- Rate of transfusion reaction during the study period
- Rate of transfusion reaction during the most recent fiscal or calendar year
- Turnaround time from report of reaction to completion of initial laboratory investigation
- Turnaround time from report of reaction to verification of final report by pathologist

Applicable Requirements

*Participation in this study helps laboratories meet:

- CAP Laboratory Accreditation Transfusion Medicine Checklist statements including TRM.32900 (records include information about bacteriologic studies when indicated), TRM.41750 (reporting of transfusion reactions and incidents), TRM.41850 (investigation of suspected hemolytic transfusion reaction), TRM.42110 (written policies and procedures related to transfusion-related acute lung injury [TRALI])
- The Joint Commission standards QSA.05.19.03 (EP3: laboratory evaluation of the suspected transfusion-related adverse event immediately upon notification), QSA.05.24.03, QSA.05.03.01 (EP1, EP2)
- CLIA §493.1103(b), §493.1103(d), 493.1271(e)(1); §493.1271(b), §493.1105(a)(3)(ii)
- AABB: standards 7.5.1 (recognition of and response to transfusion reactions) and 7.5.2 (laboratory evaluation and reporting of transfusion reactions)

This is a one-time study conducted in the first quarter.

In-Date Blood Product Wastage QT4

Blood for transfusion is a precious resource. At a minimum, wastage of blood that is not out-of-date represents a financial loss to the health care system. More ominously, systemic wastage of blood may reflect an environment of care that is out of control and may pose risks to patient safety.

Enrollment in this program assists laboratories in meeting regulatory requirements as follows:

- CAP Laboratory Accreditation Program Checklist statements: TRM.40875 that requires the transfusion service medical director to monitor and audit transfusion practices to ensure the appropriate use of blood; TRM.30800, Disposition Records; and TRM.32275, Component Records, regarding recording the use of each blood or component product from receipt to final disposition.
- The Joint Commission Standards QSA.05.02.01, adequate blood and blood components; QSA.05.03.03, requirements for policies and procedures for returning unused blood products to blood transfusion services; and QSA.05.22.01, records of blood product disposition.
- AABB Standards for Blood Banks and Transfusion Services assessment 8.2 that requires transfusing facilities to have a peer-review program that monitors transfusion practices for blood components.

Objective

Compare the rates of blood product wastage (ie, units discarded in-date) in participating hospitals and track rates of improvement over time.

Data Collection

On a monthly basis, participants will use blood bank records to obtain information on the total number of units transfused for each type of blood component. Participants will track the number and type of blood units that are wasted in-date and the circumstances of wastage. This monitor includes the following types of blood components: whole blood (allogeneic), red blood cells (allogeneic), frozen plasma, platelet concentrates, single donor platelets, and cryoprecipitate.

Performance Indicators

- Overall blood wastage rate (%)
- Wastage rates by blood component type (%)

Performance Breakdown

- Breakdown of circumstances of wastage (%)

Look in e-LAB Solutions Suite for your input forms approximately two weeks before the start of the next quarter.

ABO Subgroup Typing ABOSG

Procedure	Program Code	Challenges per Shipment
	ABOSG	
ABO subgroup typing	▮	3
Rh typing	▮	3

Program Information

- Three 2.0-mL 3% red blood cell suspensions; three 2.0-mL corresponding serum specimens
- Two shipments per year

Red Blood Cell Antigen Genotyping RAG

Procedure	Program Code	Challenges per Shipment
	RAG	
RBC blood group genotyping for phenotype prediction	▮	3

Program Information
- Three 2.0-mL whole blood specimens
- Two shipments per year

Red Blood Cell Antigen Typing RBCAT

Procedure	Program Code	Challenges per Shipment
	RBCAT	
Red blood cell antigen typing	▮	2

Program RBCAT is for donor centers and transfusion laboratories performing non-automated/manual red cell phenotyping for the management of patients with complex serology (ie, alloimmunization, sickle cell disease, warm autoimmune hemolytic anemia). Challenges will include antigens such as Rh, Kell, MNSs, Duffy, and Kidd blood group system.

Program Information
- Two 2.0-mL 2%–4% red blood cell suspensions
- Two shipments per year

Antibody Titer ABT, ABT1, ABT2, ABT3

Procedure	Program Code				Challenges per Shipment
	ABT	ABT1	ABT2	ABT3	
Anti-A titer	▮	▮			1
Anti-B titer				▮	1
Anti-D titer	▮		▮		1

Program Information
- ABT - One 2.0-mL specimen for anti-A titer with one corresponding titer cell (3%–4% red blood cell suspension); one 2.0-mL specimen for anti-D titer with one corresponding titer cell (3%–4% red blood cell suspension)
- ABT1 - One 2.0-mL specimen for anti-A titer with one corresponding titer cell (3%-4% red blood cell suspension)
- ABT2 - One 2.0-mL specimen for anti-D titer with one corresponding titer cell (3%–4% red blood cell suspension)
- ABT3 - One 2.0-mL specimen for anti-B titer with one corresponding titer cell (3%–4% red blood cell suspension)
- Two shipments per year

Antibody Titer—Automated AABT, AABT1, AABT2, AABT3

Procedure	Program Code				Challenges per Shipment
	AABT	AABT1	AABT2	AABT3	
Anti-A titer	▮	▮			1
Anti-B titer				▮	1
Anti-D titer	▮		▮		1

Program Information

- AABT - One 2.0-mL specimen for anti-A titer; one 2.0-mL specimen for anti-D titer
- AABT1 - One 2.0-mL specimen for anti-A titer
- AABT2 - One 2.0-mL specimen for anti-D titer
- AABT3 - One 2.0-mL specimen for anti-B titer
- Two shipments per year

Transfusion-Related Cell Count TRC

Procedure	Program Code	Challenges per Shipment
	TRC	
Platelet count (platelet-rich plasma)	▮	5
WBC count	▮	4
Dry challenge	▮	2

WBC counts must be performed using a Nageotte chamber, fluorescence microscopy, or by flow cytometry.

Program Information

- Five 1.2-mL suspensions of platelet-rich plasma
- Two 1.0-mL vials leukocyte-reduced platelet material
- Two 1.0-mL vials leukocyte-reduced red blood cells
- Three shipments per year

Direct Antiglobulin Testing DAT

Procedure	Program Code	Challenges per Shipment
	DAT	
Direct antiglobulin testing	▮	3

Program Information

- Three 2.0-mL 3% red blood cell suspensions
- For use with manual method
- Two shipments per year

Direct Antiglobulin Testing—Automated ADAT

Procedure	Program Code	Challenges per Shipment
	ADAT	
Direct antiglobulin testing	▮	3

Program Information

- Three 4.0-mL 15% red blood cell suspensions
- For use with automated method
- Two shipments per year

Eluate Survey ELU

Procedure	Program Code	Challenges per Shipment
	ELU	
Antibody elution	▮	2

Program Information
- Two 2.0-mL 50% red blood cell suspensions
- Two shipments per year

Fetal Red Cell Detection HBF

Procedure	Program Code	Challenges per Shipment
	HBF	
Kleihauer-Betke and flow cytometry	▮	2
Rosette fetal screen	▮	2
Acid elution whole slide image	▮	1

Program Information
- Two 1.2-mL liquid whole blood specimens
- Not designed for F cell quantitation
- Two online, whole slide images per year with optional grids for cell counting
- Powered by DigitalScope® technology
- Two shipments per year

Platelet Serology PS

Procedure	Program Code	Challenges per Shipment
	PS	
Antibody detection	▮	3
Platelet crossmatch	▮	3
Platelet antibody identification	▮	3

A low concentration of sodium azide may be present in the specimens and may affect lymphocytotoxicity methods.

Program Information
- Three 3.0-mL plasma specimens
- For use with solid-phase red cell adherence, flow cytometry, and EIA/ELISA methods
- Two shipments per year

Transfusion Medicine Comprehensive—Competency Assessment TMCA

Procedure	Program Code	Challenges per Shipment
	TMCA	
ABO grouping	▮	2
Antibody detection	▮	2
Antibody identification	▮	2
Compatibility testing	▮	2
Rh typing	▮	2

Program TMCA does not meet the regulatory requirements for proficiency testing.

Program Information

- Two 3.0-mL 3% red blood cell suspensions
- Two 3.0-mL corresponding serum specimens
- One 3.0-mL donor 3% red blood cell suspension
- Three shipments per year; order shipments individually or for an entire year

Direct Antiglobulin Test—Competency Assessment TMCAD

Procedure	Program Code	Challenges per Shipment
	TMCAD	
Direct antiglobulin testing	▮	2

Program TMCAD does not meet the regulatory requirements for proficiency testing.

Program Information

- Two 2.0-mL 3% red blood cell suspensions
- Two shipments per year; order shipments individually or for an entire year

Eluate Competency Assessment TMCAE

Procedure	Program Code	Challenges per Shipment
	TMCAE	
Antibody elution	▮	2

Program TMCAE does not meet the regulatory requirements for proficiency testing.

Program Information

- Two 2.0-mL 50% red blood cell suspensions
- Two shipments per year; order shipments individually or for an entire year

Fetal Red Cell Quantitation—Competency Assessment TMCAF

Procedure	Program Code	Challenges per Shipment
	TMCAF	
Kleihauer-Betke, flow cytometry	▮	2
Rosette fetal screen	▮	2
Acid elution whole slide image	▮	1

Program TMCAF does not meet the regulatory requirements for proficiency testing.

Program Information

- Two 1.2-mL whole blood specimens
- Two online, whole slide images per year with optional grids for cell counting
- Powered by DigitalScope technology
- Two shipments per year; order shipments individually or for an entire year

Cord Blood and Stem Cell Processing CBT, SCP

Analyte	Program Code		Challenges per Shipment
	CBT	SCP	
Absolute CD3		▮	2
Absolute CD34	▮	▮	2
Bacterial culture	▮	▮	2
%CD3+		▮	2
%CD34+	▮	▮	2
%CD45+		▮	2
CFU-GM	▮	▮	2
Total CFC	▮	▮	2
Fungal culture	▮	▮	2
Hematocrit		▮	2
Hemoglobin		▮	2
Mononuclear cell count	▮	▮	2
Nucleated red cells	▮		2
Number of CD34 positive events	▮	▮	2
Number of CD45 positive events		▮	2
Total nucleated cells	▮	▮	2
Viability	▮	▮	2
WBC count	▮	▮	2

Additional Information

- Because these materials are human donor-based, the ship date is subject to change. If this should occur, notification will be provided prior to the scheduled date. In some instances, the program may ship in two installments.
- Due to material stability, no replacements will be available.
- These programs have stability of two days or less. The CAP cannot guarantee performance or offer credits for orders placed for shipment outside of the US and Canada.
- See International Shipping information section in the Ordering Information Supplement regarding additional dangerous goods shipping fees.

Program Information

- CBT - Two 2.5-mL cord blood specimens; designed for assays required for the production of umbilical cord blood stem cell programs
- SCP - Two 3.0-mL peripheral blood specimens; designed for laboratories that process and assess the suitability of stem cells
- Two shipments per year

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Bacterial Detection in Platelets BDP, BDP5

Procedure	Program Code		Challenges per Shipment
	BDP	BDP5	
Bacterial culture and detection systems	▮		2
Bacterial culture and detection systems		▮	5

Additional Information

- The Centers for Medicare & Medicaid Services (CMS) requires proficiency testing for bacterial detection/identification. Please select the appropriate program for your laboratory based on the information below.
- Program BDP is designed for donor centers/laboratories that are associated with a CMS-certified microbiology laboratory with the same CLIA number and are participating in an approved proficiency testing program for bacterial detection.
- Program BDP5 is designed for donor centers/laboratories that are performing bacterial detection for the purposes of platelet unit screening and are not associated with a CMS-certified microbiology laboratory with the same CLIA number.
- See International Shipping information section in the Ordering Information Supplement regarding additional dangerous goods shipping fees.

Program Information

- BDP - Two lyophilized pellet specimens with diluents; two shipments per year
- BDP5 - Five lyophilized pellet specimens with diluents; three shipments per year

Bacterial Detection in Platelets, Rapid BDPV, BDPV5

Procedure	Challenges per Shipment	
	Program Code	
	BDPV	BDPV5
CMS certified rapid immunoassay	2	5

Additional Information

- The Centers for Medicare & Medicaid Services (CMS) requires proficiency testing for bacterial detection in platelets.
- Program BDPV is designed for donor centers/laboratories that are associated with a CMS-certified microbiology laboratory with the same CLIA number and are participating in an approved proficiency testing program for bacterial detection.
- Program BDPV5 is designed for donor centers/laboratories that are performing bacterial detection for the purposes of platelet unit screening and are not associated with a CMS-certified microbiology laboratory with the same CLIA number.
- See International Shipping information section in the Ordering Information Supplement regarding additional dangerous goods shipping fees.

Program Information

- BDPV - Two frozen specimens; two shipments per year
- BDPV5 - Five frozen specimens; three shipments per year
- For use with methods such as Verax Biomedical

Refer to the Ordering Information provided for information regarding additional dangerous goods and related fees.

Expanded Transfusion Medicine Exercises ETME1

Procedure	Program Code	Challenges per Shipment
	ETME1	
Expanded challenges	▮	2

Additional Information

Program ETME1 is an educational opportunity that offers:

- More challenging and/or complex antibody identification
- Comprehensive case studies in transfusion medicine
- Simulated collaboration with other professionals, including those within or outside your institution
- A method for determining the laboratory's ability to recognize and integrate problem solving skills in transfusion medicine

The wet challenge may consist of specimens for ABO grouping, Rh typing, antibody detection, antibody identification, compatibility testing, antigen typing, direct antiglobulin testing, antibody titer, and/or antibody elution.

Program Information

- One dry challenge and one wet challenge consisting of a serum specimen(s) and/or red blood cell suspensions
- Two shipments per year

Transfusion Medicine: A Compendium of Educational Cases

Based on more than 10 years of educational material used in proficiency testing from the CAP Transfusion, Apheresis, and Cellular Therapy Committee, this newest book on transfusion medicine consists of 20 cases with multiple-choice questions and answers. Topics covered reflect clinical cases as well as hot topics in transfusion medicine leveraging the clinical experience of 19 highly regarded transfusion medicine experts, all leaders in the field.

Contents include:

- Blood components including plasma, platelets, and red blood cells
- Neonatal/peripartum transfusion medicine
- Special situations such as hemolysis and transplantation
- Regulatory issues

Add Transfusion Medicine: A Compendium of Educational Cases (PUB228) to your order.

Or, view sample pages and purchase online:

- printed books at estore.cap.org

Item number: PUB228
Softcover; 90 pages; 2020

Viral Markers

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Viral Markers—Series 1 VM1

Analyte	Program Code	Challenges per Shipment
	VM1	
Anti-HAV (total: IgM and IgG)	▮	5
Anti-HAV (IgG)	▮	5
Anti-HBc (total: IgM and IgG)	▮	5
Anti-HBs	▮	5
Anti-HBs, quantitative	▮	5
Anti-HCV	▮	5
Anti-HIV-1	▮	5
Anti-HIV-1/2	▮	5
Anti-HIV-2	▮	5
HBsAg	▮	5

Program Information
- Five 3.5-mL plasma specimens
- Three shipments per year

Additional Information
- Do not use program VM1 with rapid anti-HCV, anti-HIV-1, or anti-HIV-1/2 kits. See page 245 for programs appropriate for rapid methods.
- Anti-HIV-1/2, HIV-1 p24 antigen combination assay users should enroll in the VM6 program. VM1 is not appropriate for this assay.

Viral Markers—Series 2 VM2

Analyte	Program Code	Challenges per Shipment
	VM2	
Anti-HBe	▮	5
HBeAg	▮	5

Program Information
- Five 3.5-mL plasma specimens
- Three shipments per year

Viral Markers—Series 3 VM3

Analyte	Program Code	Challenges per Shipment
	VM3	
Anti-CMV	▮	3
Anti-HTLV-I/II	▮	3
HIV-1 p24 antigen	▮	3

Program Information
- Three 3.5-mL plasma specimens
- Two shipments per year

Viral Markers—Series 4 VM4

Analyte	Program Code	Challenges per Shipment
	VM4	
Anti-*Trypanosoma cruzi* (Chagas disease)	▮	2

Program Information
- Two 1.0-mL plasma specimens
- Two shipments per year

Viral Markers—Series 5 VM5

Analyte	Program Code	Challenges per Shipment
	VM5	
Anti-HAV (IgM)	▮	5
Anti-HBc (IgM)	▮	5

Program Information
- Five 1.5-mL plasma specimens
- Three shipments per year

Viral Markers—Series 6 VM6/VM6X

Analyte	Program Code		Challenges per Shipment
	VM6	VM6X	
Anti-HIV-1/2	▮	▮	5
HIV-1 p24 antigen	▮	▮	5

Program Information
- VM6 - Five 0.5-mL plasma specimens
- VM6X - All program VM6 specimens in duplicate
- Three shipments per year

Anti-HIV 1/2 AHIV, AHIVW

Analyte/Procedure	Program Code		Challenges per Shipment
	AHIV	AHIVW	
Anti-HIV-1, Anti-HIV-2, Anti-HIV-1/2	▮		5
Anti-HIV-1, Anti-HIV-1/2, waived methods only		▮	2

Program Information
- AHIV - Five 0.5-mL plasma specimens; three shipments per year
- AHIVW - Two 0.5-mL plasma specimens; two shipments per year

Anti-HCV, Rapid Methods, Waived RHCVW

Analyte/Procedure	Program Code	Challenges per Shipment
	RHCVW	
Anti-HCV, waived methods only	▮	3

Program Information
- Three 0.5-mL plasma specimens
- Two shipments per year

Nucleic Acid Testing NAT

Analyte	Program Code	Challenges per Shipment
	NAT	
Babesia	▮	1
HBV	▮	5
HCV	▮	5
HIV	▮	5
West Nile virus	▮	5

Program Information

- Five 6.0-mL plasma specimens
- One 1.0-mL whole blood specimen
- Designed for blood donor centers performing nucleic acid testing on donor units
- Compatible with HIV, HCV, and HBV multiplex assays
- Three shipments per year

Vector-Borne Disease—Molecular VBDM

Analyte	Program Code	Challenges per Shipment
	VBDM	
Zika virus	▮	3

Program Information

- Three 1.5-mL liquid specimens
- Two shipments per year

Arthropod Benchtop Reference Guide

- Numerous identifications of ectoparasites commonly encountered in the clinical laboratory
- Detailed descriptions of the most significant morphologic elements, ecology, and clinical significance
- A durable and water-resistant format to withstand years of benchtop use—6½" x 7"

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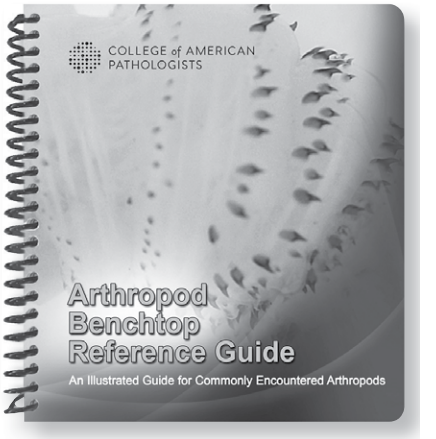

Item number: ABRG
Spiral bound; 82 pages;
65 images and tables; 2016

Parentage Testing

Parentage/Relationship Test—Filter Paper PARF

Analyte/Procedure	Program Code	Challenges per Shipment
	PARF	
DNA testing (PCR)	▮	4
Calculation challenge (dry challenge)	▮	1

Program Information

- DNA testing (PCR) - Four samples per mailing: Two shipments of mother and child specimens on blood-stained filter paper with buccal swabs for two potential fathers; one shipment with all four specimens on blood-stained filter paper
- Reporting for short tandem repeats (STRs), X-STRs, Y-STRs, as well as the conclusions provided
- Three shipments per year

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18 Histocompatibility

Keep your laboratory current with insights from a panel of experts who monitor the latest trends in histocompatibility testing.

- Benefit from the CAP's culture of continuous improvement, which provides direction for updating our proficiency testing programs.
- Ensure your regulatory requirements are covered by continuing to participate in our programs.

Histocompatibility

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

HLA Crossmatching, Antibody Screen, and Antibody Identification (Class I/Class II) MXC, MXE

Procedure	Program Code		Challenges per Shipment
	MXC	MXE	
Crossmatching (Class I/Class II)	▮		8
Antibody screen (Class I/Class II)	▮	▮	4
Antibody identification (Class I/Class II)	▮	▮	4

Program Information

- MXC - Four 0.4-mL plasma specimens; two (approximately 6-7 x 10^6 cells) purified blood lymphocyte specimens
- MXE - Four 0.25-mL plasma specimens; must be ordered in conjunction with program MXC
- Three shipments per year

Class I & II HLA Molecular Typing DML

Procedure	Program Code	Challenges per Shipment
	DML	
Molecular HLA-A, -B, and -C typing (Class I)	▮	5
Molecular HLA-DR, -DQ, and -DP typing (Class II)	▮	5

Program Information

- Five 2.0-mL whole blood specimens in CPD or CPD-A
- Serologic equivalents reporting available
- Two shipments per year

HLA-B27 Typing B27

Procedure	Program Code	Challenges per Shipment
	B27	
HLA-B27 typing	▮	5

Program Information

- Five 2.0-mL whole blood specimens in CPD or CPD-A
- Two shipments per year

Antibody Titer ABT, ABT1, ABT2, ABT3

Procedure	Program Code				Challenges per Shipment
	ABT	ABT1	ABT2	ABT3	
Anti-A titer	▮	▮			1
Anti-B titer				▮	1
Anti-D titer	▮		▮		1

Program Information

- ABT - One 2.0-mL specimen for anti-A titer with one corresponding titer cell (3%–4% red blood cell suspension); one 2.0-mL specimen for anti-D titer with one corresponding titer cell (3%–4% red blood cell suspension)
- ABT1 - One 2.0-mL specimen for anti-A titer with one corresponding titer cell (3%–4% red blood cell suspension)
- ABT2 - One 2.0-mL specimen for anti-D titer with one corresponding titer cell (3%–4% red blood cell suspension)
- ABT3 - One 2.0-mL specimen for anti-B titer with one corresponding titer cell (3%–4% red blood cell suspension)
- Two shipments per year

Antibody Titer—Automated AABT, AABT1, AABT2, AABT3

Procedure	Program Code				Challenges per Shipment
	AABT	AABT1	AABT2	AABT3	
Anti-A titer	▮	▮			1
Anti-B titer				▮	1
Anti-D titer	▮		▮		1

Program Information

- AABT - One 2.0-mL specimen for anti-A titer; one 2.0-mL specimen for anti-D titer
- AABT1 - One 2.0-mL specimen for anti-A titer
- AABT2 - One 2.0-mL specimen for anti-D titer
- AABT3 - One 2.0-mL specimen for anti-B titer
- Two shipments per year

Monitoring Engraftment ME		
Procedure	**Program Code**	**Challenges per Shipment**
	ME	
Stem cell monitoring engraftment	▮	5

Program Information

- Seven 0.5-mL whole blood specimens
- Designed for laboratories supporting stem cell transplant and laboratories monitoring chimerism after organ transplantation
- Two shipments per year

Transfusion Medicine: A Compendium of Educational Cases

Based on more than 10 years of educational material used in proficiency testing from the CAP Transfusion, Apheresis, and Cellular Therapy Committee, this newest book on transfusion medicine consists of 20 cases with multiple-choice questions and answers. Topics covered reflect clinical cases as well as hot topics in transfusion medicine leveraging the clinical experience of 19 highly regarded transfusion medicine experts, all leaders in the field.

Contents include:

- Blood components including plasma, platelets, and red blood cells
- Neonatal/peripartum transfusion medicine
- Special situations such as hemolysis and transplantation
- Regulatory issues

Add Transfusion Medicine: A Compendium of Educational Cases (PUB228) to your order.

Or, view sample pages and purchase online:

- printed books at estore.cap.org

Item number: PUB228
Softcover; 90 pages; 2020

HLA Disease Association-Drug Risk DADR1, DADR2

Analyte	Program Code		Challenges per Shipment
	DADR1	DADR2	
HLA-A*31:01	▮		3
HLA-B*13:01	▮		3
HLA-B*15:02	▮		3
HLA-B*57:01	▮		3
HLA-B*58:01	▮		3
HLA-A*29:01		▮	3
HLA-A*29:02		▮	3
HLA-DQA1*04:01		▮	3
HLA-DQA1*05:01		▮	3
HLA-DQB1*03:02		▮	3
HLA-DQB1*06:02		▮	3
HLA-DRB1*03:01		▮	3
HLA-DRB1*03:02		▮	3
HLA-DRB1*04:02		▮	3
HLA-DRB1*04:03		▮	3
HLA-DRB1*04:06		▮	3
HLA-DRB1*08:02		▮	3
HLA-DRB1*08:04		▮	3
HLA-DRB1*14:04		▮	3
HLA-DRB1*14:05		▮	3
HLA-DRB1*14:08		▮	3
HLA-DRB1*15:01		▮	3
HLA-DRB1*15:02		▮	3
HLA-DQA1*02		▮	3
HLA-DQA1*03		▮	3
HLA-DQA1*05		▮	3
HLA-DQB1*02:01		▮	3
HLA-DQB1*02:02		▮	3

Program Information

- DADR1, DADR2 - Three 0.1-mL specimens, each containing 200 µg/mL of human DNA in media
- Two shipments per year

Additional Information

These programs will challenge the laboratory to accurately identify the presence or absence of alleles associated with a variety of disease states (listed below) and/or the adverse reactions to specific drugs.

DADR1

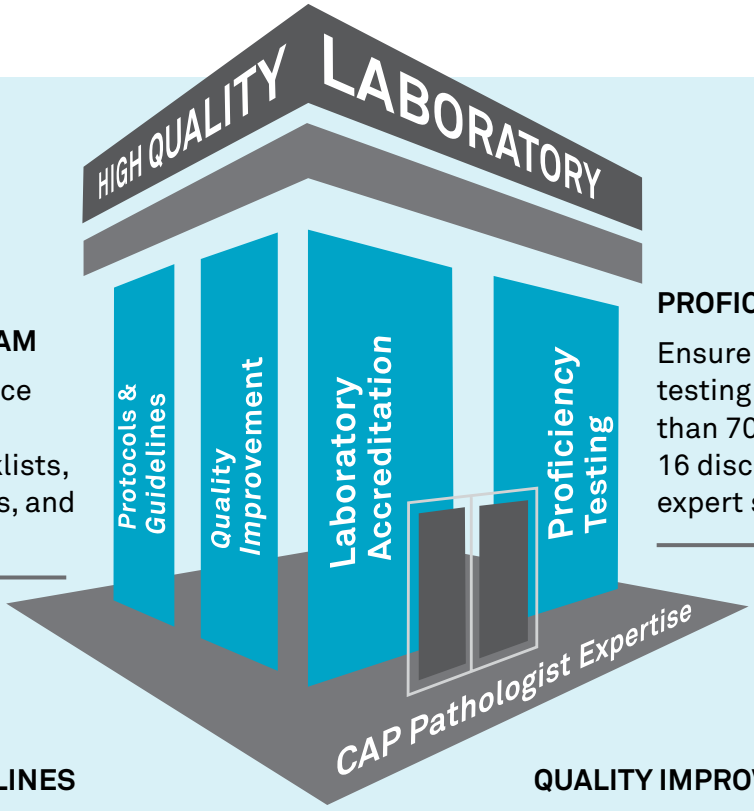
- Carbamazepine-induced Stevens-Johnson syndrome
- Allopurinol Stevens-Johnson syndrome
- Hypersensitivity to abacavir
- Dapsone hypersensitivity

DADR2

- Celiac disease
- Narcolepsy
- Pemphigus vulgaris
- Psoriasis
- Antiglomerular basement membrane disease
- Birdshot retinochoroidopathy
- Idiopathic myopathy

Laboratory Quality Solutions to **Ensure Quality Patient Care**

Built on a foundation of pathologist expertise, the College of American Pathologists (CAP) partners with laboratories worldwide to elevate the quality of laboratory medicine with best-in-class solutions designed to drive operational excellence, achieve diagnostic confidence, and ensure the best patient care.



LABORATORY ACCREDITATION PROGRAM

Improve quality and reduce risk through customized, discipline-specific checklists, collegial peer inspections, and educational resources.

PROFICIENCY TESTING (PT)

Ensure accurate and reliable testing results with more than 700 programs across 16 disciplines developed by expert scientific committees.

PROTOCOLS AND GUIDELINES

Improve cancer reporting and clinical decision making, providing more effective testing with consistent, high-quality results, and expert interpretations.

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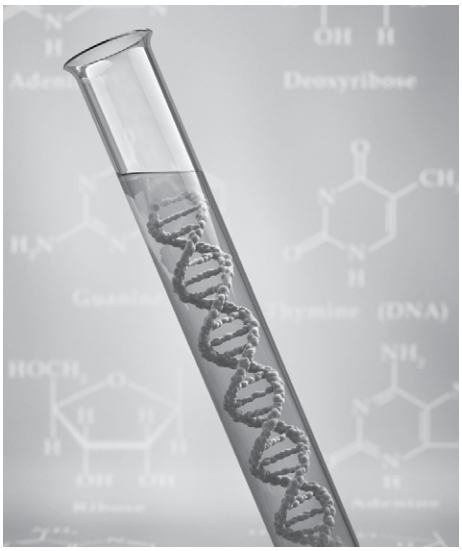
Improve processes and strengthen staff expertise while reducing risk and improving patient outcomes.

Learn more about how the CAP can help you achieve your laboratory quality goals.

19 Genetics and Molecular Pathology



We make choosing the right program easier.

Enrolling in the appropriate PT/EQA program based on your laboratory's testing capabilities is essential to ensuring high quality results. Before ordering for your laboratory, use our detailed flow charts and find answers to your questions at **capatholo.gy/3nGogfE**.

Genetics and Molecular Pathology

New Programs NEW

Program Changes

Cytogenetics

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

CAP/ACMG Cytogenetics CY, CYBK

Analyte/Procedure	Program Code		Challenges per Shipment
	CY	CYBK	
Chromosome abnormality	▮	▮	6
Karyotype nomenclature	▮	▮	6

Each challenge includes a case history and images of metaphase cells that are representative of each case. Each mailing will include three constitutional and three neoplastic challenges.

