

**List of Proficiency testing Scheme Provider & Scope of Accreditation
for Medical laboratory that participate in Proficiency testing**

Provider	Test	Matrix
1. <u>Division of Proficiency Testing, Department of Medical Sciences, Thailand</u>	Clinical Chemistry	
	1. Glucose	-Lyophilized serum
	2. Blood Urea Nitrogen (BUN)	
	3. Creatinine	
	4. Uric acid	
	5. Total protein	
	6. Albumin	
	7. Total bilirubin	
	8. Aspartate aminotransferase (AST)	
	9. Alanine aminotransferase (ALT)	
	10. Alkaline phosphatase (ALP)	
	11. Total Cholesterol	
	12. Triglyceride	
	13. Sodium	
	14. Potassium	
	15. Chloride	
	16. Calcium	
	17. Phosphorus	
	18. Magnesium	
	19. HDL-cholesterol	
	Hematology	
1. Red blood cell count	-Whole blood	
2. White blood cell count	-Stained blood film	
3. Platelet count		
4. Hemoglobin		

Provider	Test	Matrix
	5. Hematocrit 6. Mean corpuscular volume (MCV) 7. Mean corpuscular hemoglobin (MCH) 8. Mean corpuscular hemoglobin concentration (MCHC) 9. White blood cell count differentiation 10. Red blood cell morphology 11. Platelet estimation 12. Fecal occult blood	- Stool or solution
	Microbiology	
	1. Aerobic bacteria identification 2. Antimicrobial susceptibility test 3. Gram stain 4. Acid fast stain 5. KOH preparation	-Pure culture -Pure culture -Bacterial smear -Sputum smear -Photo
	Microscopy	
	1. Blood parasite examination 2. Urinary sediment examination 3. Stool sediment examination 4. Urinalysis: Chemical test (-Specific gravity - pH - leucocyte - Nitrite - Protein - Glucose - Ketone - Urobilinogen - Bilirubin – Blood) 5. Human Chorionic Gonadotropin (HCG)	- Stained blood film - Urine photo - Stool sediment - Liquid urine - Liquid urine
	Immunology	
	1. Syphilis test (- Nonspecific test - Specific test)	- Serum
	Blood Bank	
	1. ABO blood grouping	-Red blood cell suspension

Provider	Test	Matrix
	2. Rh (D) blood grouping 3. Unexpected antibody screening 4. Unexpected antibody identification 5. Compatibility Testing	-Serum
	Pharmacogenomics	
	1. HLA-B*15:02 allele 2. HLA-B*57:01 allele 3. HLA-B*58:01 allele	DNA
<u>2. Faculty of Medical Technology, Mahidol University, Thailand</u>	Clinical Chemistry (EQAC)	
	1. Glucose 2. BUN 3. Creatinine 4. Uric acid 5. Cholesterol 6. Triglycerides 7. HDL-cholesterol 8. LDL-cholesterol 9. Total protein 10. Albumin 11. Total bilirubin 12. Aspartate aminotransferase 13. Alanine aminotransferase 14. Alkaline phosphatase 15. Amylase, Total 16. Calcium, Total 17. Chloride 18. CK, Total	-Lyophilized serum

Provider	Test	Matrix
	19. GGT 20. LDH 21. Magnesium 22. Phosphorus, Inorganic 23. Potassium 24. Sodium	
	Clinical Hormone (EQA)	
	1. T3 2. T4 3. FT3 4. FT4 5. TSH	-Lyophilized serum
	Tumor Markers (EQAT)	
	1. AFP 2. CEA 3. PSA 4. CA-125 5. CA-15-3 6. CA-19-9 7. B-HCG	-Lyophilized serum
	Urine Chemistry	
	1. Sodium 2. Potassium 3. Chloride 4. Urea 5. Creatinine 6. Glucose	- Liquid urine

