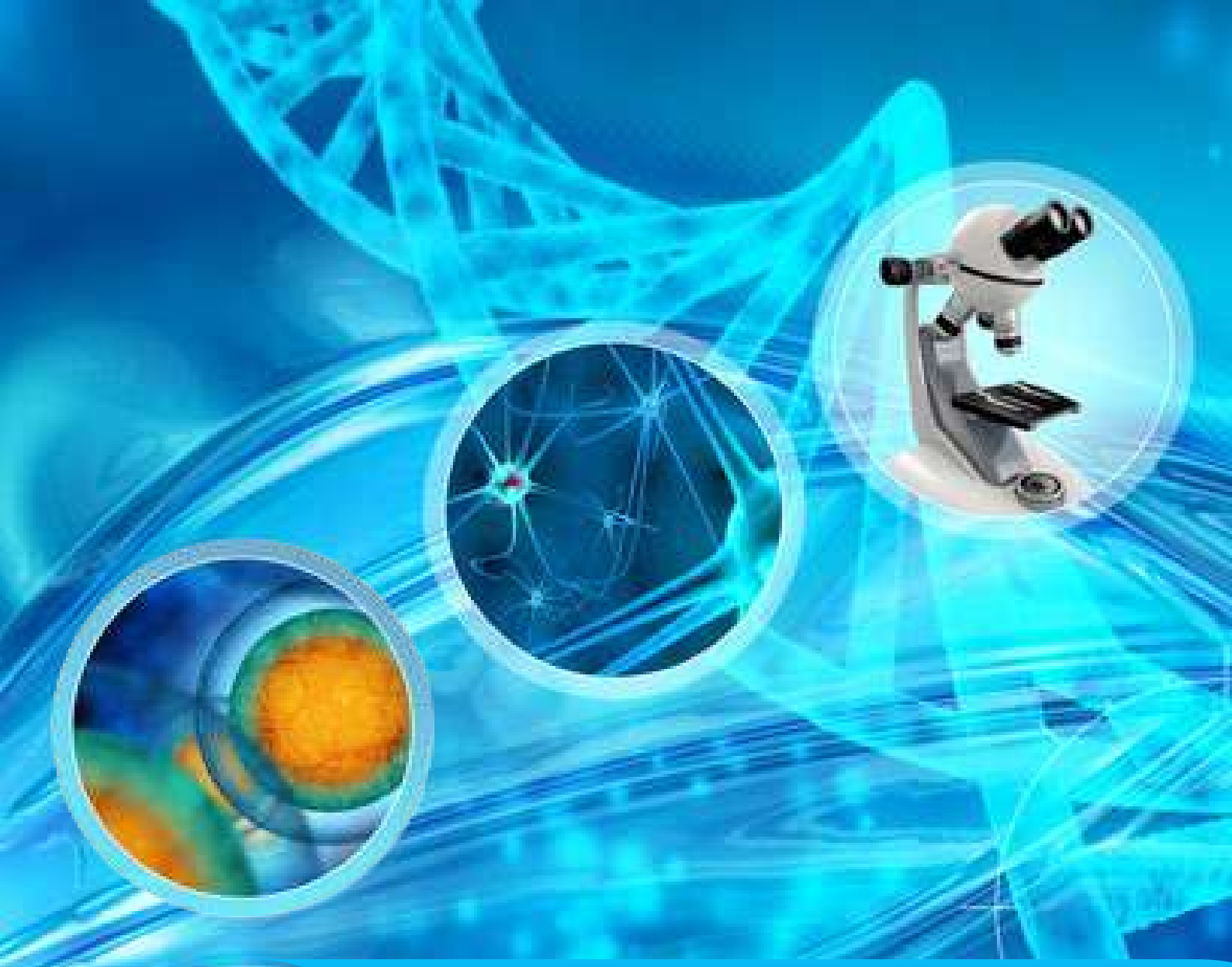


LABORATORY HANDBOOK

LABLINK

MEDICAL LABORATORY

EDITORIAL COMMITTEE

Advisors

Dr. Muhammad Nazri Aziz	Person In Charge (Consultant Medical Microbiologist), Lablink Medical Laboratory
Dr. Norris Naim	Consultant Blood Transfusion Specialist cum Haematologist, Lablink Medical Laboratory
Dr. Herni Talib	Consultant Histopathologist, Lablink Medical Laboratory
Dr. Roslina Suboh	Consultant Histopathologist, Lablink Medical Laboratory
Assoc Prof. Dr. Aletza Mohd Ismail	Consultant Chemical Pathologist, Lablink Medical Laboratory

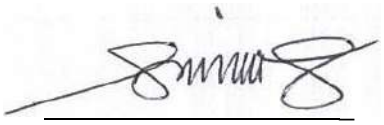
Members

Cik Nur Jannah Lim Bee Eng	Deputy General Manager, Lablink Central
Cik Kamna Khorana Ashok Kumar	Head of Reference Business Centre, Lablink Central
Pn. Nur Amalina Mohd Zaman	Head of Laboratory (Integrated Diagnostics), Lablink Central
Cik Siti Fauziah Mohamed	Head of Laboratory (Histopathology & Cytopathology), Lablink Central
Pn. Sreeambal Ramankutty	Head of Laboratory (Microbiology & Molecular), Lablink Central
Pn. Norsyuhaini Sharin	Senior Clinical Laboratory Scientist (Haematology), Lablink Central
Cik Nabila Ibrahim	Senior Clinical Laboratory Scientist (Molecular Diagnostics), Lablink Central
Cik Revathy Muthusamy	Clinical Laboratory Scientist (Cytopathology), Lablink Central
Pn. Nurul Najwa Abdul Mokti	Clinical Laboratory Scientist (Biochemistry), Lablink Central
Cik Sarah Ailis Ahmad Rashdi	Senior Clinical Laboratory Scientist (Serology & Immunology), Lablink Central
Pn. Rabiatul Adawiyah Zulkipli	Quality Executive, Lablink Central

Version 12, February 2024

Published by
Lablink Medical Laboratory (Lablink (M) Sdn. Bhd.)
14(129) Jalan Pahang Barat,
Off Jalan Pahang, 53000 Kuala Lumpur, Malaysia.
Phone: +603-4023 4588
Fax: +603-4023 4298
Email: enquiry@kpjlablink.com
Website: http://www.kpjlablink.com

Approved by:



Dr. Muhammad Nazri Aziz
Person in Charge
Date: 19th February 2024

TABLE OF CONTENTS

CORPORATE PROFILE

Lablink Medical Laboratory

Established in 1989, Lablink Medical Laboratory is the largest network of private hospital laboratories in Malaysia. In 1991, Lablink became a subsidiary of KPJ Healthcare Berhad (KPJHB) and started to manage all the hospital laboratories within the KPJHB Group since 1999. Lablink manages laboratories under KPJ's hospitals, some private hospitals, apart from its Heardquarters in Kuala Lumpur, and attends request from general practitioners' clinics and medical centres/ laboratories from private and government across Malaysia.

Lablink core concern is always about providing accurate and time efficient laboratory results to the clinicians, patients and customers in line with our slogan "Lab Tests Save Lives". With the value propostion of improving our patients' lives with reliable laboratory services by offering the right tests, for the right patient, at the right time, and delivering timely and accurate results which make positive impact on patients' lives, Lablink is committed to achieve it goals directed by its vision, mission, and quality policy.

At Lablink, the clinical, technical and administrative sections work closely as a team in pursuing and meeting quality standards in laboratory practice by taking into consideration of the organization context, the interest of our stakeholders and other relevant interested parties.

VISION

"The trusted diagnostic lab in the reagion"

MISSION

"Improving lives with Quality lab services"

CORE VALUES

Ensuring **SAFETY**

Delivering service with **COURTESY**

Performing duties with **INTEGRITY**

Exercising **PROFESSIONALISM**

Striving for **CONTINUOUS IMPROVEMENT**

TAG LINE

Lab tests saves lives

CONSULTANT PATHOLOGISTS

Dr. Muhammad Nazri Bin Aziz
Person In-Charge / Consultant Medical Microbiologist
M.D. (USM), MPath Medical Microbiology (UKM)
NSR No.: 129390

Dr. Norris Naim
Consultant Blood Transfusion Specialist cum Haematologist
MBBCh (University of Wales, UK), MPath (Haematology), UKM
Specialty: Hematopathology,
Transfusion Medicine
NSR No.: 130291

Dr. Herni Talib
Consultant Histopathologist
MBBS, MPath University of Malaya
Specialty: Histopathology
NSR No.: 130853

Dr. Roslina Suboh
Consultant Histopathologist
M.D UKM, MPath UKM
Specialty: Histopathology
NSR No.: 134343

Dr. Norfadzilah Bt Mohd Yusof
Consultant Histopathologist
MB, Bch (Univ. Ainshams), M.Path (UM)
NSR No.: 135410

Dr. Chau Yann Tyng
Consultant Histopathologist
MPath (UM), FRCPath (UK)
Specialty: General Pathology
NSR No.: 139805

Assoc. Prof. Dr. Aletza Mohd Ismail
Consultant Chemical Pathologist
MB BCh BAO (Belfast), MPath (UM)
Specialty: Chemical Pathology
NSR No.: 132789

INTRODUCTION

Lablink Medical Laboratory is one of the Clinical Support Services in the KPJ Group of hospitals. It provides medical laboratory diagnostic and consultation services to the KPJ Group of hospital and external healthcare facilities. The diagnostic services comprised of several disciplines in diagnostic pathology, concerned with the testing of biological samples obtained from patients.

This handbook is designed to be a comprehensive guideline on the requirement for laboratory services for medical practitioners and healthcare providers for the utilization of the laboratory services.

This handbook also provides special instructions about patient preparation before specimen collection, including the type or number of specimens that are needed to be sent to the laboratory. Guideline on the proper collection, packaging and transportation of specimens for testing are also included.

QUALITY POLICY

Lablink (M) Sdn Bhd is dedicated to making a positive impact in our patients' lives through the delivery of reliable laboratory services. In the pursuit of our vision and mission, Lablink is committed to:

- Deliver comprehensive, reliable, top-tier medical laboratory tests, ensuring **precise, accurate, and timely results** tailored to meet and exceed our customers' needs and expectations.
- Emphasise ethical conduct by assuring **confidentiality** of sensitive information, effectively managing conflicts of interest, and **maintaining a steadfast commitment to impartiality** in all our professional activities.
- Establish, implement, and maintain an effective management system that aligns with the requirements of both ***MS ISO 9001:2015*** and ***MS ISO 15189:2022 standards.***
- Ensure staff well-being and satisfaction, and foster a **culture of continuous learning** through the enhancement of staff's knowledge, skills, competencies, and career development.

LOCATION, SCOPE OF SERVICES & OPERATION HOURS

Lablink Central (Headquarters)

Location :

Bangunan Lablink,
14(129) Jalan Pahang Barat,
Off Jalan Pahang,
53000 Kuala Lumpur.
Tel: 03 4023 4588 / 03 4023 3588
Fax: 03 4023 4298

Operation Hours:

Monday – Friday
8.30 AM – 5.00 PM
(Lablink Care Centre starts at 8.00 am)

Saturday
8.30 AM – 12.30 PM
(Lablink Care Centre starts at 8.00 am)

Sunday and Public Holidays
Close

Contact Numbers:

03-40234588, 03-40210791, 03-40210752, 03-40210751,
03-40210780, 03-40210820, 03-40233588, 03-40238892

Laboratory/Unit	Scope of Services
Lablink Care Centre	Attending walk in customer for laboratory investigation. Consultation on laboratory investigation and laboratory results. Perform sample collection(venesection and other sample collection).
Reference Business Centre (RBC)	Specimen reception, registration and distribution. Collection and dispatch of specimen. Collection and dispatch of laboratory reports Referral of tests
Integrated Diagnostic Lab (IDL)	Chemistry Pathology
	• General chemistry for blood, urine and body fluids • Tumor markers • Hormones • Quantitative immunology testing • Special proteins/specific proteins • Drugs of abuse testing
	Hematology
	a) Routine Hematology: • Full blood count and differential count • Peripheral blood film examination • Reticulocyte count • Erythrocyte sedimentation rate

	b) Specialized Hematology: • Full blood picture with clinical interpretation • Haemoglobin analysis • Bone marrow examination • Flow cytometric examination
	Medical Microbiology
	• TB Quantiferon Test • Blood Film Malaria Parasites • Detection of Viral Antigens • Serological Testing • Immunology Testing - Immunoglobulin assays - Specific Immunoglobulins assays - Complement assays - Autoantibodies assays
Microbiology Lab	Medical Microbiology : a) Bacteriology (Culture & Sensitivity Testing) b) Mycobacteriology (Culture & Sensitivity Testing, PCR testing) c) Mycology (Culture & Sensitivity Testing) d) Parasitology (Detection and Identification of parasites)
Molecular Diagnostic Lab (MDL)	Nucleic acid detection for : • Respiratory infections • Central Nervous System infections • Gastrointestinal Infections • Hepatitis & HIV-1 Infections • Sexually Transmitted Infections • Tropical & Emerging Disease Infections • Thalassemia
Cytopathology Lab	a) Gynaecology cytology b) Non-gynaecology cytology c) Fine Needle aspiration
Histopathology Lab	a) Surgical histopathology – processing and reporting b) Frozen section – reporting c) Immunohistochemistry stains d) Histochemical stains

The list of tests and the turnaround time for tests offered by each of the laboratory is outlined in *TEST CATALOGUE & REQUIREMENTS* section.

LAB DIRECTORY

SERVICES/LABORATORY/UNIT	POSITION	CONTACT NUMBER/EXT NUMBER
Operator / Customer Service		03-40234588, 03-40210791, 03-40210752, 03-40210751, 03-40210780, 03-40210820, 03-40233588, 03-40238892
Lablink Care Centre (Walk in)	Medical Officer	Ext 1024
	Staff	Ext 1031/1034/1030
Sample Collection	Dispatch Supervisor	Ext 3015
Reference Business Centre	Head of RBC	Ext 3020
	Staff	Ext 3016/3017
Integrated Diagnostic Lab (Biochemistry, Immunology, Autoimmune Hematology)	Chemical Pathologist/ Immunologist	Ext 3021
	Hematologist	Ext 3000
	Head of Lab	Ext 3021
	Hematology Staff	Ext 3010
	Chemical pathology/Serology/ Immunology Staff	Ext 3008/3009
Microbiology Lab	Clinical Microbiologist	Ext 2002
	Head of Lab	Ext 5002
	Staff	Ext 5006/5008
Molecular Diagnostic Lab	Clinical Microbiologist	Ext 2002
	Head of Lab	Ext 5002
	Staff	Ext 1010
Histopathology Lab Cytopathology Lab	Pathologist (Head) Head of Lab Staff Pathologist (Head) Head of Lab Staff	Ext 4011 Ext 4555 Ext 4005/4006/4009 Ext 4001 Ext 4555 Ext 4004/4008

TEST ORDERING

GPs/ Non KPJ customers

Test can be requested using Lablink Test Request form as listed below:

- Intergrated Diagnostic (IDL) Request Form
- Microbiology Request Form
- Molecular Request Form
- Covid-19 Test Request Form
- Histopathology Request Form
- Frozen Section Request Form
- Cytology Request Form
- Quantiferon TB Gold Request Form
- Prenatal Risk Screen Form
- Immunology Request Form
- Allergy Test Request Form
- Steatotest@Liverfast Form

- Serum Protein Electrophoresis Request Form
  (Refer to Appendix 1)

The laboratory request forms shall be completed with the following information:

- ✓ Patient's identification information (Full name, Identity card or passport number, hospital / clinic registration number,age and gender)
- ✓ Relevant clinical history and diagnosis
- ✓ Drug history, where relevant
- ✓ Hospital or clinic official rubber stamp
- ✓ Name of test requested
- ✓ Type of specimen and anatomic site of origin, where appropriate
- ✓ Date of specimen collected, time of collection where appropriate
- ✓ Name of person collecting the specimen
- ✓ Doctor's signature and stamp

Incomplete form filling may delay the specimen processing and affect the turnaround time of the final report.

Walk in Customers

Walk in customers may request for a test at our counter referring to the test catalogue in consultation by the Medical Officer. Customer may also bring a referral letter from their doctor for test to be performed at Lablink. The counter staff will assist in registration of patient information and test requested.

CONSUMABLES ORDERING

Consumables items such as blood collection tubes, TB Quantiferon tubes, urine containers, laboratory request forms, specimen bag (Kangaroo bag) , slide holders and other can be obtained by filling up the "Consumable request form" provided by Lablink. The form can be emailed to lablink.reports@gmail.com or hand over to the dispatch during sample collection.