Program Information

- CY - Online images of metaphase cells delivered two times a year; your CAP shipping contact will be notified via email when the activity is available
- CYBK - Prints of metaphase cells; two shipments per year

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CAP/ACMG Fluorescence In Situ Hybridization CYF, CYI

Disease/Procedure	Program Code		Challenges per Shipment
	CYF	CYI	
Constitutional and Hematologic Disorders			
FISH for constitutional disorder - slides	▮		1
FISH for constitutional disorder - image/dry challenge	▮		2
FISH for hematologic disorder - slides	▮		1
FISH for hematologic disorder - image/dry challenge	▮		2
Urothelial Carcinoma			
FISH for urothelial carcinoma		▮	2

Program Information

- CYF - Four slides and four image/dry challenges
- CYI - Two 250-µL cell samples suspended in ethanol from two different specimens; participants use FISH to detect chromosome abnormalities
- Two shipments per year

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Additional Information

- CYF 2024-A:
  Constitutional disorder (two slides) - *STS*
  Hematologic disorder (two slides) - *KMT2A*
- CYF 2024-B:
  Constitutional disorder (two slides) - Smith-Magenis syndrome critical region *(RAI1)*
  Hematologic disorder (two slides) - *EGR1*
- CYF is prepared from cell suspension samples. For FISH in paraffin-embedded tissues, see page 257.
- These programs are only for laboratories that perform both hybridization and interpretation under the same CLIA number.

CAP/ACMG Fluorescence In Situ Hybridization for Paraffin-Embedded Tissue CYH, CYJ, CYK, CYL, CYALK

Analyte/Procedure	Program Code					Challenges per Shipment	
	CYH	CYJ	CYK	CYL	CYALK	A	B
Breast Cancer							
ERBB2 (HER2) amplification	▮					10	10
Interpretive challenges for *ERBB2 (HER2)* amplification	▮					3	3
Brain/Glioma Tissue							
1p/19q		▮				1	1
Solid Tumor							
FOXO1 rearrangement			▮			1	
FUS rearrangement			▮				1
Lymphoma Tissue							
MALT1 rearrangement				▮		1	
IGH rearrangement				▮			1
Lung Cancer							
ALK rearrangement					▮	1	
ALK rearrangement image challenge					▮		1

Additional Information

- All CYJ, CYK, and CYL specimens will be 4.0-micron tissue sections mounted on positively charged glass slides.
- These programs are for laboratories that perform both hybridization and interpretation under the same CLIA number. For interpretation only *ERBB2 (HER2)* amplification by FISH for breast cancer, see program CYHI, below.

Program Information

- CYH - Two unstained, five-core tissue microarray slides equivalent to 10 paraffin-embedded breast tissue specimens; two H&E stained tissue microarray slides are also provided
- CYJ - Four unstained slides and one H&E stained slide
- CYK - Two unstained slides and one H&E stained slide
- CYL - Two unstained slides and one H&E stained slide
- CYALK - Two unstained slides and one H&E stained slide are provided for the A mailing; the B mailing will include an *ALK* image challenge
- Two shipments per year

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CAP/ACMG *ERBB2 (HER2)* Amplification by FISH, Interpretation Only CYHI

Analyte/Procedure	Program Code	Challenges per Shipment
	CYHI	
ERBB2 (HER2) amplification in breast cancer, interpretation only	▮	3

Additional Information

- *ERBB2 (HER2)* Amplification by FISH, Interpretation Only is not considered proficiency testing. This exercise may be used to meet the requirements for alternative assessment.
- This program is for laboratories that perform interpretation only for *ERBB2 (HER2)* FISH for breast cancer.
- For laboratories that perform both hybridization and interpretation for *ERBB2 (HER2)* FISH for breast cancer under the same CLIA number, see program CYH, above.

Program Information

- Three online interpretation challenges; your CAP shipping contact will be notified via email when the activity is available
- Two shipments per year

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CAP/ACMG Constitutional Microarray CYCGH

Procedure	Program Code	Challenges per Shipment
	CYCGH	
Cytogenomic microarray analysis for constitutional abnormalities	▮	2

Program Information

- Two 2.0-µg DNA specimens
- Two shipments per year

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Additional Information

- Participants will identify and characterize gains or losses and the cytogenetic location of abnormalities detected.
- This program is not appropriate for low resolution arrays that are designed to detect only aneuploidy.

CAP/ACMG Oncology Microarray CYCMA

Procedure	Program Code	Challenges per Shipment
	CYCMA	
Cytogenomic microarray analysis for oncologic abnormalities	▮	1

Program Information

- One 2.0-ug DNA specimen
- Two shipments per year

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Participants will identify and characterize gains or losses and the cytogenetic location of abnormalities detected.

Biochemical and Molecular Genetics

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

CAP/ACMG Biochemical Genetics BGL, BGL1

Analyte/Procedure	Program Code		Challenges per Shipment
	BGL	BGL1	
Acylcarnitines, qualitative and quantitative	▮		1
Amino acids, qualitative and quantitative	▮		1
Carnitine, qualitative and quantitative		▮	3
Glycosaminoglycans (mucopolysaccharides), qualitative and quantitative	▮		1
Organic acids, qualitative and quantitative	▮		1
Educational challenge	▮		1

Program Information

- BGL -
  - Acylcarnitines: One 0.1-mL plasma specimen
  - Amino acids: One 1.0-mL plasma or 2.0-mL urine specimen
  - Glycosaminoglycans (mucopolysaccharides): One 2.0-mL urine specimen
  - Organic acids: One 7.5-mL urine specimen
  - Educational challenge: Will consist of any one of the BGL analytes
- BGL1 - Three 0.3-mL serum specimens
- Two shipments per year

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Give the CAP's complimentary Sample Exchange Registry service a try!

Sign up for this unique and complimentary service for those rare analytes for which proficiency testing is not yet available. This service now includes all clinical laboratory disciplines.

- The CAP connects laboratories performing testing for which no formal proficiency testing is available.
- There is no charge for this service.
- Participate at any time, no contract required.
- A minimum of three laboratories performing the same analyte test must participate before the CAP can facilitate the sample exchange.
- Each individual laboratory will receive its own results along with an anonymized summary report for all participants.

Visit cap.org and from the Laboratory Improvement tab, choose Proficiency Testing > Sample Exchange Registry.

CAP/ACMG Amino Acid Quantitation for Inherited Metabolic Disorders BGL2

Analyte/Procedure	Program Code	Challenges per Shipment
	BGL2	
Alanine	▮	3
Alloisoleucine	▮	3
Arginine	▮	3
Aspartic acid	▮	3
Citrulline	▮	3
Cystine	▮	3
Glutamic acid	▮	3
Glutamine	▮	3
Glycine	▮	3
Histidine	▮	3
Homocystine	▮	3
Hydroxyproline	▮	3
Isoleucine	▮	3
Leucine	▮	3
Lysine	▮	3
Methionine	▮	3
Ornithine	▮	3
Phenylalanine	▮	3
Proline	▮	3
Serine	▮	3
Taurine	▮	3
Threonine	▮	3
Tryptophan	▮	3
Tyrosine	▮	3
Valine	▮	3

Program Information

- Three 1.0-mL liquid specimens
- Two shipments per year

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CAP/ACMG Acylcarnitine Quantitation for Inherited Metabolic Disorders BGL4

NEW

Analyte/Procedure	Program Code	Challenges per Shipment
	BGL4	
Acetylcarnitine	▮	3
Propionylcarnitine	▮	3
Butyrylcarnitine	▮	3
Isovalerylcarnitine	▮	3
Glutarylcarnitine	▮	3
Hexanoylcarnitine	▮	3
Octanoylcarnitine	▮	3
Dodecanoylcarnitine	▮	3
Hexadecanoylcarnitine	▮	3
3-OH-hexadecanoylcarnitine	▮	3
Octadecanoylcarnitine	▮	3

Program Information

- Three 1.0-mL liquid specimens
- Two shipments per year

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CAP/ACMG Alpha-1 Antitrypsin Genotyping AAT

Analyte/Procedure	Program Code	Challenges per Shipment
	AAT	
Alpha-1 antitrypsin (*SERPINA1*) genotyping	▮	3

This program will test for the M, S, and Z alleles.

Program Information

- Three 10.0-µg extracted DNA specimens
- Two shipments per year

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CAP/ACMG Apolipoprotein E Genotyping APOE

Analyte/Procedure	Program Code	Challenges per Shipment
	APOE	
Apolipoprotein E (*APOE*) genotyping	▮	3

This program is designed for laboratories utilizing *APOE* testing for hyperlipoproteinemia type III and Alzheimer diseases and will test for *APOE* e2, *APOE* e3, and *APOE* e4.

Program Information

- Three 10.0-µg extracted DNA specimens
- Two shipments per year

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CAP/ACMG *BRCA1/2* Sequencing BRCA

Analyte/Procedure	Program Code	Challenges per Shipment
	BRCA	
BRCA1/2 DNA sequencing and variant interpretation	▮	3
BRCA1/2 duplication/deletion analysis	▮	3

Program Information

- Three 10.0-µg extracted DNA specimens
- Two shipments per year

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Additional Information

- Test your skill at reporting and interpreting DNA sequence variants for *BRCA1/2* using standard nomenclature.
- Receive a summary and discussion of responses, including comments on the variant nomenclature and known or expected outcomes from identified variants.
- Primers are not included; laboratories are expected to utilize the primers used in routine clinical testing.

CAP/ACMG Cardiomyopathy Sequencing Panel CMSP

Analyte/Procedure	Program Code	Challenges per Shipment
	CMSP	
Cardiomyopathy sequencing panel	▮	3

Program Information

- Three 80.0-µL purified extracted DNA specimens (50 ng/µL)
- Two shipments per year

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Additional Information

- This proficiency challenge is for laboratories performing gene panels, exome sequencing, and whole genome sequencing to detect germline variants associated with inherited forms of cardiomyopathy.
- Participants will be asked to identify variants in the following genes: *ACTC1, MYBPC3, MYH7, MYL2, MYL3, TNNI3, TNNT2,* and *TPM1*.

CAP/ACMG Hemoglobinopathies Genotyping HGM

Analyte/Procedure	Program Code	Challenges per Shipment
	HGM	
Alpha-thalassemia	▮	3
Beta-thalassemia	▮	3
Hemoglobin S/C	▮	3

Program Information

- Three 50.0-µg extracted DNA specimens
- Two shipments per year

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CAP/ACMG Inherited Cancer Sequencing Panel ICSP

Analyte/Procedure	Program Code	Challenges per Shipment
	ICSP	
Inherited cancer sequencing panel	▮	3

Additional Information

- This proficiency challenge is for laboratories performing gene panels, exome sequencing, and whole genome sequencing to detect germline variants associated with inherited forms of cancer.
- Participants will be asked to identify variants in the following genes: *APC*, *ATM*, *BRCA1*, *BRCA2*, *CDKN2A*, *CHEK2*, *MLH1*, *MSH2*, *MSH6*, *PALB2*, and *PMS2*.

Program Information

- Three 80.0-µL purified extracted DNA specimens (50 ng/µL)
- Two shipments per year

ACMG American College of Medical Genetics and Genomics Translating Genes Into Health®

CAP/ACMG Molecular Genetics Series MGL1, MGL2, MGL3, MGL4, MGL5

Disease/Gene	Program Code					Challenges per Shipment
	MGL1	MGL2	MGL3	MGL4	MGL5	
Bloom syndrome (*BLM* gene)				▮		3
BRCA1/2			▮			3
Canavan (*ASPA* gene)				▮		3
Connexin 26 (*GJB2* gene)			▮			3
Cystic fibrosis (*CFTR* gene)		▮			▮	3/2(MGL5)
DMD/Becker (*DMD* gene)		▮				3
Factor V Leiden (*F5* gene)	▮					3
Familial dysautonomia (*ELP1* gene)				▮		3
Fanconi anemia complementation group C (*FANCC* gene)				▮		3
Fragile X (*FMR1* gene)	▮					3
Friedreich ataxia (*FXN* gene)		▮				3
Gaucher (*GBA* gene)				▮		3
Glycogen storage disease type Ia (*G6PC* gene)				▮		3
Hemochromatosis (*HFE* gene)	▮					3
Hemoglobin S/C		▮				3
Huntington (*HTT* gene)		▮				3
Methylenetetrahydrofolate reductase (*MTHFR* gene) c.665C>T (677C>T) and c.1286A>C (1298A>C)	▮					3
Mucolipidosis IV (*MCOLN1* gene)				▮		3
Multiple endocrine neoplasia type 2 (*RET* gene)			▮			3
Myotonic dystrophy (*DMPK* gene)		▮				3
Niemann-Pick type A/B (*SMPD1* gene)				▮		3
Plasminogen activator inhibitor (PAI)-1 (*SERPINE1* gene)	▮					3

Continued on the next page

Program Information

- MGL1, MGL2, MGL3, MGL4 - Three 50.0-µg extracted DNA specimens per disease/gene
- MGL5 - Two 50.0-µg extracted DNA specimens
- Two shipments per year

ACMG American College of Medical Genetics and Genomics

Additional Information

- The *BRCA1/2* program (module MGL3) is designed for laboratories testing for the three Ashkenazi Jewish founder mutations.
- The cystic fibrosis programs (modules MGL2 and MGL5) are designed for laboratories that are testing for the minimum mutation panel for population-based carrier screening (ie, the ACMG-23 mutation panel) from the ACMG Technical Standards and Guidelines for *CFTR* Mutation Testing, expanded panels, PolyT variant analysis, and/or full gene sequencing.
- Module MGL4 is designed for laboratories testing for diseases/disorders related to Ashkenazi Jewish ancestry.
- The Prader-Willi/Angelman syndrome program is designed for laboratories using methylation techniques for analysis.

CAP/ACMG Molecular Genetics Series MGL1, MGL2, MGL3, MGL4, MGL5 continued

Disease/Gene	Program Code					Challenges per Shipment
	MGL1	MGL2	MGL3	MGL4	MGL5	
Prader-Willi/Angelman syndrome	▮					3
Prothrombin (*F2* gene)	▮					3
RhD		▮				3
Spinal muscular atrophy (*SMN1* and *SMN2* genes)		▮				3
Spinocerebellar ataxia (*ATXN1*, *ATXN2*, *ATXN3*, *CACNA1A*, and *ATXN7* genes)		▮				3
Tay-Sachs (*HEXA* gene)				▮		3

Program Information

- MGL1, MGL2, MGL3, MGL4 - Three 50.0-µg extracted DNA specimens per disease/gene
- MGL5 - Two 50.0-µg extracted DNA specimens
- Two shipments per year

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Additional Information

- The *BRCA1/2* program (module MGL3) is designed for laboratories testing for the three Ashkenazi Jewish founder mutations.
- The cystic fibrosis programs (modules MGL2 and MGL5) are designed for laboratories that are testing for the minimum mutation panel for population-based carrier screening (ie, the ACMG-23 mutation panel) from the ACMG Technical Standards and Guidelines for *CFTR* Mutation Testing, expanded panels, PolyT variant analysis, and/or full gene sequencing.
- Module MGL4 is designed for laboratories testing for diseases/disorders related to Ashkenazi Jewish ancestry.
- The Prader-Willi/Angelman syndrome program is designed for laboratories using methylation techniques for analysis.
- The Spinal Muscular Atrophy program includes *SMN1* and *SMN2* gene analysis and copy number analysis.

CAP/ACMG Inherited Metabolic Diseases IMD1, IMD2, IMD3

Analyte/Procedure	Program Code			Challenges per Shipment
	IMD1	IMD2	IMD3	
Mitochondrial DNA deletion syndromes	▮			3
MCAD		▮		3
Mitochondrial cytopathies*			▮	3

*Includes disorders/diseases such as Leber hereditary optic neuropathy and myoclonus epilepsy with ragged red fibers (MERRF).

Program Information

- IMD1, IMD2, IMD3 - Three 50.0-µg extracted DNA specimens
- Two shipments per year

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CAP/ACMG Molecular Genetics Sequencing SEC, SEC1

Procedure	Program Code		Challenges per Shipment
	SEC	SEC1	
DNA sequencing interpretation challenge	▮		3
DNA sequencing		▮	3

Additional Information

- Test your skill at interpreting and reporting DNA sequence variants for inherited diseases using standard nomenclature.
- Receive a summary and discussion of responses, including comments on nomenclature, known or expected outcomes from identified variants, and teaching points about genes/disorders represented.

Program Information

- SEC - DNA sequence electropherogram files with a range of variants, suitable for base-calling and analysis using a range of commercial or public domain software programs; also includes nomenclature/variant references. Two online activities per year; your CAP shipping contact will be notified via email when the activity is available
- SEC1 - Three 30.0-µg extracted DNA specimens; forward and reverse lyophilized primers are provided; two shipments per year

ACMG American College of Medical Genetics and Genomics

Pharmacogenetics PGX, PGX1, PGX3

Analyte/Procedure	Program Code			Challenges per Shipment
	PGX	PGX1	PGX3	
CYP2C19	▮			3
CYP2C9	▮			3
CYP2B6	▮			3
CYP2D6	▮			3
CYP3A4	▮			3
CYP3A5	▮			3
CYP4F2	▮			3
SLCO1B1 (rs4149056)	▮			3
VKORC1	▮			3
IL28B (rs12979860)		▮		3
COMT (rs4680)		▮		3
G6PD		▮		3
OPRM1 (rs1799971, c.118A>G)		▮		3
DPYD			▮	3
NUDT15			▮	3
TPMT			▮	3
UGT1A1			▮	3

UGT1A1 (PGX3 program) tests the laboratory's ability to detect variants in the TATA repeat sequence in the *UGT1A1* promotor (eg, *UGT1A1*28* with seven TA repeats). The ability to detect variants in other regions of the *UGT1A1* gene is not part of this program.

Program Information

- PGX, PGX1, PGX3 - Three 25.0-µg extracted DNA specimens
- Includes allele detection (genotyping) and/or interpretive challenges
- Two shipments per year

CAP/ACMG Rett Syndrome (*MECP2*) RETT

Analyte/Procedure	Program Code	Challenges per Shipment
	RETT	
Rett (*MECP2*) genotyping	▮	3
Rett (*MECP2*) duplication/deletion analysis	▮	3

Program Information
- Three 10.0-µg extracted DNA specimens
- Two shipments per year

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CAP/ACMG Thrombophilia Mutations TPM

Analyte/Procedure	Program Code	Challenges per Shipment
	TPM	
Factor II (*F2* gene, Prothrombin)	▮	3
Factor V Leiden (*F5* gene)	▮	3

This program is designed for the Cepheid GeneXpert factor II and factor V assays. DNA extraction for other assays/methods is NOT recommended.

Program Information
- Three 250.0-µL synthetic whole blood specimens
- Two shipments per year

ACMG American College of Medical Genetics and Genomics Translating Genes Into Health®

Red Blood Cell Antigen Genotyping RAG

Procedure	Program Code	Challenges per Shipment
	RAG	
RBC blood group genotyping for phenotype prediction	▮	3

Program Information
- Three 2.0-mL whole blood specimens
- Two shipments per year

Noninvasive Prenatal Testing NIPT

Analyte	Program Code	Challenges per Shipment
	NIPT	
Cell-free DNA screening for fetal aneuploidy	▮	3

Noninvasive prenatal testing is an exercise and is not considered proficiency testing. This exercise may be used to meet the requirements for alternative assessment.

Program Information
- Three liquid specimens
- Two shipments per year

Next-Generation Sequencing

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

All laboratories subject to US Clinical Laboratory Improvement Amendments (CLIA) Regulations: Proficiency testing (PT) challenges must NOT be referred to another laboratory for any portion of NGS testing, even if this is how patient testing is routinely performed. For PT challenges, any referral is strictly prohibited by CMS.

Next-Generation Sequencing—Germline NGS

Procedure	Program Code	Challenges per Shipment
	NGS	
Next-generation sequencing	▮	2

Laboratories will have the ability to analyze up to 200 preselected chromosomal intervals in hg19 (GRCh37) and hg38 (GRCh38) coordinates within various genes; for a full list of genes in this program, please go to cap.org. Under the Laboratory Improvement tab, click on Catalog and Ordering Information. The list is located under the PT Order Supplements header.

Program Information

- One 10.0-µg extracted gDNA specimen; one educational variant interpretation image/dry challenge
- Methods-based challenge for germline variants for laboratories using gene panels, exome, and genome sequencing
- Two shipments per year

Next-Generation Sequencing—Solid Tumor NGSST

Procedure	Program Code	Challenges per Shipment
	NGSST	
Next-generation sequencing	▮	3

Additional Information

- This is a methods-based proficiency challenge for laboratories performing targeted next-generation sequencing of cancer genes or mutation hotspots in solid tumors.
- This program includes variants present with a variant allele fraction (VAF) potentially as low as 5%.

Program Information

- Three 1.0-µg gDNA (50 ng/µL) specimens
- Two shipments per year

Next-Generation Sequencing—Hematologic Malignancies NGSHM

Procedure	Program Code	Challenges per Shipment
	NGSHM	
Next-generation sequencing	▮	3

Additional Information

- This is a methods-based proficiency challenge for laboratories performing targeted next-generation sequencing of genes or mutation hotspots in hematologic malignancies.
- This program includes variants present with a variant allele fraction (VAF) potentially as low as 5%.

Program Information

- Three 1.0-µg gDNA (50 ng/µL) specimens
- Two shipments per year

Next-Generation Sequencing
Solid Tumor Bioinformatics NGSB1

Procedure	Program Code	Challenges per Shipment
	NGSB1	
Illumina TruSight Tumor 15 Panel	▮	1
Illumina TruSight Tumor 170 Panel	▮	1
Illumina TruSight Oncology 500 Panel	▮	1
Thermo Fisher Ion AmpliSeq Cancer Hotspot Panel v2	▮	1
Thermo Fisher Oncomine Comprehensive Assay v3	▮	1
Thermo Fisher Oncomine Focus Cancer Panel	▮	1

Additional Information

- This *in silico* bioinformatics program is designed to complement and augment somatic variant wet bench NGS proficiency testing programs by testing a greater diversity of variants at a greater range of variant allele fractions.
- The BAM and/or FASTQ files are platform-specific and may not be compatible with other instruments/software.
- This program includes variants present with a variant allele fraction (VAF) potentially as low as 5%.
- For platform agnostic solid tumor bioinformatic proficiency testing challenges, refer to the NGSB4 program, page 270.

Program Information

- Sequencing files containing somatic variants to be downloaded and incorporated into your laboratory bioinformatics pipeline for analysis and reporting; file sizes range from 100MB to 1GB
- BAM and FASTQ file formats
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Next-Generation Sequencing Solid Tumor Bioinformatics Hybrid NGSB4

Analyte/Procedure	Program Code	Challenges per Shipment
	NGSB4	
In silico mutagenized sequencing file(s) containing somatic variants of relevance in solid tumors - platform agnostic	▮	1

This is a platform agnostic hybrid *in silico* proficiency testing and validated materials program for laboratories performing targeted NGS of cancer genes or mutational hotspots in solid tumors.

For panel-specific solid tumor bioinformatic proficiency testing challenges, refer to the NGSB1 program, page 269.

Minimum Requirements:

- Laboratories must provide a gene panel sequencing data file (FASTQ or **unaligned** BAM) that has been generated using their current clinical sequencing protocols from one of the following sources: A specimen from the NGS - Germline program (see page 268) or from one of the following NIST Reference Material cell lines: RM 8398 (NA12878), RM 8391, RM 8392, or RM 8393. FASTQs or **unaligned** BAMs must be submitted along with a BED file describing the regions targeted and interrogated by your laboratory. Specimens from the NGSST and NGSHM programs or additional Coriell/NIST Reference Material cell lines cannot be used for this program.
- Laboratories can transfer and download files from most modern browsers/operating systems. Due to the extremely large file sizes, 40 Mbps transfer speed or higher is needed to ensure successful transfer of your laboratory's sequencing files to the CAP. For the most up-to-date information on system requirements, click **Browser and Operating System Requirements** located at the bottom of the cap.org homepage.

Additional Information, Proficiency Testing Program:

- Laboratories will be asked to identify somatic single nucleotide variants and small (1-15bp) insertions, deletions, duplications, and deletions-insertions (delins) in a subset of solid tumor mutational hotspots/genes with VAF potentially as low as 5%. Laboratories will be required to submit results of the variants identified.

Additional Information, Validated Materials:

- The sequencing file will contain up to 75 custom somatic variants that are tailored to the specific assay submitted (depending on the size of the panel provided) at VAF from 3% to 99% (higher allele fractions to mimic loss of heterozygosity or homozygosity) and will include:
  - o Single nucleotide variants
  - o Insertions, deletions, delins, and/or duplications ranging from 1-100bp (1-15bp, 16-50bp, 51-100bp)
  - o For laboratories doing microsatellite instability, microsatellite instability at mono nucleotide tracts in the submitted capture design will be included.

  All variants will be modeled based on actual somatic mutations from the COSMIC database. This portion of the program is not traditional proficiency testing and no results will be returned to the CAP; information regarding the variants introduced will be sent along with the mutagenized file.

Program Information

- The proficiency testing portion of this program is designed to complement and augment NGS somatic variant wet bench proficiency testing programs by testing for a greater diversity of variants with a wide range of variant allele fractions (VAF) while the validated materials portion is designed to optimize bioinformatics pipelines, augment validations, and assist with pipeline verification after changes to NGS/ bioinformatics processes.
- One panel sequencing data file (FASTQ or **unaligned** BAM), originating from your laboratory and provided to the CAP, for *in silico* mutagenesis
- Sequencing files containing somatic variants to be downloaded and analyzed by your laboratory bioinformatics pipeline
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Next-Generation Sequencing
Hematologic Malignancies Bioinformatics NGSB3

Procedure	Program Code	Challenges per Shipment
	NGSB3	
Illumina TruSight Myeloid Sequencing Panel	▮	1
Thermo Fisher Oncomine Myeloid Assay	▮	1

Additional Information

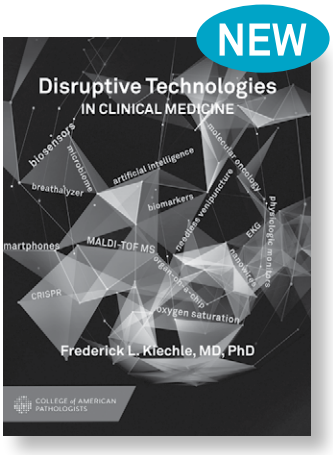
- This *in silico* bioinformatics program is designed to complement and augment somatic variant wet bench NGS proficiency testing programs by testing a greater diversity of variants at a greater range of variant allele fractions.
- The BAM and/or FASTQ files are platform-specific and may not be compatible with other instruments/software.
- This program includes variants present with a variant allele fraction (VAF) potentially as low as 5%.
- For platform agnostic hematologic malignancies bioinformatic proficiency testing challenges, refer to the NGSB5 program, page 272.

Program Information

- Sequencing files containing somatic variants to be downloaded and incorporated into your laboratory bioinformatics pipeline for analysis and reporting; file sizes range from 100MB to 1GB
- BAM and FASTQ file formats
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Disruptive Technologies in Clinical Medicine

Disruptive Technologies in Clinical Medicine provides a look into how disruptive technologies can directly impact clinical medicine and pathology and how they will benefit pathologists by improving patient care through more timely and accurate lab results. This book invites physicians to see the patterns, consider the implications, and apply their learning in their practices. By understanding the impact of disruptive technologies, the reader will be able to harness the opportunities they present and be more aware of where to apply them.



This overview covers 13 examples of disruptive technology, including:

- Biosensors which may be wearable, non-implantable, or implantable
- Smartphone detectors
- MALDI-TOF in bacterial identification
- Organoids and regenerative medicine
- Artificial intelligence

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Softcover; 170 pages; 2023

Next-Generation Sequencing Hematologic Malignancies Bioinformatics Hybrid NGSB5

Analyte/Procedure	Program Code	Challenges per Shipment
	NGSB5	
In silico mutagenized sequencing file(s) containing somatic variants of relevance in hematologic malignancies - platform agnostic	▮	1

This is a platform agnostic hybrid *in silico* proficiency testing and validated materials program for laboratories performing targeted NGS of cancer genes or mutational hotspots in hematologic malignancies.

For panel-specific hematologic malignancies bioinformatic proficiency testing challenges, refer to the NGSB3 program, page 271.

Minimum Requirements:

- Laboratories must provide a gene panel sequencing data file (FASTQ or **unaligned** BAM) that has been generated using their current clinical sequencing protocols from one of the following sources: a specimen from the NGS - Germline program (see page 268) or from one of the following NIST Reference Material cell lines: RM 8398 (NA12878), RM 8391, RM 8392, or RM 8393. FASTQs or **unaligned** BAMs must be submitted along with a BED file describing the regions targeted and interrogated by your laboratory. Specimens from the NGSST and NGSHM programs or additional Coriell/NIST Reference Material cell lines cannot be used for this program.
- Laboratories can transfer and download files from most modern browsers/operating systems. Due to the extremely large file sizes, 40 Mbps transfer speed or higher is needed to ensure successful transfer of your laboratory's sequencing files to the CAP. For the most up-to-date information on system requirements, click **Browser and Operating System Requirements** located at the bottom of the cap.org homepage.
- **Additional Information, Proficiency Testing Program:**
- Laboratories will be asked to identify somatic single nucleotide variants and small (1-15bp) insertions, deletions, duplications, and deletions-insertions (delins) in a subset of hematologic malignancies mutational hotspots/genes with VAF potentially as low as 5%. Laboratories will be required to submit results of the variants identified.
- **Additional Information, Validated Materials:**
- The sequencing file will contain up to 75 custom somatic variants that are tailored to the specific assay submitted (depending on the size of the panel provided) at VAF from 3% to 99% (higher allele fractions to mimic loss of heterozygosity or homozygosity) and will include:
  - o Single nucleotide variants
  - o Insertions, deletions, delins, and/or duplications ranging from 1-100bp (1-15bp, 16-50bp, 51-100bp)

  All variants will be modeled based on actual somatic mutations from the COSMIC database. This portion of the program is not traditional proficiency testing and no results will be returned to the CAP; information regarding the variants introduced will be sent along with the mutagenized file.

Program Information

- The proficiency testing portion of this program is designed to complement and augment NGS somatic variant wet bench proficiency testing programs by testing for a greater diversity of variants with a wide range of variant allele fractions (VAF) while the validated materials portion is designed to optimize bioinformatics pipelines, augment validations, and assist with pipeline verification after changes to NGS/ bioinformatics processes.
- One panel sequencing data file (FASTQ or **unaligned** BAM), originating from your laboratory and provided to the CAP, for *in silico* mutagenesis
- Sequencing files containing somatic variants to be downloaded and analyzed by your laboratory bioinformatics pipeline
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Next-Generation Sequencing Undiagnosed Disorders—Exome NGSE

Analyte/Procedure	Program Code	Challenges per Shipment
	NGSE	
Exome analysis for germline undiagnosed disorders	▮	1

Additional Information/Minimum Requirements

- This *in silico* based program will assess the ability of the laboratory to identify germline variants responsible for a provided clinic phenotype as is encountered in an undiagnosed disease scenario. In addition to analyzing the *in silico* mutagenized file to identify a genetic diagnosis for the provided clinical scenario, pathogenic or likely pathogenic ACMG secondary findings may also be reported.
- Laboratories must provide an exome sequencing data file (FASTQ or **unaligned** BAM) that has been generated using their current clinical sequencing protocols from one of the following sources: A specimen from the NGS - Germline program (see page 268) or from one of the NIST Reference Material cell lines: RM 8398 (NA12878), RM 8391, RM 8392, or RM 8393. Specimens from the NGSST and NGSHM programs or additional Coriell/NIST Reference Material cell lines cannot be used for this program.
- FASTQs or **unaligned** BAMs must be submitted along with a BED file describing the regions targeted and interrogated by your laboratory. Additionally, more than 90% of exons targeted and interrogated by your laboratory must have a minimum read coverage of 10X.
- Laboratories can transfer and download files from most modern browsers/operating systems. Due to the extremely large file sizes, 40 Mbps transfer speed or higher is needed to ensure successful transfer of your laboratory's sequencing files to the CAP. For the most up-to-date information on system requirements, click **Browser and Operating System Requirements** located at the bottom of the cap.org homepage.