Provider	Test	Matrix
	7. Microalbumin 8. Protein 9. Albumin	
	Clinical Microscopy (B-EQAM)	
	1. Complete Blood Count (CBC) 2. Blood film examination 3. Blood Cell Identification 4. Urinalysis	-Whole blood -Stained blood film -Blood film photograph -Urinary photograph
	Clinical Immunology (EQAI)	
	1. HBV serology (HBsAg, Anti-HBs, Anti-HBc, HBeAg, Anti-HBe) 2. Syphilis serology	-Serum
	Bacteriology (EQAB)	
	1. Gram stain 2. Acid fast bacilli stain 3. Bacteria identification and susceptibility testing	- Bacterial smear - Sputum smear - Pure culture
	Clinical Parasitology (EQAP)	
	1. Parasite examination	- Stained blood film - Stool sediment
3. EQA Center, <u>Thailand</u>	Clinical Chemistry	
	1. Glucose 2. BUN 3. Creatinine 4. Uric acid 5. Cholesterol 6. HDL-Chol direct 6. Triglycerides	-Lyophilized serum


Provider	Test	Matrix
	7. Alkaline phosphatase 8. Total protein 9. Albumin 10. Total bilirubin 11. Aspartate aminotransferase 12. Alanine aminotransferase 13. Sodium 14. Potassium 15. Chloride 16. Calcium 17. Inorganic Phosphorus 18. LDH 19. GGT 20. CK 21. CK-MB 22. LDL-C 23. Magnesium	
	Cardiac Markers	
	1. CK-MB mass 2. Troponin I 3. Troponin T 4. Homocysteine 5. NT-proBNP 6. hsCRP 7. Myoglobin 8. D-Dimer 9. hs-TnI 10. hs-TnT	-Lyophilized serum

Provider	Test	Matrix
	Hemoglobin A1c	- Lyophilized Hemolysate
	POCT Blood Glucose	- Lyophilized Blood Glucose Control
	Urine Clinical Chemistry	
	<ol style="list-style-type: none"> 1. Electrolytes 2. Total Protein 3. Micro-albumin 4. Creatinine 5. Urea 6. Uric acid 7. Glucose 8. Total Calcium 9. Inorganic Phosphate 10. Magnesium 	-Lyophilized Urine
<u>4. National Institute of Health, Department of Medical Sciences, Thailand</u>	<ol style="list-style-type: none"> 1. Anti-HIV 2. HIV Antigen 3. HIV viral load 4. HIV drug resistance 5. Anti-HCV 6. Type of Influenza virus, Avian Influenza virus by RT-PCR 7. Lead 8. Cadmium 9. Manganese 10. Type of Influenza virus by RT-PCR 11. α-thalassemia 1 (SEA and Thai) 12. HbA1c 	-Plasma -Plasma -Plasma -Plasma -Plasma -Virus -Blood -Blood -Blood -Virus -DNA -Whole blood

Provider	Test	Matrix
	13. Dengue virus by RT-PCR 14. Toxicology 15. Anti-Measles IgM 16. Anti-Rubella IgM 17. Bacterial identification 18. Antimicrobial susceptibility 19. β -thalassemia 20. Anti-Scrub typhus IgM 21. Anti-Scrub typhus IgG 22. Anti-Murine typhus IgM 23. Anti-Murine typhus IgG 24. Chikungunya by RT-PCR 25. Zika by RT-PCR 26. Cholinesterase enzyme 27. SARS-CoV-2 28. Human papilloma virus 29. MPOX	-Serum or Plasma -Unknown sample -Serum -Serum -Bacterial in transport medium -Bacterial in transport medium -DNA solution -Serum -Serum -Serum -Serum -Serum or Plasma -Serum or Plasma/ Urine -Serum or Plasma -Inactivated virus culture in transport medium
<u>5. Regional Medical Sciences Center 1, Department of Medical Sciences, Thailand</u>	1. Anti-HIV 2. Alcohol 3. HCG (by strip test) 4. Hepatitis B surface antigen & antibody 5. Hemoglobin E screening 6. HCG 7. Protein 8. Glucose 9. Total Delta-9- Tetrahydrocannabinol (THC) 10. Total Cannabidiol (CBD) 11. POCT Glucose	-Plasma -Whole Blood -Urine -Plasma -Whole Blood -Urine -Urine -Urine -Urine -Marijuana powder -Marijuana powder - Blood