URGENT TEST REQUEST

GPs/ Non KPJ customers

Request with appropriate justification will be accepted as ***"Urgent Test Request"***. Please contact 03-40234588 / 03-4027 2852 / 03-4027 2800, ext. 3016 / 3017 (sample collection)

Walk in Customers

For ***"Urgent Test Request"*** kindly inform the counter staff (LCC) so that the form can be stamped as **URGENT** and they can update the respective laboratory.

REFERRED TEST

Where test cannot be performed or not available in house, it will be referred out to various referral laboratories from government and private sectors. The laboratories are selected based on criterias to ensure quality and reliability of results. Reference Business Centre will managed and handled the referral tests for Lablink.

RESULTS REPORTING AND TRACING

Result Reporting

i. KPJ Hospital Laboratories

All test results can be viewed and retrieved via the Laboratory Information System (WINLIS) of each respective laboratory. Referral test reports will be uploaded into the LIS as well.

ii. GP Clinics/Non- KPJ Hospital Labs/Walk in customer.

Results/reports will be emailed to the authorized receiver. Hard copy reports only will be provided upon request and will be sent by post or dispatch.

Referral test reports will also be provided in the same manner as above.

Result Tracing

Kindly call the respective laboratory (refer to Lab Directory) for any inquiry regarding result OR preliminary report. Result tracing will only be entertained if the result has exceeded its turnaround time (TAT). Please refer to each tests' TAT in respective unit section.

CRITICAL RESULT NOTIFICATION

i. The patient authorized healthcare provider (doctor/nurse) is notified when specified diagnostic test result reached critical value or alert value as listed in below table.

ii. In the event that the authorized healthcare provider cannot be reached, the next authorized healthcare provider is reached and the result is conveyed.

iii. All critical results will be notified to the authorized healthcare provider within 30 minutes upon confirmation of results via phone. Tests result falls under alert range will be notified to the authorized healthcare provider within 2 hours upon confirmation of results via phone. Effective and timely communication (within 24 hours) is emphasized for anatomical pathology and cytology.

iv. Critical test values obtained from referral laboratories will be communicated to the authorized healthcare provider once the referral laboratory notify Lablink.

v. To verify the accuracy of patient information and test result communicated via the telephone, the consultant or authorized person for patient care is required to read-back the patient name, unique patient numeric identification (MRN)/ identity card number, and the critical test result(s) conveyed.

Critical Results Value

Hematology

Lower Critical Limit	Analyte	Upper Critical Limit
-	APTT	80 secs or > 2X upper reference range
100 mg/dL	Fibrinogen	-
70 mg/dL	Fibrinogen (Paeds)	-
20%	Hematocrit	60%
25%	Hematocrit (neonates)	70%
20%	Hematocrit (Paeds)	40%
8 g/dL	Hemoglobin	19 g/dL
6.0 g/dL	Hemoglobin (dialysis cases)	20 g/dL
10 g/dL	Hemoglobin (neonates)	22 g/dL
9 g/dL	Hemoglobin (Paeds)	20 g/dL
	INR (ratio)	4
50 X 10^3/uL	Platelet count	800 x 10^3/uL
-	PT	20 sec
2.0 X10^3/uL	WBC	30 x10^3/uL
2.0 X10^3/uL	WBC (Paeds)	45 x10^3/uL
-	Morphology	Presence of blast

Serology/Immunology

Lower Critical Limit	Analyte	Upper Critical Limit
-	Free T4	45 pmol/L
-	TSH (neonates)	>25 mIU/mL (>25 for cord blood)

Clinical Chemistry

Lower Critical Limit	Analyte	Upper Critical Limit
-	ALT/SGPT	400 U/L
-	Ammonia (Paeds)	100 umol/L
-	Amylase	250 U/L
-	AST/SGOT	400 U/L
10mmol/L	Bicarbonate	40mmol/L
-	Bilirubin Total (Adult)	102 umol/L
-	Bilirubin Total	Neonate 308 umol/L (18 mg/dL) Chlid 428 umol/L (25.0 mg/dL)
1.7 mmol/L	Calcium	3.0 mmol/L
1.7 mmol/L	Calcium (Paeds)	3.0 mmol/L
-	Creatinine	510 umol/L (Non dialysis)
-	Creatinine (Paeds)	330 umol/L
-	Creatinine Kinase	350 U/L

Lower Critical Limit	Analyte	Upper Critical Limit
1.6 mmol/L	CSF- Glucose (Paeds)	-
-	CSF-Protein (Paeds)	1.87 g/L
3.0 mmol/L	Glucose	20.0 mmol/L
-	Lactate	5.0 mmol/L
	Lactate (Paeds)	3.0 mmol/L
-	LDH	1000 U/L
0.41 mmol/L	Magnesium	2.0 mmol/L
0.5 mmol/L	Magnesium (Paeds)	1.8 mmol/L
0.32 mmol/L	Phosphate	2.87 mmol/L
0.4 mmol/L	Phosphate (Paeds)	2.80 mmol/L
2.8 mmol/L	Potassium	6.0 mmol/L
2.8 mmol/L	Potassium (Paeds)	6.0 mmol/L
120 mmol/L	Sodium	159 mmol/L
125 mmol/L	Sodium (Paeds)	155 mmol/L
-	Urea	30.0 mmol/L
-	Urea (Paeds)	19.0 mmol/L
-	Uric acid (Paeds)	500 umol/L
-	GGT	1000 U/L
-	Lithium	1.5 mmol/L
250 mmol/kg	Serum Osmolality	350 mmol/kg
250 mmol/kg	Serum Osmolality (Paeds)	310 mmol/kg
-	Troponin T	Positive(Qualitative) 0.05ng/mL (Quantitative)

Microbiology

Specimen/Test	Critical Result/Findings
Blood Culture	Positive result from gram stain / culture
CSF culture	Positive result from gram stain / culture
CSF Antigen	Positive : for Cryptococcal and bacteria
Any type culture	Isolation of Bacteria: *Burkholderia pseudomallei, Corynebacterium diphtheria, Bordetella pertussis, Francisella tularensis, Yersinia pestis*. Isolation of Fungal: *Blastomyces dermatitidis, Histoplasma capsulatum Coccidioides immitis, Paracoccidioides brasiliensis*

Therapeutic Drug /Toxicology Monitoring

Lower Critical Limit	Analyte	Upper Critical Limit
	Acetaminophen	> 150 µg/ml ; 4 hours post ingestion >50 µg/ml ; 12 hours post ingestion
	Amikacin	Peak : >35ng/ml Trough : >10ng/ml

Lower Critical Limit	Analyte	Upper Critical Limit
	Digoxin	>2.5ng/ml
	Ethanol	>250 mg/dl
	Gentamicin	Peak : >12 µg/ml Trough : > 2 µg/ml
	Vancomycin	Peak : >80 µg/ml Trough: >30 µg/ml
	Phenytoin(Dilantin)	>20 µg/ml
	Theophylline	>20 µg/ml
	Valproic Acid	>150 µg/ml
	Carbamazepine (Tegretol)	>15 µg/ml
	Cyclosporine	>400 ng/ml
	Tacrolimus	>25 ng/ml
	Salicylate	>500 µg/ml

Blood Bank

Test/Event	Critical Findings
Antibody Screen	Positive
Crossmatch	Incompatible blood
Blood Grouping	Different blood group identified from previous blood bank record.
Transfusion Reaction	• Wrong transfusion • Haemolysis • Septic Transfusion (positive bacterial screen)
Others	Product recall Rare blood group (eg : Bombay, RhD Neg)

Anatomy Pathology and Cytopathology

HISTOPATHOLOGY	
Category	**Critical Findings**
Unexpected or discrepant Findings	1. Unexpected malignancy 2. Wrong organ removed 3. Fat in endometrial curettage 4. Fat in colonic endoscopic polypectomy specimens 5. Significant disagreement in frozen section and final diagnosis. 6. Neoplasm causing paralysis 7. Malignancy in superior vena cava syndrome

HISTOPATHOLOGY	
Category	**Critical Findings**
Reports on Infection	1. Bacteria in heart valve and bone marrow 2. Organism in an immune-compromised patient such as AFB, fungi, viral , protozoa 3. Organism in CSF 4. Unusual organisms or organism in unusual sites (e.g.: amoeba in the eye)
Reports on critically ill Patients requiring immediate therapy	1. Crescents in greater than 50% of glomeruli in renal biopsy specimen 2. Transplant rejection

CYTOPATHOLOGY
Critical Findings
1. Unexpected/non -suspicious malignancy of the following: - High grade squamous intraepithelial lesion (HSIL) - Squamous cell carcinoma (SCC) - Adenocarcinoma 2. Malignancy in critical places that can cause spinal cord injury 3. Fungi in FNA specimen from an immune compromised patient 4. The finding of certain microorganisms in any patient.

COMPLAINT AND FEEDBACK

Clinicians/customers/patients/users who wish to raise a complaint or provide a feedback Lablink pertaining the laboratory services may do so by scanning the QR code below and fill up the details:

SPECIMEN COLLECTION GUIDELINES

IDENTIFICATION OF TUBES

Various tubes are used in Lablink. It all depends on which test to be performed. Below are the examples of tubes coded by different colours. The coded colour on cap indicates the type of preservative contains. Each tube has its specificity thus, blood drawn into the tubes must be same as test requested (**Figure 1**).

VACUETTE® tube type	Colour-coding of cap	Additive	Intended purpose
Serum		Clot Activator	Determinations in serum for clinical chemistry, microbiological serology, immunology, TDM
Serum Gel		Clot Activator and gel	Determinations in serum for clinical chemistry, microbiological serology, immunology, TDM
Serum Beads		Clot Activator and Beads	Determinations in serum for clinical chemistry, microbiological serology, immunology
Serum Crossmatch		Clot Activator	Determinations in serum for crossmatch testing
Plasma		Sodium Heparin	Determinations in heparinised plasma for clinical chemistry
Plasma		Lithium Heparin	Determinations in heparinised plasma for clinical chemistry
Plasma Gel		Lithium Heparin and gel	Determinations in heparinised plasma for clinical chemistry
EDTA		K2 EDTA K3 EDTA	Determinations in EDTA whole blood for haematology
EDTA Crossmatch		K3 EDTA	Determinations in EDTA whole blood for crossmatch testing
EDTA Gel		K2 EDTA / gel	Determinations in EDTA plasma for molecular biological identification of viruses, parasites and bacteria
Coagulation		Citrate Solution (3.2%) Citrate Solution (3.8%)	Determinations in citrated plasma for coagulation testing
CTAD		CTAD (3.2%)	Determinations in citrated plasma for coagulation testing where the artificial entry of platelet factors into the plasma is avoided
Glucose		Anticoagulant Glycolysis inhibitor	Determinations in stabilised anticoagulated whole blood or plasma for glucose and lactate testing
Trace Elements		Clot Activator Sodium Heparin	Determinations in serum / heparinised plasma for trace elements testing
Blood Grouping		ACD-A ACD-B CPDA	Determinations in ACD / CPDA whole blood for blood grouping

Figure 1: Tubes coded by different colours

HAND HYGIENE

Keeping hands clean through improved hand hygiene is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands with soap and clean, running water. If clean, running water is not accessible, as is common in many parts of the world, use soap and available water. If soap and water are unavailable, use an alcohol-based hand sanitizer that contains at least 60% alcohol to clean hands. Below show the 7 steps of hand hygiene.

Figure 2: Seven steps of hand hygiene

PHLEBOTOMY PROCEDURES

Do and Don't During phlebotomy procedures

All the times, always follow the procedure in order to ensure the safety and accuracy of sample withdrawn from the patient. Below is the table show you should do and don't for phlebotomy procedure.

Do	Don't
DO carry out hand hygiene (use soap and water or alcohol rub), and wash carefully, including wrists and spaces between the fingers for at least 30 seconds	**DO NOT** forget to clean your hands
DO use one pair of non-sterile gloves per procedure or patient	**DO NOT** use the same pair of gloves for more than one patient
DO use a single-use device for blood sampling and drawing	**DO NOT** use a syringe, needle or lancet for more than one patient
DO disinfect the skin at the venepuncture site	**DO NOT** touch the puncture site after disinfecting it
DO discard the used device (a needle and syringe is a single unit) immediately into a robust sharps container	**DO NOT** leave an unprotected needle lying outside the sharps container
Where recapping of a needle is unavoidable, **DO** use the one-hand scoop technique	**DO NOT** recap a needle using both hands
DO seal the sharps container with a tamper-proof lid	**DO NOT** overfill or decant a sharps container
DO place laboratory sample tubes in a sturdy rack before injecting into the rubber stopper	**DO NOT** inject into a laboratory tube while holding it with the other hand

PHLEBOTOMY PROCEDURE FOR ADULTS

1. Assemble equipment

Collect all the equipment needed for the procedure and place it within safe and easy reach on a tray or trolley, ensuring that all the items are clearly visible. The equipment required includes:

- laboratory sample collection tubes, which should be stored dry and upright in a rack; blood can be collected in
    - Sterile glass or plastic tubes with rubber caps
    - Vacuum-extraction blood tubes
    - Glass tubes with screw capswell-fitting, non-sterile gloves
- an assortment of blood-sampling devices
- a tourniquet
- alcohol hand rub
- 70% alcohol swabs for skin disinfection
- gauze or cotton-wool ball to be applied over puncture site
- laboratory specimen labels/barcode
- writing equipment
- laboratory forms
- leak-proof transportation bags and containers
- a puncture-resistant sharps container

Ensure that the rack containing the sample tubes is close to you, the health worker, but away from the patient, to avoid it being accidentally tipped over.

2. Identify and prepare the patient

Where the patient is adult and conscious follow the steps outlined below.

- Introduce yourself to the patient, and ask the patient to state their full name and identity card/passport number.
- Check that the laboratory form matches the patient's identity (2 patient identifiers; patient full name and IC No/Passport No are used to identify patient correctly).
- Ask whether the patent has allergies, phobias or has ever fainted during previous injections or blood draws.
- If the patient is anxious or afraid, reassure the person and ask what would make them more comfortable.
- Make the patient comfortable in a supine position (if possible).
- Discuss the test to be performed and obtain verbal consent. The patient has a right to refuse a test at any time before the blood sampling, so it is important to ensure that the patient has understood the procedure.

3. Select the site

- Extend the patient's arm and inspect the antecubital fossa or forearm.
- Locate a vein of a good size that is visible, straight and clear. The median cubital vein lies between muscles and is usually the easiest to puncture. Under the basilica vein run an artery and a nerve, so puncturing here runs the risk of damaging the nerve or artery and is usually more painful. **DO NOT** inserts the needle where veins are diverting, because this increases the chance of a haematoma.
- The vein should be visible without applying the tourniquet. Locating the vein will help in determining the correct size of needle.
- Apply the tourniquet about 4–5 finger widths above the venepuncture site and re-examine the vein.

4. Perform hand hygiene and put on gloves

- Perform hand hygiene
    - Wash hands with soap and water, and dry with single-use towels
    - If hands are not visibly contaminated, clean with alcohol rub – use 3 ml of alcohol rub on the palm of the hand, and rub it into fingertips, back of hands and all over the hands until dry.
- After performing hand hygiene, put on well-fitting, non-sterile gloves.

5. Disinfect the entry site

- Unless drawing blood cultures, or prepping for a blood collection, clean the site with a 70% alcohol swab for 30 seconds and allow to dry completely (30 seconds).
    - Note: alcohol is preferable to povidone iodine, because blood contaminated with povidone iodine may falsely increase levels of potassium, phosphorus or uric acid in laboratory test results.
- Apply firm but gentle pressure. Start from the centre of the venepuncture site and work downward and outwards to cover an area of 2 cm or more.
- Allow the area to dry. Failure to allow enough contact time increases the risk of contamination.
- **DO NOT** touches the cleaned site; in particular, **DO NOT** places a finger over the vein to guide the shaft of the exposed needle. It the site is touched, repeat the disinfection.

6. Take blood

Perform venepuncture as follows.

- Anchor the vein by holding the patient's arm and placing a thumb below the venepuncture site.
- Ask the patient to form a fist so the veins are more prominent.
- Enter the vein swiftly at a 30 degree angle or less, and continue to introduce the needle along the vein at the easiest angle of entry.
- Once sufficient blood has been collected, release the tourniquet before withdrawing the needle.
- Some guidelines suggest removing the tourniquet as soon as blood flow is established,

and always before it has been in place for two minutes or more.

- Withdraw the needle gently and apply gentle pressure to the site with a clean gauze or dry cotton-wool ball. Ask the patient to hold the gauze or cotton wool in place, with the arm extended and raised. Ask the patient **NOT** to bend the arm, because doing so causes a haematoma.