Program Information

- One exome sequencing data file, originating from your laboratory and provided to the CAP, for *in silico* mutagenesis; the mutagenized exome sequencing data file is to be downloaded and analyzed by your bioinformatics pipeline
- The mutagenized exome sequencing file will be accompanied by a clinical history, relevant laboratory data, and results of ancillary studies, where appropriate.
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Next-Generation Sequencing
Undiagnosed Disorders—Trio Analysis NGSET

Analyte/Procedure	Program Code	Challenges per Shipment
	NGSET	
Trio (parents and proband) exome analysis for germline undiagnosed disorders	▮	3

Additional Information/Minimum Requirements

- This *in silico* based program will assess the ability of the laboratory to identify germline variants responsible for a provided clinic phenotype in a proband as is encountered in an undiagnosed disease scenario using a trio approach (ie, laboratories will analyze the proband and parents in an effort to determine the diagnosis in the proband). In addition to analyzing the *in silico* mutagenized files to identify a genetic diagnosis for the provided clinical scenario, inheritance patterns as well as pathogenic or likely pathogenic ACMG secondary findings may also be reported.
- Laboratories must provide exome sequencing data files (FASTQs or **unaligned** BAMs) that have been generated using their current clinical sequencing protocols from one of the following Genome in a Bottle Consortium trio sources: The Ashkenazi Jewish trio (Coriell IDs GM24385, GM24149, and GM24143 or NIST RM8392) or the Han Chinese trio (Coriell IDs GM24631, GM24694, and GM24695). All exome files must be from the same trio (Ashkenazi Jewish or Han Chinese). Specimens from the NGS, NGSST, and NGSHM programs or additional Coriell/Genome in a Bottle Consortium sources cannot be used for this program.
- FASTQs or **unaligned** BAMs must be submitted along with a BED file describing the regions targeted and interrogated by your laboratory. Additionally, more than 90% of exons targeted and interrogated by your laboratory must have a minimum read coverage of 10X.
- Laboratories can transfer and download files from most modern browsers/operating systems. Due to the extremely large file sizes, 40 Mbps transfer speed or higher is needed to ensure successful transfer of your laboratory's sequencing files to the CAP. For the most up-to-date information on system requirements, click **Browser and Operating System Requirements** located at the bottom of the cap.org homepage.

Program Information

- Three exome sequencing data files (one from each parent plus the proband), originating from your laboratory and provided to the CAP, for *in silico* mutagenesis; the mutagenized exome sequencing data files are to be downloaded and analyzed by your bioinformatics pipeline
- The mutagenized exome sequencing files will be accompanied by a clinical history, relevant laboratory data, and results of ancillary studies, where appropriate.
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Copy Number Variant—Solid Tumor CNVST

Procedure	Program Code	Challenges per Shipment
	CNVST	
Copy number variant—solid tumor	▮	3

Additional Information

- This program is designed for laboratories using next-generation sequencing for copy number analysis.
- Laboratories will be asked to identify copy number alterations in some of these genes: *CDKN2A, CDKN2B, EGFR, ERBB2, FGFR3, MET, MYC, MYCN, TP53*.
- Copy number alterations tested will include amplification, gain, copy neutral loss of heterozygosity, and deletion.

Program Information

- One 20-µL gDNA (10ng/µL) specimen
- Two snap-frozen cell pellets
- Two shipments per year

Tumor Mutational Burden TMB

Procedure	Program Code	Challenges per Shipment
	TMB	
Tumor mutational burden	▮	3

Additional Information

- This program is intended for laboratories using next-generation sequencing to determine tumor mutational burden.
- This program is appropriate for laboratories using targeted panels and whole exome sequencing.
- Paired normal tissue is included.
- Specimens are 50% tumor.

Program Information

- Three 10-µL gDNA (50ng/µL) specimens
- Three 10-µL gDNA (50ng/µL) paired normal tissues
- Two shipments per year

Molecular Oncology—Solid Tumors

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Microsatellite Instability MSI

Procedure	Program Code	Challenges per Shipment
	MSI	
Microsatellite instability testing (DNA amplification)	▮	3
MLH1 promoter methylation analysis	▮	3

Laboratories performing DNA mismatch repair assessment by immunohistochemistry methods should see program MMR on page 301.

Program Information

- Three specimens each containing two 10.0-micron unstained paraffin section slides and one H&E slide
- For laboratories performing molecular testing using PCR and NGS
- Two shipments per year

In Situ Hybridization ISH, ISH2

Analyte/Procedure	Program Code		Challenges per Shipment
	ISH	ISH2	
Epstein-Barr virus (EBV)	▮		4
Human papillomavirus (HPV)	▮		4
Kappa/Lambda (IGK/IGL)	▮		4
ERBB2 (HER2) gene amplification (brightfield)		▮	10

Laboratories performing FISH for interphase chromosomal targets in paraffin sections refer to the Cytogenetics programs, page 257.

Program ISH2 is only for laboratories that perform both hybridization and interpretation under the same CLIA number.

Program Information

- ISH -

  EBV, HPV: Three 4-core tissue microarray slides and one H&E slide (each)

  Kappa/Lambda: Four 4-core tissue microarray slides and one H&E slide
- ISH2 - Two 5-core tissue microarray slides in duplicate
- Two shipments per year

DNA Extraction & Amplification FFPE MHO5

Procedure	Program Code	Challenges per Shipment
	MHO5	
DNA purification	▮	1

This is a methods-based proficiency challenge to examine DNA purification from formalin-fixed, paraffin-embedded (FFPE) tissues . Laboratories will be able to purify DNA from FFPE sections and amplify control targets using laboratory-provided reagents.

Program Information

- Three 10.0-micron paraffin sections
- Two shipments per year

Neoplastic Cellularity NEO

Procedure	Program Code	Challenges per Shipment
	NEO	
Online assessment of percent neoplastic cellularity	▮	10

Program Information

- Ten regions of interest (ROIs) using online, whole slide images
- A method-based preanalytic program to assess competency for determining percent neoplastic cellularity
- Powered by DigitalScope® technology
- Individual reporting fields for up to five pathologists are available.
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Sarcoma Fusion Gene SARC

Gene	Program Code	Challenges per Shipment
	SARC	
Sarcoma fusion gene*	▮	3

*See fusion gene listing below.

Laboratories performing FISH for sarcoma translocation refer to the Cytogenetics programs, page 257.

Program Information

- Three snap-frozen cell pellets from which approximately 5.0-µg of RNA can be extracted
- For laboratories performing molecular testing using RT-PCR and NanoString
- Two shipments per year

Sarcoma Fusion Gene Listing

COL1A1::PDGFB, t(17;22)
ETV6::NTRK3, t(12;15)
EWSR1::ATF1, t(12;22)
EWSR1::ERG, t(21;22)
EWSR1::FLI1, t(11;22)
EWSR1::FLI1 or *EWSR1::ERG*
EWSR1::WT1, t(11;22)
FUS::DDIT3, t(12;16)
PAX3::FOXO1, t(2;13)
PAX7::FOXO1, t(1;13)
PAX3::FOXO1 or *PAX7::FOXO1*
SS18::SSX1, t(X;18)
SS18::SSX2, t(X;18)
SS18::SSX1 or *SS18::SSX2*

Cell-free Tumor DNA CFDNA

Analyte/Procedure	Program Code	Challenges per Shipment
	CFDNA	
cfDNA	▮	3

Additional Information

- DNA fragments stabilized in simulated plasma
- This is not intended for laboratories that perform circulating tumor cell (CTC) analysis.
- Genes in this program include: *EGFR, BRAF, KRAS, NRAS, IDH1, PIK3CA, ERBB2, MET*, and *BRCA1*.
- This program includes variants present with a variant allele fraction (VAF) range of 0.1% - 3.0%.

Program Information

- Three 125-ng DNA (25 ng/mL) specimens
- Two shipments per year

Fusion RNA Sequencing RNA

Analyte/Procedure	Program Code	Challenges per Shipment
	RNA	
RNA	▮	3

Additional Information

- Total RNA from a cell line engineered to contain desired fusion RNA
- This is for laboratories using RNAseq to detect gene fusion transcripts.
- This is not intended to replace the current program (SARC) for reverse transcription (RT)-PCR based detection (see page 277).
- Potential fusion variants include: *CD74::ROS1, EML4::ALK, ETV6::NTRK3, FGFR3::TACC3, PAX8::PPARG, SLC45A3::BRAF*.
- Specific intragenic fusion/exon skipping variants may also be included, specifically *EGFRvIII* and *MET* exon 14 skipping.

Program Information

- Three 500-ng RNA (20 ng/µL) specimens
- Two shipments per year

Solid Tumor—Other BRAF, EGFR, KRAS, KIT

Analyte	Program Code				Challenges per Shipment
	BRAF	EGFR	KRAS	KIT	
BRAF	▮				3
EGFR		▮			3
KRAS			▮		3
KIT				▮	3
PDGFRA				▮	3

Program Information

- BRAF, EGFR, KRAS - Paraffin-embedded sections or shavings
- KIT -

  One specimen containing four 10.0-micron unstained paraffin section slides and one H&E slide

  Two 1.0-µg gDNA (50 ng/µL) specimens
- For laboratories performing molecular testing using PCR
- Two shipments per year

Multigene Tumor Panel MTP

Analyte	Program Code	Challenges per Shipment
	MTP	
BRAF	▮	3
EGFR	▮	3
ERBB2 (HER2)	▮	3
KIT	▮	3
KRAS	▮	3
NRAS	▮	3
PDGFRA	▮	3
PIK3CA	▮	3

Program Information

- Three 2.0-µg gDNA (50 ng/µL) specimens for laboratories performing molecular testing on multiple targets
- Two shipments per year

CAP accredited laboratories that perform testing for the detection of somatic single nucleotide variants, insertions, and deletions in *BRAF*, *EGFR*, and *KRAS* by non-NGS methods are required to enroll in either MTP or the respective single gene programs. This includes laboratories that perform non-NGS-based multiplexed assays and nonmultiplexed assays (eg, Sanger sequencing). Laboratories that perform NGS-based testing of somatic single nucleotide variants, insertions, and deletions in *BRAF*, *KRAS*, *EGFR*, and/or other genes are required to enroll in NGSST (on page 268) as this proficiency testing program provides challenges with lower variant allele fractions as well as challenges in other genes commonly included in NGS-based panels for the identification of somatic variants in solid tumors.

Glioma GLI

Analyte	Program Code	Challenges per Shipment
	GLI	
MGMT	▮	3
IDH1, IDH2	▮	3

Program Information

- Four 2.0-µg gDNA (50 ng/µL) specimens
- One specimen containing four 10.0-micron unstained paraffin section slides and one H&E slide
- For laboratories performing molecular testing using PCR
- Two shipments per year

Molecular Oncology—Hematologic

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Molecular Hematologic Oncology MHO/MHO1, MHO2/MHO3, MHO5

Procedure/Gene	Program Code			Challenges per Shipment
	MHO/MHO1	MHO2/MHO3	MHO5	
Lymphoid Malignancy Genotyping				
IGH	▮			3
IGH::BCL2 major	▮			3
IGH::BCL2 minor	▮			3
IGH::CCND1	▮			3
IGK	▮			3
TRB	▮			3
TRG	▮			3
Myeloid Malignancy Genotyping				
BCR::ABL1 p190		▮		3
BCR::ABL1 p210		▮		3
CALR		▮		3
CBFB::MYH11		▮		3
FLT3 ITD		▮		3
FLT3 TKD		▮		3
JAK2 c.1849G>T p.V617F		▮		3
KMT2A-PTD (*MLL*-PTD)		▮		3
MPL		▮		3
NPM1		▮		3
PML::RARA		▮		3
RUNX1::RUNX1T1		▮		3
DNA extraction and amplification from formalin-fixed, paraffin-embedded (FFPE) tissue			▮	1

Program Information

- MHO - One sample vial containing purified DNA (200 µg/mL per vial) for each specimen
- MHO1 - MHO specimens in duplicate for additional DNA testing
- MHO2 - Two sample vials; one with purified DNA containing 200 µg/mL and one with purified RNA containing 400 µg/mL
- MHO3 - MHO2 specimen in duplicate for additional DNA and RNA testing
- MHO5 - Three 10.0-micron paraffin sections; extraction and amplification from FFPE tissue will be assessed by a method-based challenge
- Two shipments per year; ships on dry ice (dry ice does not apply to MHO5)

IGHV Mutation Analysis IGHV

Analyte/Procedure	Program Code	Challenges per Shipment
	IGHV	
IGHV	▮	3

Additional Information

- Sequence analysis of the clonal immunoglobulin heavy chain V gene (*IGHV*) to determine somatic hypermutation (SHM) status
- Any sequencing method may be used.
- Report productive/unproductive rearrangement, SHM status, percent similarity, and V-gene utilization.

Program Information

- Three 20-µg DNA specimens (200 ng/µL)
- Two shipments per year

Measurable (Minimal) Residual Disease MRD, MRD1, MRD2

Analyte	Program Code			Challenges per Shipment
	MRD	MRD1	MRD2	
BCR::ABL1 p190		▮		3
BCR::ABL1 p210	▮			3
PML::RARA			▮	3

Program Information

- MRD, MRD1, MRD2 - Three RNA specimens in sterile water
- For laboratories diagnosing and monitoring leukemia tumor burden by measuring the quantity of *BCR::ABL1* or *PML::RARA* fusion transcripts
- Two shipments per year; ships on dry ice

NEW

Navigating Multimodality Biomarker Assessment NMBA/NMB1

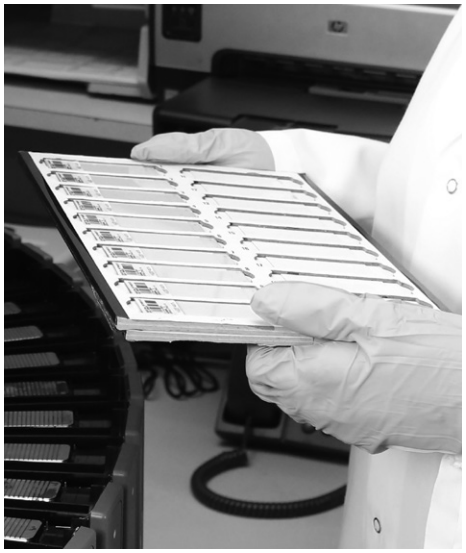
Program Name	Program Code	Cases per Mailing
	NMBA/NMB1	
Multimodality biomarker assessment case analysis	▮	2

Biomarkers can be tested through a variety of methodologies (eg, flow cytometry, immunohistochemistry, next generation sequencing, PCR-based testing, karyotype, FISH, clinical chemistry). Each modality has different technical strengths and weaknesses, along with varied analytical and clinical specifications such as sensitivity and specificity. Results may not be clearly concordant across the modalities. This program will challenge pathologists to resolve discrepancies between different methods or "multimodality" biomarker testing.

Program Information

- NMBA - Online program, whole slide images powered by DigitalScope technology (if available); NMBA provides CME or CE for one pathologist or laboratory professional
- NMB1 - Reporting option with CME or CE credit for each additional pathologist or laboratory professional (within the same institution); must order in conjunction with program NMBA
- Two mailings per year with two cases each mailing
- Earn a maximum of 4 CME credits (AMA PRA Category 1 Credits) per pathologist and a maximum of 4 CE credits per laboratory professional per year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

20 Anatomic Pathology



Depend on our commitment to slide quality for PAP PT and PAP Education programs.

- Every slide is reviewed and approved by pathologists and cytotechnologists before it is put in circulation.
- All slide sets are reviewed every six months by a staff cytotechnologist.
- Slides that do not maintain consensus grading are removed from the program and reviewed by a committee of pathologist experts.

Anatomic Pathology

New Programs NEW

Surgical Pathology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Online Performance Improvement Program in Surgical Pathology PIPW/PIPW1

Program	Program Code	Challenges per Shipment
	PIPW/PIPW1	
Surgical pathology case review	▮	10

Additional Information

- PIPW prepares pathologists to succeed by providing ongoing diagnostic learning in general surgical pathology.
- Pathologists can assess their diagnostic skills and compare their performance with that of their peers.
- Included PIPW case selections feature:
  - A variety of neoplastic and nonneoplastic lesions
  - Inflammatory and infectious diseases
  - Various sites, encompassing a variety of organ systems
  - Beginning in 2024, two PIPW cases per release will be from smaller tumors and will not duplicate PIP (glass).
- See system requirements on page 12.

Program Information

- PIPW - Ten diagnostic challenges/whole slide H&E images with clinical history; CME credit is available for one pathologist; for each additional pathologist, order PIPW1
- PIPW1 - Reporting option with CME credit for each additional pathologist (within the same institution); must order in conjunction with program PIPW
- Earn a maximum of 40 CME credits *(AMA PRA Category 1 Credits™)* per pathologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope® technology
- Four online activities per year; your CAP shipping contact will be notified via email when the activity is available

Performance Improvement Program in Surgical Pathology PIP/PIP1

Program	Program Code	Challenges per Shipment
	PIP/PIP1	
Surgical pathology case review	▮	10

Additional Information

- PIP prepares pathologists to succeed by providing ongoing diagnostic learning in general surgical pathology.
- This program:
  - Provides a practical approach to continuing education
  - Gives pathologists a method to assess their diagnostic skills and compare their performance with that of their peers
  - Allows you to experience smaller tumors and more interesting cases by providing three online cases per release
  - Features PIP case selections that include:
    - A variety of neoplastic and nonneoplastic lesions
    - Inflammatory and infectious diseases
    - Various sites, encompassing a variety of organ systems

Program Information

- PIP - Ten diagnostic challenges with clinical history: seven H&E stained glass slides and three online only cases; CME credit is available for one pathologist; for each additional pathologist, order PIP1
- PIP1 - Reporting option with CME credit for each additional pathologist (within the same institution); must order in conjunction with program PIP
- Powered by DigitalScope technology
- Earn a maximum of 40 CME credits *(AMA PRA Category 1 Credits)* per pathologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Four shipments per year

Virtual Biopsy Program VBP/VBP1

Program	Program Code	Challenges per Shipment
	VBP/VBP1	
Online biopsy case review	▮	5

Additional Information

- VBP prepares pathologists to succeed by providing ongoing diagnostic learning in surgical pathology.
- This program is applicable to all pathologists, including general pathologists, and focuses on biopsy material. Cases may include gross, radiographic, or endoscopic images.
- There are four topical releases per year that focus on benign and malignant pathology. Cases are from selected organ systems and may include a variety of specimen types (eg, core biopsies, endoscopic biopsies, curettings, aspirate smears).
- See system requirements on page 12.

Program Information

- VBP - Five diagnostic challenges/whole slide images with clinical history; reporting with CME credit is available for one pathologist; for each additional pathologist, order VBP1
- VBP1 - Reporting option with CME credit for each additional pathologist (within the same institution); must order in conjunction with program VBP
- Earn a maximum of 25 CME credits *(AMA PRA Category 1 Credits)* per pathologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope technology
- Four online activities per year; your CAP shipping contact will be notified via email when the activity is available

Access CPIP cases when and where it's convenient via PC or personal mobile device.

Pathologists can keep abreast of current scientific knowledge with interactive, case-based learning to address both common and esoteric issues faced in the laboratory.

CPIP supports pathologists who do principally clinical pathology as well as those who do primarily anatomic pathology but cover clinical pathology. A diverse portfolio of real-life case scenarios, including images and clinical background, help pathologists to stay current on issues and advances in the laboratory.

CPIP is designed for pathologists, by pathologists. Each case is developed and peer-reviewed, ensuring learnings are practical and easily applied to work. Thought-provoking questions with feedback and multiple choice knowledge checks assess and confirm diagnostic skills. Participants may apply 1.25 CME credits for each CPIP toward the ABPath's Continuing Certification (CC) requirements.

Clinical Pathology Improvement Program CPIP/CPIP1

Program Name	Program Code	Cases per Year
	CPIP/CPIP1	
Online cases in clinical pathology	∎	12

Consider CPIP for:

- Medical directors seeking to continuously improve the clinical pathology knowledge and collective skills of their pathology team
- Pathologists with clinical and/or laboratory management responsibilities
- Pathologists seeking CME CC credits in clinical pathology
- Subspecialty clinical pathologists who need to keep current

Discipline	Case Schedule (subject to change)	Month 2024
Hematology	Peripheral blood smear review - WBCs	January
Laboratory Management	Risk management strategies	February
Chemistry	Preanalytical inferences in core laboratory assays	March
Transfusion Medicine	ABO testing	April
Transfusion Medicine	Regulatory aspects of blood banking	May
Laboratory Management	CLIA director responsibilities and risks	June
Chemistry	Interpretation of iron studies	July
Microbiology	Blood parasite review and diagnosis	August
Hematology	Peripheral blood smear review - RBCs	September
Microbiology	Gram stain interpretation	October
Molecular Pathology	Liquid biopsy	November
Transfusion Medicine	Transfusion reactions	December

To learn more visit cap.org and search CPIP.

Program Information

- CPIP - One online clinical laboratory case per month
- CPIP1 - Additional pathologist (within the same institution) reporting option with CME credit; must order in conjunction with CPIP
- Earn a maximum of 15 CME credits *(AMA PRA Category 1 Credits™)* per year
- Twelve cases per year; your CAP shipping contact will be notified via email when the activity is available

Touch Imprint/Crush Preparation TICP/TICP1

Procedure	Program Code	Challenges per Shipment
	TICP/TICP1	
Online slide and image program in rapid assessment case review	▮	4

Additional Information

- The TICP program gets surgical pathologists, cytopathologists, and cytotechnologists ready to succeed by familiarizing them with the cytomorphologic features of pathologic processes and tumors in touch imprints and crush or scrape preparations. These specimens are prepared either for intraoperative consultation (frozen section) or rapid on-site evaluation (ROSE) of tissue biopsies for adequacy and/or interpretation. Participants will learn to make an immediate adequacy assessment, assign the process to a general category, and triage the specimen to appropriate ancillary studies. Participants will review digital whole slides of the TICP preparations (hematoxylin & eosin, modified Wright-Giemsa, and/or Papanicolaou stains), static images of the preparation and ancillary studies, and clinical history/radiographic findings to reach a diagnosis. Each case has a complete description of entities in the differential diagnosis along with a discussion of the correct interpretation.
- Participants will receive immediate feedback on interpretations, ancillary studies, and case-related adequate assessment.
- The cases will focus on TICP head/neck and liver/hepatobiliary topics.
- May include rarely captured cases that may not be available on the glass slide
- See system requirements on page 12.

Program Information

- TICP - Four online assessment challenges with clinical history; TICP provides CME or CE credit for one pathologist or cytotechnologist; for each additional pathologist or cytotechnologist, order TICP1
- TICP1 - Reporting option with CME or CE credit for each additional pathologist/cytotechnologist (within the same institution); must order in conjunction with program TICP
- Earn a maximum of 10 CME credits (*AMA PRA Category 1 Credits*) per pathologist and a maximum of 10 CE credits per cytotechnologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Online, whole slide images powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CAP/NSH HistoQIP HQIP

Stain/Tissue	Program Code	Challenges per Shipment	
	HQIP	A	B
H&E - Bone marrow biopsy	▮	1	
H&E - Skin excision biopsy	▮	1	
IHC - Calretinin, appendix resection	▮	1	
IHC - Napsin A, lung adenocarcinoma resection	▮	1	
Special Stain - Mucin, small bowel resection	▮	1	
H&E - Kidney resection	▮		1
H&E - Lung resection	▮		1
IHC - CDX2, colonic adenocarcinoma resection	▮		1
IHC - CD30, Hodgkin's lymphoma (lymph node excision)	▮		1
Special Stain - GMS, control tissue	▮		1

HistoQIP improves histologic slide preparation in anatomic pathology laboratories. In this educational program, an expert panel of pathologists, histotechnologists, and histotechnicians evaluates submitted slides for histologic technique using uniform grading criteria. Participants receive a laboratory-specific evaluation and a participant summary with performance benchmarking, commentary from evaluators, and peer comparison data.

Program Information

- Participant laboratories may submit up to five stained coverslipped glass slides (one from each category) per mailing.
- Includes photographs
- Two shipments per year

NSH.ORG

CAP/NSH HistoQIP Cell Block Preparations HQCLB

Stain/Tissue	Program Code	Challenges per Shipment	
	HQCLB	A	B
H&E - Pleural fluid, with mesothelial cells	▮	1	
IHC - Calretinin on pleural fluid with mesothelial cells	▮	1	
H&E - Lymph node FNA cell block with metastatic carcinoma	▮	1	
IHC - TTF-1 lymph node, TTF1 positive metastatic carcinoma	▮	1	
H&E - Pelvic wash with serous carcinoma	▮		1
IHC - Ber-EP4 on pelvic wash with serous carcinoma	▮		1
H&E - Nonneoplastic lymph node FNA biopsy	▮		1
IHC - CD20 nonneoplastic lymph node FNA biopsy	▮		1

This program augments efforts to improve the preparation of H&E and immunohistochemical slides in all anatomic pathology and cytopathology laboratories involved in the handling of cell block preparations.

Program Information

- Participants may submit up to four stained coverslipped slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP Targeted Therapy HQTAR

Stain/Tissue	Program Code	Challenges per Shipment	
	HQTAR	A	B
H&E - Breast ductal carcinoma	∎	1	
IHC - HER2, breast ductal carcinoma	∎	1	
H&E - Urothelial carcinoma	∎	1	
IHC - PD-L1, urothelial carcinoma	∎	1	
H&E - Gastroesophageal adenocarcinoma	∎		1
IHC - HER2, gastroesophageal adenocarcinoma	∎		1
H&E - Breast lobular carcinoma	∎		1
IHC - ER, breast lobular carcinoma	∎		1

This program augments efforts to improve the preparation of H&E and immunohistochemical slides in all anatomic pathology laboratories involved in the handling of specimens undergoing analysis for targeted therapies.

Program Information

- Participants may submit up to four stained coverslipped slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

CAP/NSH HistoQIP Whole Slide Image Quality Improvement Program HQWSI

Stain/Tissue	Program Code	Challenges per Shipment	
	HQWSI	A	B
H&E - Appendix resection	∎	1	
H&E - Lymph node resection	∎	1	
IHC - *H. pylori*, stomach biopsy	∎	1	
Special Stain - Trichrome, liver biopsy	∎	1	
H&E - Prostate, invasive adenocarcinoma, biopsy	∎	1	
H&E - Spleen resection	∎		1
H&E - Prostate resection, TURP	∎		1
IHC - Ki-67, breast carcinoma, resection **or** biopsy	∎		1
Special Stain - Elastin, lung resection	∎		1
H&E - Breast, invasive carcinoma, resection **or** biopsy	∎		1

The program provides feedback to laboratories using whole slide imaging for clinical applications. Participants upload their scanned whole slide images to the CAP designated server. In this educational program, an expert panel of pathologists, histotechnologists, and histotechnicians evaluates whole slide images for histologic technique and image quality. Participants receive a laboratory-specific evaluation and a participant summary with performance benchmarking, commentary from evaluators, and peer comparison data as well as annotated feedback directly on their uploaded images.

Program Information

- Participant laboratories may submit up to five stained coverslipped glass slides and corresponding scanned whole slide images per mailing.
- Online, whole slide images powered by DigitalScope technology
- Two shipments per year

NSH.ORG

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP Biopsy Series HQIPBX

Stain/Tissue	Program Code	Challenges per Shipment	
	HQIPBX	A	B
H&E – Bladder biopsy	■	1	
H&E – Cervical biopsy	■	1	
H&E – Skin punch biopsy	■	1	
H&E – Stomach biopsy	■	1	
H&E – Colon biopsy	■		1
H&E – Endometrial biopsy	■		1
H&E – Prostate needle biopsy	■		1
H&E – Breast core biopsy	■		1

The HistoQIP Biopsy Series is an additional program to improve the preparation of histologic slides in all anatomic pathology laboratories. In this educational program, an expert panel of pathologists, histotechnologists, and histotechnicians evaluates submitted slides for histologic technique using uniform grading criteria. Participants receive a laboratory-specific evaluation and a participant summary with performance benchmarking, commentary from evaluators, and peer comparison data.

Program Information

- Participants may submit up to four H&E stained and coverslipped glass slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

Grossing, Staging, and Reporting: An Integrated Manual of Modern Surgical Pathology

Gross dissection is the first step in analyzing a resection specimen. *Grossing, Staging and Reporting* presents a standardized approach for practicing pathologists, pathologists-in-training, and pathologists' assistants who handle specimens. This manual is organized by organ system and incorporates AJCC staging criteria and elements of the CAP cancer protocols.

Topics covered:

- Indications for procedures
- Expected macroscopic and microscopic findings
- Step-by-step dissection techniques
- Potential staging pitfalls and solutions
- Sample reporting templates

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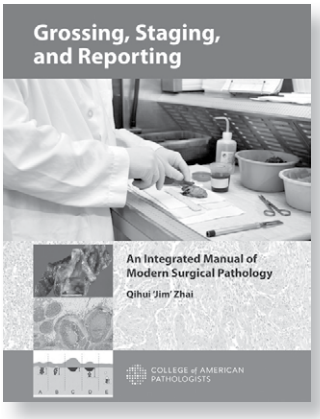

Item number: PUB131
Softcover; 288 pages; 2021

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP Specialty Series HQBX1, HQBX2, HQBX3, HQBX4

Stain/Tissue	Program Code				Challenges per Shipment	
	HQBX1	HQBX2	HQBX3	HQBX4	A	B
Gastrointestinal Biopsy Module						
H&E – Colon biopsy	▮				1	1
H&E – Esophagus biopsy	▮				1	1
H&E – Small intestine biopsy	▮				1	1
H&E – Stomach biopsy	▮				1	1
Dermatologic Biopsy Module						
H&E – Alopecia biopsy		▮			1	1
H&E – Skin excisional biopsy (large excision)		▮			1	1
H&E – Skin punch biopsy		▮			1	1
H&E – Skin shave biopsy		▮			1	1
Urogenital Tract Biopsy Module						
H&E – Bladder biopsy (nonneoplastic)			▮		1	1
H&E – Bladder biopsy (with urothelial carcinoma)			▮		1	1
H&E – Prostate needle biopsy (nonneoplastic)			▮		1	1
H&E – Prostate needle biopsy (with carcinoma)			▮		1	1
Gynecological Biopsy Module						
H&E – Cervical biopsy				▮	1	1
H&E – Endometrial biopsy				▮	1	1
H&E – Cervical cone/LEEP biopsy				▮	1	1
H&E – Vaginal biopsy				▮	1	1

The HistoQIP Specialty Series includes modules to improve the preparation of histologic slides in all anatomic pathology laboratories involved in the handling of gastrointestinal, dermatologic, urogenital tract, and gynecologic biopsies. In this educational program, an expert panel of pathologists, histotechnologists, and histotechnicians evaluates submitted slides for histologic technique using uniform grading criteria. Participants receive a laboratory-specific evaluation and a participant summary with performance benchmarking, commentary from evaluators, and peer comparison data.