Provider	Test	Matrix
	12. POCT Hematocrit	- Blood
6. Regional Medical Sciences Center 2 Phitsanulok, Department of Medical Sciences, Thailand	1. HCG 2. Protein in urine 3. Sugar in urine 4. Methamphetamine 5. Morphine 6. Cannabinoid	- Urine - Urine - Urine - Urine - Urine - Urine
7. Regional Medical Sciences Center 12 Songkhla, Department of Medical Sciences, Thailand	1. Anti-HIV	-Plasma
8. Clinical Service Center, Faculty of Associated Medical Sciences, Chiang Mai University, Thailand	1. Hb Typing 2. Hemoglobin E screening 3. ESR 4. Hematocrit 5. G6PD screening	- Lyophilized Hemoglobin - Lyophilized Hemoglobin - Whole blood - Whole blood - Lyophilized lysed red blood cells
9. WWARN QA/QC, Worldwide Antimalarial Resistance Network, Mahidol-Oxford Tropical Medicine Research Unit, Thailand	1. Antimalarial drug in human plasma - Amodiaquin - Desethylamodiaquine - Chloroquine - Desethylchloroquine - Primaquine - Carboxyprimaquine - Mefloquine - Carboxymefloquine	Human plasma

Provider	Test	Matrix
	<ul style="list-style-type: none"> - Lumefantrine - Desbutyl-lumefantrine - Dihydroartemisinin 	
<u>10. Bureau of Drug and Narcotic, Department of Medical Sciences, Thailand</u>	Drug screening and confirmation <ol style="list-style-type: none"> 1. Amphetamines 2. Opiates 3. Cannabinoids 4. Cocaine 5. Ketamine 6. Mitragynine 	- Urine
<u>11. Regional Medical Sciences Center 8 Udonthani, Department of Medical Sciences, Thailand</u>	<ol style="list-style-type: none"> 1. Anti-HIV 2. HCG 3. Protein in urine 4. Sugar in urine 	- Plasma - Urine - Urine - Urine
<u>12. Department of Clinical Pathology, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand</u>	<ol style="list-style-type: none"> 1. Prothrombin time (PT) 2. Prothrombin time - International normalized ratio (PT-INR) 3. Activated partial thromboplastin time (APTT) 4. Factor VIII assay (F VIII) 	- Lyophilized plasma
<u>13. NU MLC Proficiency Testing Center, WE Med Lab Center Co.,Ltd., Thailand</u>	<ol style="list-style-type: none"> 1. POCT Glucose 2. Hematocrit 3. HbA1c 4. Blood gas and electrolyte (-pH range - pO₂ - pCO₂ - HCO₃⁻ - Na⁺ - K⁺ - Cl⁻ - Ca²⁺) 5. Urinalysis: Chemical test (- pH range -Specific 	-Whole blood -Whole blood -Whole blood -Pure gas and electrolyte solution - Sample liked urine

Provider	Test	Matrix
	gravity - Protein - Glucose - Blood - Leukocytes - Urobilinogen - Nitrite - Ketones - Bilirubin) 6. HCG 7. Urine sediment 8. Microalbumin 9. Fecal occult blood	- Sample liked urine - Photo - Sample liked urine - Sample liked fecal
14. Regional Medical Sciences Center 6 Chonburi, Department of Medical Sciences, Thailand	1. Anti-HIV 2. HIV Antigen 3. HCG 4. Protein in urine 5. Sugar in urine	- Plasma - Plasma - Urine - Urine - Urine
15. College of American Pathologists (CAP)	Clinical Chemistry 1. General Chemistry 2. Lipids 3. Thyroid 4. Cardiac Markers 5. Hemoglobin A1C 6. Whole Blood Glucose 7. Urine chemistry 8. Special chemistry 9. Body fluid chemistry 10. B-type Natriuretic Peptides 11. Tumor markers 12. Urine Drug Screening Hematology 1. Basic Hematology 2. Blood cell identification	-Liquid serum -Liquid whole blood -Liquid plasma -Liquid urine -Liquid body fluid -Lyophilized urine -Whole blood - Photograph and online