7. Fill the laboratory sample tubes

- When obtaining multiple tubes of blood, use evacuated tubes with a needle and tube holder. This system allows the tubes to be filled directly. If this system is not available, use a syringe or winged needle set instead.
- Pierce the stopper on the tube with the needle directly above the tube using slow, steady pressure. **DO NOT** press the syringe plunger because additional pressure increases the risk of haemolysis.
- Where possible, keep the tubes in a rack and move the rack towards you. Inject downwards into the appropriate coloured stopper. **DO NOT** remove the stopper because it will release the vacuum.
- If the sample tube does not have a rubber stopper, inject extremely slowly into the tube as minimizing the pressure and velocity used to transfer the specimen reduces the risk of haemolysis. **DO NOT** recap and remove the needle.
- Before dispatch, invert the tubes containing additives for the required number of times.

8. Draw the samples in correct order as follows:

Order of use	Type of tube/usual colour	Additive	Mode of action	Uses
1	Blood culture bottle (yellow-black striped tubes)	Broth mixture	Preserves viability of microorganisms	Microbiology – aerobes, anaerobes, fungi
2	Non-additive tube	None	Centrifugation	Chemistries, immunology and serology
3	Coagulation tube (light blue top)	Sodium citrate	Forms calcium salts to remove calcium	Coagulation tests (prothrombin time), requires full draw
4	Clot activator (red top)	Clot activator	Blood clots, and the serum is separated by Centrifugation	Chemistries, immunology and serology, blood bank (cross-match)
5	Serum separator tube (red-grey tiger top or gold)	None	Contains a gel at the bottom to separate blood from serum on Centrifugation	Chemistries, immunology and serology
6	Sodium heparin (dark green top)	Sodium heparin or lithium heparin	Inactivates thrombin and Thromboplastin	For lithium level use sodium heparin, for ammonia level use either
7	PST (light green top)	Lithium heparin anticoagulant and a gel separator	Anticoagulants with lithium, separates plasma with PST gel at bottom of tube	Chemistries
8	EDTA (purple top)	EDTA	Forms calcium salts to remove calcium	Haematology, Blood

Order of use	Type of tube/usual colour	Additive	Mode of action	Uses
				Bank (cross-match) requires full draw
9	Blood tube (pale yellow top)	Acid-citrate-dextrose (ACD, ACDA or ACDB)	Complement inactivation	HLA tissue typing, paternity testing, DNA studies
10	Oxalate/fluoride (light grey top)	Sodium fluoride and potassium oxalate	Anti-glycolytic agent preserves glucose up to five days	Glucoses, requires full draw (may cause haemolysis if short draw)

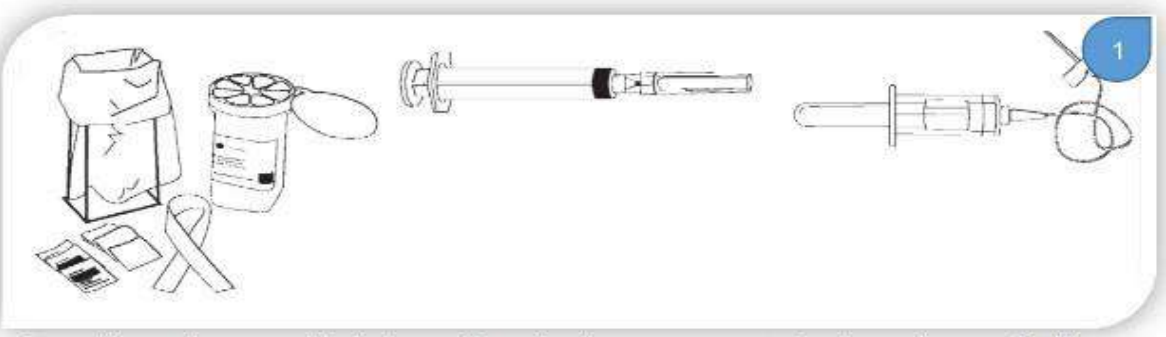
9. Sample labeling and complete patient procedure

- Discard the used needle and syringe or blood sampling device into a puncture-resistant sharps container.
- Label all blood tubes with patient's full name and IC number/passport number.
- Check the pre-printed label (barcoded lab number) and information on laboratory reqeust form for accuracy. Both patient information on specimen tubes and request form SHALL NOT have any discrepancy.
- Paste the barcode onto the specimen tubes. Write the date and time of specimen collection on the tubes. The person performing specimen collection to be indicated on the form/specime collection tubes.
- Discard used items into the appropriate category of waste. Items used for phlebotomy that would not release a drop of blood if squeezed (e.g. gloves) may be discarded in the general waste, unless local regulations state otherwise.
- Perform hand hygiene again, as described above.
- Inform the patient when the procedure is over.
- Ask the patient how they are feeling. Check the insertion site to verify that it is not bleeding, then thank the patient and say something reassuring and encouraging before the person leaves.

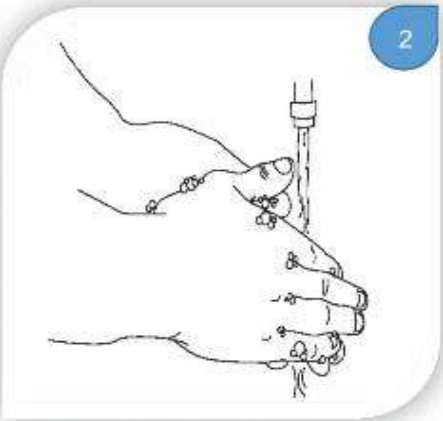
10. Prepare sample for transportation (if need)

- Pack laboratory samples safely in a plastic leak-proof bag with an outside compartment for the laboratory request form. Placing the requisition on the outside helps avoid contamination.If there are multiple tubes, place them in a rack or padded holder to avoid breakage during transportation.

DIAGRAM FOR ADULT BLOOD TAKING PROCEDURES

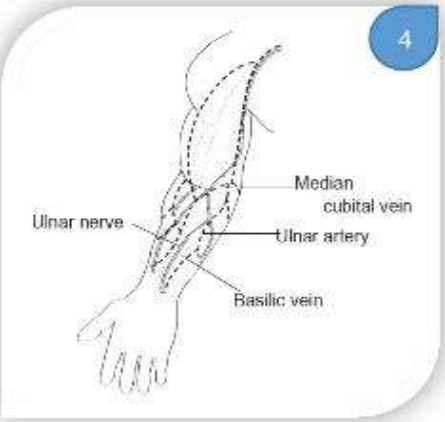


Assemble equipment and include needle and syringe or vacuum tube, depending on which is to be used.

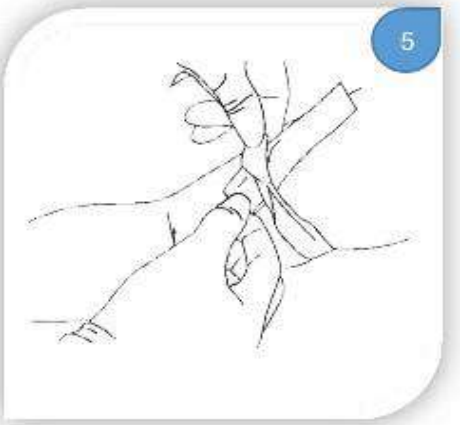


Perform hand hygiene (if using soap and water, dry hands with single use towel).

Identify and prepare the patient.



Select the site, preferably at the antecubital area (i.e: the bend of elbow). Warming the arm with a hot pack, or hanging the hand down may make it easier to see the veins. Palpate the area to locate the anatomic landmarks. Do not touch the site once alcohol or other antiseptic has been applied.

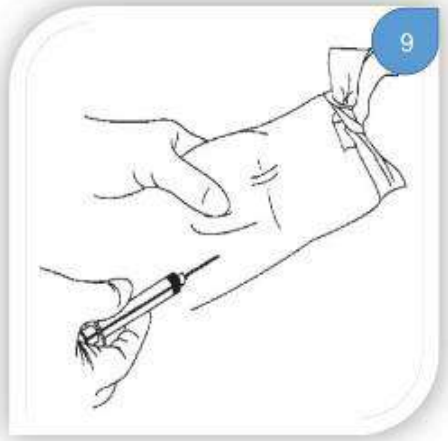


Apply a tourniquet, about 4-5 finger widths above the selected venepuncture site.

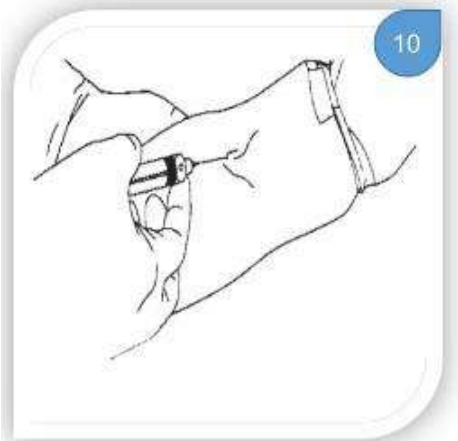
Ask the patient to form a fist so that the veins are more prominent.

Put on well-fitting, non-sterile gloves.

Disinfect site using 70 % isopropyl alcohol for 30 seconds and allow to dry completely (30 seconds).



Anchor the vein by holding the patient's arm and placing a thumb below the venepuncture site.



Enter the vein swiftly at 30 degree angle.

Once sufficient blood has been collected, release the tourniquet before withdrawing the needle.

Withdraw the needle gently and then give patient a clean gauze or dry cotton –wool ball to apply to the site with gentle pressure.

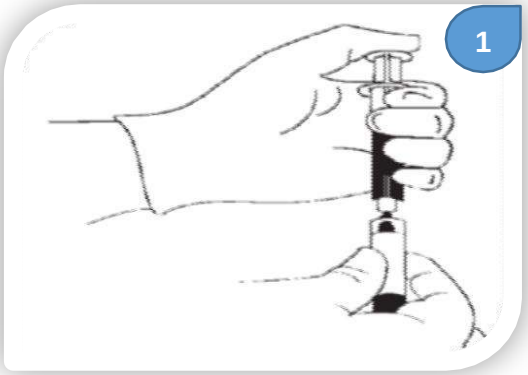
Discard the used needle and syringe or blood-sampling device into a puncture resistance container

Check the label and forms for accuracy.

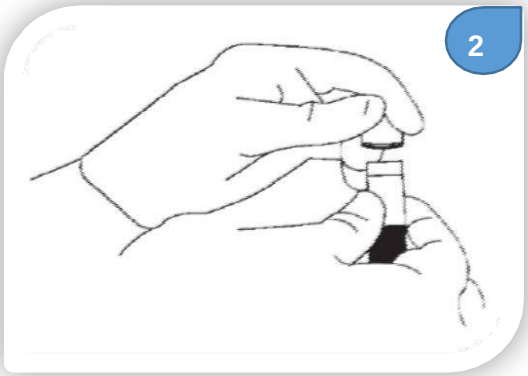
Discard sharp and broken glass into the sharps container. Place items that can drip blood or body fluids into the infectious waste.

Remove gloves and place them in the general waste. Perform hand hygiene. If using soap and water, dry hands with single use towels.

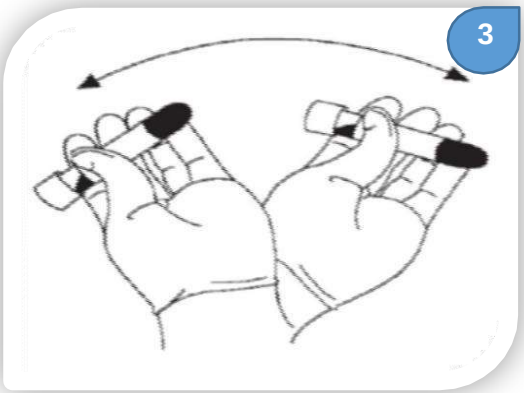
FILLING TUBES



If the tubes does not have rubber stopper, press the plunger in slowly to reduce haemolysis (this is safer than removing the needle).



Place stopper in the tube.



Following laboratory instructions, invert the sample gently to mix the blood with the additives. Invert 8 to 10 times.

PHLEBOTOMY FOR NEONATES AND PAEDIATRICS

Choice of procedure and site

The choice of site and procedure (venous site, finger-prick or heel-prick – also referred to as "capillary sampling" or "skin puncture") will depend on the volume of blood needed for the procedure and the type of laboratory test to be done. Venepuncture is the method of choice for blood sampling in term neonates. However, it requires an experienced and trained phlebotomist. If a trained phlebotomist is not available, the physician may need to draw the specimen. The blood from a capillary specimen is similar to an arterial specimen in oxygen content, and is suitable for only a limited number of tests because of its higher likelihood of contamination with skin flora and smaller total volume.

Preparation

Ask whether the parent would like to help by holding the child. If the parent wishes to help, provide full instructions on how and where to hold the child. If the parent prefers not to help, ask for assistance from another phlebotomist.
Immobilize the child as described below.

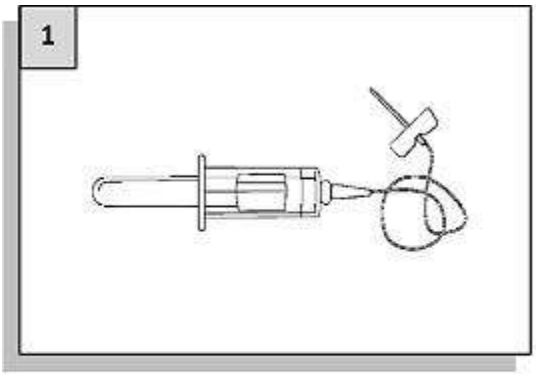
- Designate one phlebotomist as the technician, and another phlebotomist or a parent to immobilize the child.
- Ask the two adults to stand on opposite sides of an examination table.
- Ask the immobilizer to:
    - Stretch an arm across the table and place the child on its back, with its head on top of the outstretched arm.
    - Pull the child close, as if the person were cradling the child.
    - Grasp the child's elbow in the outstretched hand.
    - Use their other arm to reach across the child and grasp its wrist in a palm-up position (reaching across the child anchors the child's shoulder, and thus prevents twisting or rocking movements; also, a firm grasp on the wrist effectively provides the phlebotomist with a "tourniquet").

- If necessary, take the following steps to improve the ease of venepuncture.
    - Ask the parent to rhythmically tighten and release the child's wrist, to ensure that there is an adequate flow of blood.
    - Keep the child warm, which may increase the rate of blood flow by as much as sevenfold, by removing as few of the child's clothes as possible and, in the case of an infant, by:
        - Swaddling in a blanket.
        - Having the parent or caregiver hold the infant, leaving only the extremity of the site of venepuncture exposed.
        - Warm the area of puncture with warm cloths to help dilate the blood vessels.
        - Use a trans-illuminator or pocket pen light to display the dorsal hand veins and the veins of the antecubital fossa.

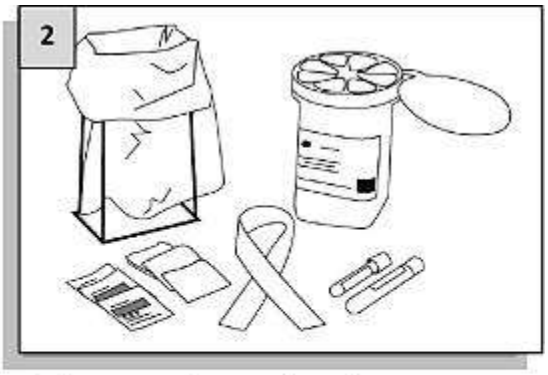
Drawing Blood

- Follow the procedures given in Phlebotomy for Adult for:
    - Hand hygiene
    - Advance preparation
    - Patient identification and positioning
    - Skin antisepsis (but **DO NOT** use chlorhexidine on children under 2 months of age).
- Once the infant or child is immobilized, puncture the skin 3–5 mm distal to (i.e. away from) the vein this allows good access without pushing the vein away.
- If the needle enters alongside the vein rather than into it, withdraw the needle slightly without removing it completely, and angle it into the vessel.
- Draw blood slowly and steadily.