Program Information

- HQBX1, HQBX2, HQBX3, HQBX4 - Participants may submit up to four H&E stained and coverslipped glass slides (one from each category) per mailing
- Two shipments per year

NSH.ORG

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP In Situ Hybridization (HPV/EBV) HQISH

Stain/Tissue	Program Code	Challenges per Shipment	
	HQISH	A	B
H&E - Cervical biopsy	▮	1	
ISH - DNA/RNA negative control probe ISH	▮	1	
ISH - DNA/RNA positive control probe ISH	▮	1	
ISH - Human papillomavirus (HPV) ISH, (HPV probe, ISH)	▮	1	
H&E - Epstein-Barr virus (EBV) positive lymphoma	▮		1
ISH - DNA/RNA negative control probe ISH	▮		1
ISH - DNA/RNA positive control probe ISH	▮		1
ISH - EBV ISH (EBV probe, ISH)	▮		1

This program augments efforts to improve the preparation of ISH slides in all anatomic pathology laboratories involved in the handling of specimens undergoing analysis for HPV and EBV detection by chromogenic in situ hybridization.

Program Information

- Participants are to submit an H&E, positive and negative reagent control slides, and HPV and EBV DNA/RNA ISH stained coverslipped glass slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

CAP/NSH HistoQIP IHC Series HQIHC

Stain/Tissue	Program Code	Challenges per Shipment	
	HQIHC	A	B
IHC - CD8, tonsil resection	▮	1	
IHC - bcl-2, lymph node resection	▮	1	
IHC - CK20, colonic adenocarcinoma	▮	1	
IHC - Glial fibrillary acidic protein (GFAP), brain tissue	▮	1	
IHC - ETS-related gene (ERG), prostate adenocarcinoma	▮	1	
IHC - PAX5, Hodgkin lymphoma	▮		1
IHC - ER, endometrium (resection or biopsy)	▮		1
IHC - TTF1, lung adenocarcinoma	▮		1
IHC - SALL4, seminoma	▮		1
IHC - Ki-67, breast ductal carcinoma	▮		1

HistoQIP—IHC improves the preparation of immunohistochemistry slides in all anatomic laboratories involved in the handling of a broad range of surgical specimens. In this educational program, an expert panel of pathologists, histotechnologists, and histotechnicians evaluates submitted slides for histologic technique using uniform grading criteria. Participants receive a laboratory-specific evaluation and a participant summary with performance benchmarking, commentary from evaluators, and peer comparison data.

Program Information

- Participants may submit up to five stained coverslipped slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP
Central Nervous System IHC HQNEU

Stain/Tissue	Program Code	Challenges per Shipment	
	HQNEU	A	B
H&E - Pituitary gland (adenohypophysis)	▮	1	
IHC - Growth hormone (GH), pituitary gland (adenohypophysis)	▮	1	
IHC - Prolactin, pituitary gland (adenohypophysis)	▮	1	
H&E - Hemangioblastoma	▮	1	
IHC - Inhibin, hemangioblastoma	▮	1	
H&E - Medulloblastoma	▮		1
IHC - Synaptophysin, medulloblastoma	▮		1
IHC - Ki-67, medulloblastoma	▮		1
H&E - Atypical teratoid/rhabdoid tumor (AT/RT)	▮		1
IHC - INI-1, AT/RT	▮		1

This program augments efforts to improve the preparation of H&E and immunohistochemical slides in all anatomic pathology laboratories involved in the handling of central nervous system gliomas.

Program Information

- Participants may submit up to three IHC and two H&E stained coverslipped glass slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP Non-small Cell Lung Carcinoma IHC HQNSC

Stain/Tissue	Program Code	Challenges per Shipment	
	HQNSC	A	B
H&E – Lung adenocarcinoma	▮	1	
IHC – TTF-1, lung adenocarcinoma	▮	1	
IHC – Napsin A, lung adenocarcinoma	▮	1	
H&E – ALK, positive lung adenocarcinoma	▮	1	
IHC – ALK, positive lung adenocarcinoma	▮	1	
H&E – Lung squamous cell carcinoma	▮		1
IHC – p40/p63, lung squamous cell carcinoma	▮		1
IHC – CK5 or CK5/6, lung squamous cell carcinoma	▮		1
H&E – PD-L1, positive lung squamous cell carcinoma	▮		1
IHC – PD-L1, positive lung squamous cell carcinoma	▮		1

This program augments efforts to improve the preparation of H&E and immunohistochemical slides in all anatomic pathology laboratories involved in the handling of non-small cell lung carcinoma.

Program Information

- Participants may submit up to three IHC and two H&E stained coverslipped glass slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

Learn the secret to good slide technique.

Histologic Preparations: Common Problems and Their Solutions is a how-to guide to good slide preparation. Building on data and images from the CAP/NSH HistoQIP program, the book presents photographic examples of well-prepared slides followed by numerous examples of associated problems and their solutions. The text contains troubleshooting techniques for the most common artifacts and problems incurred in routine histologic preparations, including fixation and processing; microtomy; frozen sections; hematoxylin-eosin, trichrome, reticulin, elastin, basement membrane, mucin, amyloid, immunohistochemical, and Gram stains, along with mycobacteria, *Helicobacter pylori*, spirochetes, and fungi.

Add Histologic Preparations: Common Problems and Their Solutions to your order. Or, view sample pages and purchase online:

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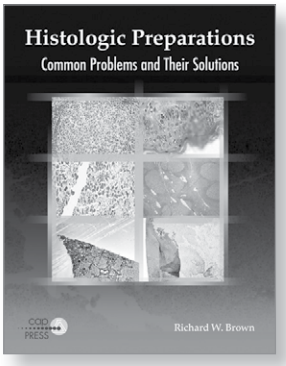


Item number: PUB123
Softcover; 168 pages; 300+ photomicrographs, figures, and tables; 2009

Anatomic Pathology
20

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

CAP/NSH HistoQIP Melanoma IHC HQMEL

Stain/Tissue	Program Code	Challenges per Shipment	
	HQMEL	A	B
H&E - Melanoma skin biopsy	▮	1	
IHC - Melan A/MART-1 melanoma skin biopsy	▮	1	
IHC - SOX10 melanoma skin biopsy	▮	1	
H&E - PD-L1 positive melanoma	▮	1	
IHC - PD-L1 positive melanoma	▮	1	
H&E - Melanoma skin resection	▮		1
IHC - S100 melanoma skin resection	▮		1
IHC - PRAME (preferentially expressed antigen in melanoma), positive for PRAME, melanoma skin resection	▮		1
H&E - Melanoma with CD8 positive tumor infiltrating lymphocytes	▮		1
IHC - CD8 melanoma with CD8 positive tumor infiltrating lymphocytes	▮		1

This program augments efforts to improve the preparation of H&E and immunohistochemical slides in all anatomic pathology laboratories involved in the handling of skin specimens containing melanoma.

Program Information

- Participants may submit up to three IHC and two H&E stained coverslipped glass slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

CAP/NSH HistoQIP Mismatch Repair IHC HQMMR

Stain/Tissue	Program Code	Challenges per Shipment	
	HQMMR	A	B
H&E – Colonic adenocarcinoma	▮	1	
IHC – MLH1, colonic adenocarcinoma	▮	1	
IHC – MSH2, colonic adenocarcinoma	▮	1	
IHC – MSH6, colonic adenocarcinoma	▮	1	
IHC – PMS2, colonic adenocarcinoma	▮	1	
H&E – Endometrial adenocarcinoma	▮		1
IHC – MLH1, endometrial adenocarcinoma	▮		1
IHC – MSH2, endometrial adenocarcinoma	▮		1
IHC – MSH6, endometrial adenocarcinoma	▮		1
IHC – PMS2, endometrial adenocarcinoma	▮		1

This program augments efforts to improve the preparation of H&E and immunohistochemical slides in all anatomic pathology laboratories involved in the handling of colonic and endometrial tumors performing mismatch repair IHC.

Program Information

- Participants may submit up to four IHC and one H&E stained coverslipped glass slides (one from each category) per mailing.
- Two shipments per year

NSH.ORG

HistoQIP programs that include IHC stains assess preanalytic steps. For immunohistochemistry programs that focus on instrument analytic and pathologist readout steps, see the immunohistochemistry programs on pages 297-302.

General Immunohistochemistry

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Immunohistochemistry MK

Procedure	Program Code	Challenges per Shipment
	MK	
Immunohistochemistry	▮	16

The MK program allows laboratories to compare their assay methodology and results with all participating laboratories. Case materials are donated and represent a variety of diagnostic entities. Markers will vary in each case and will provide a wide range of IHC testing for routine surgical pathology practices.

Program Information

- Five glass slides with unstained tissue sections from four separate cases; each case includes four slides for selected IHC markers and one slide for H&E
- Two shipments per year

CD117 Immunohistochemistry Tissue Microarray PM1

Analyte	Program Code	Challenges per Shipment
	PM1	
CD117	▮	10

For ER/PgR testing, see the PM2 program on page 299.

Program Information

- One 10-core tissue microarray slide
- One shipment per year

Immunohistochemistry Tissue Microarray Series PM5

Analyte	Program Code	Challenges per Shipment
	PM5	
CEA	▮	10
PRAME	▮	10

Each year, the PM5 program will feature two different markers for immunohistochemistry laboratories to evaluate assay performance on a variety of tissue and/or tumor types. The IHC markers for this program may change from those listed above due to development constraints.

Program Information

- Two 10-core tissue microarray slides, one for CEA and one for PRAME
- One shipment per year

These immunohistochemistry programs assess instrument analytic and pathologist readout steps. For programs focusing on preanalytic steps, see the HistoQIP IHC programs on pages 289-296.

p53 Immunohistochemistry Tissue Microarray P53

Analyte	Program Code	Challenges per Shipment
	P53	
p53	▮	10

The purpose of this program is to assess the laboratory's ability to detect various patterns of p53 staining, which is diagnostically useful in several tumor types.

Program Information

- One 10-core tissue microarray slide
- Two shipments per year

Dermatopathology Immunohistochemistry DPIHC

Procedure	Program Code	Challenges per Shipment
	DPIHC	
Dermatopathology	▮	8

This case-based program assesses the laboratory's ability to perform and interpret immunostains commonly used in dermatopathology practice.

Program Information

- Six glass slides with unstained tissue sections from two separate cases; each case includes four slides for selected IHC markers, one slide for H&E, and one slide for negative control
- Two shipments per year

CAP/ACMG *ERBB2 (HER2)* Amplification by FISH, Interpretation Only CYHI

Analyte/Procedure	Program Code	Challenges per Shipment
	CYHI	
ERBB2 (HER2) amplification in breast cancer, interpretation only	▮	3

Additional Information

- *ERBB2 (HER2)* Amplification by FISH, Interpretation Only is not considered proficiency testing. This exercise may be used to meet the requirements for alternative assessment.
- This program is for laboratories that perform interpretation only for *ERBB2 (HER2)* FISH for breast cancer.
- For laboratories that perform both hybridization and interpretation for *ERBB2 (HER2)* FISH for breast cancer under the same CLIA number, see page 257.

Program Information

- Three online interpretation challenges; your CAP shipping contact will be notified via email when the activity is available
- Two shipments per year

ACMG
American College of Medical Genetics and Genomics
Translating Genes Into Health®

These immunohistochemistry programs assess instrument analytic and pathologist readout steps. For programs focusing on preanalytic steps, see the HistoQIP IHC programs on pages 289-296.

Immunohistochemistry Predictive Markers

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

HER2 Immunohistochemistry HER2

Analyte	Program Code	Challenges per Shipment
	HER2	
HER2	▮	20

Program Information
- Two 10-core tissue microarray slides
- Two shipments per year

The HER2 program fulfills the proficiency testing requirement stated in the ASCO/CAP HER2 Testing Guideline. Due to the unique nature of these human, donor-based materials, the shipping date is subject to change. If this should occur, the CAP will provide notification prior to the originally scheduled shipping date.

Gastric HER2 GHER2

Analyte	Program Code	Challenges per Shipment
	GHER2	
HER2	▮	10

Program Information
- One 10-core tissue microarray slide
- Two shipments per year

Additional Information
- The Gastric HER2 program fulfills the proficiency testing requirement stated in the CAP/ASCP/ASCO Gastroesophageal HER2 Testing Guideline.
- The interpretive criteria for HER2 immunohistochemistry performed on gastroesophageal adenocarcinomas differs significantly from breast carcinoma. The GHER2 program will help participating laboratories understand these differences.

ER/PgR Immunohistochemistry Tissue Microarray PM2

Analyte	Program Code	Challenges per Shipment
	PM2	
Estrogen receptor (ER)	▮	20
Progesterone receptor (PgR)	▮	20

Program Information
- Four 10-core microarray slides, two for ER and two for PgR
- Two shipments per year

The PM2 program fulfills the ER proficiency testing requirement and the PgR alternative assessment requirement stated in the ASCO/CAP ER/PgR Testing Guideline. Due to the unique nature of these human, donor-based materials, the shipping date is subject to change. If this should occur, the CAP will provide notification prior to the originally scheduled shipping date.

These immunohistochemistry programs assess instrument analytic and pathologist readout steps. For programs focusing on preanalytic steps, see the HistoQIP IHC programs on pages 289-296.

HER2 and ER Immunohistochemistry Interpretation Only HERI

NEW

Analyte/Procedure	Program Code	Challenges per Shipment
	HERI	
HER2 online slide review	▮	10
ER online slide review	▮	10

Additional Information

- HER2 and ER Immunohistochemistry Interpretation Only is an exercise and is not considered proficiency testing.
- This program is for laboratories that perform interpretation only for HER2 and ER for breast cancer and may be used to meet the requirements for alternative performance assessment.
- For laboratories that perform both staining and interpretation for HER2 and ER for breast cancer under the same CLIA number, see page 299.

Program Information

- Ten online whole slide images for HER2 by IHC interpretation only
- Ten online whole slide images for ER by IHC interpretation only
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CD20 Immunohistochemistry Tissue Microarray PM3

Analyte	Program Code	Challenges per Shipment
	PM3	
CD20	▮	10

For ER/PgR testing, see the PM2 program on page 299.

Program Information

- One 10-core tissue microarray slide
- Two shipments per year

Highly Sensitive Anaplastic Lymphoma Kinase IHC PM6

Analyte	Program Code	Challenges per Shipment
	PM6	
Highly sensitive anaplastic lymphoma kinase IHC (ALK)	▮	10

This program assesses the laboratory's ability to detect ALK-rearranged lung cancers using highly sensitive ALK immunohistochemistry. The ALK1 clone is NOT highly sensitive and should not be used in this program.

Program Information

- One 10-core tissue microarray slide
- Two shipments per year

BRAF V600E BRAFV

Analyte	Program Code	Challenges per Shipment
	BRAFV	
BRAF V600E	▮	10

The purpose of this program is to assess the laboratory's ability to detect BRAF V600E mutant tumors using mutation-specific immunohistochemistry.

Program Information

- One 10-core tissue microarray slide
- Two shipments per year

These immunohistochemistry programs assess instrument analytic and pathologist readout steps. For programs focusing on preanalytic steps, see the HistoQIP IHC programs on pages 289-296.

CD30 Immunohistochemistry Tissue Microarray CD30

Analyte	Program Code	Challenges per Shipment
	CD30	
CD30	▮	10

This program assesses the laboratory's ability to detect CD30 expression in lymphomas, which has emerged as a key therapeutic target.

Program Information

- One 10-core tissue microarray slide
- Two shipments per year

DNA Mismatch Repair MMR

Procedure	Program Code	Challenges per Shipment
	MMR	
MLH1 by IHC	▮	10
MSH2 by IHC	▮	10
MSH6 by IHC	▮	10
PMS2 by IHC	▮	10

If your laboratory performs DNA mismatch repair by molecular methods, see the MSI program on page 276.

Program Information

- Four unstained cell line/tissue microarray slides for the immunohistochemical analysis of DNA mismatch repair proteins MLH1, MSH2, MSH6, and PMS2
- Two shipments per year

PD-L1 Immunohistochemistry PDL1

Analyte	Program Code	Challenges per Shipment
	PDL1	
PD-L1	▮	10

The purpose of this program is to assess the laboratory's ability to detect PD-L1 expression and apply various PD-L1 scoring systems.

Program Information

- One 10-core tissue microarray slide; additional slide provided for H&E
- Two shipments per year

These immunohistochemistry programs assess instrument analytic and pathologist readout steps. For programs focusing on preanalytic steps, see the HistoQIP IHC programs on pages 289-296.

NEW

Navigating Multimodality Biomarker Assessment NMBA/NMB1

Program Name	Program Code	Cases per Mailing
	NMBA/NMB1	
Multimodality biomarker assessment case analysis	▮	2

Biomarkers can be tested through a variety of methodologies (eg, flow cytometry, immunohistochemistry, next generation sequencing, PCR-based testing, karyotype, FISH, clinical chemistry). Each modality has different technical strengths and weaknesses, along with varied analytical and clinical specifications such as sensitivity and specificity. Results may not be clearly concordant across the modalities. This program will challenge pathologists to resolve discrepancies between different methods or "multimodality" biomarker testing.

Program Information

- NMBA - Online program, whole slide images powered by DigitalScope technology (if available); NMBA provides CME or CE for one pathologist or laboratory professional
- NMB1 - Reporting option with CME or CE credit for each additional pathologist or laboratory professional (within the same institution); must order in conjunction with program NMBA
- Two mailings per year with two cases each mailing
- Earn a maximum of 4 CME credits (AMA PRA Category 1 Credits) per pathologist and a maximum of 4 CE credits per laboratory professional per year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CME CE credit

Immunohistochemistry Prognostic Markers

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

c-Myc/Bcl-2 Immunohistochemistry Tissue Microarray MYCB

Analyte	Program Code	Challenges per Shipment
	MYCB	
c-Myc	▮	10
Bcl-2	▮	10

This program assesses the laboratory's ability to detect c-Myc and Bcl-2-positivity in large B-cell lymphomas, which have emerged as critical prognostic markers.

Program Information

- Two 10-core tissue microarray slides, one for c-Myc and one for Bcl-2
- Two shipments per year

p16 Immunohistochemistry Tissue Microarray P16

Analyte	Program Code	Challenges per Shipment
	P16	
p16	▮	10

This program assesses the laboratory's ability to detect p16 overexpression in squamous cell carcinomas, mainly as a surrogate for HR-HPV detection in head and neck tumors.

Program Information

- One 10-core tissue microarray slide
- Two shipments per year

Ki-67 Immunohistochemistry Tissue Microarray KI67

Procedure	Program Code	Challenges per Shipment
	KI67	
Ki-67	▮	10

The purpose of this program is to assess the laboratory's ability to accurately quantify the Ki-67 proliferation index, which is prognostically significant and emerging as a companion diagnostic.

Program Information

- One 10-core cell line tissue microarray slide
- Two shipments per year

These immunohistochemistry programs assess instrument analytic and pathologist readout steps. For programs focusing on preanalytic steps, see the HistoQIP IHC programs on pages 289-296.

Specialty Anatomic Pathology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Autopsy Pathology AUP/AUP1

Procedure	Program Code	Challenges per Shipment
	AUP/AUP1	
Autopsy online case analysis	▮	5

- AUP prepares pathologists and pathologists' assistants to succeed by providing ongoing diagnostic learning in autopsy pathology.
- Each case includes case description, gross and/or microscopic images, and case discussion with sample death certificate, key teaching points, and current references.

Program Information

- AUP - Online activity providing five cases and the second activity includes an additional mini-symposium; reporting with CME or CE credit is available for one pathologist or pathologists' assistant; for each additional pathologist/pathologists' assistant, order AUP1
- Includes the option to download program content
- AUP1 - Reporting option with CME or CE credit for each additional pathologist or pathologists' assistant (within the same institution); must order in conjunction with program AUP
- Earn a maximum of 12.5 CME credits *(AMA PRA Category 1 Credits)* per pathologist and a maximum of 12.5 CE credits per pathologists' assistant for completion of entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Online, whole slide images powered by DigitalScope technology (if available)
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Digital Slide Program—Dermatopathology DPATH/DPATH1

Program	Program Code	Challenges per Shipment
	DPATH/DPATH1	
Online dermatopathology case review	▮	6

Additional Information

- DPATH prepares pathologists, dermatopathologists, and dermatologists to succeed by providing ongoing diagnostic learning in dermatopathology.
- Cases include static images.
- See system requirements on page 12.

Program Information

- DPATH - Six diagnostic challenges/whole slide images with clinical history; reporting with CME credit is available for one pathologist; for each additional pathologist, order DPATH1
- DPATH1 - Reporting option with CME credit for each additional pathologist (within the same institution); must order in conjunction with program DPATH
- Earn a maximum of 15 CME credits *(AMA PRA Category 1 Credits)* per pathologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Hematopathology Online Education HPATH/HPATH1

Program	Program Code	Challenges per Shipment
	HPATH/HPATH1	
Hematopathology online case review	▮	5

Additional Information

HPATH prepares pathologists, hematopathologists, and hematologists to succeed by providing ongoing diagnostic learning in hematopathology.

- Clinical history and relevant laboratory data
- At least one online, whole slide image of peripheral blood, bone marrow, spleen, lymph node, or other tissue
- Results of ancillary studies such as immunohistochemistry, flow cytometry, FISH, karyotyping, and molecular studies, where appropriate
- Case discussion and discussion of differential diagnoses
- Each case includes assessment questions.
- See system requirements on page 12.

Program Information

- HPATH - Five diagnostic challenges/online, whole slide images with clinical history; reporting with CME credit is available for one pathologist/ hematologist; for additional pathologist/hematologist, order HPATH1
- HPATH1 - Reporting option with CME credit for each additional pathologist/ hematologist (within the same institution); must order in conjunction with program HPATH
- Earn a maximum of 12.5 CME credits (*AMA PRA Category 1 Credits™*) per pathologist and a maximum of 12.5 CE credits per hematologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Neuropathology Program NP/NP1

Program	Program Code	Challenges per Shipment
	NP/NP1	
Neuropathology online case review	▮	8

NP prepares anatomic pathologists, neuropathologists, and trainees to succeed by providing ongoing diagnostic learning in neuropathology. Each shipment of this educational program includes eight cases that cover the spectrum of neoplastic and nonneoplastic disorders affecting the central and peripheral nervous systems, including infectious, degenerative, developmental, demyelinating, traumatic, toxic-metabolic, vascular, and neuromuscular diseases. In addition, each mailing will include a mini-symposium that focuses on a specific problem area in neuropathology, which relates to at least four of the eight cases.

Program Information

- NP - Online activity providing eight cases and a mini-symposium; reporting with CME credit is available for one pathologist; for each additional pathologist, order NP1
- Includes option to download program content
- NP1 - Reporting option with CME credit for each additional pathologist (within the same institution); must order in conjunction with program NP
- Earn a maximum of 10 CME credits *(AMA PRA Category 1 Credits)* per pathologist.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

CME credit

Cytopathology

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Glass Slide Gynecologic Cytopathology PT Program With Glass Slide PAP Education PAP PT

Slide Type	Program Code					Challenges per Year	
	PAPCPT	PAPKPT	PAPMPT	PAPLPT	PAPJPT	Proficiency Testing	Education
Conventional	▮				▮	10	10
SurePath		▮		▮	▮		
ThinPrep			▮	▮	▮		
Individual Participant Response Form	APAPCPT	APAPKPT	APAPMPT	APAPLPT	APAPJPT		

PAPCPT, PAPKPT, PAPMPT, PAPLPT, and PAPJPT prepare pathologists and cytotechnologists to succeed by providing ongoing diagnostic learning in gynecologic cytopathology.

Ordering Information

You will receive one shipment for proficiency testing (10 slides) and two additional shipments for your education (five slides each).

Follow these steps to order your PAP Proficiency Testing and PAP Education:

1. Choose the following:
   a. Slide type program code (refer to table above)
   b. PAP Education series shipment dates (choose one)
      - Series 1
        - A mailing ships February
        - B mailing ships August
      - Series 2
        - A mailing ships May
        - B mailing ships November
   c. Add the PAP Education series number after the slide type program code (eg, PAPCPT1, PAPCPT2).
2. Order one Individual Participant Response Form code for each participating pathologist/cytotechnologist. Also include the PAP Education Series number after the program code (eg, APAPCPT1).
3. Select primary testing session option with two alternative date options using the Gynecologic Cytology Proficiency Testing Order Details Form.
4. PPTENR is required by CMS as verification that personnel required to participate in PAP PT under its CLIA number are taking the examination at another laboratory.

Additional Information

- Participants will receive an evaluation via email shortly after submitting results online.
- The PAP Education component meets the CAP Laboratory Accreditation Program requirement for participation in a peer educational program.

Program Information

- Ten glass slides for proficiency testing and 10 glass slides for education
- APAPCPT, APAPKPT, APAPMPT, APAPLPT, APAPJPT - Reporting option with CME or CE credit for each pathologist/cytotechnologist (within the same institution); must order in conjunction with PAPCPT, PAPKPT, PAPMPT, PAPLPT, PAPJPT
- Earn a maximum of eight CME credits (*AMA PRA Category 1 Credits*) per pathologist and a maximum of eight CE credits per cytotechnologist for completing all challenges.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Three shipments per year; one shipment for proficiency testing (10 slides) and two shipments for education (five slides each)

Cytopathology Glass Slide Education Program PAPCE, PAPJE, PAPKE, PAPLE, PAPME Series 1 or 2

Slide Type	Program Code					Education Challenges per Year
	PAPCE	PAPKE	PAPME	PAPLE	PAPJE	
Conventional	▮				▮	10
SurePath		▮		▮	▮	
ThinPrep			▮	▮	▮	
Individual Participant Response Form	APAPCE	APAPKE	APAPME	APAPLE	APAPJE	

PAPCE, PAPKE, PAPME, PAPLE, and PAPJE prepare pathologists and cytotechnologists to succeed by providing ongoing diagnostic learning in cytopathology.

Ordering Information

Follow these steps to order your PAP Education:

1. Choose the following:
   a. Slide type program code (refer to table above)
   b. PAP Education series shipment dates (choose one)
      - Series 1
        - A mailing ships February
        - B mailing ships August
      - Series 2
        - A mailing ships May
        - B mailing ships November
   c. Add the PAP Education series number after the slide type program code (eg, PAPCE1, PAPCE2).
2. Order one Individual Participant Response Form code for each participating pathologist/cytotechnologist. Also include the PAP Education series number after the program code (eg, APAPCE1).

Additional Information

- Participants will receive an evaluation via email shortly after submitting results online.
- The PAP Education component meets the CAP Laboratory Accreditation Program requirement for participation in a peer educational program.

Program Information

- Ten glass slides for education
- APAPCE, APAPJE, APAPKE, APAPLE, APAPME - Reporting option with CME or CE credit for each pathologist/cytotechnologist (within the same institution); must order in conjunction with programs PAPCE, PAPJE, PAPKE, PAPLE, PAPME
- Earn a maximum of eight CME credits (*AMA PRA Category 1 Credits*) per pathologist and a maximum of eight CE credits per cytotechnologist for completing all challenges.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Two shipments (five slides each)

Human Papillomavirus (High Risk) for Cytopathology CHPVD, CHPVM, CHPVK, CHPVJ

Analyte/Procedure	Program Code				Challenges per Shipment
	CHPVD	CHPVM	CHPVK	CHPVJ	
HPV	▮	▮	▮	▮	5
High-risk HPV genotyping (optional)		▮	▮	▮	5

Additional Information

- Each laboratory should choose the program that best reflects the transport media received in its facility. For program CHPVJ, participants must provide results for all three media types. If your laboratory receives only two types of media, order the programs that are appropriate for your specific laboratory (CHPVD, CHPVM, or CHPVK).
- For laboratories that perform HPV genotyping using ThinPrep PreservCyt or SurePath Preservative Fluid transport mediums on site, programs CHPVM, CHPVK, and select CHPVJ specimens provide an opportunity to report specific HPV genotypes.
- The CAP does not report genotyping responses to the CMS.

Program Information

- Five simulated cervical specimens
- CHPVD - Digene® Specimen Transport Medium™ (STM)
- CHPVM - ThinPrep PreservCyt® transport medium
- CHPVK - SurePath Preservative Fluid transport medium and corresponding vial of diluent
- CHPVJ - Combination of Digene, ThinPrep PreservCyt, and SurePath transport mediums
- Three shipments per year

Touch Imprint/Crush Preparation TICP/TICP1

Procedure	Program Code	Challenges per Shipment
	TICP/TICP1	
Online slide and image program in rapid assessment case review	▮	4

Additional Information

- The TICP program gets surgical pathologists, cytopathologists, and cytotechnologists ready to succeed by familiarizing them with the cytomorphologic features of pathologic processes and tumors in touch imprints and crush or scrape preparations. These specimens are prepared either for intraoperative consultation (frozen section) or rapid on-site evaluation (ROSE) of tissue biopsies for adequacy and/or interpretation. Participants will learn to make an immediate adequacy assessment, assign the process to a general category, and triage the specimen to appropriate ancillary studies. Participants will review digital whole slides of the TICP preparations (hematoxylin & eosin, modified Wright-Giemsa, and/or Papanicolaou stains), static images of the preparation and ancillary studies, and clinical history/radiographic findings to reach a diagnosis. Each case has a complete description of entities in the differential diagnosis along with a discussion of the correct interpretation.
- Participants will receive immediate feedback on interpretations, ancillary studies, and case-related adequate assessment.
- The cases will focus on TICP head/neck and liver/hepatobiliary topics.
- May include rarely captured cases that may not be available on the glass slide
- See system requirements on page 12.