Provider	Test	Matrix
	3. Erythrocyte Sedimentation Rate 4. Hematology Automated with Differential Series 5. Centrifugal Hematology 6. Blood parasite 7. Reticulocyte	images - Giemsa-stained blood
	Urinalysis and Clinical Microscopy	
	1. Urinalysis 2. Occult Blood 3. Sperm Analysis	- Liquid urine - Urinary photograph - Simulated fecal specimens - Sperm specimen - Eosin-nigrosine-stained slides
	Coagulation	
	1. Coagulation 2. Activated Clotting Time 3. D-dimer 4. Whole Blood Coagulation	-Lyophilized plasma -Lyophilized whole blood -Liquid plasma
	Microbiology	
	1. Throat Culture 2. Rapid Group A Strep Antigen Detection 3. Gram Stain 4. Urine Colony Count/Urine Culture Identification 5. Throat and Urine Culture/Rapid A Strep Antigen Detection 6. <i>Clostridium difficile</i> Toxin Antigen Detection 7. Viral Antigen Detection	-Loop specimens -Unstained slides -Urine specimens -Lyophilized specimen -Liquid specimen
	Immunology	
	1. Antinuclear antibody (ANA)	-Liquid serum

Provider	Test	Matrix
	<ol style="list-style-type: none"> 2. Antistreptolysin O (ASO) 3. C-reactive Protein (CRP) 4. hCG, Serum 5. Infectious Mononucleosis 6. Rheumatoid Factor 7. Rubella (IgG) 8. Complement C3 9. Complement C4 10. <i>Helicobacter pylori</i> Antibody Detection 11. Special Immunology 12. Syphilis 13. Viral markers 	-Liquid plasma
<p><u>16. Randox</u> <u>International Quality</u> <u>Assessment Scheme</u> <u>(RIQAS)</u></p>	<ol style="list-style-type: none"> 1. Ammonia Ethanol 2. Anti-TSH Receptor 3. Blood Gas 4. BNP 5. Cardiac 6. Clinical Chemistry 7. Coagulation 8. CSF 9. CYFRA 21-1 (Cytokeratin 19) 10. ESR 11. Hematology 12. HbA1c 13. Human Urine 14. Immunoassay 15. Immunoassay Specialty 1 16. Immunoassay Specialty 2 	<p>-Liquid serum</p> <p>-Lyophilized serum</p> <p>-Aqueous material</p> <p>-Liquid whole blood</p> <p>-Lyophilized plasma</p> <p>-Liquid sample</p> <p>-Lyophilized sample</p> <p>-Liquid urine</p>

Provider	Test	Matrix
	17. Immunosuppressant 18. Lipids 19. Liquid Cardiac 20. Maternal Screening 21. Serology (EBV) 22. Serology (HIV/Hepatitis) 23. Serology (Syphilis) 24. Serology (ToRCH) 25. Specific Proteins 26. Sweat testing 27. Therapeutic Drugs 28. Trace Elements in Blood 29. Trace Elements in Serum 30. Trace Elements in Urine 31. Urinalysis 32. Urine Toxicology	
<u>17. Bio-Rad</u> <u>Laboratories</u>	1. Blood Gas 2. Blood typing 3. Cardiac markers 4. Clinical Chemistry 5. Coagulation 6. Ethanol/Ammonia 7. Hematology 8. Hemoglobin 9. HIV-Hepatitis 10. Immunoassay 11. Lipids 12. Serum Proteins	-Lyophilized whole blood -Lyophilized serum -Lyophilized plasma -Liquid serum -Liquid plasma -Lyophilized urine

Provider	Test	Matrix
	13. Syphilis 14. Therapeutic Drug Monitoring 15. ToRCH-EBV-MuMz 16. Urinalysis 17. Urine chemistry	
<u>18. Regional Medical Sciences Center 10 Ubonratchathani, Department of Medical Sciences, Thailand</u>	1. POCT Glucose 2. POCT Hematocrit 3. HCG 4. Protein in urine 5. Sugar in urine 6. Acid phosphatase enzyme and sperm	- Blood - Blood - Urine - Urine - Urine - Sperm slide and swab
<u>19. Regional Medical Sciences Center 5 Samut Songkhram, Department of Medical Sciences, Thailand</u>	1. HCG 2. Protein in urine 3. Sugar in urine 4. Dengue NS1 Antigen 5. Dengue IgM 6. Dengue IgG 7. POCT Glucose 8. POCT Hematocrit	- Urine - Urine - Urine - Plasma / Serum - Plasma / Serum - Plasma / Serum - Blood - Blood