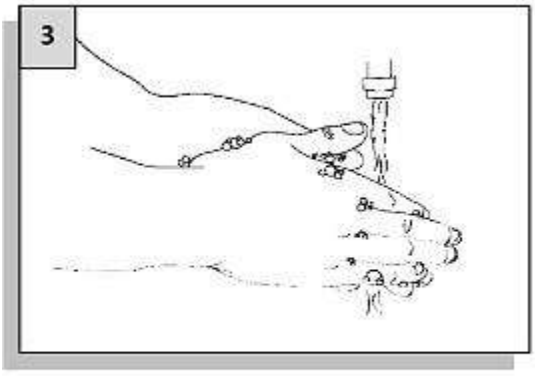
<u>DIAGRAM FOR PAEDIATRIC BLOOD TAKING PROCEDURES</u>



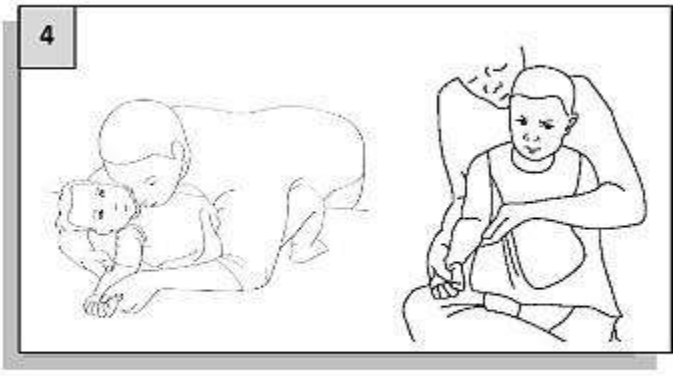
Use a winged steel needle, usually 23 or 25 gauge, with an extension tube (butterfly). Keep the tube and needle separate until the needle is in the vein.



Collect supplies and equipment.

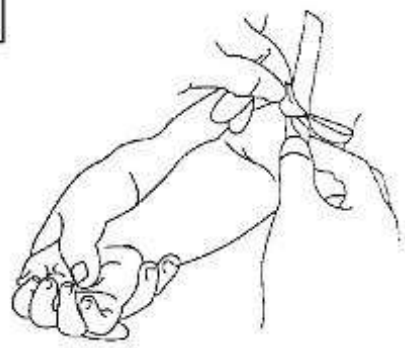


Perform hand hygiene (if using soap and water, dry hands with single-used towels).



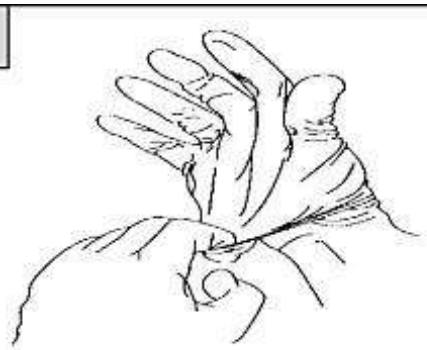
Immobilize the baby or child.

5



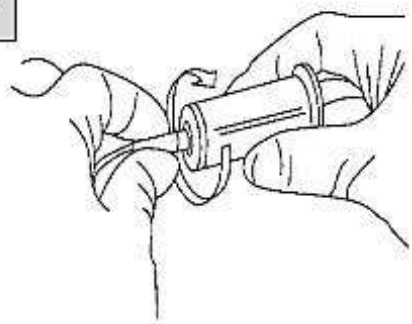
Put the tourniquet on the patient about two fingers widths above the venepuncture site.

6



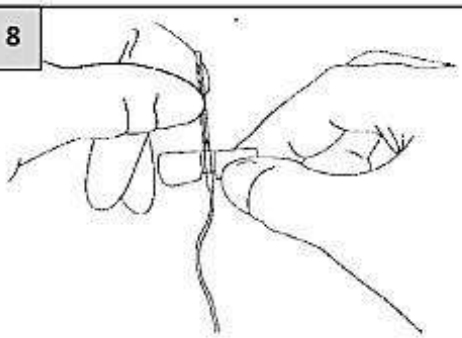
Put on well fitting, non-sterile gloves

7



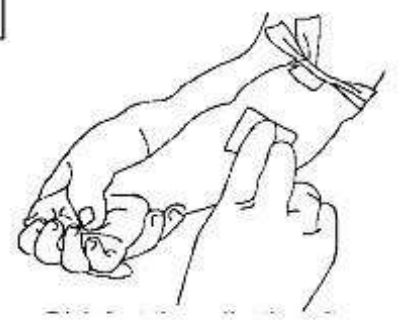
Attach the end of the winged infusion set to the end of the vacuum tube and insert the collection tube into the holder until the tube reaches the needle.

8



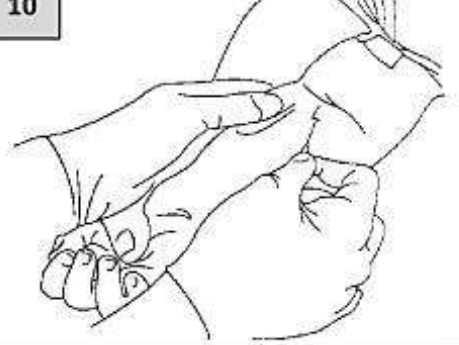
Remove the plastic sleeve from the end of the butterfly.

9



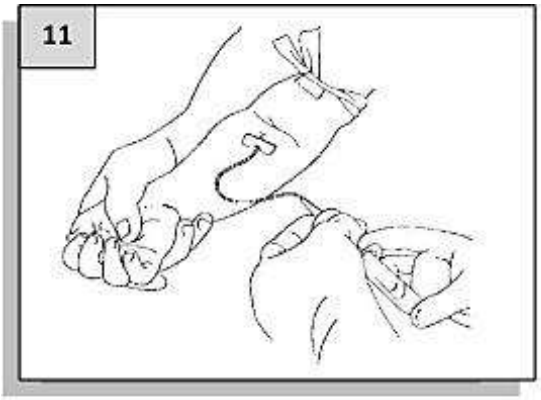
Disinfect the collection site and allow to dry.

10



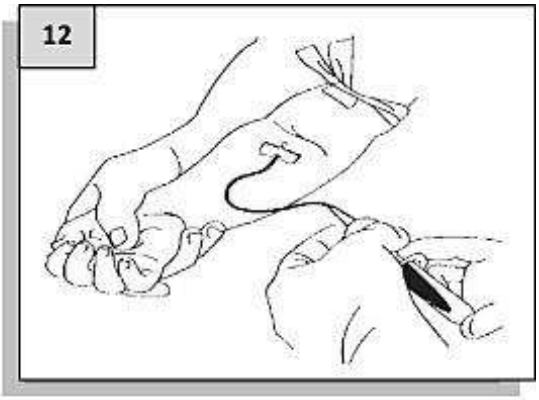
Use a thumb to draw the skin tight.

11



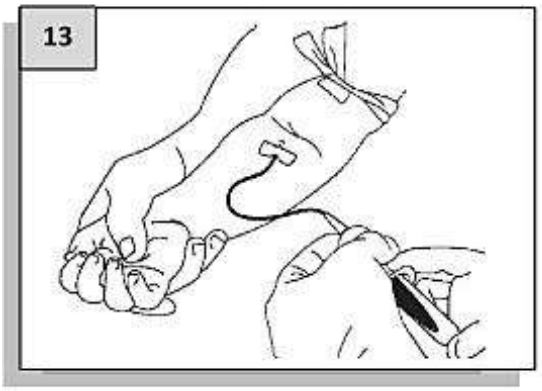
Push the vacuum tube completely onto the needle.

12



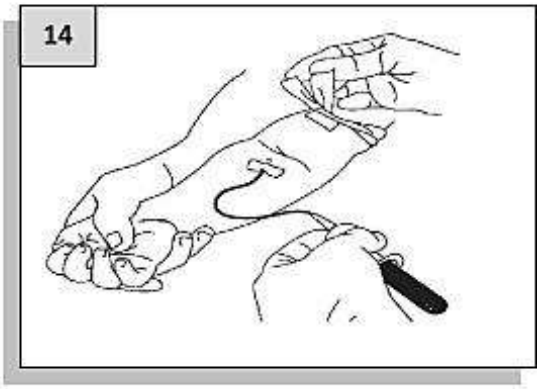
Blood should begin to flow into the tube.

13



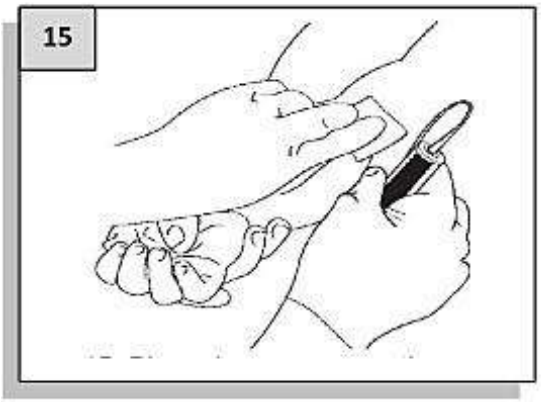
Fill the tube until it is full or until the vacuum is exhausted. If filling multiple tubes, carefully remove the full tube and replace with another tube, taking care not to move the needle in the vein.

14



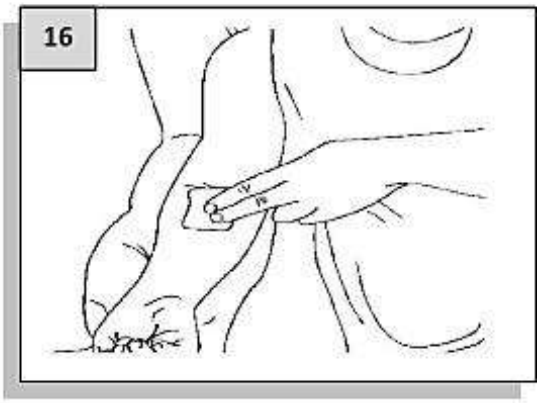
After the required amount has been collected, release the tourniquet.

15



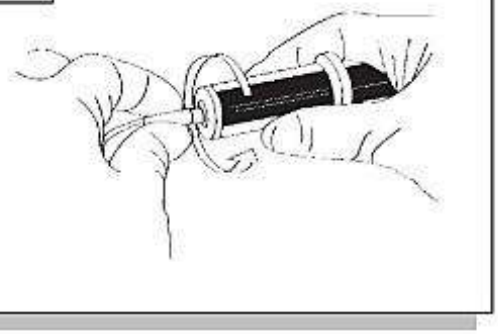
Place dry gauze over the venepuncture site and slowly withdraw the needle.

16



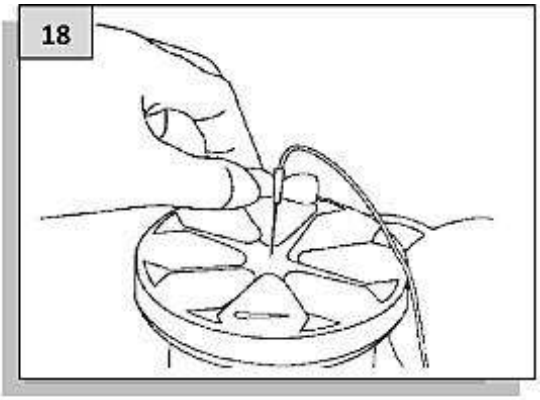
Ask the parent to continue applying mild pressure.

17



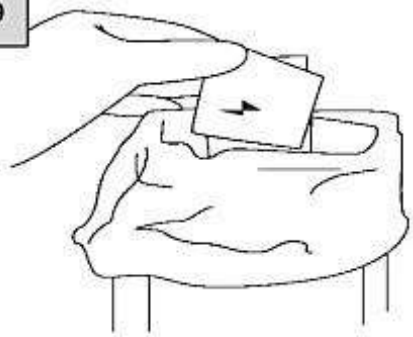
Remove the butterfly from the vacuum tube holder.

18



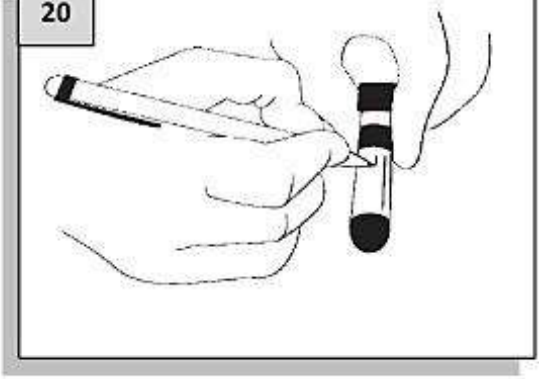
Dispose the butterfly in a sharp container.

19



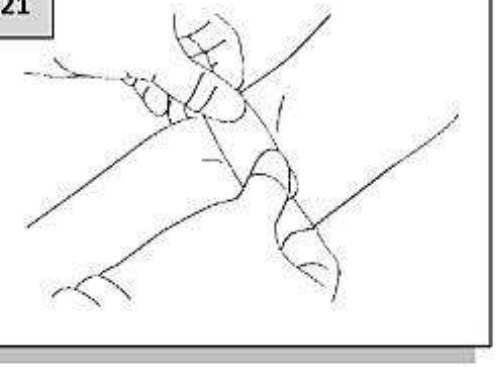
Properly dispose of all contaminated supplies.

20



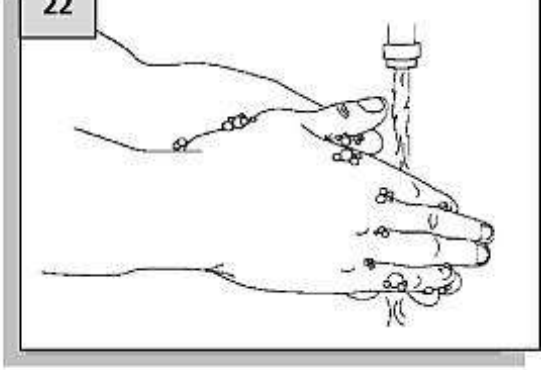
Label the tube with patient's name and MRN/ DOB/ IC.

21



Put and adhesive bandage on the patient if necessary.

22



Remove gloves, dispose them appropriately and perform hand hygiene (if use soap and water, dry hands with single-used towel).

CAPILLARY SAMPLING

Choice of site

Adult patients

The finger is usually the preferred site for capillary testing in an adult patient. The sides of the heel are only used in paediatric and neonatal patients. Ear lobes are sometimes used in mass screening or research studies.

Paediatric and neonatal patients

Selection of a site for capillary sampling in a paediatric patient is usually based on the age and weight of the patient. If the child is walking, the child's feet may have calluses that hinder adequate blood flow. Below show the conditions influencing the choice of heel or finger-prick.

Condition	Heel-prick	Finger-prick
Age	Birth to about 6 months	Over 6 months
Weight	From 3 – 10 kg, approximately	Greater than 10 kg
Placement of lancet	On the medial or lateral plantar surface	On the side of the ball of the finger perpendicular to the lines of finger prints
Recommended finger	Not applicable	Second and third finger (i.e. middle and ring finger); avoid the thumb and index finger because of calluses, and avoid the little finger because the tissue is thin

Order of draw

With skin punctures, the haematology specimen is collected first, followed by the chemistry and blood bank specimens. This order of drawing is essential to minimize the effects of platelet clumping. The order used for skin punctures is the reverse of that used for venepuncture collection. If more than two specimens are needed, venepuncture may provide more accurate laboratory results.

Procedure

Adult patient

- Prepare the skin
    - Apply alcohol to the entry site and allow to air dry.
    - Puncture the skin with one quick, continuous and deliberate stroke, to achieve a good flow of blood and to prevent the need to repeat the puncture.
    - Wipe away the first drop of blood because it may be contaminated with tissue fluid or debris (sloughing skin).
    - Avoid squeezing the finger or heel too tightly because this dilutes the specimen with

tissue fluid (plasma) and increases the probability of haemolysis.
    - When the blood collection procedure is complete, apply firm pressure to the site to stop the bleeding.

- Take laboratory samples in the correct order to minimize erroneous test results
    - With skin punctures, collect the specimens in the order below, starting with haematology specimens:
        - Haematology specimens
        - Chemistry specimens
        - Blood bank specimens

<u>Paedratic and neonatal patient</u>

- Immobilize the child
    - First immobilize the child by asking the parent to:
        - Sit on the phlebotomy chair with the child on the parent's lap
        - immobilize the child's lower extremities by positioning their legs around the child's in a cross-leg pattern
        - Extend an arm across the child's chest, and secure the child's free arm by firmly tucking it under their own
        - Grasp the child's elbow (i.e. the skin puncture arm), and hold it securely;
        - Use his or her other arm to firmly grasp the child's wrist, holding it palm down

- Prepare the skin
    - Prepare the skin as described above for adult patients.
    - **DO NOT** use povidone iodine for a capillary skin puncture in paediatric and neonatal patients; instead, use alcohol, as stated in the instructions for adults.