Program Information

- TICP - Four online assessment challenges with clinical history; TICP provides CME or CE credit for one pathologist or cytotechnologist; for each additional pathologist or cytotechnologist, order TICP1
- TICP1 - Reporting option with CME or CE credit for each additional pathologist/cytotechnologist (within the same institution); must order in conjunction with program TICP
- Earn a maximum of 10 CME credits (*AMA PRA Category 1 Credits*) per pathologist and a maximum of 10 CE credits per cytotechnologist for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Online, whole slide images powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Nongynecologic Cytopathology Education Program NGC/NGC1

Procedure	Program Code	Challenges per Shipment
	NGC/NGC1	
Nongynecologic cytopathology case review – glass slides	▮	5
Nongynecologic cytopathology case review – online	▮	5 per year

Additional Information

- Designed to help pathologists and cytotechnologists get ready to succeed, the Nongynecologic Cytopathology Education (NGC) Program is an interlaboratory educational opportunity to assess participants' screening and interpretive skills. The NGC program is unsuitable for proficiency testing as these cases are chosen for their educational value. Cases may incorporate static online images that incorporate radiology and multiple aspects of pathology to enhance the interpretation.
- Participants will receive an evaluation via email shortly after submitting results online.
- Additional online advanced education cases provide immediate feedback on interpretation selection, follow-up recommendations, and case-related educational questions.
- See system requirements on page 12.

Program Information

- NGC - Five glass slides per shipment; five online cases; one laboratory response form and two individual response forms
- NGC1 - Reporting option with CME or CE credit for each additional pathologist/ cytotechnologist (within the same institution); must order in conjunction with program NGC
- Earn a maximum of 25 CME credits *(AMA PRA Category 1 Credit)* per pathologist and a maximum of 25 CE credits per cytotechnologist for completing the glass slides and online cases.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- One online activity with whole slide images powered by DigitalScope technology
- Four shipments of glass slides per year

Digital Slide Program in Fine-Needle Aspiration FNA/FNA1

Procedure	Program Code	Challenges per Shipment
	FNA/FNA1	
Online program in fine-needle aspiration case review	▮	5

Additional Information

- The FNA program gets pathologists and cytotechnologists ready to succeed by focusing on fine-needle aspiration diagnostic dilemmas in practice. Online cases, which consist of whole slide images and static images, provide immediate feedback on interpretation selection, ancillary studies selection, and case-related educational questions.
- Cases will focus on FNA of mediastinal and thyroid topics.
- May include rarely captured cases that may not be available on the glass slide
- See system requirements on page 12.

Program Information

- FNA - Five online diagnostic challenges; FNA provides CME or CE credit for one pathologist or cytotechnologist; for each additional pathologist or cytotechnologist, order FNA1
- FNA1 - Reporting option with CME or CE credit for each additional pathologist/ cytotechnologist (within the same institution); must order in conjunction with program FNA
- Earn a maximum of 10 CME credits *(AMA PRA Category 1 Credits)* per pathologist and a maximum of 10 CE credits per cytotechnologist.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Online, whole slide images powered by DigitalScope technology
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Fine-Needle Aspiration Glass Slide FNAG/FNAG1

Procedure	Program Code	Challenges per Shipment
	FNAG/FNAG1	
Fine-needle aspiration glass slide case review	▮	5

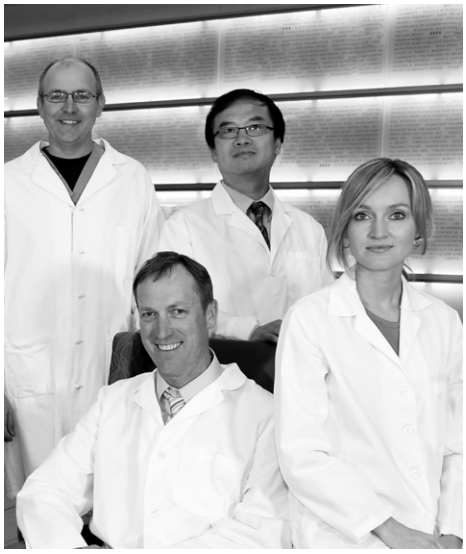
Additional Information

- The Fine-Needle Aspiration Glass Slide Education program gets pathologists and cytotechnologists ready to succeed through an interlaboratory educational opportunity to assess participants' screening and interpretive skills. FNAG cases may include more than one slide of varying stains and/or preparations used on fine-needle aspirations.
- Cases may include static online images that incorporate radiology and multiple aspects of pathology to support the interpretation.
- Participants will receive an evaluation via email shortly after submitting results online.

Program Information

- FNAG - Five cases consisting of glass slides and selected online images, representing a variety of conditions; one laboratory response form and two individual response forms
- FNAG1 - Reporting option with CME or CE credit for each additional pathologist/cytotechnologist (within the same institution); must order in conjunction with program FNAG
- Earn a maximum of 10 CME credits *(AMA PRA Category 1 Credits)* per pathologist and a maximum of 10 CE credits per cytotechnologist.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Two shipments per year

21 Forensic Sciences



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Forensic Sciences

Analytes/procedures in **bold** type are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Forensic Pathology FR/FR1

Procedure	Program Code	Challenges per Shipment
	FR/FR1	
Forensic pathology cases	▮	5

Additional Information

- Cases may include or reflect anthropologic materials, ballistics, dental identification, DNA identification, environmental pathology, forensic evidence, injury pattern, medicolegal issues, toxicology, and trace evidence.
- FR prepares hospital-based pathologists, forensic pathologists, residents, fellows, and medical examiners/coroners for success by keeping them current in forensic pathology techniques and practices. This educational program is also designed for investigators, analysts, and technicians/technologists.

Program Information

- FR - Online activity containing five case studies illustrating gross and/or microscopic slides and questions related to medicolegal decision making; CME or CE credit is available for one pathologist or investigator. For each additional pathologist or investigator, order FR1.
- FR1 - Additional pathologist or investigator (within the same institution) reporting option with CME or CE credit; must order in conjunction with program FR
- Includes option to download program content
- Earn a maximum of 12.5 CME credits (*AMA PRA Category 1 Credits™*) per pathologist and a maximum of 12.5 CE credits per investigator for completion of an entire year.
- This activity meets the ABPath CC requirements for Improvement in Medical Practice (IMP).
- Two online activities per year; your CAP shipping contact will be notified via email when the activity is available

Vitreous Fluid, Postmortem VF		
Analyte	**Program Code**	**Challenges per Shipment**
	VF	
Acetone	▮	3
Chloride	▮	3
Creatinine	▮	3
Ethanol	▮	3
Glucose	▮	3
Potassium	▮	3
Sodium	▮	3
Vitreous urea nitrogen	▮	3

Program Information

- Three 5.0-mL synthetic vitreous fluid specimens
- For forensic and other toxicology laboratories that perform quantitative analysis of vitreous fluid
- Conventional and International System of Units (SI) reporting offered
- Two shipments per year

Clinical Toxicology Testing: A Guide for Laboratory Professionals, Second Edition

This book is a practical guide to directing hospital toxicology laboratory operations. This edition features expanded sections on testing in the clinical setting, methodologies, and more user-friendly information on specific analytes. It provides the reader with a comprehensive view of what is needed—and expected—when offering a clinical toxicology service.

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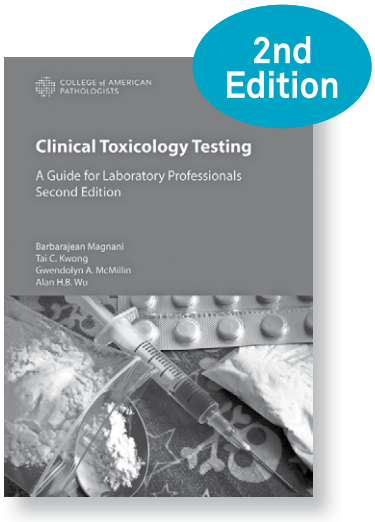


Item number: PUB227
Softcover; 2020

Forensic Toxicology, Criminalistics FTC

Analyte	Program Code	Challenges per Shipment
	FTC	
See drug listing below	▮	5

Program Information

- Five 20.0-mL whole blood specimens
- For crime and hospital laboratories that have forensic toxicology divisions performing qualitative and quantitative analysis of drugs in whole blood specimens
- Three shipments per year

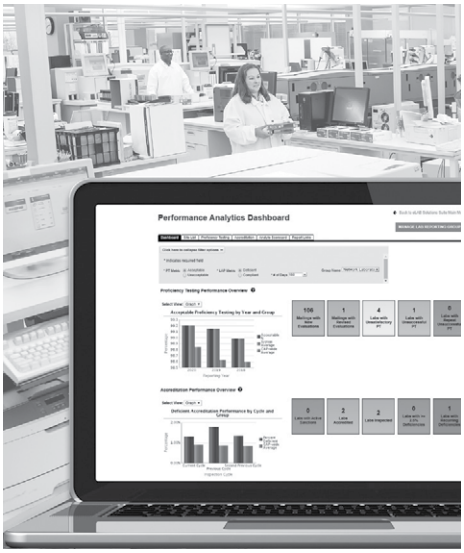
FTC Program Drug Listing

Challenges will include a mix of drugs from the list below.

6-acetylmorphine (6-AM)
7-aminoclonazepam
7-aminoflunitrazepam
7-hydroxymitragynine
Acetaminophen
Alpha-hydroxyalprazolam
Alprazolam
Amitriptyline
Amphetamine
Aripiprazole
Atenolol
Atropine
Benzoylecgonine
Brompheniramine
Buprenorphine
Bupropion
Butalbital
Carbamazepine
Carbamazepine-10, 11-epoxide
Carisoprodol
Chlordiazepoxide
Chlorpheniramine
Citalopram
Clomipramine
Clonazepam
Clozapine
Cocaethylene
Cocaine
Codeine
Cyclobenzaprine*
Delta-9-THC
Delta-9-THC-COOH
Demoxepam
Desipramine
Desmethylclomipramine
Desmethylsertraline
Dextromethorphan
Diazepam
Dihydrocodeine
Diltiazem
Diphenhydramine
Doxepin
Doxylamine
Duloxetine
Ecgonine ethyl ester
Ecgonine methyl ester
Ephedrine
Fentanyl*
Flunitrazepam
Fluoxetine
Gabapentin
Gamma-hydroxybutyrate (GHB)
Hydrocodone
Hydromorphone
Hydroxybupropion
Hydroxyzine
Ibuprofen
Imipramine
Ketamine
Lamotrigine
Levetiracetam
Lidocaine
Lorazepam
Lysergic acid diethylamide (LSD)
Meperidine*
Mephedrone
Meprobamate
Methadone
Methadone metabolite (EDDP)
Methamphetamine
Methylenedioxyamphetamine (MDA)
Methylenedioxymethamphetamine (MDMA)
Methylenedioxypyrovalerone (MDPV)
Methylphenidate
Metoprolol
Midazolam
Mirtazapine
Mitragynine (Kratom)
Morphine*
N-desmethyltramadol
Naproxen
Norbuprenorphine
Norchlordiazepoxide
Norclomipramine
Norcodeine
Norcyclobenzaprine
Nordiazepam
Nordoxepin
Norfentanyl
Norfluoxetine
Norketamine
Normeperidine
Normirtazapine
Noroxycodone
Norpropoxyphene
Norsertraline
Nortrimipramine
Nortriptyline
Norverapamil
O-desmethyltramadol
Olanzapine
Oxazepam
Oxycodone
Oxymorphone
Paroxetine
Pentobarbital
Phencyclidine
Phenethylamine
Pheniramine
Phenobarbital
Phentermine
Phenylephrine
Phenytoin
Pregabalin
Propoxyphene
Propranolol
Pseudoephedrine
Quetiapine
Quinine
Ranitidine
Ritalinic acid
Salicylate
Sertraline
Strychnine
Tapentadol
Temazepam
Topiramate
Tramadol
Trazodone
Trimipramine
Valproic acid
Venlafaxine
Verapamil
Zolpidem

*and/or metabolite(s)

22 Analyte/Procedure Index



Performance Analytics Dashboard provides valuable insights into your laboratory's performance.

The complimentary dashboard helps you manage your CAP PT and accreditation performance.

- Access all graded proficiency testing result forms, evaluations, and participant summary reports from one centralized location.
- Benchmark your laboratory against your peers and CAP-wide performance.
- Consolidate multiple CAP numbers to view a single dashboard for an entire system.

Analyte/Procedure Index

The following Analyte/Procedure Index is a comprehensive listing of analytes and corresponding CAP program options. It also includes Calibration Verification/Linearity (CVL) and Quality Cross Check (QCC) programs.

Analytes/procedures in bold type whose corresponding program codes are bold are regulated for proficiency testing by the Centers for Medicare & Medicaid Services (CMS).

Laboratories must perform five challenges three times per year (as noted by boldface) for analytes that are regulated by the CMS.

The X in the LAP ENR column denotes the CAP programs that can be used to fulfill the proficiency testing enrollment requirements for CAP-accredited laboratories. Use this index to identify the correct PT programs that match up to your laboratory's activity menu to meet accreditation requirements. For CAP-accredited laboratories outside the US, enrollment in CAP PT is required for all tests/activities if a program is available. Refer to program descriptions in this catalog to determine compatibility with your specific methodologies.

Analyte/Procedure	LAP ENR	Program Code	Description	Page
1,25-dihydroxy vitamin D		BMV1	Bone Markers and Vitamins	88
1,5-anhydroglucitol		AG	1,5-Anhydroglucitol	73
3-methoxytyramine		N/NX	Urine Chemistry–Special	71
4-hydroxytriazolam		DFC	Drug–Facilitated Crime	113
5-hydroxyindoleacetic acid, qualitative		N/NX	Urine Chemistry–Special	71
5-hydroxyindoleacetic acid, quantitative	X	N/NX	Urine Chemistry–Special	71
6-acetylmorphine (6-AM)		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
7-aminoclonazepam		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
7-aminoflunitrazepam		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
7-hydroxymitragynine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
11-deoxycortisol		Y/YY	Sex Hormones	86
11-hydroxy-THC		THCB	Blood Cannabinoids	111
17-hydroxycorticosteroids		N/NX	Urine Chemistry–Special	71
17-hydroxyprogesterone	X	Y/YY	Sex Hormones	86
17-ketosteroids		N/NX	Urine Chemistry–Special	71
25-OH vitamin D, total	X	ABVD	Accuracy-Based Vitamin D	116
		LN40	Vitamin D CVL	134
	X	VITD	25-OH Vitamin D	86
50:50 mixing study, aPTT		CGE/CGEX	Coagulation, Extended	167
		CGS1	Coag Special, Series 1	168
50:50 mixing study, PT		CGE/CGEX	Coagulation, Extended	167
		CGS1	Coag Special, Series 1	168
ABO grouping	X	**J, J1**	Transfusion Medicine	232
	X	**JAT**	Transfusion Medicine, Automated	233
		JATE1	Transfusion Medicine, Automated, Educational	233
		JATQ	QCC, Transfusion Medicine	50
		TMCA	Transfusion Medicine, Competency Assessment	240
ABO subgroup typing		ABOSG	ABO Subgroup Typing	236
Acetaminophen	X	CZ/CZX/ CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FTC	Forensic Toxicology, Criminalistics	109
		LN3	TDM CVL	125
	X	SDS	Serum Drug Screen	106
		T	Toxicology	100
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Acetone	X	AL1	Whole Blood Alcohol/ Volatiles	106
	X	AL2	Serum Alcohol/Volatiles	106
		SDS	Serum Drug Screen	106
		VF	Vitreous Fluid, Postmortem	106

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Acid phosphatase		C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Acid-fast smear	X	**E**	Mycobacteriology	193
	X	**E1**	Mycobacteriology, Ltd	193
***Acinetobacter calcoaceticus-baumannii* complex**	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
Activated clotting time	X	CT, CT1, CT2, CT3, CT5	ACT	169
		CTQ, CT1Q, CT2Q, CT3Q, CT5Q	QCC, ACT	47
		POC14, POC15, POC16	Competency Activated Clotting Time	54
Activated partial thromboplastin time		APXBN	Anticoagulant Monitoring, Apixaban	169
	X	**CGB**	Basic Coagulation	166
		CGE/CGEX	Coagulation, Extended	167
	X	**CGL**	Coagulation, Limited	166
		CGLQ	QCC, Coagulation, Limited	47
		CGS1	Coag Special, Series 1	168
		CGS3	Coag Special, Series 3	168
		CGS4	Coag Special, Series 4	168
		DBGN	Anticoagulant Monitoring, Dabigatran	169
		FNPX	Anticoagulant Monitoring, Fondaparinux	169
		RVBN	Anticoagulant Monitoring, Rivaroxaban	169
Activated protein C resistance		CGE/CGEX	Coagulation, Extended	167
		CGS2	Coag Special, Series 2	168
Active vitamin B_{12}		MMA	MMA and Active Vitamin B_{12}	84
Acylcarnitine		BGL	Biochemical Genetics	259
Acylcarnitine quantitation		BGL4	Acylcarnitine Quantitation for Inherited Metabolic Disorders	261
ADAMTS13		CGS7	ADAMTS13	168
Adenovirus		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
		ID2	Nucleic Acid Amp, Respiratory	204
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
Adenovirus (cont.)		VLS2	Viral Load	206
	X	**VR1**	Virology Culture	200
	X	**VR2**	Viral Antigen by DFA	200
	X	**VR4**	Viral Antigen by EIA and Latex	200
Adenovirus 40/41		SP, SPN	Stool Pathogen	189
Adjustable micropipette CVL		I	Instrumentation	136
Adrenocorticotropic hormone (ACTH)	X	TM/TMX	Tumor Markers	91
Alanine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Alanine aminotransferase (ALT/SGPT)	X	**C1, C3/C3X, CZ/CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Albumin		ABS	Accuracy-Based Testosterone and Estradiol	117
	X	**C1, C3/C3X, CZ/CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		SPE	Protein Electrophoresis	78
Albumin, CSF	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
Albumin, urine		ABU	Accuracy-Based Urine	117
		LN20	Urine Albumin	130
	X	U	Urine Chemistry–General	70
Albumin: creatinine ratio		ABU	Accuracy-Based Urine	117
		LN20	Urine Albumin CVL	130
		U	Urine Chemistry–General	70
		UMC	Urine Albumin Creatinine	159
Alcohol, serum	X	**AL2**	Serum Alcohol/Volatiles	106

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Amphetamine group (cont.)		UT	Urine Toxicology	100
Amylase	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Amylase, pancreatic	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Amylase, urine		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
Anaerococcus prevotii/ vaginalis		JIP	Joint Infection Panel	208
Analytical balance		I	Instrumentation	136
Anaplasma phagocytophilum		TTD	Antibody Detection of Tick-Transmitted Diseases	213
Anaplastic lymphoma kinase	X	PM6	Anaplastic Lymphoma Kinase IHC	300
Androstenedione	X	Y/YY	Sex Hormones	86
Angiotensin converting enzyme		ACE	Angiotensin Converting Enzyme	73
Anti ADAMTS13 IgG		CGS7	ADAMTS13	168
Anti-A titer		AABT, AABT1	Antibody Titer, Automated	238
		ABT, ABT1	Antibody Titer	237
Anti-B titer		AABT3	Antibody Titer, Automated	238
		ABT3	Antibody Titer	237
Antibody detection	X	**J, JAT**	Transfusion Medicine	232–233
		JATE1	Transfusion Medicine, Automated, Educational	233
		JATQ	QCC, Transfusion Medicine	50
	X	PS	Platelet Serology	239
		TMCA	Transfusion Medicine, Competency Assessment	240
Antibody detection/ identification (HLA)	X	MXC, MXE	HLA Analysis, Class I/II	250

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Antibody identification		ETME1	Expanded Transfusion Medicine Exercises	243
	X	**J, JAT**	Transfusion Medicine	232–233
		JATE1	Transfusion Medicine, Automated, Educational	233
		TMCA	Transfusion Medicine, Competency Assessment	240
Antibody screen (HLA)		MXC, MXE	HLA Analysis, Class I/II	250
Antibody titer		ABT, ABT1, ABT2, ABT3	Antibody Titer	237
Antibody titer, automated		AABT, AABT1, AABT2, AABT3	Antibody Titer, Automated	238
Anticardiolipin IgA, qualitative		ACL, APS	Antiphospholipid Antibody	219
Anticardiolipin IgA, quantitative		ACL, APS	Antiphospholipid Antibody	219
Anticardiolipin IgG, IgM, polyclonal; qualitative	X	ACL, APS	Antiphospholipid Antibody	219
Anticardiolipin IgG, IgM, polyclonal; quantitative		ACL, APS	Antiphospholipid Antibody	219
Anti-CCP		CCP	Cyclic Citrullinated Peptide Antibody	220
Anticentromere antibody		S2	Immunology, Special	217
Antichromatin antibody		ACA	Antichromatin Antibody	218
Anti-CMV, IgG, IgM	X	VR3	Infectious Disease Serology	213
Anti-CMV, total	X	VM3	Viral Markers–Series 3	244
	X	VR3	Infectious Disease Serology	213
Anti-D titer		AABT, AABT2	Antibody Titer, Automated	238
		ABT, ABT2	Antibody Titer	237
Anti-DNA (ds) antibody, qualitative	X	S2, S4	Immunology, Special	217
Anti-DNA (ds) antibody, quantitative		S2, S4	Immunology, Special	217
Anti-DNA topoisomerase (Anti-Scl-70)		RDS	Rheumatic Disease Special Serologies	221
Antideamidated gliadin peptide antibody screen (IgA, IgG)		CES/CESX	Celiac Serology	220
Antideamidated gliadin peptide antibody, IgA; qualitative	X	CES/CESX	Celiac Serology	220
Antideamidated gliadin peptide antibody, IgG; qualitative		CES/CESX	Celiac Serology	220
Antideamidated gliadin peptide antibody, IgA, IgG; quantitative		CES/CESX	Celiac Serology	220

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Antideamidated gliadin peptide/tissue transglutaminase antibody screen (IgA, IgG)		CES/CESX	Celiac Serology	220
Antiendomysial antibody IgA, IgG; qualitative		CES/CESX	Celiac Serology	220
Antiendomysial antibody IgA, IgG; quantitative		CES/CESX	Celiac Serology	220
Antifilamentous actin IgG antibody		FCN	Antifilamentous Actin Antibody	218
Antifungal drugs monitoring		AFD	Antifungal Drugs Monitoring	111
Antifungal susceptibility testing	X	F	Mycology and Aerobic Actinomycetes	194
	X	F1	Yeast	194
Antigen detection, bacterial		CDF2	*Clostridioides (Clostridium) difficile* Detection	186
	X	**CDF5**	*Clostridioides (Clostridium) difficile* Detection	186
	X	**D**	Bacteriology	177
	X	**D6**	Rapid Group A Strep	182
	X	**D8**	Group B Strep	183
	X	D9	Rapid Group A Strep, Waived	182
	X	**HC1**	*C. trachomatis* by DFA	186
	X	**HC3**	*C. trachomatis* by EIA	186
		LBAS	*Legionella pneumophila*	183
	X	**MC4**	Urine Colony Count Combination	180
		POC4	POC Strep Screen Competency	52
	X	**RMC**	Routine Microbiology Combination	180
		SBAS	*Streptococcus pneumoniae*	183
Antigen detection, viral	X	**VR2**	Viral Antigen Detection by DFA	200
	X	**VR4**	Viral Antigen Detection by EIA and Latex	200
Antigliadin antibody IgA, IgG; qualitative		CES/CESX	Celiac Serology	220
Antigliadin antibody IgA, IgG; quantitative		CES/CESX	Celiac Serology	220
Antiglomerular basement membrane, qualitative	X	S2	Immunology, Special	217
Antiglomerular basement membrane, quantitative		S2	Immunology, Special	217
Anti-HAV, IgG	X	VM1	Viral Markers–Series 1	244
Anti-HAV, IgM	X	VM5	Viral Markers–Series 5	245
Anti-HAV, total		VM1	Viral Markers–Series 1	244
Anti-HBc, IgM	X	**VM5**	Viral Markers–Series 5	245
Anti-HBc, total	X	**VM1**	Viral Markers–Series 1	244

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Anti-Hbe	X	VM2	Viral Markers–Series 2	244
Anti-HBs, qualitative	X	VM1	Viral Markers–Series 1	244
Anti-HBs, quantitative		VM1	Viral Markers–Series 1	244
Anti-HCV	X	RHCVW	Anti-HCV, Rapid Methods, Waived	245
	X	VM1	Viral Markers–Series 1	244
Antihistidyl t-RNA synthetase (Jo-1)		RDS	Rheumatic Disease Special Serologies	221
Antihistone antibody		AHT	Antihistone Antibody	218
Anti-HIV-1	X	**AHIV**	Anti-HIV Rapid Methods	245
	X	AHIVW	Anti-HIV Rapid Methods, waived	245
	X	**VM1**	Viral Markers–Series 1	244
Anti-HIV-2	X	**AHIV**	Anti-HIV Rapid Methods	245
	X	**VM1**	Viral Markers–Series 1	244
Anti-HIV-1/2	X	**AHIV**	Anti-HIV Rapid Methods	245
	X	AHIVW	Anti-HIV Rapid Methods, waived	245
	X	**VM1**	Viral Markers–Series 1	244
Anti-HIV-1/2, HIV-1 p24 antigen	X	**VM6/ VM6X**	Viral Markers–Series 6	245
Anti-HTLV-I/II		VM3	Viral Markers–Series 3	244
Anti-intrinsic factor antibody		APC	Autoimmune Gastritis Markers	218
Anti-Jo-1 (antihistidyl t-RNA synthetase)		RDS	Rheumatic Disease Special Serologies	221
Anti-LKM		LKM	Liver-Kidney Microsomal Antibody	221
Antimicrobial susceptibility testing	X	**D**	Bacteriology	177
	X	**D2**	Urine Cultures	179
		MBT	Microbiology Bench Tools Competency	178
	X	**RMC**	Routine Microbiology Combination	180
Antimitochondrial antibody, qualitative	X	S2	Immunology, Special	217
Antimitochondrial antibody, quantitative		S2	Immunology, Special	217
Antimitochondrial M2 antibody		H	Antimitochondrial M2 Antibody	218
Anti-MPO		S2	Immunology, Special	217
Antimüllerian hormone	X	AMH	Antimüllerian Hormone	86
Antimycobacterial susceptibility testing	X	**E**	Mycobacteriology	193
		MTBR	Molecular MTB Detection and Resistance	193
		MTR5	Molecular MTB Detection and Resistance	193
Antineutrophil cytoplasmic antibody (ANCA)		S2	Immunology, Special	217

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Antinuclear antibody (ANA), qualitative	X	**ANA, IL**	Immunology	216
Antinuclear antibody (ANA), quantitative	X	ANA, IL	Immunology	216
Antiparietal cell antibody		APC	Autoimmune Gastritis Markers	218
Antiphosphatidylserine antibodies (IgG, IgM, and IgA)		APS	Antiphosphatidylserine Antibodies	219
Antiphosphatidylserine/prothrombin complex		APS	Antiphosphatidylserine Antibodies	219
Antiphospholipid antibody		ACL	Antiphospholipid Antibody	219
Anti-PR3		S2	Immunology, Special	217
Antiribosomal P antibody		ARP	Antiribosomal P Antibody	219
Anti-RNP antibody, qualitative	X	S2	Immunology, Special	217
Anti-RNP antibody, quantitative		S2	Immunology, Special	217
Anti-Ro52 antibodies		S2	Immunology, Special	217
Anti-Ro60 antibodies		S2	Immunology, Special	217
Anti-*Saccharomyces cerevisiae* antibody		ASC	Anti-*Saccharomyces cerevisiae* Antibody	219
Anti-Scl-70 (anti-DNA topoisomerase)		RDS	Rheumatic Disease Special Serologies	221
Anti-Sm antibody, qualitative	X	S2	Immunology, Special	217
Anti-Sm antibody, quantitative		S2	Immunology, Special	217
Anti-Sm/RNP antibody, qualitative	X	S2	Immunology, Special	217
Anti-Sm/RNP antibody, quantitative		S2	Immunology, Special	217
Antismooth muscle antibody, qualitative	X	S2	Immunology, Special	217
Antismooth muscle antibody, quantitative		S2	Immunology, Special	217
Antisperm antibody IgG		ASA	Semen Analysis	162
Anti-SSA antibody, qualitative	X	S2	Immunology, Special	217
Anti-SSA antibody, quantitative		S2	Immunology, Special	217
Anti-SSA/SSB antibody, qualitative	X	S2	Immunology, Special	217
Anti-SSA/SSB antibody, quantitative		S2	Immunology, Special	217
Anti-SSB antibody, qualitative	X	S2	Immunology, Special	217
Anti-SSB antibody, quantitative		S2	Immunology, Special	217
Antistreptolysin O (ASO), qualitative	X	**ASO, IL**	Immunology	216
Antistreptolysin O (ASO), quantitative	X	ASO, IL	Immunology	216
Antithrombin (activity, Ag)		CGE/CGEX	Coagulation, Extended	167
		CGS2	Coag Special, Series 2	168
		LN35	Thrombophilia CVL	133
Antithyroglobulin antibody, qualitative	X	S2, S4	Immunology, Special	217
Antithyroglobulin antibody, quantitative		S2, S4	Immunology, Special	217
Antithyroid microsomal, qualitative	X	S2, S4	Immunology, Special	217
Antithyroid microsomal, quantitative		S2, S4	Immunology, Special	217
Antithyroid peroxidase, qualitative	X	S2, S4	Immunology, Special	217
Antithyroid peroxidase, quantitative		S2, S4	Immunology, Special	217
Antitissue transglutaminase antibody IgA, qualitative	X	CES/CESX	Celiac Serology	220
Antitissue transglutaminase antibody IgA, quantitative	X	CES/CESX	Celiac Serology	220
Antitissue transglutaminase antibody IgG, qualitative		CES/CESX	Celiac Serology	220
Antitissue transglutaminase antibody IgG, quantitative		CES/CESX	Celiac Serology	220
Anti-Trypanosoma cruzi		VM4	Viral Markers–Series 4	245
Apixaban		APXBN	Anticoagulant Monitoring, Apixaban	169
Apolipoprotein A1	X	ABL	Accuracy-Based Lipids	116
	X	C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Apolipoprotein B	X	ABL	Accuracy-Based Lipids	116
	X	C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Apolipoprotein E *(APOE)* genotyping	X	APOE	Apolipoprotein E *(APOE)* Genotyping	261
Arginine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Aripiprazole		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Arsenic, urine		TMU	Trace Metals, Urine	108
Arsenic, whole blood		TMWB	Trace Metals, Whole Blood	108

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Arthropod identification		TMO	Ticks, Mites, and Other Arthropods	198
Aspartate aminotransferase (AST/SGOT)	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Aspartic acid, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Aspirin assay		PIA/PIAX	Drug-Specific Platelet Aggregation	172
Astrovirus		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Atenolol		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Atropine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Automated WBC differential	X	**FH1-FH4, FH9-FH10, FH13, FH16-FH17**	Hematology Automated Differential	140
		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
Autopsy pathology		AUP/AUP1	Autopsy Pathology	304
B-ALL		BALL	B-ALL Measurable (Minimal) Residual Disease	227
B-type natriuretic peptides	X	BNP	B-Type Natriuretic Peptides, 2 Challenge	61
	X	BNP5	B-Type Natriuretic Peptides, 5 Challenge	61
		BNPQ	QCC, B-Type Natriuretic Peptides	39
		LN30	B-Type Natriuretic Peptides CVL	131
	X	PCARM/ PCARMX	Point-of-Care Cardiac Markers	67
		POC12	POC Cardiac Markers Competency	53

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Babesia microti		TTD	Antibody Detection of Tick-Transmitted Diseases	213
		NAT	Nucleic Acid Testing	246
Bacterial antigen detection		CDF2	*Clostridioides (Clostridium) difficile* Detection	186
	X	**CDF5**	*Clostridioides (Clostridium) difficile* Detection	186
	X	**D**	Bacteriology	177
	X	**D6**	Rapid Group A Strep	182
	X	D9	Rapid Group A Strep, Waived	182
	X	**HC1**	*C. trachomatis* by DFA	186
	X	**HC3**	*C. trachomatis* by EIA	186
		LBAS	*Legionella pneumophila* Antigen Detection	183
	X	**MC4**	Urine Colony Count Combination	180
		POC4	POC Strep Screen Competency	52
	X	**RMC**	Routine Microbiology Combination	180
		SBAS	*S. pneumoniae* Antigen Detection	183
Bacterial detection in platelets		BDP, BDPV	Bacterial Detection, Platelets	242
	X	**BDP5, BDPV5**	Bacterial Detection, Platelets	242
Bacterial identification	X	**BCM**	Bacterial Blood Culture, Molecular	184
	X	**D**	Bacteriology	177
	X	**D1, D2, D3, RMC**	Throat, Urine, GC Cultures	179–180
	X	**D8**	Group B Strep	183
		DEX	Expanded Bacteriology	178
	X	**HC6/HC6X**	*C. trachomatis*/GC by Nucleic Acid Amp	191
	X	**HC7**	*C. trachomatis*/GC DNA by NAA	191
		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
	X	**IDR**	Infectious Disease, Respiratory Panel	210
		LPX	Laboratory Preparedness Exercise	188
		MBT	Microbiology Bench Tools Competency	178
	X	**MC4**	Urine Colony Count Combination	180

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Bacterial identification (cont.)		MRS	Methicillin-resistant *Staphylococcus aureus* Screen	187
		MRS2M	MRSA Screen, Molecular, 2 Challenge	187
	X	**MRS5**	Methicillin-resistant *Staphylococcus aureus* Screen	188
	X	**MRS5M**	MRSA Screen, Molecular, 5 Challenge	188
	X	**RMC**	Routine Microbiology Combination	180
	X	**STIM**	Sexually Transmitted Infection Detection, Molecular	191
	X	**VS**	Vaginitis Screen	190
Bacterial vaginosis screen		BV	Bacterial Vaginosis	190
		MVP	Molecular Vaginal Panel	190
		VS2	Vaginitis Screen, Virtual Gram Stain	191
Bacterioides fragilis		JIP	Joint Infection Panel	208
Barbiturate group		DMPM	Drug Monitoring for Pain Management	112
		SDS	Serum Drug Screen	106
		T	Toxicology	100
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
BCR/ABL1 p190	X	MHO2, MHO3	Molecular Hematologic Oncology	280
		MRD1	Measurable (Minimal) Residual Disease	281
BCR/ABL1 p210	X	MHO2, MHO3	Molecular Hematologic Oncology	280
		MRD	Measurable (Minimal) Residual Disease	281
Bence Jones protein		UBJP	Urine Bence Jones Protein	78
Benzodiazepine group		DMPM	Drug Monitoring for Pain Management	112
		OFD	Oral Fluid for Drugs of Abuse	105
		SDS	Serum Drug Screen	106
		T	Toxicology	100
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Benzoylecgonine		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
Benzoylecgonine (cont.)		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
		UTCO	Urine Toxicology Carryover	138
Beta-1 globulin		SPE	Serum Electrophoresis	78
Beta-2 globulin		SPE	Serum Electrophoresis	78
Beta-2-glycoprotein I		ACL, APS	Antiphospholipid Antibody	219
Beta-2-microglobulin, serum	X	TM/TMX	Tumor Markers	91
Beta-2-microglobulin, urine		CD	Cadmium	107
Beta globulin		SPE	Serum Electrophoresis	78
Beta-hydroxybutyrate	X	KET	Ketones	66
Beta-thalassemia		HGM	Hemoglobinopathies, Molecular Methods	263
Bile crystal identification, photographs		BCR	Bile Crystals	155
Bilirubin, confirmatory urine		DSC	Dipstick Confirmatory	156
Bilirubin, direct	X	C1, C3/C3X, C4, CZ/ CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
	X	NB, NB2	Neonatal Bilirubin	67
Bilirubin, total	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
	X	**NB,** NB2	Neonatal Bilirubin	67
Bilirubin, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
		DSC	Dipstick Confirmatory	156
	X	HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
Bioavailable testosterone		Y	Sex Hormones	86

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Butalbital		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
***C. difficile* antigen (see *Clostridioides (Clostridium) difficile* antigen)**				
C. difficile toxin (see *Clostridioides (Clostridium) difficile* toxin)				
CA 15-3		LN34	Tumor Markers CVL	132
	X	TM/TMX	Tumor Markers	91
CA 19-9		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		LN34	Tumor Markers CVL	132
	X	TM/TMX	Tumor Markers	91
CA 27.29	X	TM/TMX	Tumor Markers	91
CA 72-4		TM/TMX	Tumor Markers	91
CA 125		LN34	Tumor Markers CVL	132
	X	TM/TMX	Tumor Markers	91
Cadmium, urine	X	CD	Cadmium	107
Cadmium, whole blood	X	CD	Cadmium	107
Caffeine	X	CZ2X, CZX, CZ, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Calcitonin	X	TM/TMX	Tumor Markers	91
Calcium		ABVD	Accuracy-Based Vitamin D	116
	X	**C1, C3/C3X, C4, CZ/CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Calcium, ionized	X	AQ, AQH, AQIS	Critical Care Blood Gas	94–95
Calcium, ionized (cont.)		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN13C	Blood Gas CVL	128
		POC10, POC11	POC Competency Blood Gases	53
Calcium, urine		ABU	Accuracy-Based Urine	117
		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
Calcofluor white		FSM	Fungal Smear	196
Campylobacter		CAMP	Campylobacter	186
		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Canavan disease (*ASPA* gene)	X	MGL4	Molecular Genetics	264–265
Candida albicans		JIP	Joint Infection Panel	208
Candida culture	X	**F3**	*Candida* Culture	195
Candida glabrata vaginal, molecular		MVP	Molecular Vaginal Panel	190
Candida krusei vaginal, molecular		MVP	Molecular Vaginal Panel	190
Candida sp., DNA probe	X	VS	Vaginitis Screen	190
Candida sp. group, vaginal, molecular		MVP	Molecular Vaginal Panel	190
Cannabinoids (see Delta-9-THC-COOH, Delta-9-THC, and 11-hydroxy-THC)				
Carbamazepine	X	**CZ/CZX/CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FTC	Forensic Toxicology, Criminalistics	109
		LN3	TDM CVL	125
		T	Toxicology	100
		UT	Urine Toxicology	100
Carbamazepine-10,11-epoxide		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Carbamazepine, free		CZ/CZX/CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Carbapenem-resistant organisms		CRO	Carbapenem-Resistant Organisms	185

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Carbapenemase resistance mechanism detection		CRE	Carbapenemase Detection	185
Carbon dioxide (CO_2)	X	C1, C3/C3X, C4, CZ/ CZX/CZ2X	Chemistry and TDM	56–58
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Carboxyhemoglobin	X	SO	Blood Oximetry	97
		SOQ	QCC, Blood Oximetry	43
Cardiomyopathy sequencing panel		CMSP	Cardiomyopathy Sequencing Panel	262
Carisoprodol		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Carnitine	X	BGL1	Biochemical Genetics	259
Casts, urine, semiquantitative		UAA, UAA1	Automated Urinalysis	155
CD1a		RFAV1	Rare Flow Antigen Validation, CD1a	229
CD3	X	FL, FL1	Lymphocyte Subset Immunophenotyping	224
		FL7	Flow Cytometry, T-Cell Subsets Analysis	227
		LN22	Flow Cytometry CVL	130
		SCP	Stem Cell Processing	241
CD4	X	FL, FL1	Lymphocyte Subset Immunophenotyping	224
		FL7	Flow Cytometry, T-Cell Subsets Analysis	227
		LN22	Flow Cytometry CVL	130
CD8	X	FL, FL1	Lymphocyte Subset Immunophenotyping	224
		FL7	Flow Cytometry, T-Cell Subsets Analysis	227
		LN22	Flow Cytometry CVL	130
CD20		PM3	Immunohistochemistry	300
CD30		CD30	CD30 Immunohistochemistry	301
		RFAV3	Rare Flow Antigen Validation, CD30	229
CD34		CBT	Cord Blood Testing	241
	X	FL4	Flow Cytometry CD34+	224
		SCP	Stem Cell Processing	241
CD45	X	FL, FL1	Lymphocyte Subset Immunophenotyping	224
CD45 (cont.)		FL4	Flow Cytometry CD34+	224
		SCP	Stem Cell Processing	241
CD49d		ZAP70	ZAP-70 Analysis by Flow Cytometry	230
CD103		RFAV2	Rare Flow Antigen Validation, CD103	229
CD117 (c-kit)		PM1	Immunohistochemistry	297
CEA		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
	X	K/KK	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
		PM5	Immunohistochemistry Tissue Microarray Series	297
Cell-free DNA		CFDNA	Cell-Free Tumor DNA	278
		NIPT	Noninvasive Prenatal Testing	90
Ceruloplasmin	X	S2, S4	Immunology, Special	217
CFU-GM		CBT	Cord Blood Testing	241
		SCP	Stem Cell Processing	241
CH50		CH50	Total Hemolytic Complement	223
Chlamydia trachomatis	X	**HC1**	*C. trachomatis* by DFA	186
	X	**HC3**	*C. trachomatis* by EIA	186
	X	**HC6, HC6X**	*C. trachomatis*/GC by Nucleic Acid Amp	191
	X	**HC7**	*C. trachomatis*/GC DNA by NAA	191
	X	**STIM**	Sexually Transmitted Infection Detection, Molecular	191
		VR1	Virology Culture	200
Chlamydia pneumoniae		IDN, IDO	Nucleic Acid Amp, Organisms	207
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
Chlordiazepoxide		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Chloride	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Chloride (cont.)		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN13C	Blood Gas CVL	128
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		POC10, POC11	POC Competency Blood Gases	53
Chloride, sweat	X	SW1, SW2, SW4	Sweat Analysis Series	81
Chloride, urine		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
Chloride, vitreous fluid		VF	Vitreous Fluid, Postmortem	106
Chlorpheniramine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Cholesterol		ABL	Accuracy-Based Lipids	116
	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
	X	LCW	Chemistry–Ltd, Waived	66
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Chromium	X	R	Trace Metals	80
Chromium, urine		TMU	Trace Metals, Urine	108
Chromium, whole blood		TMWB	Trace Metals, Whole Blood	108
Chromosomal abnormalities	X	CY, CYBK	Cytogenetics	256
Citalopram		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Citrate		KSA	Kidney Stone Risk Assessment	71
Citrobacter spp.		JIP	Joint Infection Panel	208
Citrulline, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
CK isoenzymes	X	**CRTI, HCRTI**	Cardiac Markers	62
CK-MB (immunochemical)	X	**CRT, CRTI, HCRT, HCRTI**	Cardiac Markers	62
		CRTQ	QCC, Cardiac Markers	40
		HCRQ	QCC, High-Sensitivity Cardiac Markers	41
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
	X	**PCARM/ PCARMX**	Point-of-Care Cardiac Markers	67
		POC12	POC Cardiac Markers Competency	53
CK2 (MB)		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Clinical pathology improvement program		CPIP/CPIP1	Quality Management, Education	14
Clobazam		DFC	Drug–Facilitated Crime	113
Clomipramine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Clonazepam		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Clonidine		DFC	Drug–Facilitated Crime	113
***Clostridioides (Clostridium) difficile* antigen**		CDF2	*Clostridioides (Clostridium) difficile* Detection	186
	X	**CDF5**	*Clostridioides (Clostridium) difficile* Detection	186
	X	**D**	Bacteriology–Antigen Detection	177
		SP, SPN	Stool Pathogens–Rapid and Molecular	189
Clostridioides (Clostridium) difficile toxin		CDF2	*Clostridioides (Clostridium) difficile* Detection	186

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Clostridioides (Clostridium) difficile toxin (cont.)		CDF5	*Clostridioides (Clostridium) difficile* Detection	186
		D	Bacteriology–Antigen Detection	177
		GIP	Gastrointestinal Panel	212
		GIP5	Gastrointestinal Panel	212
		SP, SPN	Stool Pathogens–Rapid and Molecular	189
Clozapine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
		ZE	Therapeutic Drug Monitoring, Extended	60
CMV (see Cytomegalovirus)				
c-Myc/Bcl-2 immunohistochemistry tumor markers		MYCB	c-Myc/Bcl-2 Immunohistochemistry TMA	303
CO_2 (see Carbon dioxide)				
Cobalt		TMU	Trace Metals, Urine	108
Cobalt, whole blood		TMWB	Trace Metals, Whole Blood	108
Cocaethylene		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Cocaine		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Codeine		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
Compatibility testing	X	**J, JAT**	Transfusion Medicine	232–233
		JATE1	Transfusion Medicine, Automated, Educational	233
Compatibility testing (cont.)		TMCA	Transfusion Medicine, Competency Assessment	240
Complement C3	X	**IG/IGX**	Immunology, General	216
		LN7	Immunology CVL	126
Complement C4	X	**IG/IGX**	Immunology, General	216
		LN7	Immunology CVL	126
Complexed PSA	X	K/KK	Ligand–General	84
COMT		PGX1	Pharmacogenetics	266
Conductivity, sweat	X	SW1, SW2, SW4	Sweat Analysis Series	81
Connexin 26 (*GJB2* gene)	X	MGL3	Molecular Genetics	264–265
Copper	X	R	Trace Metals	80
Copper, urine		TMU	Trace Metals, Urine	108
Copper, whole blood		TMWB	Trace Metals, Whole Blood	108
Coproporphyrins	X	N/NX	Urine Chemistry–Special	71
Copy number variant		CNVST	Copy Number Variant–Solid Tumor	275
Coronavirus		COV2	SARS-CoV-2 Molecular	202
		COVAG	SARS-CoV-2 Antigen	203
	X	**COVM**	SARS-CoV-2 Molecular, 5 Challenge	203
		COVS	SARS-CoV-2 Serology	222
	X	**CVAG**	SARS-CoV-2 Antigen, 5 Challenge	203
		ID2	Nucleic Acid Amp, Respiratory	204
	X	**ID3**	Nucleic Acid Amplification, Respiratory Limited	204
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
Cortisol		ABS	Accuracy-Based Testosterone and Estradiol	117
	X	**C1, C3/C3X, CZ/CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
Cortisol, salivary		SALC	Salivary Cortisol	79
Cortisol, urinary free	X	N/NX	Urine Chemistry–Special	71
Cotinine		NTA	Nicotine and Tobacco Alkaloids	107
		OFD	Oral Fluid for Drugs of Abuse	105

Analyte/Procedure	LAP ENR	Program Code	Description	Page
COVID-19 (see SARS-CoV-2)				
C-peptide		ABGIC	Accuracy-Based Glucose, Insulin, and C-Peptide	119
	X	ING	Insulin, Gastrin, C-Peptide, PTH	88
		LN46	C-Peptide/Insulin CVL	135
C-reactive protein (CRP)	X	CRP, IL	Immunology	216
		LN12	C-Reactive Protein CVL	128
C-reactive protein, high-sensitivity (hsCRP)	X	HSCRP	High-Sensitivity C-Reactive Protein	66
		LN21	High-Sensitivity C-Reactive Protein CVL	130
Creatine kinase (CK)	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Creatinine	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN24	Creatinine Accuracy Cal CVL	131
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		SCO	Serum Carryover	138
Creatinine, urine		ABU	Accuracy-Based Urine	117
		BU	Bone and Mineral, Urine	87
	X	CD	Cadmium	107
		DAI	Urine Drug Adulterant/ Integrity Testing	103
		LN20	Urine Albumin CVL	130
		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
Creatinine, urine (cont.)		UDC	Forensic Urine Drug Testing, Confirmatory	104
	X	UMC	Urine Albumin/ Creatinine	159
Creatinine, vitreous fluid		VF	Vitreous Fluid, Postmortem	106
Creatinine, whole blood	X	**WBCR**	Whole Blood Creatinine	69
Crossmatching		EXM, EXM2	Electronic Crossmatch	233–234
	X	**J, JAT**	Transfusion Medicine	232–233
	X	MXC	HLA Analysis, Class I/II	250
		TMCA	Transfusion Medicine, Competency Assessment	240
Cryptococcal antigen detection	X	CRYP	Cryptococcal Antigen Detection	195
	X	F	Mycology and Aerobic Actinomycetes	194
	X	F1	Yeast	194
Cryptococcus neoformans/gatti		IDME	Meningitis/Encephalitis Panel	209
		IDM5	Meningitis/Encephalitis Panel	209
Cryptosporidium		GIP	Gastrointestinal Panel	212
		GIP5	Gastrointestinal Panel	212
***Cryptosporidium* immunoassay, preserved specimen**	X	**P, P3, P4, P5**	Parasitology	197
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Crystal identification, body fluid		BFC	Body Fluid Crystals	155
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CSF antigen detection	X	**D**	Bacteriology	177
CSF IgG calculations		OLI	CSF Chemistry and Oligoclonal Bands	76
C-telopeptide (CTX)		BMV5	Bone Markers and Vitamin	88
Cutibacterium avidum/ granulosum		JIP	Joint Infection Panel	208
Cyclic citrullinated peptide antibody		CCP	Anti-Cyclic Citrullinated Peptide Antibody	220
Cyclobenzaprine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Cyclospora cayatanensis		GIP	Gastrointestinal Panel	212
		GIP5	Gastrointestinal Panel	212

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		LN31	Immunosuppressive Drugs CVL	132
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CYP2C9	X	PGX	Pharmacogenetics	266
CYP2C19	X	PGX	Pharmacogenetics	266
CYP2D6		PGX	Pharmacogenetics	266
CYP3A4		PGX	Pharmacogenetics	266
CYP3A5		PGX	Pharmacogenetics	266
CYP4F2		PGX	Pharmacogenetics	266
Cystatin C		CYS	Cystatin C	76
		LN49	Cystatin C CVL	135
Cystic fibrosis (*CFTR* gene)	X	MGL2, MGL5	Molecular Genetics	264–265
Cystine		KSA	Kidney Stone Risk Assessment	71
Cystine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Cytogenomic microarray		CYCGH	Constitutional Microarray Analysis	258
		CYCMA	Cytogenomic Microarray Analysis for Oncologic Abnormality	258
Cytology proficiency testing (see Cytopathology GYN proficiency testing)				
Cytomegalovirus (CMV)		ID1	Nucleic Acid Amp, Viruses	201
		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
		LN38	CMV Viral Load CVL	133
		VLS, VLS2	Viral Load	206
	X	VM3	Viral Markers–Series 3	244
	X	**VR1**	Virology Culture	200
	X	**VR2**	Virology by DFA	200
	X	VR3	Infectious Disease Serology	213
Cytopathology GYN education		PAPCE1	PAP Edu, Conventional	309
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		CGL	Coagulation, Limited	166
D-dimer, quantitative	X	CGDF	Coagulation, D-dimer/ FDP	166
	X	CGL	Coagulation, Limited	166
		CGLQ	QCC, Coagulation, Limited	47
		LN42	D-dimer CVL	134
	X	PCARM/ PCARMX	Point-of-Care Cardiac Markers	67
		POC12	POC Cardiac Markers Competency	53
Delta-8-THC		THCB	Blood Cannabinoids	111
Delta-9-THC		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		THCB	Blood Cannabinoids	111
		UT	Urine Toxicology	100
Delta-9-THC-COOH		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		THCB	Blood Cannabinoids	111
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
		UTCO	Urine Toxicology Carryover	138
Demoxepam		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
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Desipramine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
	X	ZT	TDM, Special	61
Desmethylclomipramine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Desmethylsertraline		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Dextromethorphan		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
DHEA sulfate	X	Y/YY	Sex Hormones	86
DIA (see Dimeric inhibin A)				
Diazepam		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UT	Urine Toxicology	100
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		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
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		VPBS	Virtual Peripheral Blood Smear	149
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Digoxin	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN3	TDM CVL	125
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		CZQ	QCC, Chemistry and TDM	39
Dihydrocodeine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Diltiazem		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Dilute prothrombin time		CGE/CGEX	Coagulation, Extended	167
Dilute Russell's viper venom time		CGS1	Coag Special, Series 1	168
Dimeric inhibin A (DIA)	X	FP/FPX	Maternal Screen	89
Diphenhydramine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Diphenylhydantoin			See Phenytoin	
Direct antiglobulin testing	X	DAT	Direct Antiglobulin Testing	238
		TMCAD	Transfusion Medicine, Competency Assessment	240
Direct antiglobulin testing, automated		ADAT	Direct Antiglobulin Testing–Automated	238
Direct bilirubin	X	C1, C3/C3X, C4, CZ/ CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
	X	NB, NB2	Neonatal Bilirubin	67
Disease association/ drug risk		DADR1, DADR2	Disease Association/ Drug Risk	253
Disopyramide		CZ/CZX/ CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39

Analyte/Procedure	LAP ENR	Program Code	Description	Page
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DNA analysis	X	DML	HLA Molecular Typing	250
	X	PARF	Parentage/Relationship	247
DNA content/cell cycle analysis		FL, FL2	Flow Cytometry	224
DNA extraction and amplification		MHO5	Molecular Oncology Hematologic	276, 280
DNA fingerprinting		IDN, IDO	Nucleic Acid Amp, Organisms	207
DNA mismatch repair		HQMMR	HistoQIP Mismatch Repair IHC	296
		MMR	DNA Mismatch Repair	301
DNA sequencing		SEC, SEC1	DNA Sequencing	266
Dopamine	X	N/NX	Urine Chemistry–Special	71
Doxepin		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Doxylamine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
DPYD		PGX3	Pharmacogenetics	266
Duloxetine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
EBV (see Epstein-Barr virus)				
Ecgonine ethyl ester		FTC	Forensic Toxicology, Criminalistics	109
Ecgonine methyl ester		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
***E. coli* O157 (see *Escherichia coli* O157)**				
eGFR		LN24	Creatinine Accuracy CVL	131
EGFR (see Epidermal growth factor receptor)				
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Electrophoresis	X	HG	Hemoglobinopathy	147
		LPE	Lipoprotein Electrophoresis	78
	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
		SPE	Protein Electrophoresis	78
		UBJP	Urine Bence Jones Protein	78
Elution, antibody		ELU	Eluate	239
		TMCAE	Eluate Competency Assessment	240
Embryology		EMB	Embryology	163
Entameoba histolytica		GIP, GIP5	Gastrointestinal Panel	212
Enteroaggregative *E. coli* (EAEC)		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
***Enterobacter cloacae* complex**	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Enterococcus faecalis		JIP	Joint Infection Panel	208
Enterococcus faecium		JIP	Joint Infection Panel	208
Enteropathogenic *E. coli* (EPEC)		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Enterotoxigenic *E. coli* (ETEC)		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Enterovirus		ID1	Nucleic Acid Amp, Viruses	201
		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
	X	**IDR**	Infectious Disease, Respiratory Panel	210
	X	**VR1**	Virology Culture	200
Eosinophils, urine		SCM2	Special Clinical Microscopy	158
Ephedrine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Epidermal growth factor receptor (*EGFR*)	X	EGFR	Mutation Testing	278
	X	MTP	Multigene Tumor Panel	279
Epinephrine	X	N/NX	Urine Chemistry–Special	71
Epithelial cells, urine, semiquantitative		UAA1	Automated Urinalysis	155
Epstein-Barr virus (EBV)		ID1	Nucleic Acid Amp, Viruses	201
	X	ISH	In Situ Hybridization	276
		VLS, VLS2	Viral Load	206
		VR3	Antibody Detection–Infectious Disease Serology	213
ER by immunohistochemistry	X	PM2	ER, PgR by Immunohistochemistry	299
ER by immunohistochemistry, interpretation only		HERI	HER2 and ER Immunohistochemistry Interpretation Only	300

Analyte/Procedure	LAP ENR	Program Code	Description	Page
ERBB2 (HER2) gene amplification by ISH	X	ISH2	In Situ Hybridization	276
Erythrocyte sedimentation rate		ESR, ESR1, ESR2, ESR3	Erythrocyte Sedimentation Rate	145
Erythropoietin		EPO	Erythropoietin	90
Escherichia coli	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
***Escherichia coli* K1**		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
***Escherichia coli* O157**		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Estazolam		DFC	Drug–Facilitated Crime	113
Estradiol		ABS	Accuracy-Based Testosterone and Estradiol	117
		LN8	Reproductive Endocrinology CVL	127
	X	Y/YY	Sex Hormones	86
Estriol, unconjugated (uE3)	X	FP/FPX	Maternal Screen	89
	X	Y/YY	Sex Hormones	86
Estrogen receptors by immunohistochemistry	X	PM2	ER, PgR by Immunohistochemistry	299
Estrogen receptors by immunohistochemistry, interpretation only		HERI	HER2 and ER Immunohistochemistry Interpretation Only	300
Ethanol	X	**AL1**	Whole Blood Alcohol/ Volatiles	106
	X	**AL2**	Serum Alcohol/Volatiles	106
		LN11	Serum Ethanol CVL	127
Ethanol, urine		UDS, UDS6	Urine Drug Screen	102
Ethanol, vitreous fluid		VF	Vitreous Fluid, Postmortem	106
Ethosuximide	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Ethyl glucuronide (EtG)		ETB	Ethanol Biomarkers	107
Ethyl sulfate (EtS)		ETB	Ethanol Biomarkers	107
Ethylene glycol		AL1	Whole Blood Alcohol/ Volatiles	106
		AL2	Serum Alcohol/Volatiles	106
Etizolam		DFC	Drug–Facilitated Crime	113
Everolimus		EV	Everolimus	60
Factor II		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor II (*F2* gene)	X	MGL1	Molecular Genetics	264–265
	X	TPM	Thrombophilia Mutations	267

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Factor V		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor V Leiden (*F5* gene)	X	MGL1	Molecular Genetics	264–265
	X	TPM	Thrombophilia Mutations	267
Factor VII		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor VIII		CGE/CGEX	Coagulation, Extended	167
		CGS3	Coag Special, Series 3	168
		ECF	Expanded Coagulation Factors	167
Factor VIII inhibitor		CGS3	Coag Special, Series 3	168
Factor IX		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor X		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor XI		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor XII		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Factor XIII		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Familial dysautonomia (*ELP1* gene)	X	MGL4	Molecular Genetics	264–265
Fanconi anemia, complementation grp. C (*FANCC* gene)	X	MGL4	Molecular Genetics	264–265
Fecal calprotectin		FCAL	Fecal Calprotectin	77
Fecal fat, qualitative		FCFS	Fecal Fat	77
Fecal lactoferrin		FLAC	Fecal Lactoferrin	187
Fecal occult blood		OCB	Occult Blood	158
		OCBQ	QCC, Occult Blood	46
Fentanyl		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Fluoxetine (cont.)		T	Toxicology	100
		UT	Urine Toxicology	100
Folate, RBC	X	FOL	RBC Folate	90
Folate, serum	X	K/KK	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
Follicle-stimulating hormone (FSH)		ABS	Accuracy-Based Testosterone, Estradiol	117
		LN8	Reproductive Endocrinology CVL	127
	X	Y/YY	Sex Hormones	86
Fondaparinux		FNPX	Anticoagulant Monitoring, Fondaparinux	169
Forensic pathology		FR/FR1	Forensic Pathology	316
Forensic toxicology		FTC	Forensic Toxicology, Criminalistics	109
Fragile X (*FMR1* gene)	X	MGL1	Molecular Genetics	264–265
Free beta hCG		FP1B	First Trimester Maternal Screening, Free Beta	89
Free Kappa/Lambda ratio		SFLC	Serum Free Light Chains	223
Free testosterone		Y	Sex Hormones	86
Friedreich ataxia (*FXN* gene)	X	MGL2	Molecular Genetics	264–265
Fructosamine		FT	Fructosamine	77
Fungal culture		CBT	Cord Blood Testing	241
		SCP	Stem Cell Processing	241
Fungal serology		FSER	Fungal Serology	196
Fungus identification	X	**F**	Mycology and Aerobic Actinomycetes	194
	X	**F1**	Yeast	194
	X	**F3**	*Candida* Culture	195
G6PD		PGX1	Pharmacogenetics	266
Gabapentin		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
		ZE	Therapeutic Drug Monitoring, Extended	60
Galactomannan		FGAL	Galactomannan	195
Gamma globulin		M, OL1	CSF Chemistry	76
		SPE	Serum Electrophoresis	78
Gamma glutamyl transferase (GGT)	X	C1, C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Gamma glutamyl transferase (GGT) (cont.)		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Gamma hydroxybutyrate (GHB)		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
***Gardnerella vaginalis*, DNA probe**	X	**VS**	Vaginitis Screen	190
Gastric occult blood		GOCB	Gastric Occult Blood	156
Gastric pH		GOCB	Gastric Occult Blood	156
Gastrin	X	ING	Insulin, Gastrin, C-Peptide, PTH	88
Gaucher disease (*GBA* gene)	X	MGL4	Molecular Genetics	264–265
GDH Antigen		CDF2	*Clostridioides (Clostridium) difficile* Detection	186
	X	**CDF5**	*Clostridioides (Clostridium) difficile* Detection	186
	X	**D**	Bacteriology	177
Genomic copy number array		CYCGH	Constitutional Microarray Analysis	258
Gentamicin	X	**CZ/CZX/CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN3	TDM CVL	125
Giardia		GIP	Gastrointestinal Panel	212
		GIP5	Gastrointestinal Panel	212
***Giardia* immunoassay, preserved specimen**	X	**P, P3, P4, P5**	Parasitology	197
Giemsa stain	X	**BP**	Blood Parasite	198
	X	**P**	Parasitology	197
Glioma by FISH		CYJ	Fluorescence In Situ Hybridization and Interpretation on Site, Brain/Glioma Tissue	257
Glucose		ABGIC	Accuracy-Based Glucose, Insulin, and C-Peptide	119
	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	**C1, C3/C3X, C4, CZ/CZX/CZ2X**	Chemistry and TDM	56–58