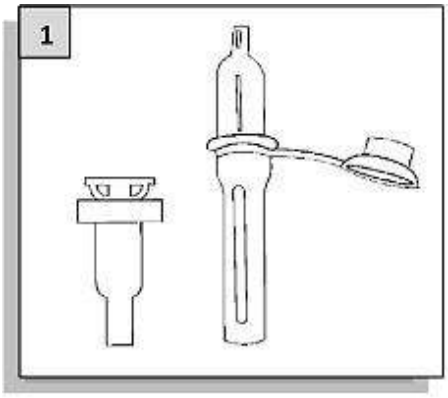
- Puncture the skin
    - Puncture the skin as described above for adult patients.
    - If necessary, take the following steps to improve the ease of obtaining blood by finger-prick in paediatric and neonatal patients:
        - Ask the parent to rhythmically tighten and release the child's wrist, to ensure that there is sufficient flow of blood
        - Keep the child warm by removing as few clothes as possible, swaddling an infant in a blanket, and having a mother or caregiver hold an infant, leaving only the extremity of the site of capillary sampling exposed.
    - Avoid excessive massaging or squeezing of fingers because this will cause haemolysis and impede blood flow.

- Take laboratory samples in the order that prevent cross-contamination of sample tube additives
    - As described above for adult patients, collect the capillary haematology specimen first, followed by the chemistry and blood bank specimens.
    - Clean up blood spills.
    - Collect all equipment used in the procedure, being careful to remove all items from the patient's bed or cot; to avoid accidents, do not leave anything behind.

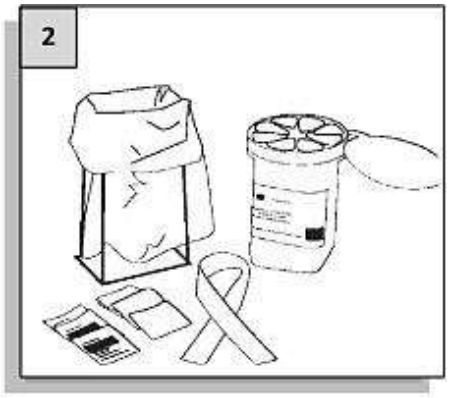
- Give follow up care
    - There are two separate steps to patient follow-up care – data entry (i.e. completion of requisitions), and provision of comfort and reassurance.

- Unsuccessful attempts in paediatric patients
    - Adhere strictly to a limit on the number of times a paediatric patient may be stuck. If no satisfactory sample has been collected after two attempts, seek a second opinion to decide whether to make a further attempt, or cancel the tests.

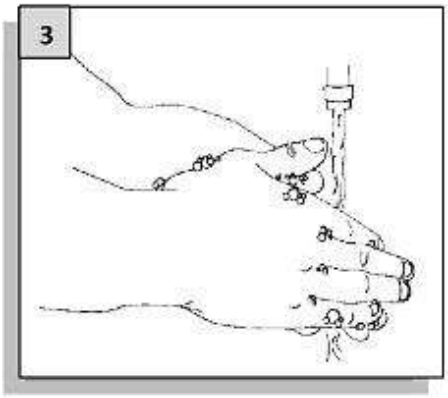
CAPILLARY BLOOD SAMPLING DIAGRAM



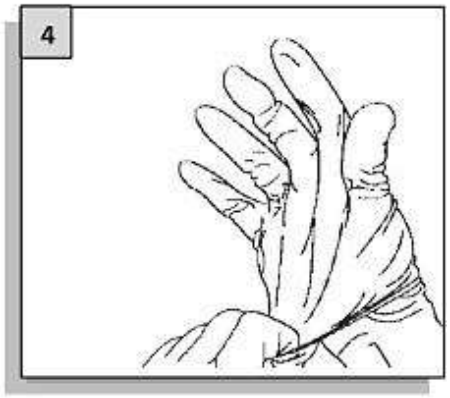
Lancet and collection tube



Assemble equipment and supplies.

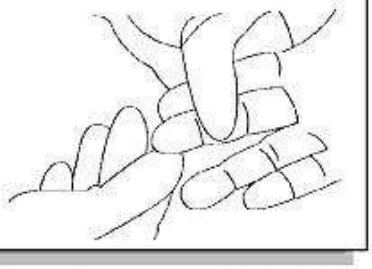


Perform hand hygiene (if using soap and water, dry hands with single-use towel)



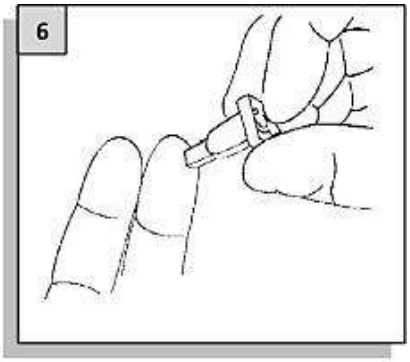
Put on well fitting, non-sterile gloves.

5



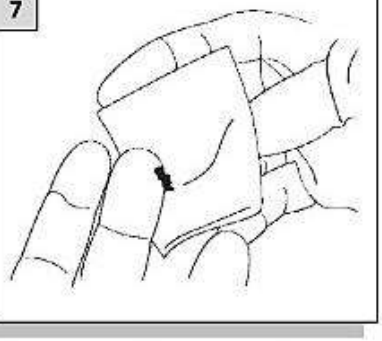
Select the site. Apply 70% isopropyl alcohol and allow to air dry.

6



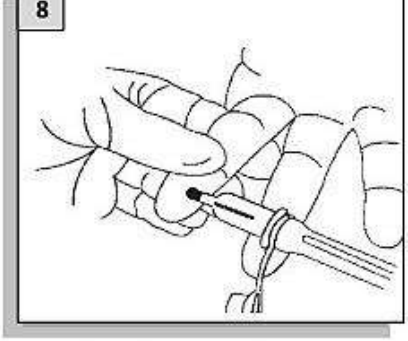
Puncture the skin.

7



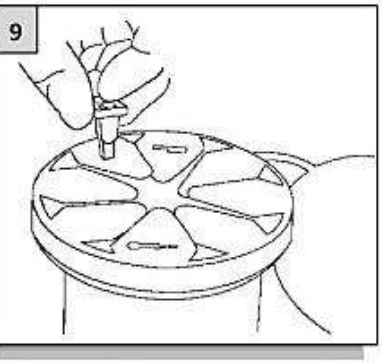
Wipe away the first drop of blood.

8



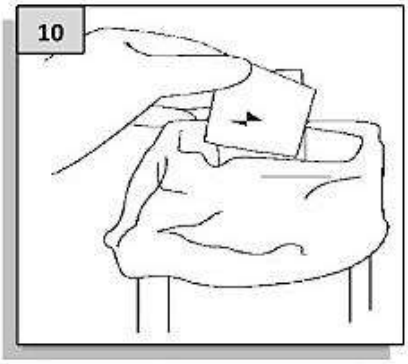
Avoid squeezing the finger too tightly

9



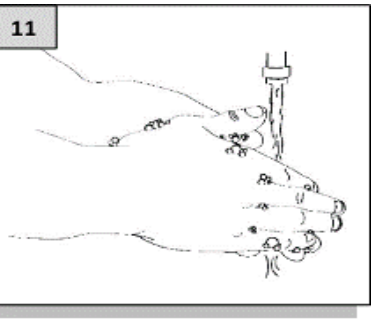
Dispose all sharps appropriately.

10



Dispose of waste materials appropriately.

11



Remove gloves and place in general waste. Perform hand hygiene (if using soap and water, dry hands with single use towels)

SPECIMEN REJECTION / ACCEPTANCE CRITERIA

1. INTRODUCTION

All test requests will be evaluated and checked at the common receiving area upon receipt before it is sent to the respective unit for analysis. In the respective unit, the test requests will be checked and evaluated again. Specimen/request will be rejected following the rejection criteria(as listed in section 2) are not fulfilled. All rejections will be notified to the requester for further action and rectification. While most rejection criteria are general, some are unit specific

2. GENERAL

List of Specimen Rejection Criteria:

i. Incorrect specimen
   - Specimen in wrong tubes/container
   - Wrong specimen sent

ii. Insufficient volume for test
iii. Spoilt specimen (Leak, Lyse, Broken)
iv. Improper labellling of specimen
   - Wrong labeling
   - Incomplete information on labeling

v. Specimen not properly transported
vi. Delay in despatch of specimen
vii. Incomplete information on request form
viii. Incorrect collection procedure
ix. Specimen sent without request form*
x. Specimen sent without worklist**
xi. No specimen received with request form
xii. Test not done/available/test for external laboratories
xiii. Duplicate request
xiv. Wrong request form
xv. Wrong laboratory
xvi. Quantity specimen received is not tally with what written on forms*
xvii. Wrong FBC result sent with PBF slides/request**
xviii. Incomplete FBC result sent with PBF slides/request**
xix. Wrong test code***
xx. Did not sent order in the system***
xxi. Cancel test
xxii. Incomplete information on specimen container
   - Nature of specimen
   - Date/time for specimen taken where applicable

xxiii. Specimen sent without checklist**
xxiv. Wrong registration***

Note:
* Only for test which required physical form.
** Only for internal referral test (interbranch) within Lablink Group
*** For online request via interbranch.

3. CHEMICAL PATHOLOGY, SEROLOGY AND IMMUNOLOGY

Request which do not fulfill the laboratory requirements will be rejected. Below are among the common primary rejection criteria by Chemical Pathology, Serology and Immunology Services:

3.1 Spoilt specimen

a. Blood haemolysed.
b. Lipaemic sample.
c. Icteric sample.
d. Sample out of stability.
e. Sample under incubation / over incubation.
f. Sample overfilled / under filled.
g. Sample collected using unsuitable or inappropriate blood collection tube or container.

3.2 Wrong registration of patient information

a. Wrong patient identification inclusive of name, age, birth date, and gender.
b. Incomplete patient's particulars such as:
    i. Identification Card (IC) number.
    ii. Name of the patients.
    iii. Sender information.

3.5 Improper labeling of specimen

a. Name / IC number not tally with request form or sample
b. Wrong sampling date on form or sample

4. URINALYSIS

Request which do not fulfill the laboratory requirements will be rejected. Below are among the common primary rejection criteria by Urinalysis section:

4.1 Spoilt specimen

a. Sample out of stability:
    i. Urine sample (for urinalysis) which has been left at room temperature (20 - 25^{o}C) for more than 2 hours and also urine which has been kept in temperature ranged of 2 - 8 ^{o}C for more than 24 hours.
    ii. The laboratory requisition must indicate the time of collection.
b. Sample received other than in prescribed container.
c. Contaminated specimen.
d. Leaking specimen.
e. Broken container.
f. Non urine sample.

4.2 Insufficient volume for testing

- Specimen received less than 10ml.

4.3 Incorrect timing of collection for specimens submitted for antibiotic levels.

5. HAEMATOLOGY

Request which do not fulfill the laboratory requirements will be rejected. Below are among the common primary rejection criteria by Haematology Services:

5.1 Wrong FBC results sent with PBF slides/request

5.2 Incomplete FBC results sent with PBF slides/request

a. No Full Blood Count (FBC) result attached.
b. No clinical history provided.
c. No quality control slide and complete form attached.
d. No slide smear provided.

5.3 Spoilt specimen

a. Blood smear such as blood smear is too narrow, made on greasy slide, too thick, long, wide and uneven thickness.
b. Lipaemic sample – Grossly lipaemic sample giving inaccurate result even after plasma replacement should be recollected.
c. Haemolysed sample – Grossly haemolysed sample giving inaccurate result or unreadable blood films should be rejected and a recollection performed.
d. Aged Specimens – General acceptability of EDTA sample is max 24 hours. Upon old samples received, shall there be significant morphological changes in the white cells and red cells, specimen will be rejected and recollected.
e. Presence of clots in the vacutainers upon visual inspection.
f. Flow Cytometry – Sample refrigerated or exposed to cold temperature or exceeding 48 hours after collection.
g. Blood Group – Specimen **must** be whole blood EDTA / Plain.
h. Sample leaking.

5.4 Insufficient volume for test

a. Lavender vacutainers for Hematology analysis with less than 1cc. in an EDTA tube.
b. Blue vacutainers for Coagulation studies which are less than 2 cc.
c. Pediatric sample collected using Microtainer collection devices, which is less than 1 line on the Microtainer.

6. MICROBIOLOGY

6.1 Improper specimen source

a. Swabs for AFB cultures(fluid or tissue required)
b. Urine, sputum, routine genital or oral lesions submitted for anaerobic culture.
c. Specimens contaminated with aerobic flora submitted for anaerobic culture.
d. Pooled 24 hour sputum, urine, or feces for AFB cultures.

6.2 Improper specimen collection

a. Uncapped or unsterile collection container or swab
b. Dry swab, moisture ampule not crushed after collection.
c. Barium present in stool specimens for Ova and Parasite analysis.
d. Improper transport medium or environment for all microbiological specimens.
e. Specimens for Neiserria gonorrheae which have been refrigerated.
f. Duplicate specimens collected within a 24 hour time period, except for blood cultures.

6.3 Swabs submitted for culture not identified as to source.

6.4 Rejection of culture plate

a. Broken culture plates.
b. Expired culture plates.
c. Sending culture plates which are not suitable to the specimen type.
d. Culture plates that are overgrown or dried out.
e. Sending anaerobe culture plates without GASPACK.
f. Not sealed culture plates.
g. Sending mix growth for bacteria identification.
h. Plates not incubated at 35-37 degrees centigrade in CO2 condition and received <24 hrs after collection for suspected cases of Neisseria gonorrhea
i. Culture plates incubation less than 18 hours.
j. Culture plates send in cold chain.

6.5 Improper transport

a. Urine specimens for culture left at room temperature for more than two hours or refrigerated for more than 24 hours.
b. Anaerobic cultures not transported in an anaerobic environment.

7. HISTOPATHOLOGY

All specimens in the Histopathology laboratory are irretrievable specimen, hence rejection in Histopathology by means as ***rejected to process*** the specimen and **not to** return or discard the specimen inappropriately. The rejected specimen will be kept in a non-conformance box until the rectification is done. The sender shall be notified by phone and followed by the issuance of the *Histopathology Rejection Form, LL.9-008* (Refer Appendix 1) and the request will be processed once rectification is done with appropriate documentation. However, in some circumstances e.g. no label on the specimen container and as requested by the sender, the specimen will be rejected/returned to the sender for further rectification. Lab turnaround time (LTAT) of specimen held in non-conformance box will be counted from the date rectification has been taken.

Specimen Acceptance Criteria

a. The request form must be completed with:

i. Patient details with at least two identifiers: Name AND MRN number OR Date of Birth (D.o.B) OR identification number
ii. Nature and anatomical site of specimen
iii. Doctors name and signature
iv. Diagnosis and clinical history
v. Specimen collection date and time
vi. Itemized number of the specimen if multiple specimen containers.

b. The specimen container:

i. Patient details with at least two identifiers: Name AND MRN number OR Date of Birth (D.o.B) OR identification number

ii. Nature and anatomical site of specimen
iii. Date of sampling/collection
iv. Itemized number of multiple specimen containers.
v. Proper fixatives; e.g 10% buffered formalin for routine histology H&E testing.

Note:

i) All details on the request form and specimen container MUST be tallied.
ii) When a compromised clinically critical or irreplaceable sample is accepted, after consideration of the risk to patient safety, the nature of the problem will be indicated in the final report if necessary, caution will be advised by the reporting pathologist when interpreting results that can be affected.

Specimen Rejection Criteria

i. No or Incomplete details on request form; patient details, doctor's name & signature, nature of specimen, diagnosis and clinical history.
ii. Incomplete details on specimen container e.g No type of specimen.
iii. Improper or No preservatives
iv. Discrepancies between specimen container and request form on patient details
v. Discrepancies between specimen container and request form on specimen type or an anatomical site.
vi. Discrepancies between details on specimen container & request form and the specimen received. E.g. stated on the request form and specimen container as 'Gallbladder' but macroscopic/gross examination received 'Appendix'.
vii. Illegible handwriting
viii. Formalin leaking and specimen spilled out from the container.
ix. The number of specimens received does not match with the number of specimens stated on the request form
x. Wrong specimen.
xi. No specimen in the container

8. CYTOPATHOLOGY

The following is a general listing of common situations in which a specimen may be rejected for processing. Each functional laboratory area has an additional listing of rejection protocol depending on the specific testing criteria. Specific transportation requirements need to be observed every time to ensure the sample's integrity. For each general category, a few examples are listed.

- Improperly labelled specimens
  - Specimens not labelled
  - Specimens labelled with incorrect patient identification.
  - Specimens that do not match the patient information on the laboratory requisition.

- Improper Collection
  - Specimens collected with improper preservative.
  - Quantity of specimen insufficient to perform testing.
  - Specimens that are obviously or subsequently prove to be contaminated.

- Specimens inappropriately transported to the laboratory
    - Specimens leaking or grossly contaminated on the exterior portion of the container
    - Broken slides beyond repair

- Inappropriate specimens
    - Tissue sample
    - Sample in formalin (fluid + formalin)
    - Incorrect sample container
    - Specimen not complying with temperature, transportation or storage requirement.