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Glucose (cont.)		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN13C	Blood Gas CVL	128
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Glucose, CSF	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
Glucose, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
	X	HCC2	Waived Combination	68
		LN6	Urine Chemistry CVL	126
		POC3	POC Urine Dipstick Competency	52
	X	U	Urine Chemistry–General	70
Glucose, vitreous fluid		VF	Vitreous Fluid, Postmortem	106
Glucose, whole blood	X	HCC	Waived Combination	68
		HCC2	Waived Combination	68
	X	LCW	Chemistry–Ltd, Waived	66
		LN17	Whole Blood Glucose CVL	129
		POC2	POC Glucose Competency	52
		POC7	POC/Waived Glucose and Hemoglobin Competency	52
		WBGQ	QCC, Whole Blood Glucose	39
Glucose-6-phosphate dehydrogenase, qualitative and quantitative		G6PDS	Glucose-6 Phosphate Dehydrogenase	77
Glutamic acid, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Glutamine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Glutaraldehyde, urine		DAI	Urine Drug Adulterant/ Integrity Testing	103
Glycated serum albumin		GSA	Glycated Serum Albumin	66
Glycine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Glycogen storage disease type Ia (*G6PC* gene)	X	MGL4	Molecular Genetics	264–265
Glycohemoglobin	X	GH2, GH5, GH5I	Hemoglobin A_{1c}	65
		GHQ	QCC, Hemoglobin A_{1c}	40
		LN15	Hemoglobin A_{1c} CVL	128
Glycosaminoglycans (mucopolysaccharides)	X	BGL	Biochemical Genetics	259
Gram stain	X	**D**	Bacteriology	177
	X	**D2, D3, RMC**	Throat, Urine, GC Cultures	179–180
	X	**D5**	Gram Stain	180
		VGS1	Virtual Gram Stain Basic	182
		VGS2	Virtual Gram Stain Advanced	182
		VS2	Vaginitis Screen, Virtual Gram stain	191
Group A *Streptococcus* antigen detection	X	**D**	Bacteriology	177
	X	**D6**	Rapid Group A Strep	182
	X	D9	Rapid Group A Strep, Waived	182
	X	MC4	Urine Colony Count Combination	180
		POC4	POC Strep Screen Competency	52
	X	**RMC**	Routine Microbiology Combination	180
Group B *Streptococcus*	X	**D8**	Group B Strep	183
Growth hormone	X	Y/YY	Sex Hormones	86
GYN cytopathology (see Cytopathology GYN proficiency testing)				
GYN cytopathology education (see Cytopathology GYN education)				
Haemophilus influenzae		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Haptoglobin	X	IG/IGX	Immunology, General	216
	X	S2/S4	Immunology, Special	217
HBeAg	X	**VM2**	Viral Markers, Series 2	244
HBsAg	X	**VM1**	Viral Markers, Series 1	244
HBV (see Hepatitis B virus)				
HCV (see Hepatitis C virus)				
HDL cholesterol		ABL	Accuracy-Based Lipid	116

Analyte/Procedure	LAP ENR	Program Code	Description	Page
HDL cholesterol (cont.)	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	LCW	Chemistry–Ltd, Waived	66
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Helicobacter pylori	X	HPS	*H. pylori* Antigen, Stool	187
	X	S2, S4	*H. pylori* IgG Antibody	217
	X	S5	*H. pylori* IgG Antibody	217
	X	VR3	*H. pylori* IgG Antibody	213
Helicobacter pylori breath test		HPBT	*H. pylori* Breath Test	77
Hematocrit	X	**AQH, AQIS**	Critical Care Blood Gas	94, 95
		AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	**FH1-FH4, FH9-FH10, FH13, FH16-FH17**	Hematology Automated Differential	140
		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
	X	HCC2	Waived Combination	68
	X	**HE**	Basic Hematology	140
		POC10, POC11	POC Competency Blood Gases	53
		SCP	Stem Cell Processing	241
	X	**SO**	Blood Oximetry	97
		SOQ	QCC, Blood Oximetry	43
Hematologic disorders by FISH		CYF	Fluorescence In Situ Hybridization and Interpretation on Site	256
Hematology bone marrow case studies		BMD	Bone Marrow Cell Differential	145
Hematology case studies		VPBS	Virtual Peripheral Blood Smear	149
Hematology peripheral blood case studies		EHE1	Expanded Virtual Peripheral Blood Smear	149
Hematopathology online education		HPATH, HPATH1	Hematopathology Online Education	150
Hemochromatosis (*HFE* gene)	X	MGL1	Molecular Genetics	264–265
Hemocytometer fluid count	X	HFC, HFCI	Hemocytometer Fluid Count	157
Hemoglobin	X	**FH1-FH4, FH9-FH10, FH13, FH16-FH17**	Hematology Automated Differential	140
Hemoglobin (cont.)		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
	X	HCC	Waived Combination	68
	X	HCC2	Waived Combination	68
	X	**HE**	Basic Hematology	140
		LN9	Hematology CVL	127
		POC7	POC/Waived Glucose and Hemoglobin Competency	52
		SCP	Stem Cell Processing	241
	X	**SO**	Blood Oximetry	97
		SOQ	QCC, Blood Oximetry	43
Hemoglobin A_{1c}	X	GH2, GH5, GH5I	Hemoglobin A_{1c}	65
		GHQ	QCC, Hemoglobin A_{1c}	40
		LN15	Hemoglobin A_{1c} CVL	128
Hemoglobin A2 quantitation	X	HG	Hemoglobinopathy	147
Hemoglobin electrophoresis	X	HG	Hemoglobinopathy	147
Hemoglobin, estimated	X	**AQH, AQIS**	Critical Care Blood Gas	94, 95
		AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
		POC10, POC11	POC Competency Blood Gases	53
Hemoglobin F quantitation	X	HG	Hemoglobinopathy	147
Hemoglobin, plasma		PHG	Plasma Hemoglobin	78
Hemoglobin S/C	X	HGM	Hemoglobinopathies Genotyping	263
	X	MGL2	Molecular Genetics	264–265
Hemoglobin, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
	X	HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
Hemolytic complement, total		CH50	Total Hemolytic Complement	223
Hemosiderin, urine		SCM1	Special Clinical Microscopy	158
Heparin assay		CGS4	Coag Special, Series 4	168
Heparin-induced thrombocytopenia		CGE/CGEX	Coagulation, Extended	167
		CGS5	Coag Special, HIT	168
Heparin, low molecular weight		LN36	Heparin CVL	133
Heparin, unfractionated		LN36	Heparin CVL	133
Heparin/platelet Factor IV		CGS5	Coag Special, HIT	168

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Influenza virus (cont.)		ID3Q	QCC, Nucleic Acid Amplification, Respiratory Limited	48
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
		POC8	POC Influenza A/B Ag	52
	X	**VR1**	Virology Culture	200
	X	**VR2**	Viral Antigen Detection by DFA	200
	X	**VR4**	Viral Antigen Detection by EIA and Latex	200
Informatics		ICBE, ICBE1	Informatics Essentials for Pathologists	15
Inherited cancer sequencing panel		ICSP	Inherited Cancer Sequencing Panel	263
Instrument function		I	Instrumentation	136
Instrument linearity		I	Instrumentation	136
		LN11	Serum Ethanol CVL	127
		LN12	C-Reactive Protein CVL	128
		LN13, LN13C	Blood Gas CVL	128
		LN15	Hemoglobin A_{1c} CVL	128
		LN16	Homocysteine CVL	129
		LN17	Whole Blood Glucose CVL	129
		LN18, LN19	Reticulocyte CVL	129
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN20	Urine Albumin CVL	130
		LN21	High-Sensitivity C-Reactive Protein CVL	130
		LN22	Flow Cytometry CVL	130
		LN23	PSA CVL	130
		LN24	Creatinine Accuracy CVL	131
		LN25	Troponin I CVL	131
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		LN3	TDM CVL	125
		LN30	BNP CVL	131
		LN31	Immunosuppressive Drugs CVL	132
		LN32	Ammonia CVL	132
		LN33	Serum Myoglobin CVL	132
		LN34	Tumor Markers CVL	132
		LN35	Thrombophilia CVL	133
		LN36	Heparin CVL	133
		LN37	von Willebrand Factor Ag CVL	133
		LN38	CMV Viral Load CVL	133
		LN39	HIV Viral Load CVL	133

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Instrument linearity (cont.)		LN40	Vitamin D CVL	134
		LN41	Procalcitonin CVL	134
		LN42	D-dimer CVL	134
		LN44	Fibrinogen CVL	134
		LN45	HCV Viral Load CVL	133
		LN46	C-Peptide/Insulin CVL	135
		LN47	High-Sensitivity Troponin T CVL	135
		LN48	High-Sensitivity Troponin I CVL	135
		LN49	Cystatin C CVL	135
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
		LN6	Urine Chemistry CVL	126
		LN7	Immunology CVL	126
		LN8	Reproductive Endocrinology CVL	127
		LN9	Hematology CVL	127
Insulin		ABGIC	Accuracy-Based Glucose, Insulin, and C-Peptide	119
	X	ING	Insulin, Gastrin, C-Peptide, PTH	88
		LN46	C-Peptide/Insulin CVL	135
Interleukin (IL)-1 beta		CTKN	Cytokines	220
International normalized ratio (INR)	X	CGB	Basic Coagulation	166
	X	CGL	Coagulation, Limited	166
		CGS1	Coag Special, Series 1	168
		CGS4	Coag Special, Series 4	168
		POC6	POC PT/INR, CoaguChek XS Plus	52
		WP10	Whole Blood Coagulation	173
	X	WP3, WP4, WP6, WP9	Whole Blood Coagulation	173
Ionized calcium	X	AQ, AQH, AQIS	Critical Care Blood Gas	94
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		POC10, POC11	POC Competency Blood Gases	53
Iron	X	**C1, C3/C3X, CZ/CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		IFS	Interfering Substances	137

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Iron (cont.)		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Isoleucine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Isopropanol	X	AL1	Whole Blood Alcohol/ Volatiles	106
	X	AL2	Serum Alcohol/Volatiles	106
Itraconazole		AFD	Antifungal Drugs Monitoring	111
JC virus		ID1T	Nucleic Acid Amp, JC and BK	201
Jo-1 (antihistidyl t-RNA synthetase)		RDS	Rheumatic Disease Special	221
Kappa/Lambda	X	ISH	In Situ Hybridization	276
Kappa/Lambda ratio		IG/IGX	Immunology, General	216
		S2, S4	Immunology, Special	217
Karyotype nomenclature	X	CY, CYBK	Cytogenetics	256
Ketamine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Ketones, serum		KET	Ketones	66
Ketones, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
	X	HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
Ki-67		KI67	Ki-67 Immunohistochemistry TMA	303
Kidney stone risk assessment		KSA	Kidney Stone Risk Assessment	71
Kingella kingae		JIP	Joint Infection Panel	208
KIT	X	KIT	*KIT/PDGFRA*	278
	X	MTP	Multigene Tumor Panel	279
Klebsiella aerogenes	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Klebsiella oxytoca	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
***Klebsiella pneumoniae* group**	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
KOH prep (skin)	X	CMMP	Clinical Microscopy, Misc	152
KOH prep (skin or vaginal)	X	FSM	Fungal Smear	196
KRAS	X	KRAS	Colorectal Cancer Mutation	278
	X	MTP	Multigene Tumor Panel	279

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Laboratory preparedness exercise		LPX	Laboratory Preparedness Exercise	188
Lacosamide		ZE	Therapeutic Drug Monitoring, Extended	60
Lactate	X	AQ, AQH, AQIS	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	C3/C3X, CZ/ CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		LN13C	Blood Gas CVL	128
		POC10, POC11	POC Competency Blood Gases	53
Lactate, CSF	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
Lactate dehydrogenase (LD)	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		SCO	Serum Carryover	138
Lactate dehydrogenase (LD), CSF	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
Lamellar body count		LBC	Lamellar Body Count	157
Lamotrigine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
		ZE	Therapeutic Drug Monitoring, Extended	60
Large unstained cells (LUC)		FH4	Hematology Automated Differential	140
		FH4Q	QCC, Hematology	62
LD isoenzymes	X	**CRTI, HCRTI**	Cardiac Markers	62
LD1/LD2 ratio	X	**CRTI, HCRTI**	Cardiac Markers	62
LDL cholesterol, calculated	X	ABL	Accuracy-Based Lipid	116
LDL cholesterol, measured	X	ABL	Accuracy-Based Lipid	116

Analyte/Procedure	LAP ENR	Program Code	Description	Page
LDL cholesterol, measured (cont.)	X	C1, C3/C3X, C4, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
LDL cholesterol, waived	X	LCW	Chemistry–Ltd, Waived	66
Lead (blood)	X	**BL**	Blood Lead	107
Lead, urine		TMU	Trace Metals, Urine	108
Legionella pneumophila antigen		LBAS	*Legionella* Ag	183
Legionella pneumophila		IDN, IDO	Nucleic Acid Amp, Organisms	207
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
Leucine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Leukemia/lymphoma immunophenotype		FL3	Flow Cytometry	224
Leukemia/lymphoma, interpretation only		FL5	Flow Cytometry Interpretation Only	225
Leukocyte esterase, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
	X	HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
Leukocyte-reduced platelets		TRC	Transfusion-Related Cell Count	238
Leukocyte-reduced RBC		TRC	Transfusion-Related Cell Count	238
Leukocyte, stool, Wright-Giemsa		CMMP	Clinical Microscopy, Misc	152
Levetiracetam		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
		ZE	Therapeutic Drug Monitoring, Extended	60
Levorphanol		T	Toxicology	100
		UT	Urine Toxicology	100
Lidocaine	X	CZ/CZX/CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FTC	Forensic Toxicology, Criminalistics	109
		LN3	TDM CVL	125
		T	Toxicology	100
		UT	Urine Toxicology	100
Lipase	X	C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Lipids		ABL	Accuracy-Based Lipid	116
	X	**C1, C3/C3X, CZ/CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Lipoprotein (a)	X	ABL	Accuracy-Based Lipid	116
	X	C1, C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Lipoprotein-associated phospholipase		PLA	Lp-PLA_2	77
Lipoprotein electrophoresis		LPE	Lipoprotein Electrophoresis	78
Listeria monocytogenes		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
Lithium	X	**C1, C3/C3X, CZ/CZX/CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN3	TDM CVL	125
Liver-kidney microsomal antibody		LKM	Liver-Kidney Microsomal Antibody	221
Lorazepam		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Meperidine (cont.)		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Mephedrone		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Meprobamate		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Meprobamate/ Carisoprodol		UDS, UDS6	Urine Drug Screen	102
Mercury, urine		TMU	Trace Metals, Urine	108
Mercury, whole blood		TMWB	Trace Metals, Whole Blood	108
Metabolic disease testing		BGL	Biochemical Genetics	259
Meta-chlorophenylpiperazine (m-CPP)		DFC	Drug–Facilitated Crime	113
		T	Toxicology	100
		UT	Urine Toxicology	100
Metanephrine	X	N/NX	Urine Chemistry–Special	71
Methadone		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Methadone metabolite (EDDP)		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Methamphetamine		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Methamphetamine (cont.)		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Methanol	X	AL1	Whole Blood Alcohol/ Volatiles	106
	X	AL2	Serum Alcohol/Volatiles	106
Methaqualone		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
Methemoglobin	X	SO	Blood Oximetry	97
		SOQ	QCC, Blood Oximetry	43
Methionine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Methicillin-resistant *Staphylococcus aureus* (MRSA)		BCS1	Blood Culture *Staphylococcus aureus*	183
		IDN, IDO	Nucleic Acid Amp, Organisms	207
		MRS	Methicillin-resistant S. *aureus* Screen	187
		MRS2M	MRSA Screen, Molecular, 2 Challenge	187
	X	**MRS5**	Methicillin-resistant S. *aureus* Screen	188
	X	**MRS5M**	MRSA Screen, Molecular, 5 Challenge	188
Methotrexate	X	CZ/CZX/ CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Methylenedioxy-amphetamine (MDA)		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
Methylenedioxyethyl-amphetamine (MDEA)		UDC	Forensic Urine Drug Testing, Confirmatory	104
Methylenedioxymeth-amphetamine (MDMA)		DFC	Drug–Facilitated Crime	113

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Methylenedioxymeth-amphetamine (MDMA) (cont.)		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Methylenedioxy-pyrovalerone (MDPV)		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Methylenetetra-hydrofolate reductase (*MTHFR* gene)	X	MGL1	Molecular Genetics	264–265
Methylmalonic acid		MMA	MMA and Active B_{12}	84
Methylphenidate		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Metoprolol		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
MGMT		GLI	Glioma	279
Microalbumin, urine		LN20	Urine Albumin CVL	130
	X	U	Urine Chemistry–General	70
	X	UMC	Urine Albumin (Microalbumin)/ Creatinine	159
Microarray, constitutional disorders		CYCGH	Constitutional Microarray Analysis	258
Microarray, neoplastic disorders		CYCMA	Cytogenomic Microarray Analysis for Oncologic Abnormality	258
Microsatellite instability	X	MSI	Microsatellite Instability	276
Microtiter plate reader linearity		I	Instrumentation	136
Midazolam		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
Mirtazapine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Mite identification		TMO	Ticks, Mites, and Other Arthropods	198
Mitochondrial cytopathies	X	IMD3	Mitochondrial Cytopathies	265
Mitochondrial DNA deletion syndromes	X	IMD1	Mitochondrial DNA Deletion Syndromes	265
Mitragynine (Kratom)		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Mixing studies, aPTT		CGE/CGEX	Coagulation, Extended	167
		CGS1	Coag Special, Series 1	168
Mixing studies, PT		CGE/CGEX	Coagulation, Extended	167
		CGS1	Coag Special, Series 1	168
MLH1 promoter methylation analysis	X	MSI	Defective DNA Mismatch Repair/ Hereditary Nonpolyposis Colorectal Cancer (HNPCC)	276
Modified acid-fast stain	X	P, P3, P4, P5	Parasitology	197
Mold identification	X	**F**	Mycology and Aerobic Actinomycetes	194
Molecular genetics	X	MGL1, MGL2, MGL3, MGL4, MGL5	Molecular Genetics	264–265
Molecular hematologic oncology	X	MHO, MHO1, MHO2, MHO3	Molecular Hematologic Oncology	280
		MHO5	Molecular Hematologic Oncology	276, 280
Molecular HLA typing	X	DML	HLA Molecular Typing	250
Molecular typing		IDN, IDO	Nucleic Acid Amp, Organisms	207
Monitoring engraftment	X	ME	Monitoring Engraftment	252
Monkeypox (mpox) virus detection		MPOX	Monkeypox Virus	202
Mononuclear cell count		CBT	Cord Blood Testing	241
		SCP	Stem Cell Processing	241
Moraxella catarrhalis	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
Morganella morganii		JIP	Joint Infection Panel	208
Morphine		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
M-protein (paraprotein) identification	X	SPE	Protein Electrophoresis	78

Analyte/Procedure	LAP ENR	Program Code	Description	Page
MPL		MHO2, MHO3	Molecular Hematologic Oncology	280
MPV		FH1-FH4, FH9-FH10, FH13, FH16-FH17	Hematology Automated Differential	140
		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
		HE	Basic Hematology	140
MRSA (see Methicillin-resistant *Staphylococcus aureus*)				
Mucolipidosis IV (*MCOLN1* gene)	X	MGL4	Molecular Genetics	264–265
Mucopolysaccharide (Glycosaminoglycan)	X	BGL	Biochemical Genetics	259
Multimodality Biomarker Assessment		NMBA, NMB1	Navigating Multimodality Biomarker Assessment	282, 302
Multiple endocrine neoplasia type 2 (*RET* gene)	X	MGL3	Molecular Genetics	264–265
Mumps-IgG		VR3M	Virology	213
Mycobacterial culture	X	**E1**	Mycobacteriology, Ltd	193
Mycobacterial identification	X	**E**	Mycobacteriology	193
Mycobacterium tuberculosis		IDO	Nucleic Acid Amp, Organisms	207
Mycobacterium tuberculosis antibody detection		QF	*M. tuberculosis* Infection Detection	221
Mycobacterium tuberculosis identification and resistance detection		MTBR	Molecular MTB Detection and Resistance	193
		MTR5	Molecular MTB Detection and Resistance, 5 Challenge	193
Mycophenolic acid	X	MPA	Mycophenolic Acid	60
Mycoplasma genitalium		MGEN	*Mycoplasma genitalium*, Molecular	190
		STIM	Sexually Transmitted Infection Detection, Molecular	191
Mycoplasma pneumoniae		IDN, IDO	Nucleic Acid Amp, Organisms	207
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
		VR3	Antibody Detection–Infectious Disease Serology	213
Myoglobin	X	CRT, CRTI, HCRT, HCRTI	Cardiac Markers	62
		CRTQ	QCC, Cardiac Markers	40
		HCRQ	QCC, High-Sensitivity Cardiac Markers	41
		LN33	Serum Myoglobin CVL	132
	X	PCARM/ PCARMX	Point-of-Care Cardiac Markers	67
		POC12	POC Cardiac Markers Competency	53
Myoglobin, urine		MYG	Myoglobin, Urine	71
Myotonic dystrophy (*DMPK* gene)	X	MGL2	Molecular Genetics	264–265
N-acetylprocainamide (NAPA)	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
N-desmethyltramadol		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Naloxone		DMPM	Drug Monitoring for Pain Management	112
Naproxen		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Nasal smears, eosinophil		CMMP	Clinical Microscopy, Misc	152
Neisseria gonorrhoeae	X	**D3**	GC Cultures	179
	X	**HC6/HC6X**	*C. trachomatis*/GC by Nucleic Acid Amp	191
	X	**HC7**	*C. trachomatis*/GC DNA by NAA	191
		JIP	Joint Infection Panel	208
	X	**RMC**	Routine Microbiology Combination	180
	X	**STIM**	Sexually Transmitted Infection Detection, Molecular	191
Neisseria meningitidis		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
Neoplastic cellularity		NEO	Neoplastic Cellularity	277
Neuropathology		NP/NP1	Neuropathology Program	307
Neutral fats		FCFS	Fecal Fat	77
Next-generation sequencing		CNVST	Copy Number Variant–Solid Tumor	275

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Norhydrocodone		DMPM	Drug Monitoring for Pain Management	112
Norketamine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Normeperidine		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Normetanephrine	X	N/NX	Urine Chemistry–Special	71
Normirtazapine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Nornaloxone		T	Toxicology	100
		UT	Urine Toxicology	100
Norovirus		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
		SP1	Stool Pathogens	189
Noroxycodone		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Noroxymorphone		DMPM	Drug Monitoring for Pain Management	112
Norpropoxyphene		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
Norsertraline		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Nortrimipramine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Nortriptyline		DFC	Drug–Facilitated Crime	113
Nortriptyline (cont.)		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
	X	ZT	TDM, Special	61
Norvenlafaxine		DFC	Drug–Facilitated Crime	113
Norverapamil		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Novel opioids and benzodiazepines		NOB	Novel Opioids and Benzodiazepines	110
NRAS	X	MTP	Multigene Tumor Panel	279
nRBC		FH3, FH9, FH13, FH16-FH17	Hematology Automated Differential	140
		FH3Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
N-telopeptide (NTX)		BMV6	Differential	88
	X	BU	Bone and Mineral, Urine	87
NT-pro B-type natriuretic peptides		BNP	B-Type Natriuretic Peptides, 2 Challenge	61
	X	BNP5	B-Type Natriuretic Peptides, 5 Challenge	61
		BNPQ	QCC, B-Type Natriuretic Peptides	39
		LN30	BNP CVL	131
	X	PCARM/ PCARMX	Point-of-Care Cardiac Markers	67
Nucleated cells, total		ABF3	Automated Body Fluid	152
		CBT	Cord Blood Testing	241
		SCP	Stem Cell Processing	241
Nucleated red blood cell count		FH3, FH9, FH13, FH16-FH17	Hematology Automated Differential	140
		FH3Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
Nucleated red cells, total		CBT	Cord Blood Testing	241
Nucleic acid amplification	X	HBVL, HBVL5, HCV2	Hepatitis Viral Load	205
	X	**HC6/HC6X**	*C. trachomatis*/GC by Nucleic Acid Amp	191
	X	**HC7**	*C. trachomatis*/GC DNA by NAA	191
	X	HIVG, HV2	HIV Viral Load	206
		ID1, ID1T	Nucleic Acid Amp, Viruses	201
		ID2	Nucleic Acid Amp, Respiratory	204

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Nucleic acid amplification (cont.)	X	**ID3**	Nucleic Acid Amplification, Respiratory Limited	204
		ID3Q	QCC, Nucleic Acid Amplification, Respiratory Limited	48
		IDN, IDO	Nucleic Acid Amp, Organisms	207
		MRS2M	MRSA Screen, Molecular, 2 Challenge	187
	X	**MRS5M**	MRSA Screen, Molecular, 5 Challenge	188
		SP, SPN, SP1	Stool Pathogens	189
		VLS, VLS2	Viral Load	206
		VRE	Vancomycin-Resistant *Enterococcus*	192
Nucleic acid testing	X	NAT	Nucleic Acid Testing	246
NUDT15		PGX3	Pharmacogenetics	266
Nugent scoring		VS2	Vaginitis Screen, Virtual Gram Stain	191
Occult blood		OCB	Occult Blood	158
		OCBQ	QCC, Occult Blood	46
		POC9	POC Fecal Occult Blood	52
Occult blood, gastric		GOCB	Gastric Occult Blood	156
Ocular micrometer check		I	Instrumentation	136
O-desmethyltramadol		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Olanzapine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Oligoclonal bands		OLI	Oligoclonal Bands	76
Opiate group		DMPM	Drug Monitoring for Pain Management	112
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
		UTCO	Urine Toxicology Carryover	138
OPRM1		PGX1	Pharmacogenetics	266
Organic acids: urine; qualitative	X	BGL	Biochemical Genetics	259
Organic acids, urine; quantitative		BGL	Biochemical Genetics	259
Ornithine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Osmolality, measured	X	C3/C3X, CZ/CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Osmolality, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
		LN6	Urine Chemistry CVL	126
		POC3	POC Urine Dipstick Competency	52
	X	U	Urine Chemistry–General	70
Osmometer check		I	Instrumentation	136
Osteocalcin		BGS	Bone and Growth	87
Oxalate		KSA	Kidney Stone Risk Assessment	71
Oxazepam		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
Oxcarbazepine		ZE	Therapeutic Drug Monitoring, Extended	60
Oxcarbazepine metabolite		ZE	Therapeutic Drug Monitoring, Extended	60
Oxidants, urine		DAI	Urine Drug Adulterant/ Integrity Testing	103
Oxycodone		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Oxyhemoglobin	X	SO	Blood Oximetry	97
		SOQ	QCC, Blood Oximetry	43

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Oxymorphone		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
p16		P16	P16 Immuno-histochemistry TMA	303
p53		P53	p53 Immuno-histochemistry TMA	298
p2PSA		K/KK	Ligand–General	84
Pancreatic amylase	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
PAPP-A		FP1B	First Trimester Maternal Screening, Free Beta	89
		FP1T	First Trimester Maternal Screening, Total hCG	89
Parainfluenza virus		ID2	Nucleic Acid Amp, Respiratory	204
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
	X	**VR1**	Virology Culture	200
	X	**VR2**	Viral Antigen Detection by DFA	200
Paraprotein identification	X	SPE	Protein Electrophoresis	78
Parasite identification	X	**BP**	Blood Parasite	198
	X	**P, P3, P4, P5**	Parasitology	197
		PEX	Expanded Parasitology	198
Parathyroid hormone (PTH)	X	ING	Insulin, Gastrin, C-Peptide, PTH	88
		PTHQ	QCC, PTH	42
Parentage/relationship testing	X	PARF	Parentage/Relationship	247
Paroxetine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Parvimonas micra		JIP	Joint Infection Panel	208
Parvovirus B19		ID1	Nucleic Acid Amp, Viruses	201
pCO_2	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
pCO_2 (cont.)		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
		LN13, LN13C	Blood Gas CVL	128
		POC10, POC11	POC Competency Blood Gases	53
PDGFRA	X	KIT	*KIT/PDGFRA*	278
	X	MTP	Multigene Tumor Panel	279
PD-L1		PDL1	PD-L1 Immunohistochemistry	301
Pentobarbital		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Peptoniphilus spp.		JIP	Joint Infection Panel	208
Peptostreptococcus anaerobius		JIP	Joint Infection Panel	208
Performance improvement program in surgical pathology		PIP/PIP1, PIPW/ PIPW1	Performance Improvement Program in Surgical Pathology	284–285
Peripheral blood cell identification		EHE1	Expanded Virtual Peripheral Blood Smear	149
Peripheral blood smear, virtual		VPBS	Virtual Peripheral Blood Smear	149
pH		AFL	Amniotic Fluid Leakage	153
	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		GOCB	Gastric Occult Blood	156
		LN13, LN13C	Blood Gas CVL	128
		POC10, POC11	POC Competency Blood Gases	53
pH, gastric		GOCB	Gastric Occult Blood	156
pH interpretation		AFL	Amniotic Fluid Leakage	153
pH meters		I	Instrumentation	136
pH, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
		DAI	Urine Drug Adulterant/ Integrity Testing	103
	X	HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
		UDC	Forensic Urine Drug Testing, Confirmatory	104
Phencyclidine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Phencyclidine (cont.)		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Phenethylamine		FTC	Forensic Toxicology, Criminalistics	109
Pheniramine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Phenobarbital	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		LN3	TDM CVL	125
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
Phentermine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Phenylalanine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Phenylephrine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Phenytoin	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		LN3	TDM CVL	125
		SCO	Serum Carryover	138
		T	Toxicology	100
		UT	Urine Toxicology	100
Phenytoin, free	X	CZ/CZX/ CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Phosphorus	X	C1, C3/C3X, CZ/CZX/ CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
Phosphorus, urine		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
PIK3CA	X	MTP	Multigene Tumor Panel	279
Pinworm prep	X	CMMP	Clinical Microscopy, Misc	152
Pipette calibration-gravimetric		I	Instrumentation	136
Plasma cell myeloma, minimal residual disease		FL9	Flow Cytometry Plasma Cell Myeloma Measurable (Minimal) Residual Disease	228
Plasma cell neoplasms		PCNEO	Flow Cytometry, Plasma Cell Neoplasms	228
Plasma hemoglobin		PHG	Plasma Hemoglobin	78
Plasminogen activator inhibitor		CGE/CGEX	Coagulation, Extended	167
Plasminogen activator inhibitor (PAI)-1 (*SERPINE1* gene)		MGL1	Molecular Genetics	264–265
Plasminogen antigen		CGE/CGEX	Coagulation, Extended	167
Platelet aggregation		PF	Platelet Function	170
Platelet antibody detection	X	PS	Platelet Serology	239
Platelet calculator		TRC	Transfusion-Related Cell Count	238
Platelet count	X	**FH1-FH4, FH9-FH10, FH13, FH16-FH17**	Hematology Automated Differential	140
		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
	X	**HE**	Basic Hematology	140
		LN9	Hematology CVL	127
Platelet count, estimated		EHE1	Expanded Virtual Peripheral Blood Smear	149
		VPBS	Virtual Peripheral Blood Smear	149
Platelet count (platelet-rich plasma)	X	TRC	Transfusion-Related Cell Count	238
Platelet crossmatch		PS	Platelet Serology	239
Platelet function		PF1	Platelet Function	170

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Platelet mapping		PLTM	Platelet Mapping	174
Plesiomonas shigelloides		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
PML/RARA	X	MHO2, MHO3	Molecular Hematologic Oncology	280
		MRD2	Measurable (Minimal) Residual Disease	281
Pneumocystis detection		PCP1	*Pneumocystis jirovecii,* Calcofluor White Stain	196
		PCP2	*Pneumocystis jirovecii,* DFA Stain	196
		PCP4	*Pneumocystis jirovecii,* GMS Stain	196
PNH immunophenotype		PNH	Paroxysmal Nocturnal Hemoglobinuria, RBC	229
pO_2	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
		LN13, LN13C	Blood Gas CVL	128
		POC10, POC11	POC Competency Blood Gases	53
Porphobilinogen, urine		UPBG	Porphobilinogen, Urine	72
Posaconazole		AFD	Antifungal Drugs Monitoring	111
Post-immunotherapy analysis, flow cytometry		FL6	Post-Immunotherapy Flow Analysis	225
Postanalytical DNA sequencing		SEC	DNA Sequencing Count	266
Postvasectomy sperm count, automated		PV1	Postvasectomy Sperm Count	162
Postvasectomy sperm count, manual	X	PV	Postvasectomy Sperm Count	162
Postvasectomy sperm presence/absence, manual	X	PV	Postvasectomy Sperm Count	162
Potassium	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN13C	Blood Gas CVL	128
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Potassium (cont.)		POC10, POC11	POC Competency Blood Gases	53
Potassium, urine		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
Potassium, vitreous fluid		VF	Vitreous Fluid, Postmortem	106
Prader-Willi/Angelman syndrome	X	MGL1	Molecular Genetics	264–265
PRAME		PM5	Immunohistochemistry Tissue Microarray Series	297
Prealbumin (transthyretin)	X	C3/C3X, CZ/ CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	S2, S4	Immunology, Special	217
Predictive markers by immunohistochemistry	X	GHER2	Gastric HER2	299
	X	HER2	HER2 by Immunohistochemistry	299
		PM1	CD117 by Immunohistochemistry	297
	X	PM2	ER, PgR by Immunohistochemistry	299
		PM3	CD20 by Immunohistochemistry	300
		PM5	Immunohistochemistry TMA	297
	X	PM6	Anaplastic Lymphoma Kinase IHC	300
Pregabalin		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
		ZE	Therapeutic Drug Monitoring, Extended	60
Prekallikrein		CGE/CGEX	Coagulation, Extended	167
Primidone	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Pro B-type natriuretic peptides		BNP	B-Type Natriuretic Peptides, 2 Challenge	61
	X	BNP5	B-Type Natriuretic Peptides, 5 Challenge	61
		BNPQ	QCC, B-Type Natriuretic Peptides	39
	X	PCARM/ PCARMX	Point-of-Care Cardiac Markers	67
Procainamide	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Procainamide (cont.)		CZQ	QCC, Chemistry and TDM	39
Procalcitonin		LN41	Procalcitonin CVL	134
	X	PCT	Procalcitonin	78
Progesterone		LN8	Reproductive Endocrinology CVL	127
	X	Y/YY	Sex Hormones	86
Progesterone receptors by immunohistochemistry		PM2	ER, PgR by Immunohistochemistry	299
Prolactin		LN8	Reproductive Endocrinology CVL	127
	X	Y/YY	Sex Hormones	86
Proline, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Promethazine		DFC	Drug–Facilitated Crime	113
Propoxyphene		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UDS, UDS6	Urine Drug Screen	102
		UT	Urine Toxicology	100
Propranolol		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Prostate-specific antigen (PSA)		ABS	Accuracy-Based Testosterone, Estradiol	117
	X	K/KK	Ligand–General	84
		LN23	PSA CVL	130
Prostate-specific antigen, complexed (cPSA)	X	K/KK	Ligand–General	84
Prostate-specific antigen (PSA), free, measured	X	K/KK	Ligand–General	84
Prostatic acid phosphatase (PAP)	X	K/KK	Ligand–General	84
Protein C		CGE/CGEX	Coagulation, Extended	167
		CGS2	Coag Special, Series 2	168
		LN35	Thrombophilia CVL	133
Protein, confirmatory urine		DSC	Dipstick Confirmatory	156
Protein electrophoresis, serum, interpretation		SPE	Protein Electrophoresis	78
Protein S		CGE/CGEX	Coagulation, Extended	167
		CGS2	Coag Special, Series 2	168

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Protein, CSF	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
Protein, total	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		SPE	Lipoprotein and Protein Electrophoresis	78
Protein, urine		ABU	Accuracy-Based Urine	117
	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
		DSC	Dipstick Confirmatory	156
	X	HCC2	Waived Combination	68
		LN6	Urine Chemistry CVL	126
		POC3	POC Urine Dipstick Competency	52
	X	U	Urine Chemistry–General	70
***Proteus* spp.**	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Prothrombin mutation (*F2* gene)	X	MGL1	Molecular Genetics	264–265
	X	TPM	Thrombophilia Mutations	267
Prothrombin time		APXBN	Anticoagulant Monitoring, Apixaban	169
	X	**CGB**	Basic Coagulation	166
	X	**CGL**	Coagulation, Limited	166
		CGLQ	QCC, Coagulation, Limited	47
		CGS1	Coag Special, Series 1	168
		CGS4	Coag Special, Series 4	168
		DBGN	Anticoagulant Monitoring, Dabigatran	169
		FNPX	Anticoagulant Monitoring, Fondaparinux	169
		POC6	POC PT/INR, CoaguChek XS Plus	52
		RVBN	Anticoagulant Monitoring Rivaroxaban	169
	X	**WP3, WP4, WP6, WP9**	Whole Blood Coagulation	173

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Prothrombin time, dilute		CGE/CGEX	Coagulation, Extended	167
Protonitazene		NOB	Novel Opioids and Benzodiazepines	110
Provider-performed microscopy		CMMP	Clinical Microscopy, Misc	152
PRU test		PIA/PIAX	Drug-Specific Platelet Aggregation	172
Pseudocholinesterase	X	C7	Pseudocholinesterase	79
Pseudoephedrine		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Pseudomonas aeruginosa	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Quality Management Tools		QP241	Rates and Turnaround Times for Investigation and Reporting of Suspected Transfusion Reactions	25
		QPB10, QPB25	Technical Competency Assessment of Body Fluid Review	26
		QPC10, QPC25	Technical Competency Assessment of Peripheral Blood Smears	27
		QPD10, QPD25	Technical Competency Assessment of Gram Stains	28
		QT10	Critical Values Reporting	33
		QT15	TATs of Troponin	34
		QT16	Corrected Results	35
		QT17	Outpatient Order Entry Errors	35
		QT2	Blood Culture Contamination	30
		QT3	Laboratory Specimen Acceptability	30
		QT4	In-Date Blood Product Wastage	31
		QT7	Satisfaction With Outpatient Specimen Collection	32
		QT8	Stat Test TAT Outliers	32
Quetiapine		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Quinidine	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
Quinidine (cont.)		CZQ	QCC, Chemistry and TDM	39
Quinine		FTC	Forensic Toxicology, Criminalistics	109
Ranitidine		FTC	Forensic Toxicology, Criminalistics	109
Rapamycin (sirolimus)	X	CS	Immunosuppressive Drugs	59
Rapid group A strep	X	**D**	Bacteriology	177
	X	**D6**	Rapid Group A Strep	182
	X	D9	Rapid Group A Strep, Waived	182
	X	**MC4**	Urine Colony Count Combination	180
	X	**RMC**	Routine Microbiology Combination	180
RBC automated count, fluid		ABF1, ABF2, ABF3	Automated Body Fluid	153
RBC count		ABF1, ABF2, ABF3	Automated Body Fluid	153
	X	**FH1-FH4, FH9-FH10, FH13, FH16-FH17**	Hematology Automated Differential	140
		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
	X	**HE**	Basic Hematology	140
		LN9	Hematology CVL	127
RBC count, automated, urine; quantitative		UAA, UAA1	Automated Urinalysis	155
RBC folate	X	FOL	RBC Folate	90
RBC manual count, fluid	X	HFC, HFCI	Hemocytometer Fluid Count	157
RBC morphology		EHE1	Expanded Virtual Peripheral Blood Smear	149
		VPBS	Virtual Peripheral Blood Smear	149
RDW		FH1-FH4, FH9-FH10, FH13, FH16-FH17	Hematology Automated Differential	140
		FH3Q, FH4Q, FH9Q, FH13Q	QCC, Automated Hematology Series	45
		HE	Basic Hematology	140
Red blood cell antigen detection		J, J1	Transfusion Medicine	232
Red blood cell antigen genotyping		RAG	Red Blood Cell Antigen Genotyping	237
Red blood cell antigen typing		RBCAT	Red Blood Cell Antigen Typing	237

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Reducing substance, urine		CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
		HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
Refractometer check		I	Instrumentation	136
Renin	X	RAP	Renin and Aldosterone	91
Reptilase time		CGE/CGEX	Coagulation, Extended	167
		ECF	Expanded Coagulation Factors	167
Respiratory syncytial virus (RSV)		ID2	Nucleic Acid Amp, Respiratory	204
	X	**ID3**	Nucleic Acid Amplification, Respiratory Limited	204
		ID3Q	QCC, Nucleic Acid Amplification, Respiratory Limited	48
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
	X	**IDR**	Infectious Disease, Respiratory Panel	210
	X	**VR1**	Virology Culture	200
	X	**VR2**	Viral Antigen Detection by DFA	200
	X	**VR4**	Virology Antigen Detection by EIA and Latex	200
Reticulocyte count, absolute	X	RT, RT2, RT3, RT4	Reticulocyte	146
		RTQ, RT3Q, RT4Q	QCC, Reticulocyte	45
Reticulocyte count, percent		LN18, LN19	Reticulocyte CVL	129
	X	RT, RT2, RT3, RT4	Reticulocyte	146
		RTQ, RT3Q, RT4Q	QCC, Reticulocyte	45
Reticulocyte hemoglobin (RET-He)		RT4	Reticulocyte	146
Reticulocyte hemoglobin concentration (CHr)		RT3	Reticulocyte	146
Rett syndrome (*MECP2* gene)	X	RETT	Rett Syndrome Genotyping	267
Rett syndrome (*MECP2* gene) duplication deletion analysis	X	RETT	Rett Syndrome Genotyping	267
RhD	X	MGL2	Molecular Genetics	264–265
RhD typing		ABOSG	ABO Subgroup typing	236
	X	**J, J1**	Transfusion Medicine	232
	X	**JAT**	Transfusion Medicine, Automated	233
RhD typing (cont.)		JATE1	Transfusion Medicine, Automated, Educational	233
		JATQ	QCC, Transfusion Medicine	50
		TMCA	Transfusion Medicine, Competency Assessment	240
Rheumatoid factor isotypes, IgA, IgG, and IgM		CCP	Cyclic Citrullinated Peptide Antibody	220
Rheumatoid factor, qualitative	X	**IL, RF/RFX**	Immunology	216
Rheumatoid factor, quantitative	X	IL, RF/RFX	Immunology	216
Rhinovirus		ID2	Nucleic Acid Amp, Respiratory	204
	X	**IDR**	Infectious Disease, Respiratory Panel	210
Rhinovirus/enterovirus	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
Rifampin Resistance		MTBR	Molecular MTB Detection and Resistance	193
		MTR5	Molecular MTB Detection and Resistance, 5 Challenge	193
Ritalinic acid		FTC	Forensic Toxicology, Criminalistics	109
Rivaroxaban		RVBN	Anticoagulant Monitoring, Rivaroxaban	169
RNA sequencing		RNA	Fusion RNA Sequencing	278
Rotavirus		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
		SP, SPN	Stool Pathogens	189
	X	**VR4**	Viral Antigen Detection by EIA and Latex	200
RSV (see Respiratory syncytial virus)				
Rubella antibody, IgG, qualitative	X	**IL, RUB/ RUBX**	Immunology	216
Rubella antibody, IgG, quantitative	X	IL, RUB/ RUBX	Immunology	216
Rubeola antibody (English measles)	X	VR3	Antibody Detection–Infectious Disease Serology	213
Rufinamide		ZE	Therapeutic Drug Monitoring, Extended	60
Rupture of fetal membranes		ROM1	Fetal Membranes/ Preterm Labor	158
Russell's viper venom time, dilute		CGS1	Coagulation Special, Series 1	168
Salicylate	X	CZ/CZX/ CZ2X, Z	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Salicylate (cont.)		FTC	Forensic Toxicology, Criminalistics	109
		LN3	TDM CVL	125
	X	SDS	Serum Drug Screen	106
		T	Toxicology	100
		UT	Urine Toxicology	100
Salmonella		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
		JIP	Joint Infection Panel	208
Sapovirus (I, II, IV, V)		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Sarcoma by FISH		CYK	Fluorescence In Situ Hybridization	257
Sarcoma translocation	X	SARC	Sarcoma Fusion Gene	277
SARS-CoV-2		COV2	SARS-CoV-2 Molecular	202
		COV2Q	QCC, SARS-CoV-2 Molecular	48
		COVAG	SARS-CoV-2 Antigen	203
		COVAQ	QCC, SARS-CoV-2 Antigen	48
	X	**COVM**	SARS-CoV-2 Molecular, 5 Challenge	203
		COVS	SARS-CoV-2 Serology	222
		COVSQ	QCC, SARS-CoV-2 Serology	49
	X	**CVAG**	SARS-CoV-2 Antigen, 5 Challenge	203
	X	**ID3**	Nucleic Acid Amplification, Respiratory Limited	204
		ID3Q	QCC, Nucleic Acid Amplification, Respiratory Limited	48
	X	**IDR**	Infectious Disease, Respiratory Panel	210
Scl-70 (anti-DNA topoisomerase)		RDS	Rheumatic Disease Special	221
Scopolamine		DFC	Drug–Facilitated Crime	113
Secobarbital		DFC	Drug–Facilitated Crime	113
		UDC	Forensic Urine Drug Testing, Confirmatory	104
Selenium	X	R	Trace Metals	80
Selenium, urine		TMU	Trace Metals, Urine	108
Selenium, whole blood		TMWB	Trace Metals, Whole Blood	108
Semen analysis		ASA, SM, PV1	Semen Analysis	162
	X	SC, SC1, SV, PV	Semen Analysis	162
	X	SMCD	Semen Analysis, Online	162
		SM1CD	Semen Analysis, Online	162
	X	SM2CD	Semen Analysis, Online	162

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Serine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
SERPINA1 genotyping	X	AAT	Alpha-1 Antitrypsin Genotyping	261
Serratia marcescens	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Sertraline		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
Serum free light chains		SFLC	Serum Free Light Chains	223
Sex hormone-binding globulin (SHBG)		ABS	Testosterone and Estradiol Accuracy	117
	X	Y	Sex Hormones	86
Shiga toxin		SP	Stool Pathogens–Rapid and Molecular	189
		ST	Shiga Toxin	189
Shiga-like toxin producing *E. coli* (STEC)		GIP	Gastrointestinal Panel	212
		GIP5	Gastrointestinal Panel	212
Shigella		GIP	Gastrointestinal Panel	212
	X	**GIP5**	Gastrointestinal Panel	212
Sickle cell screen, qualitative	X	HG	Hemoglobinopathy	147
	X	SCS	Sickle Cell Screen	148
Sirolimus (Rapamycin)	X	CS	Immunosuppressive Drugs	59
SLCO1B1		PGX	Pharmacogenetics	266
Sodium	X	**AQ, AQH, AQIS**	Critical Care Blood Gas	94–95
		AQQ, AQHQ, AQSQ	QCC, Critical Care Blood Gas Series	44
	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN13C	Blood Gas CVL	128
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		POC10, POC11	POC Competency Blood Gases	53
Sodium, urine		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70

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Sodium, vitreous fluid		VF	Vitreous Fluid, Postmortem	106
Soluble transferrin receptor		STFR	Soluble Transferrin Receptor	82
Somatomedin C (IGF-1)	X	Y, YY	Sex Hormones	86
Specific gravity	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
		DAI	Urine Drug Adulterant/ Integrity Testing	103
	X	HCC2	Waived Combination	68
		POC3	POC Urine Dipstick Competency	52
		UDC	Forensic Urine Drug Testing, Confirmatory	104
Spectrophotometer linearity		I	Instrumentation	136
Sperm count	X	SMCD	Semen Analysis, Online	162
Sperm count, automated		PV1	Semen Analysis	162
	X	SC1	Semen Analysis	162
Sperm count, manual	X	PV	Postvasectomy Sperm Count	162
	X	SC	Semen Analysis	162
Sperm morphology		SM	Semen Analysis	162
		SM1CD	Semen Analysis, Online	162
Sperm motility		SMCD	Semen Analysis, Online	162
Sperm presence/absence		SC	Semen Analysis	162
Sperm presence/absence, postvasectomy, manual	X	PV	Semen Analysis	162
Sperm presence/absence, vaginal		CMMP	Clinical Microscopy, Misc	152
Sperm viability	X	SM2CD	Semen Analysis, Online	162
	X	SV	Semen Analysis	162
Spinal fluid meningitis antigen panel	X	**D**	Bacteriology	177
Spinal muscular atrophy (*SMN1* and *SMN2* genes)	X	MGL2	Molecular Genetics	264–265
Spinocerebellar ataxia (*ATXN1, ATXN2, ATXN3, CACNA1A*, and *ATXN7* genes)	X	MGL2	Molecular Genetics	264–265
Split fats		FCFS	Fecal Fat	77
Staphylococcus aureus	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Staphylococcus aureus-blood culture	X	BCS1	Blood Culture *Staphylococcus aureus*	183
Staphylococcus lugdunensis		JIP	Joint Infection Panel	208
STEC (Shiga-like toxin producing *E. coli*)		GIP	Gastrointestinal Panel	212
		GIP5	Gastrointestinal Panel	212
Strep screen		POC4	POC/Waived Strep Screen Competency	52
Streptococcus agalactiae	X	**D8**	Group B Strep	183
		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
Streptococcus pneumoniae		IDME	Meningitis/Encephalitis Panel	209
	X	**IDM5**	Meningitis/Encephalitis Panel	209
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
		SBAS	*S. pneumoniae* Ag Detection	183
Streptococcus pyogenes	X	**D**	Bacteriology	177
	X	**D1**	Throat	179
	X	**D6**	Rapid Group A Strep	182
	X	D9	Rapid Group A Strep, Waived	182
	X	**IDPN**	Infectious Disease, Pneumonia Panel	211
		JIP	Joint Infection Panel	208
	X	**MC4**	Urine Colony Count Combination	180
	X	**RMC**	Routine Microbiology Combination	180
Strychnine		FTC	Forensic Toxicology, Criminalistics	109
Sulfosalicylic acid (SSA)		DSC	Dipstick Confirmatory	156
Surgical pathology		DPATH/ DPATH1	Online Digital Slide Program	305
		PIP/PIP1, PIPW/ PIPW1	Performance Improvement Program in Surgical Pathology	284–285
		VBP/VBP1	Online Virtual Biopsies Program	286
Synthetic cannabinoid/ designer drugs		SCDD	Synthetic Cannabinoid/ Designer Drugs	110
Syphilis	X	**G**	Syphilis Serology	222
T3, free (triiodothyronine)		ABTH	Harmonized Thyroid	118
	X	C1, C3/C3X, CZ/CZX/ CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	K/KK	Ligand–General	84
T3, total (triiodothyronine)		ABTH	Harmonized Thyroid	118
	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58

Analyte/Procedure	LAP ENR	Program Code	Description	Page
T3, total (triiodothyronine) (cont.)		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
T3, uptake and related tests	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
T4, free (thyroxine)		ABTH	Harmonized Thyroid	118
	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
T4, total (thyroxine)		ABTH	Harmonized Thyroid	118
	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
T-cell subsets analysis		FL7	Flow Cytometry, T-Cell Subsets Analysis	227
Tacrolimus	X	CS	Immunosuppressive Drugs	59
		LN31	Immunosuppressive Drugs CVL	132
Tapentadol		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112
		T	Toxicology	100
		UT	Urine Toxicology	100
		FTC	Forensic Toxicology, Criminalistics	109
Tapentadol-O-sulfate		DMPM	Drug Monitoring for Pain Management	112
Taurine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Tay-Sachs (*HEXA* gene)	X	MGL4	Molecular Genetics	264–265
tCO_2		AQ, AQH, AQIS, AQSQ	Critical Care Blood Gas	44, 94–95
Temazepam		DFC	Drug–Facilitated Crime	113
		DMPM	Drug Monitoring for Pain Management	112

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Temazepam (cont.)		FTC	Forensic Toxicology, Criminalistics	109
		OFD	Oral Fluid for Drugs of Abuse	105
		T	Toxicology	100
		UDC	Forensic Urine Drug Testing, Confirmatory	104
		UT	Urine Toxicology	100
Teriflunomide		ZE	Therapeutic Drug Monitoring, Extended	60
Testosterone		ABS	Accuracy-Based Testosterone and Estradiol	117
		LN8	Reproductive Endocrinology CVL	127
	X	Y/YY	Sex Hormones	86
Testosterone, bioavailable, measured		Y	Sex Hormones	86
Testosterone, free, measured		Y	Sex Hormones	86
Tetrahydrozoline		DFC	Drug–Facilitated Crime	113
Thallium, urine		TMU	Trace Metals, Urine	108
Thallium, whole blood		TMWB	Trace Metals, Whole Blood	108
Theophylline	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN3	TDM CVL	125
Threonine, quantitative		BGL2	Amino Acid Quantitation for Inherited Metabolic Disorders	260
Throat culture	X	**D1**	Throat	179
	X	**MC4**	Urine Colony Count Combination	180
	X	**RMC**	Routine Microbiology Combination	180
Thrombin time		CGE/CGEX	Coagulation, Extended	167
		CGS4	Coag Special, Series 4	168
		DBGN	Dabigatran	169
		ECF	Expanded Coagulation Factors	167
Thrombophilia mutations	X	TPM	Thrombophilia Mutations	267
Thyroglobulin	X	TM/TMX	Tumor Markers	91
Thyroid-stimulating hormone (TSH)		ABS	Accuracy-Based Testosterone and Estradiol	117
		ABTH	Harmonized Thyroid	118
	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Thyroid-stimulating hormone (TSH) (cont.)	X	**K/KK**	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
Thyroxine (T4), free		ABTH	Harmonized Thyroid	118
	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
Thyroxine (T4), total		ABTH	Harmonized Thyroid	118
	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
	X	**K/KK**	Ligand–General	84
		LN5	Ligand Assay CVL	125
		LN5S	Ligand Assay, Siemens CVL	125
Tick identification		TMO	Ticks, Mites, and Other Arthropods	198
Tissue parasite identification	X	**BP**	Blood Parasite	198
	X	**P**	Parasitology	197
		PEX	Expanded Parasitology	198
Tobramycin	X	**CZ/CZX/ CZ2X, Z**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		LN3	TDM CVL	125
Topiramate		DFC	Drug–Facilitated Crime	113
		FTC	Forensic Toxicology, Criminalistics	109
		T	Toxicology	100
		UT	Urine Toxicology	100
		ZE	Therapeutic Drug Monitoring, Extended	60
Total bile acids		TBLA	Total Bile Acid	79
Total bilirubin	X	**C1, C3/C3X, C4, CZ/ CZX/CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD2	Body Fluid Chemistry 2	75
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
	X	**NB,** NB2	Neonatal Bilirubin	67

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Total bilirubin, urine	X	CMP, CMP1	Clinical Microscopy	151
		DSC	Dipstick Confirmatory	156
	X	HCC2	Waived Combination	68
Total free fatty acids		FCFS	Fecal Fat	77
Total hCG	X	**FP1T**	First Trimester Maternal Screening, Total hCG	89
Total hemolytic complement		CH50	Total Hemolytic Complement	223
Total iron binding capacity, measured	X	C3/C3X, CZ/ CZX/CZ2X	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
Total nitrogen, urine		U	Urine Chemistry–General	70
Total nucleated cells		CBT	Cord Blood Testing	241
		SCP	Stem Cell Processing	241
Total nucleated cells manual differential count (body fluid)		HFC/HFCI	Hemocytometer Fluid Count	157
		VBF	Virtual Body Fluid	153
Total nucleated cells (WBC) automated count (body fluid)		ABF1, ABF2, ABF3	Automated Body Fluid	153
Total protein	X	**C1, C3/C3X, CZ/CZX/ CZ2X**	Chemistry and TDM	56–58
		CZQ	QCC, Chemistry and TDM	39
		FLD	Body Fluid	74
		FLDQ	QCC, Body Fluid Chemistry	40
		IFS	Interfering Substances	137
		LN2	Chemistry, Lipid, Enzyme CVL	124
		LN2BV	Chemistry, Lipid, Enzyme all Beckman except AU, Vitros CVL	124
		SPE	Protein Electrophoresis	78
Total protein, CSF	X	M, OLI	CSF Chemistry and Oligoclonal Bands	76
Total protein, urine	X	CMP, CMP1	Clinical Microscopy	151
		CMQ	QCC, Urinalysis	46
	X	HCC2	Waived Combination	68
		LN6	Urine Chemistry CVL	126
	X	U	Urine Chemistry–General	70
Total tricyclics	X	SDS	Serum Drug Screen	106
	X	ZT	TDM, Special	61
Touch imprint/crush prep		TICP, TICP1	Touch Imprint/Crush Prep	311
Toxicology, serum, qualitative	X	SDS	Serum Drug Screen	106
	X	T	Toxicology	100
Toxicology, urine, qualitative	X	DMPM	Drug Monitoring for Pain Management	112

Analyte/Procedure	LAP ENR	Program Code	Description	Page
Toxicology, urine, qualitative (cont.)	X	T	Toxicology	100
	X	UDS, UDS6	Urine Drug Screen	102
	X	UT	Urine Toxicology	100
Toxicology, urine, qualitative/quantitative	X	DMPM	Drug Monitoring for Pain Management	112
	X	UDC	Forensic Urine Drug Testing, Confirmatory	104
Toxoplasma gondii	X	VR3	Antibody Detection–Infectious Disease Serology	213
TPMT		PGX3	Pharmacogenetics	266
Tramadol		DFC	Drug–Facilitated Crime	113
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Notes

Notes

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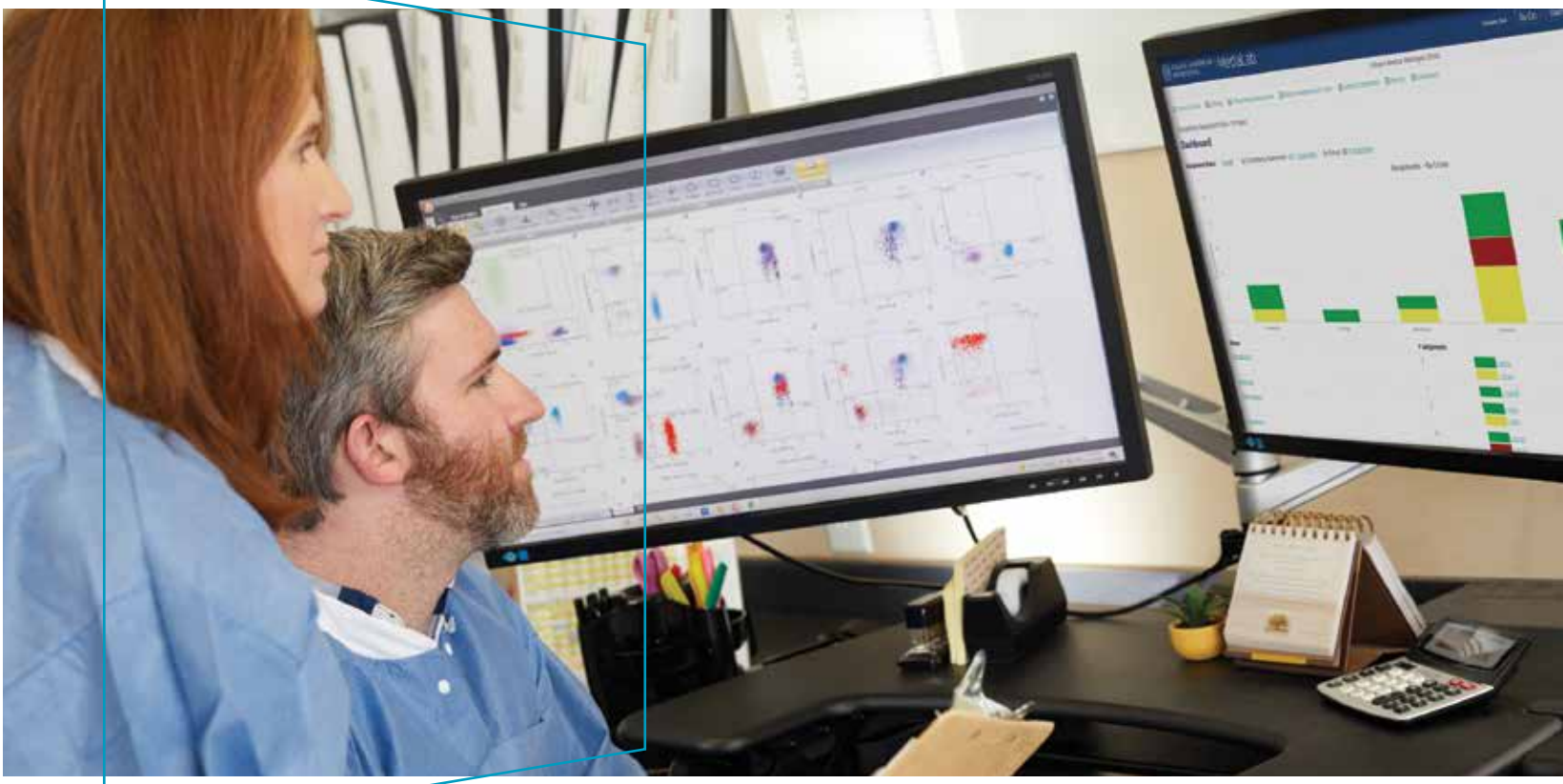

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