- Improper Test Request
    - No specimen accompanied with request form
    - No request form accompanied with specimen
    - Patient details in request form are not tally with LIS system (for KPJ Hospital request)

- Specimens inappropriately transported to the laboratory
    - Specimens leaking or grossly contaminated on the exterior portion of the container.

Note:

i) Most of the cytology sample is irretrievable specimens such as pap smear, Cerebral Spinal Fluid (CSF), neonatal specimens, fine needle aspirate or body fluids specimens will not be discarded until proper rectification process has been carried out. The responsible requestor will be notified accordingly and record in *Test Request Reject Analysis form, LL.22-5.006*. The samples will be appropriately stored in the non conformance box until the rectification process completed or upon approval from the reporting pathologist to proceed with the testing.

ii) When a compromised clinically critical or irreplaceable sample is accepted, after consideration of the risk to patient safety, the nature of the problem will be indicated in the final report and if necessary caution will be advised by the reporting pathologist when interpreting results that can be affected.

9. MOLECULAR DIAGNOSTICS

Rejection criteria are established to ensure that the quality of testing is not compromised. In Molecular Diagnostics Laboratory (MDL), all sample is treated with utmost importance, and all derived result shall be free from any form of ambiguity. A vital part in our pre-analytical process is governed by List of Specimen Rejection Criteria as stated initially in this section - rejection is inevitable if specimen received attributes to it. The following further define conditions that would render a specimen unacceptable for processing in MDL:

- Incorrect specimen:
    - Specimen (test-dependent) not placed in specified transport medium, for example:
        - PCRGI1 must use stool in Cary Blair liquid transport medium, not raw stool.

- Swabs must not be placed in gel transport medium, use UTM instead.

➢ Inappropriate specimen sent for test requested, for example:
- PCRmpDF1 must use EDTA blood, not serum or plasma, as the malaria parasites multiply inside the red blood cells.

- Insufficient volume for test:
  - ➢ Initial specimen volume inadequate, for example:
    - Plasma for PCRhcvVLR received less than 1mL, cannot proceed for testing as it will fail the preliminary check of sample volume adequacy by instrument.
  - ➢ Specimen volume inadequate for number of tests requested, for example:
    - BAL for sharing between PCRtbRIFRp & AFB Culture received less than 0.5mL, cannot proceed for both using same specimen.

- Spoilt specimen:
  - ➢ Improper storage of specimen before sending for molecular testing, for example:
    - If plasma for PCRhivVLR not retained at 2-8°C at clinic for more than 3 days, decrease in viral load result cannot be attributed to effectiveness of antiretroviral therapy prescribed.
  - ➢ Specimen container got broken or has leaked in transit with few specimen being in the same bag as the leaked sample, cannot proceed for testing as they have gotten contaminated with each other.
  - ➢ Haemolysed serum or plasma, as sensitivity of PCR will get reduced due to the presence of inhibitory factors, for example:
    - Heme, a component of hemoglobin, has been shown to inhibit PCR due to the release of iron ions, which affect the pH of the reaction & disrupt the polymerase activity, probe and primers. For this reason, heme is often regarded as a universal PCR inhibitor.

- Improper transportation of specimen:
  - ➢ Molecular specimen not transported in cold chain (2-8°C) manner.

Note: Details on rejection made shall be recorded in LL.22-5 Test Request Reject Analysis form. Requestor shall be notified on the rejection matters to ensure appropriate corrective action ensued. Till then, rejected specimen will be kept in a non-conformance container. Lab turnaround time (LTAT) of the non-conformity specimen will be counted from the date associated issue suitably rectified.

SPECIMEN COLLECTION BASED ON SPECIMEN TYPE OR TEST REQUIREMENTS

1. HAEMATOLOGY

Specimen Collection and Containers

General

Venous Blood specimens are preferred. To ensure consistent and accurate results follow strictly to the volume of blood required for the type of test as specified on the label or fill up to the mark on the label of the specimen tube.

Haematology tests are extremely sensitive to methods of collection and preservation. It is important that sample collection and processing instructions be followed to ensure accurate test results. Refer **Figure 4** for specific containers used for different tests.

To prevent haemolysis:

- Avoid vigorous mixing
- Remove needle from syringe before squirting the blood into containers.
- Send the specimen as soon as possible to the lab after collection.

Avoid clot formation by:

- Ensuring a smooth venipuncture and steady flow of blood into the syringe.
- Ensuring the anticoagulant in the specimen bottle not dry off.
- Introducing blood in the anticoagulant bottle as soon as blood is withdrawn.
- Immediately mix gently by inverting tube at least 6 – 10 times. Refer **Figure 5** for sample mixing for tube with anti-coagulant.

Coagulation Tests

Sample collection

- Specimen to be collected using 3.2% sodium citrate tubes.
- Avoid collectiong blood from indwelling lines (i.e Peripheral intravenous (IV) lines, catheters or cannulas) to avoid heparin contamination and haemodilution. If blood is to be drawn through a vascular access device (VAD), the line should be flushed with 5 mL of saline. The first 5 mL of blood or six dead space volumes of the VAD are to be discarded, then only proceed with blood collection using 3.2% sodium citrate tubes.
- Specimen must be adequately filled to the level indicated on the tube. Test will not be performed for underfilled, overfilled, haemolysed and clotted citrated samples.
- Specimen is thoroughly mixed with the anticoagulant by inverting the tube gently, following mixing frequency at Figure 4.
    - **Option 1** – Specimen collected directly into 3.2% sodium citrate tubes.
      Note: Specimens should arrive at testing laboratory within 4 hours of collection; strictly transport at room temperature.

- **Option 2** – Platelet Free Plasma (PFP) shipped in dry ice. PFP is to be prepared within 4 hours after venipuncture.

  PFP Double Centrifugation Procedure:
  - 3.2% sodium citrate tubes centrifuged at 2000g for 15 minutes.
  - Transfer plasma into a secondary tube.
  - Plasma in a secondary tube centrifuged at 2500g for 15 minutes to obtain PFP.
  - Aliquot PFP into a minimum of 3 separate plastic vials, each containing 1 mL of PFP.
  - Freeze immediately at -20°C or below. Transport frozen PFP using dry ice.

- Specimen shall be transported to testing laboratory:

  - **Option 1** – Specimen in 3.2% sodium citrate.
    Strictly at room temperature within 3 hours of blood collection.

  - **Option 2** – Platelet Free Plasma (PFP) in plastic vial.
    Strictly transport in dry ice.

- Additional Information for reporting
  - Coagulation-related testing results from the referring laboratory, if any.
    Example: PT, APTT, Platelet Count, etc.

  - Please provide a reason for testing & clinical information.
    Example: Reason for testing i.e history of menorrhagia, family history of Von Willebrand Disease, etc.

  - Please provide coagulation-related medication or history of medication.
    Examples: Oral contraceptives, anticoagulants, and factor replacement therapy/DDAVP.
    - VKA-treated patients
      Note: Recommendation to perform test after 1 - 2 weeks upon discontinuation of the VKA, with consideration of LMWH bridging.
    - On treatment LMWH
      Note: At least 12 hours after the last dose, and as near as possible to the next dose, with anti-Xa activity levels checked alongside the LA test.
    - On treatment DOAC
      Note: At least 48 hours after the last dose, or may be extended in patients with renal impairment, with DOAC level checked alongside the LA test.

LIST OF SPECIMEN CONTAINERS/TUBES

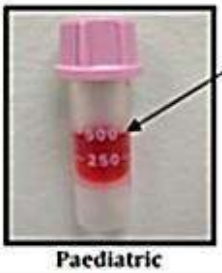
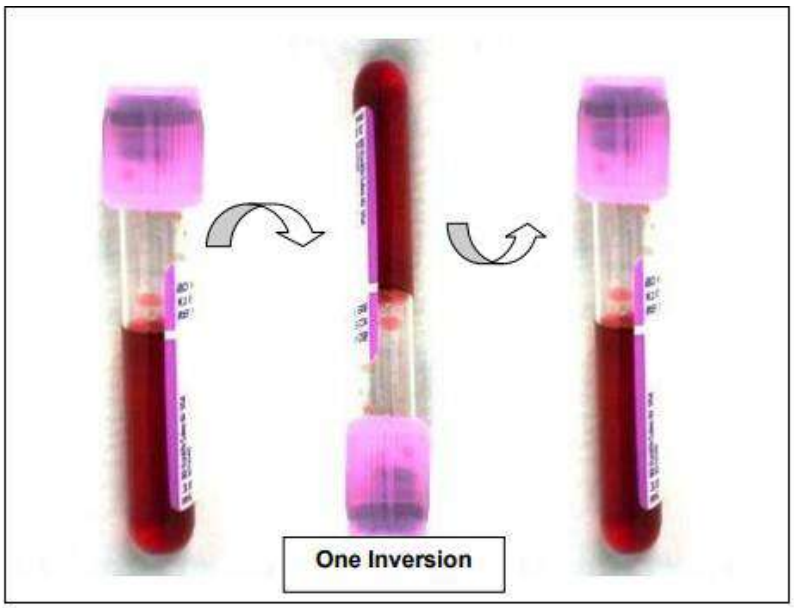
Images of the container/tube	Test	Anti-coagulant	Tube type	Specimen volume	Mixing Frequency
INTERGRATED LABORATORY					
 correct filling level	PT, APTT, INR ratio, Fibrinogen,	Buffer Sodium Citrate	Vacuum	1.8 ml	3 – 4 times
 Adult correct filling level	FBP, FBC	Purple cap – EDTA	Adult- vacuum	Adult: 2.5ml	8 times
 Paediatric correct filling level		Purple cap - EDTA	Paediatric- non vacuum	Paediatric: 250 – 500 ul	8 times

Figure 3: Specific containers used for different test.



MIX WELL BY INVERTING TUBE. DRAW VOLUME AND NUMBER OF INVERSIONS ARE OF CRITICAL IMPORTANCE AND CLINICALLY SIGNIFICANT!!

Figure 4: Proper sample mixing for tube with anti-coagulant.

2. MICROBIOLOGY

Specimen type / Test	Collection Instructions
Abscess (aspirate or swab)	1. Remove surface exudate if present by wiping an open abscess with sterile saline or 70% alcohol. 2. Sample the leading edge of an open abscess. Sample must be acquired using aseptic technique. 3. A closed abscess should be aspirated with a needle and syringe after sterilizing skin with iodine, chlorhexidine preparation or isopropyl alcohol wipes. 4. Sampling of skin surface area can introduce colonizing bacteria not involved in the infectious process.
Blood Culture	1. Disinfect rubber stopper on the culture bottle using 70% isopropyl alcohol, wait one minute. 2. Disinfect palpated venipuncture site using 70% alcohol swab by using a back and forth friction rub to cleanse the skin, cleanse for 15 seconds over a 4 cm x 4 cm area. 3. Allow to dry (**DO NOT** re-palpate vein). 4. Collect blood using needle and syringe or safety butterfly. **Note:** Bottle adaptors must be used with butterfly collections.
Catheter (Intravenous or Intra-Arterial)	1. Cleanse skin around site with 70% alcohol. 2. Aseptically remove catheter and clip the 5 cm distal tip of the catheter into a sterile screw capped transport container.
Cervical Swab – Culture for *N. gonorrhoeae*	1. Visualize the cervix using a speculum without lubricant. 2. Remove mucus and secretions from the cervix with a sterile swab, discard the swab. 3. Sample the endocervical canal with a newly obtained sterile swab.
Eye (Conjunctiva)	1. Sample eye using swab pre-moistened with sterile saline. 2. Roll swab over conjunctiva. 3. Put in the transport medium.
Feces (Stool)	1. Sample should be passed directly into a clean, sterile container. Avoid contaminating sample with urine. 2. Transport the sample promptly to the laboratory (≤ 1 hour). If transport is delayed, transfer a portion of the sample to a swab transport system such as Alkaline Peptone Water and Selenite medium.
Sputum (Expectorated)	1. Sample should be collected under the direct supervision of a nurse or physician. 2. Have the patient rinse or gargle with water to remove superficial flora.

Specimen type / Test	Collection Instructions
	3. Instruct patient to cough deeply to produce lower respiratory secretions. 4. Collect in sterile container.
Sputum – Induced	1. Have the patient rinse the mouth with water after brushing the gums and tongue. 2. Using a nebulizer, have the patient inhale ≈ 25 mL of a 3-10% sterile saline solution. 3. Collect induced specimen in a sterile container
Throat Swab	1. Depress the tongue with a tongue depressor. 2. Sample the posterior pharynx, tonsils and inflamed areas. 3. Submit swab in transport medium for culture.
Urethral Swab (male) – Culture for *N. gonorrhoeae*	1. Insert urogenital swab 2-4 cm into the urethral lumen. 2. Rotate the swab, leave in place for at least 2 seconds to facilitate absorption. 3. Submit swab in transport medium.
Urine – Indwelling Catheter	1. Disinfect the catheter collection port with 70% alcohol. 2. Use a needle and syringe to aseptically collect 5-10 mL of urine. 3. Transfer sample to sterile container.
Urine – Midstream	A. Female 1. While holding the labia apart, begin voiding. 2. After several milliliters have been passed, collect a midstream portion (without stopping the flow) into a sterile transport container. B. Male 1. Retract the foreskin (if uncircumcised). 2. Begin voiding. 3. After several milliliters have been passed, collect a midstream portion (without stopping the flow) into a sterile transport container.

2.1 COLLECTION OF STOOL

Specimen type/test	Collection Instructions	Storage/Transport
Stool Culture	• A single properly collected specimen is usually enough to identify the cause of acute bacterial diarrhea. To detect a carrier state, single specimens for three consecutive days are	• Specimens are acceptable for culture as long as the transport fluid has not

Specimen type/test	Collection Instructions	Storage/Transport
	recommended. Only one specimen per patient per day will be accepted. • All stool specimens for culture should be submitted in a transport media. The transport media is designed to maintain pH levels because some pathogens are sensitive to the pH changes associated with normal bacterial metabolism. Currently, the transport vial for culture has an orange cap and contains a red-pink fluid. If the fluid is yellow, do not use the vial; or if the fluid turns yellow after the specimen has been added, it is not acceptable for culture and must be recollected. • Stool specimens should be collected in a clean, dry container. Stool specimens should not be contaminated with water, urine, barium, or mineral oil. • Tighten the cap and shake well to mix. • Alternative collection methods: ○ For children in diapers, scrape up the stool with the spork in the cap assembly of the transport vial, recap, shake well, and submit. ○ For children with a watery diarrhea that soaks into the diaper, place a pedi urine collection bag over the child's anal area. Monitor closely, so the bag can be removed ASAP after a bowel movement to preserve as much specimen as possible in the bag. Watery specimens will tend to leak out of the pedi bag. Cut a corner from the bottom of the bag and pour contents into a transport vial. ○ Rectal swabs are substituted for stool culture specimens only if absolutely necessary. Insert sterile culturette swab a short distance into the rectum. Hold in place for a minimum of 30 seconds to allow the swab	turned yellow. • Do not refrigerate. • Transport ASAP tothe laboratory.

Specimen type/test	Collection Instructions	Storage/Transport
	to absorb specimen and withdraw. Remove cap and place swab in culturette sleeve. Squeeze sponge to moisten swab.	
Ova and Parasite Exam	• Three specimens collected on three successive days are recommended for optimum parasite detection. Collect specimen in a clean, dry container. Stool swabs are unacceptable for ova and parasite exams**.** • Interfering substances - Certain substances and medications interfere with parasite detection. These are listed below: ○ Specimen should not contain water or urine. ○ Contamination with mineral oil, barium, bismuth, antibiotics, anti- malarials, or non-absorbable anti- diarrheal agents can prevent parasite recovery for one to several weeks. ○ Purging or bowel prep agents must be cleared before the specimen can be submitted for ova and parasite exam, as they are crystalline in nature and obscure any parasitic elements that might be present.	• Transport to the laboratory as soon as possible. • Do not refrigerate • Fresh liquid stool must be transported immediately and rapidly to the lab and hand delivered to the technologist on duty with verbal instructions to look for amoebae.
Occult blood	• There are no restrictions on the number of times an occult blood test may be ordered. • If the initial negative test, additional specimens may be required. Since gastrointestinal lesions may bleed intermittently, the recommendation is a specimen from three consecutive bowel movements. ○ For females, do not submit specimens during, or until three days after a menstrual period.	Transport to the laboratory as soon as possible. Do not refrigerate**.**

Specimen type/test	Collection Instructions	Storage/Transport
	○ Do not submit specimens while the patient has bleeding hemorrhoids or blood in the urine. ○ For 7 days prior to and during the collection period, avoid aspirin or other nonsteroidal anti-inflammatory drugs, anticoagulants, or any substance which could irritate the gastro- intestinal tract, including alcohol. ○ For 72 hours prior to and during the collection period, avoid: ▪ Vitamin C, or iron supplements containing Vitamin C ▪ Red meat ▪ Artichokes, mushrooms, bean sprouts, apples, oranges, bananas, grapes.	

2.2 COLLECTION AND TRANSPORTATION OF SINGLE-COLLECTION URINE SPECIMENS

Procedural guidelines for the collection and transportation of urine specimens to the clinical laboratory are important, because diagnostic and therapeutic decisions may be based on the results of the urinalysis. Variables such as collection method, container, transportation, and storage are significant, because they affect the outcome of the analysis.

2.2.1 Types of Urine Specimens

Patient Collection

The following types of urine specimens can be collected by cooperative patients after instruction and without direct supervision:

- Random
- First morning or eight-hour
- Timed specimen, including 24-hour.

Supervised Collection

Collecting the following types of specimens may require supervision by, or the participation of, trained personnel from the clinical laboratory staff:

- Midstream “clean catch” specimen
- Specimen for microbiological culture
- Medicolegal cases

Assisted Collection

Collecting the following types of specimens requires the active participation of trained personnel:

- Catheter specimens
- Suprapubic aspiration specimens
- Collections from infants

2.2.2 Patient Instruction

Many urine specimens can be collected by the cooperative patient after simple instruction from the clinical laboratory personnel responsible for the procedure.
The following steps should be taken:

- When instructing patients, emphasize hand washing and general cleanliness
- Give patients a properly labelled specimen container and ask them to verify their name on the label
- Give oral instructions, and give a written instruction sheet or card with illustrations to the patient or display it in the area of urine collection for more information. Give patients collection instructions in their native language
- Instruct patients to secure the lid of the specimen container to prevent leakage

2.2.3 Collecting the Specimen

Random Specimen

The random specimen may be collected at any time, but the actual time of collection (voiding) should be recorded on the specimen container. Several hours of urinary continence before collection can be necessary to provide a specimen suitable for analysis.

First Morning or Eight-Hour Specimen

The first morning or eight-hour specimen is normally collected immediately on the patient's arising from a night’s sleep. This is also known as an “overnight” or “early morning” specimen. Other eight- hour periods may also be used to accommodate insomniacs and night-shift

workers, as well as certain pediatric situations. Specimens to verify orthostatic proteinuria are collected after an eight- hour period of lying down. The bladder is emptied immediately before lying down, and the specimen is collected on arising so that the urine collected is that which accumulated while the patient was in the recumbent position. Any urine voided during the night should be collected and pooled with the first morning, voided specimen.

Timed Specimen

The timed specimen is collected at a specified time in the 24-hour period (e.g., at 10 a.m. or at a specified time in relation to another activity, such as two hours after eating a meal or immediately after prostatic massage).

24 Hour Urine Specimen

If it is necessary to measure the total amount of solutes excreted in a 24-hour period, a strictly timed 24-hour specimen is required, because many solutes exhibit diurnal variations. The lowest concentrations of catecholamines, 17-hydroxysteroids, and electrolytes occur in the early morning, whereas highest concentrations occur at noon or shortly thereafter.

"Clean Catch" Specimen

Male

- Before beginning the procedure, the patient should wash his hands with soap or a cleansing towel.
- Instruct the uncircumcised patient to withdraw the foreskin to expose the urethral meatus.
- With a sterile cleansing towel or the equivalent, cleanse the glans, beginning at the urethra and working away from it.
- Have the patient begin urination, passing the first portion into the bedpan or toilet. Collect the mid-portion in the appropriate urine specimen container without contaminating the container ("clean catch"). Any excess urine can pass into the bedpan or toilet.
- Offer assistance if the patient is unable to carry out the recommended procedure. Sterile gloves should be worn by the assistant.

Female

- Before beginning the procedure, the patient should wash her hands with soap or a cleansing towelette.
- Instruct the patient to squat over the bedpan or toilet.
- With a sterile cleansing towelette or the equivalent, cleanse the urethral meatus and surrounding area.
- Have the patient begin urination, passing the first portion into the bedpan or toilet. The midportion should be collected in the appropriate container without contaminating the container ("clean catch"). Any excess urine can pass into the

bedpan or toilet.

- Offer assistance if the patient is unable to carry out the recommended procedure. Sterile gloves should be worn by the assistant.

Catheter Specimen

A catheter specimen is one collected after inserting a catheter into the bladder through the urethra, using sterile technique. Urine may be collected as a single specimen from the catheter outflow.

Suprapubic Specimen

A suprapubic specimen is one collected by aspirating urine from the distended bladder through the abdominal wall, using sterile technique.

Microbiological Cultures

Any of the specimens presented above may be used for microbiological culture if special precautions are taken.

2.2.4 Collecting Urine Specimens from Infants and Small Children

Use paediatric and newborn urine specimen collection bags with hypoallergenic skin adhesives for children who are too young to collect a urine specimen.

Random Specimen Procedure

To collect random specimens from children, clinical personnel should do the following:

- Separate the child's legs.
- Be sure pubic and perineal areas are clean, dry, and free of mucus. Do not apply powders, oils, or lotions to the skin.
- Using a pediatric urine collection device, remove the protective paper, exposing the hypoallergenic skin adhesive attached to the bag.
    - For girls, stretch the perineum to remove skin folds. Press the adhesive firmly to the skin all around the external genitals. Be sure to start at the bridge of the skin, separate the rectum from the vagina, and work forward, avoiding contamination from the rectal area.
    - For boys, fit the bag over the penis and press the flaps firmly to the perineum.
    - Make sure the entire adhesive coating is firmly attached to the skin with no puckering of the adhesive.

- Check the container periodically (e.g., every 15 minutes).
- Retrieve the collected specimen from the patient and label it.
- Without further contamination, pour or decant the specimen into a collection cup. Label the cup and transport it.

Some laboratories may prefer to collect specimens from very young babies with cotton-wool balls, rather than affixing adhesive tape to very delicate body areas. In such cases, it is critical that the sediment microscopic be aware of the potential for exogenous structures.

Procedure for Collecting a Urine Specimen for Microbiological Culture

To collect a microbiological culture specimen from children, clinical personnel should do the following:

- Before beginning the procedure, clinical personnel should wash their hands with soap or cleansing towel.
- Separate the child's legs.
- Cleanse the pubic and perianal areas with soap and water, and dry them so that these areas are clean, dry, and free of residual soap. Do not apply powders, oils, or lotions to the skin.
- Remove the protective paper, exposing the hypoallergenic skin adhesive attached to the bag.
    - For girls, stretch the perineum to remove skin folds. Press the adhesive firmly to the skin all around the external genitals. Be sure to start at the bridge of the skin, separate the rectum from the vagina, and work forward, carefully avoiding contamination from the rectal area.
    - For boys, fit the bag over the penis and press the flaps firmly to the perineum.
    - Make sure the entire adhesive coating is firmly attached to the skin with no puckering of the adhesive.

- Check the container periodically (e.g., every 15 minutes).
- Retrieve the collected specimen and label it.
- Without further contamination, pour or decant the specimen into a collection cup and secure the plastic lid. Label the cup and transport it.

2.2.5 Collection Containers

Composition

The primary collection container and transport container, if applicable, should be clean, leak-proof, particle-free, and preferably made of a clear, disposable material that is inert with regard to urinary constituents. The container and closure should be free of interfering substances, e.g., detergents. Most laboratories prefer to use sterile containers for all urine collection.

Reuse

Do not reuse specimen containers.

Capacity

The primary collection container should have a capacity of at least 50 mL with a round opening at least 4.0 cm in diameter. The container should have a wide base to avoid accidental spillage. Smaller, specialized containers are used for specimens collected from young children.

Transport and Storage

The container used during transportation should have a secure closure to prevent leakage of the contents during transportation. The closure should be easily applied and removed. The laboratory should ensure the integrity of the specimen identification and condition from the time of specimen submission to analysis. For example, if the specimen is refrigerated, the laboratory should ensure that the refrigerator is properly maintained and that delays in specimen delivery do not compromise specimen integrity.

Sterile Container

When a urine specimen is submitted for microbiological studies, the sterile containers must have secure closures. The specimen should be submitted for microbiological studies before urinalysis, unless sterile technique is used to make aliquots from a portion of the specimen for urinalysis. Sterile containers are also suggested if more than two hours elapse between specimen collection and analysis.

Label

The container should be designed to accept a label that will adhere during refrigeration or freezing. The label should include sufficient space for the patient's full name; unique identification number; date and time of specimen collection; and the name of the preservative in the container, if applicable. Some laboratories might need a label to include other information or a barcode.

To ensure proper specimen identification, place labels on the container, not on the closure.

2.2.6 Transporting and Storing Urine Specimen

Transport

If the specimen is transported, the container should have a secure closure to prevent leakage of the contents. If appropriate, use a secondary container to ensure containment of possible spills. Rapidly transport urine specimens to the laboratory for prompt examination. Laboratories should ensure the integrity of specimens during transportation (e.g., pneumatic tube systems).

Refrigeration

If the specimen cannot be transported and analyzed immediately, it should be refrigerated (2 to 8 °C) after collection. (See Section 2.1.6 for more information).

Microbiological Examination

If a microbiological examination is requested and the specimen cannot be transported immediately to the laboratory, take the following steps:

- Specimens may be refrigerated at 2 to 8 °C for up to 24 hours and still yield valid culture information.
- An aliquot of urine may be transferred into a transport tube containing a bacteriostatic preservative, several of which are commonly available; consult with the laboratory to perform testing. Preserved specimens do not require refrigeration.

Alternatively, where there is a very long transport time, an agar film (attached to a plastic support) may be dipped into the urine and placed into an appropriate closed container. Both agar and urine are sent to the testing laboratory, where sub-culturing may be performed from the agar sampling.

2.2.7 Collection and Preservation of 24-Hour Urine Specimens

If it is necessary to measure the total amount of solutes excreted in a 24-hour period, a strictly timed 24-hour specimen is required, because many solutes exhibit diurnal variations. The lowest concentrations of catecholamines, 17-hydroxysteroids, and electrolytes occur in the early morning, whereas the highest concentrations occur at noon or shortly thereafter.

2.2.8 Collecting 24-Hour Urine Specimens

Container

Collect the specimen in one or more disposable, wide-mouthed, clean, plastic container(s) (with a plastic lid) large enough to hold about 3 L. Keep the collection container in the refrigerator or on ice during the 24-hour period. Provide amber-colour containers for light-sensitive analytes.For non-ambulatory catheterized patients, store the bag on ice; if the patient is ambulatory, empty the bag periodically and refrigerate the contents.

Label

The label on the collection bottle should include the patient's identification; test required; preservative used; and the dates and the times of the start and finish of the collection period. If spillage of the preservative could harm the patient, add a suitable warning to the label and explain this to the patient verbally. Basic elements of material safety data sheet (or equivalent) information should be provided to the patient.

Preservative

For patient and healthcare worker safety, a goal should be to avoid preservatives when possible. If a special preservative is required, add it to the collection bottle before the urine collection begins. See the table following Section 9.2 for appropriate preservatives. When more than one preservative type is analytically acceptable, efforts should be made to select the least hazardous additive.

Collection

The 24-hour collection should begin by having the patient empty his or her bladder or catheter bag at a fixed time and discard the specimen. Note the date and time that the collection started. If the preservative is a biohazard, the patient should be advised to collect the urine in a separate clean container and then carefully transfer the urine to the collection container for the laboratory.

Instruction

Instruct the nurse or patient to collect all voided urine during the 24-hour collection period and add it to the collection container. Written instructions must be written in simple form and in a language comprehensible to the patient.

Completion

The collection should end exactly 24 hours after it began by having the patient empty his or her bladder, or catheter bag, and adding this specimen to the collection container.

2.3 FLUID SPECIMEN COLLECTIONS

Cerebrospinal Fluid

Cerebrospinal fluid is usually collected by lumbar puncture, but may also be obtained by lateral cervical or cisternal puncture. Sterile technique is mandatory to avoid introducing bacteria.

Manometric measurements may be done and are the responsibility of the clinical service rather than the laboratory.

Usually, fluid is collected into three or four tubes for chemical, microbiologic, and cellular analysis. The tubes should be labelled according to the sequence of collection. It is preferable to have the first tube analyzed for chemical and serologic studies. Subsequent tubes should be used for microbial and cellular analysis to obtain accurate cell counts and decrease the chance of bacterial contamination.

A sterile tube must be used for microbial studies. No anticoagulant is necessary, since spinal fluid does not clot except occasionally if the puncture is traumatic. Since the volume of CSF is relatively small, the total amount collected is limited and usually varies from 10 to 20 mL in adults. Up to 8 mL may be safely removed from the smallest infant. Complications of lumbar puncture include headache, infection, and brain herniation. Rarer complications may also occur.

Test	Anticoagulant	Volume (mL)	Comments
(e.g., protein, glucose, other special tests)	None	3-5	**Tube #1** If traumatic tap is suspected, cell count should also be performed on Tube 1.
Gram stain and culture	None	3-5	**Tube #2**
Cell count and Differential	None	3-5	**Tube #3 or #4**
Other tests as required (e.g., cytology)	None	3-5	**Tube #4**

Serous Fluid

Serous fluids (e.g., pleural, peritoneal) from large volume collections may be aliquot into smaller volumes before transport to the laboratory or in the laboratory. Specimens should be gently agitated during collection, before aliquoting, and before testing for cell counts and differentials.

Ethylenediaminetetraacetic acid (EDTA) is the recommended anticoagulant for cell counts and differentials. Refrigerated storage is adequate for cell counts and differentials for up to 24 hours. Although testing can be done on small volumes of fluid, 5 to 8 mL is recommended in the event follow up studies are needed (e.g., flow cytometry). A sterile collection tube must be used for microbial studies.

For cytology specimens, a wide range of volumes may be sent to the laboratory. As little as 15 to greater than 100 mL may be sent for analysis. A 50-mL specimen is recommended. Sterility is not required and no anticoagulant is necessary.

However, heparin and EDTA are also used. If clumps of material are present, they can be processed as a cell block. Refer to Section 10.1.1 for collection of samples for cytological examination.

Tests	Anticoagulant	Volume (mL)
RBC, WBC, differential	EDTA	5-8
Total protein, LD, glucose Amylase	Heparin, none	8-10
Gram stain, bacterial culture	SPS*, none, or anticoagulant without bactericidal or bacteriostatic effect	8-10
AFB culture	SPS, none, or anticoagulant without bactericidal or bacteriostatic effect	15-50
PAP stain, cell block	None	As Collected (raw specimen or slide smear)

*SPS = Sodium polyanetholsulfonate

Synovial Fluid

The amount of fluid removed depends on the size of the joint and effusion. A 3- to 5-mL sample is ideal for laboratory analysis. However, since this may not be possible in smaller joints, the physician should prioritize the requested tests and clearly communicate with the laboratory. Specimens should not be rejected because of small volumes, since even a drop may provide definitive diagnosis in crystalline joint disease and only small volumes are needed for cell count and differential. Infected fluids may also grow organisms even if the volume is compromised. Specimen requirements are listed in table.

The following precautions should be noted. The physician must be careful not to express synovial fluid into tubes using a needle on the collection tray, previously used to remove fluid from a medicinal vial. Fluid should be thoroughly mixed after collection and before analysis in the laboratory to obtain accurate cell counts.

Some texts indicate that lithium heparin and EDTA should not be used as anticoagulants because they produce crystalline material that can be confused with pathologic crystals.

However, others have used lithium heparin and EDTA without difficulty. Oxalate should not be used because of extensive formation of calcium oxalate crystals.

Test	Anticoagulant	Volume (mL)	Comments
Cell count, differential, crystals, inclusions	Heparin, EDTA	3-5	Can be done on a few drops of fluid. Mix thoroughly.
Glucose	Fluoride or none	3-5	8-hr fast preferred
Protein CH50	None None		
C3, C4	None or EDTA	3-5	Requires 1 mL
Culture	SPS, none, or anticoagulant without bactericidal or	3-5	Sterile tube required

	bacteriostatic effect		
PAP stain, Crystal studies	None	As Collected (raw specimen)	None

Bronchoalveolar Lavage (BAL)

A fiber-optic bronchoscope is wedged into a midsize segmental bronchus, and aliquots of sterile saline are instilled and aspirated into the alveolar spaces. In this manner, cells and organisms in the alveoli distant to the bronchoscope can be sampled. The instillation volume typically is approximately 100- to 300-mL sterile saline in 20- to 50-mL aliquots.

The first aliquot should be discarded. The other aliquots are pooled for further analysis. In diffuse lung disease, the middle or lingular lobe is used as a standard site for BAL.

If a definite segment has been lavaged, this should be recorded on the request form. Aspiration of the instilled solution should be carried out with as little trauma as possible. A typical recovery is in the range of 50 to 70%. A very low recovery of less than 25% of the applied volume may appear in cases of chronic obstructive lung diseases. Low-volume recovery should be recorded on the request form.

2.3.1 Fluid Specimen Handling and Transport

Specimens should be transported to the laboratory promptly. Cellular degeneration of CSF can begin within one hour of collection, so cell counts should be completed as soon as possible.

Cerebrospinal Fluid (CSF)

Cerebrospinal fluid (CSF) specimens should be transported at ambient temperature to the testing site as soon as possible following completion of the collection procedures. CSF for microbiology testing should never be refrigerated before or after transport; since some organisms are fastidious and temperature sensitive, they have the capability of becoming nonviable.

Serous Fluids

It is also recommended that pleural, pericardial, and peritoneal fluids be transported to the testing site at ambient temperature. To preserve the integrity of these specimens, however, the testing site should be in receipt of these specimens as soon as possible after the completion of the collection procedures.

Otherwise, cell lysis, cellular degradation, and bacterial growth could occur and possibly affect the test results specimen should be refrigerated at 4 °C without a fixative. Serous fluids have a high protein content, cellular detail with Papanicolaou (PAP), H & E, or other stains will be adequately preserved with refrigeration for several days.

Synovial Fluids

Synovial fluid specimens may be transported and analyzed at room temperature.

BAL

Bronchoalveolar lavage (BAL) samples should be kept at room temperature and transported to the laboratory immediately after collection. Analysis of cell number, viability, and differential count should be performed within three hours. Preliminary tests demonstrate a deterioration of cellular characteristics after approximately six hours.

Specimens that cannot be processed within 36 hours should be discarded. Samples are often filtered using 50- to 70-µ nylon filters before staining to remove phlegm and dust.

3. CYTOPATHOLOGY

3.1 Test offered

1) Gynecological specimen. (Cervicovaginal specimen, i.e.: Pap Smear)
2) Non-Gynecological specimen.
    i. Sputum.
    ii. Body fluids. (Urine, CSF, Pleural and ascetic fluid).
    iii. Nipple Discharge.
    iv. Brushing. (e.g.: Bronchial, Gastric).
    v. Washing (e.g.: Bronchial washing/ Peritoneal Washing).
    vi. Fine Needle Aspiration Cytology.

3.2 Requisition form

1) Fill in the cytology form accompanying the specimen, with full details (e.g.: patient's name, MRN, IC number or passport number) and the following required information:
    i. Nature of specimen,anatomical site
    ii. LMP; Last menstrual period
    iii. Adequate history including relevant previous investigations, surgery and treatment. E.g.: previous radiotherapy, IUCD user, Post LEEP or TAHBSO.
    iv. Any Hormonal/oral contraceptive (OCP)
    v. And any previous histology and cytology references numbers.
2) For urgent request, please tick the request form as "URGENT".
3) Complete the form with the contactable doctor in charge.
4) Use different barcode number for specimen from different anatomical site e.g Left and Right Breast Cyst fluid from the same patient.

3.3 Special instructions

1) Please inform urgent cases to cytology laboratory staff or noted in the requisition form, as these will only be done prior arrangement.
2) If more than one investigation is to be done, (e.g.: Bronchial washing for cytology and Culture for AFB) Please submit separate containers (Where possible)
3) It is very important that slides are prepared by the clinician e.g.; pap smear or bronchial brushing are fixed promptly and correctly to optimize the diagnostic process.

3.4 Specimen container

1) All specimens for cytological examination should be put in clean universal leak-proof containers.
2) Slides (Pap smear, nipple discharge, FNA, sputum, etc.) should be placed in slide mailer before being dispatched to the laboratory.
3) All specimens should have the same identification as that written on the request form. Specimens from different anatomical sites should be sent in separate containers, properly labelled and **must be clearly itemized in the request form**.

3.5 Specimen Collection

A. Gynecological specimen

Conventional Pap Smear

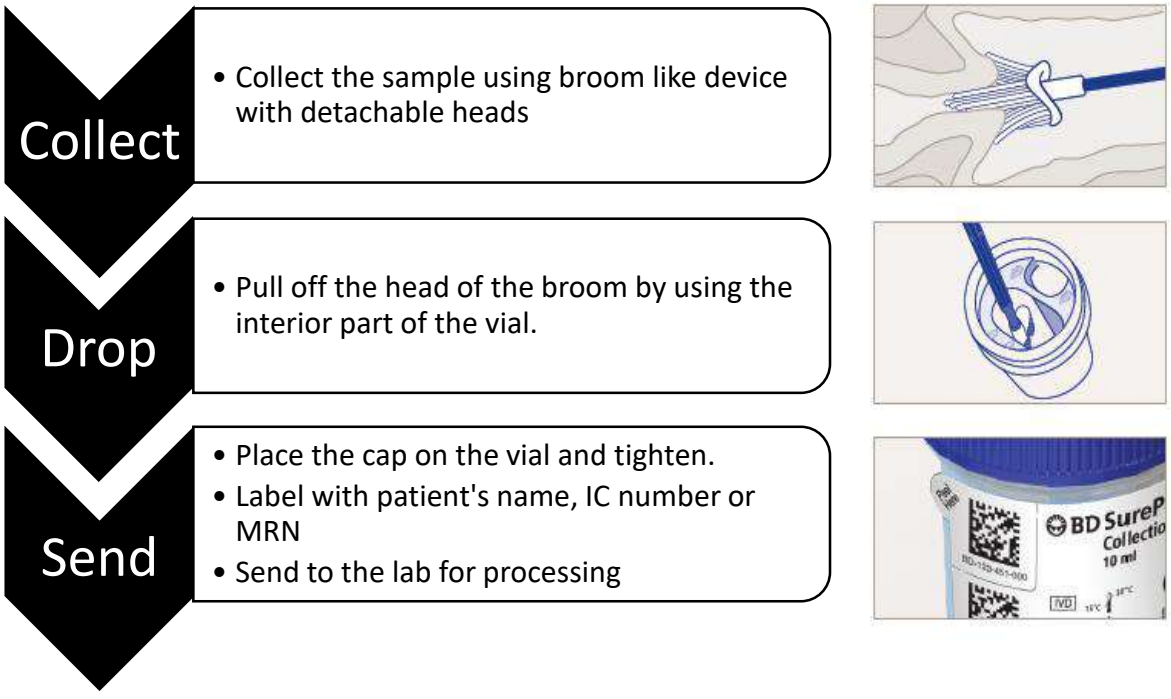
i. Take the smear before the bimanual examination.
ii. Do not use a lubricant on the speculum.
iii. Gently cleanse the cervix with cotton pledget if obscured with discharge or secretion.
iv. Place spatula at the external os and rotate through 360 degrees, lightly scraping the squamocolumnar junction.
v. Place the collected material near the frosted end of the glass slide and smear it thinly along the entire length of the slide.
vi. Fix the sample immediately before the smear dries up:

Fixative	Duration
95% ethyl alcohol	15-30 minutes
Spray fixatives (15-20cm away)	10 minutes

vii. Place inside the slide container and close the lid only after the fixative is dry.

Liquid Based Cytology (LBC)

- Liquid based methods used in Lablink is a Surepath which is FDA approved.
- It requires the use of collection devices that have been endorsed by the FDA for use with the particular specimen preparation instrument.



B. Non-gynaecological / General cytology

Respiratory sample

- Sputum
- Bronchial lavage
- Bronchial washing
- Tracheal aspirate
- Brushings

Figure 5: Sterile container

Sputum

1) Early morning, deep cough specimen is preferred.
2) Sputum should be a deep cough specimen and contain no saliva. Collect the sputum in a sterile labeled container supplied.
3) Send the specimen together with a request form to the laboratory immediately. If delay, the specimen can be refrigerated 2 - 8 ºC.

DO NOT FREEZE SPECIMENS

Brushing specimen

1) The brush must be rotated gently, and immediately smeared onto a clean labeled glass slide.
2) Fix immediately with fixative spray or 95% alcohol.
3) Place inside the slide container and close the lid only after the fixative is dry.

Body fluids

- Pleural
- Peritoneal
- Pericardial
- Hydrocoele
- CSF
- Synovial fluid
- Cyst fluid

1) Specimens are collected in clean labeled containers and dispatched immediately to the laboratory.
2) If a delay of more than 12 hours is anticipated, please refrigerate the specimen at 2 – 8 ºC.

DO NOT FREEZE SPECIMENS

Urine

1) The requesting doctor must indicate the type of urine either voided or catheterized urine.
2) The first morning voided urine specimens should be avoided and do not send overnight urine sample as most of the cells in these samples have degenerated .
3) To help ensure the adequacy of the sample, a midstream (clean catch) specimen is recommended.
4) Send the urine sample to the laboratory immediately.
5) If the specimen cannot be transported to the laboratory immediately, the specimen should be refrigerated at 2 – 8 ºC.

DO NOT FREEZE SPECIMENS

Nipple discharge

1) Do imprint smear by placing the labeled slides onto the nipple. Prepare at least 2 smears.
2) Fix immediately the labelled slides with fixative spray or 95% alcohol.

Fine Needle Aspiration (FNA)

1) FNAC procedure is conducted by appointment if necessary. If needed please contact the cytology department for an appointment.
2) Appointment requests for FNAC should be ordered only by the specialist – the request forms should be filled legibly, complete with the clinical history and findings. Whenever there is more than one lump or swelling present, the clinician should indicate which lump/s or swelling/s to be aspirated. The clinician requesting the FNAC procedure should have his/her name written clearly on the request form so that they would be able to be contacted if there is any query.
3) Consent from the patient shall be taken by the requesting practitioner.
4) FNAC for superficial lesions can be performed either by clinicians or pathologists.
5) FNAC for deep-seated lesions and as clinically indicated is performed by the radiologist under radiological guidance or the respective specialized medical practitioner on an appointment basis.

FNA services provided by cytology department:

Superficial or palpable lesions.

1) For the location and hours of this service, please contact the cytology department for an appointment if necessary.
2) Fill in the cytology form with full details and the following details
    i. Adequate history including relevant previous investigations and treatment.
    ii. And any previous histology and cytology reference numbers.
3) If a booked FNA is cancelled, inform the cytology's staff in advance.
4) If you cannot refer the patient to the cytopathology department, see the technique of fine needle aspiration below.

FNA Collection Procedure

(Please note that this procedure is for palpable lesions and NOT for deep-seated lesions, which should be conducted under radiological guidance)

a) Label all slides (on the frosted portion) by using a pencil with the patient's name or hospital number and site of aspiration if more than one site to be aspirate in one time. Itemized number of specimen on the request form if multiple slides collected.
   Note: Do not label slides with barcodes. Put barcodes on slide container
b) Palpate, localize and wipe aspiration site with antiseptic.
c) Insert the needle and retract the piston to create suction in the needle.
d) Under constant suction, move needle tip backward and forward. If possible, direct it toward different areas.
e) Release suction before removing the needle from the lesion.
f) Express the material/ aspirate onto the slide NEAR to the frosted end while holding the needle to prevent it from being disconnected from the syringe if the needle is blocked.
   Refer **Figure 7**: Deliver material onto a slide.
g) Place the second slide on the first, and gently but firmly allow the material to spread to the edges.
h) Pull the 2 slides apart keeping them firmly but gently completely apposed.

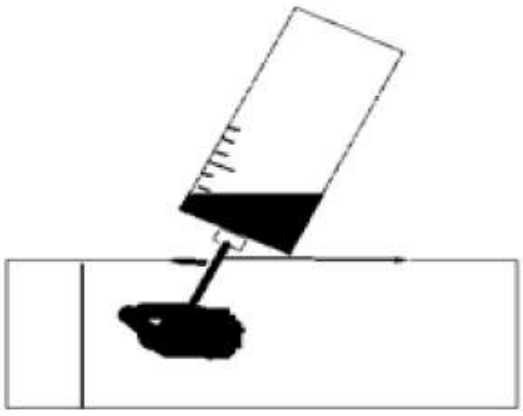
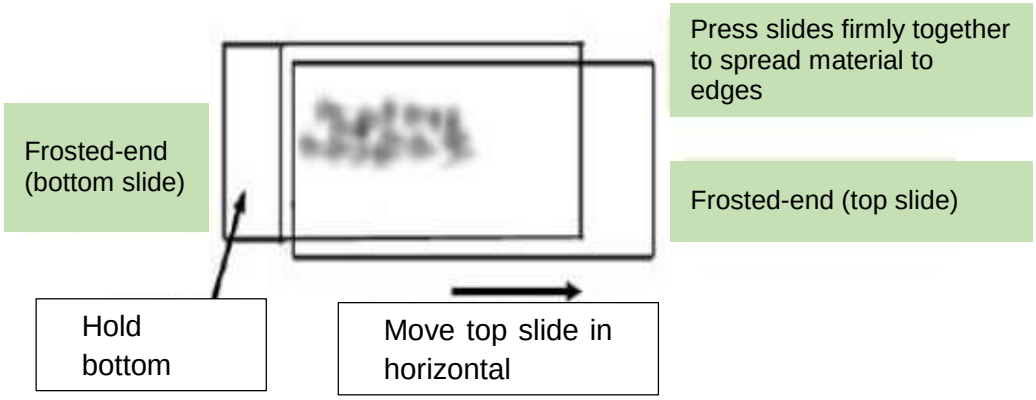
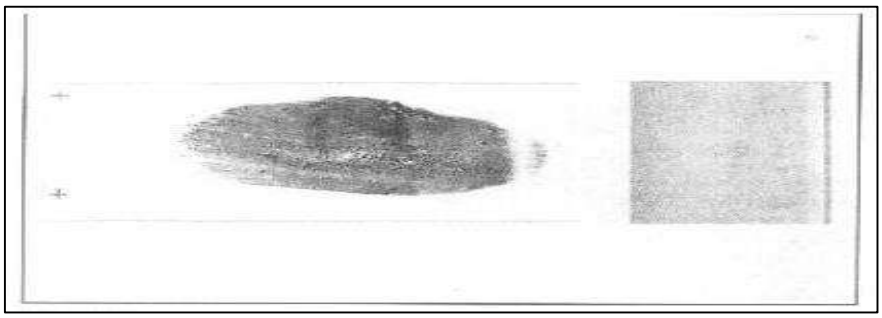


Figure 6: Deliver material onto a slide

i) Repeat the procedure if needed.
j) Fix slides immediately.
k) **Figure 8** shows the prepared FNA slide smear.
l) Label all slides (on the frosted portion) in pencil with the patient's name or hospital number.
Note: Do not label slides with barcodes. Put barcodes on slide container**.**
m) If TB is suspected clinically, rinse the needle and syringe in sterile saline and sent for mycobacterium culture.
n) Put pressure on the aspiration site. Apply plaster.
o) After the procedure, discard the needle into a sharps-container.
p) Inform the patient where and when to get their results.
q) Send the sample and the request form to the laboratory for processing and diagnosis.





(Stained smear showing the appearance of a properly smeared specimen with good distribution of material).

Specimen collected after office hours and which are unable to be sent to the laboratory shall be kept in the refrigerator at 2-8'C.
(Applicable for fluids)

4. HISTOPATHOLOGY

Request of Test and Specimen Collection

4.1 List of services offered

A. General histopathological examination of tissue (routine HPE)
B. Special histopathology diagnosis:
    i. Renal biopsy with Immunofluorescence (IF) studies (Refer to Test Catalogue and Requirements for Histopathology for List of antibodies for IF)
C. Frozen section
D. Special stains.
E. Immunohistochemistry (IHC) stains (Refer to Test Catalogue and Requirements for Histopathology for List of IHC antibodies)

Note: All histopathology specimen including frozen section specimen are sent to Histopathology laboratory on daily basis from 8.30 a.m to 5.30pm (Monday to Friday) and 8.30a.m to 12.30 p.m (Saturday) except on Sunday and Public Holiday.
There is no after hours or out-of-hours for Histopathology services at Lablink medical laboratory.

4.2 Requisition form

A. General Routine Histopathology Test

1. Fill in an appropriate Histopathology Requisition Form accompanying all specimen for histological examinations.
2. The request form must be completed with**:**
    i. Patient details with at least two identifier : Name AND MRN number OR Date of birth OR Identification number
    ii. Nature and anatomical site of specimen
    iii. Diagnosis and clinical history
    iv. Test requested (e.g. IHC, Immunofluorescence(IF) studies)
    v. Previous history or lab number (if applicable)
    vi. Doctors/referring clinician/surgeon's name and signature
    vii. Specimen collection date and time
    viii. Itemized number of specimen if multiple specimen container.
3. Register and manage the specimen in the laboratory/clinic prior to sending it to the histopathology laboratory.
4. Use only one request form for multiple samples from a single patient undergone same surgery procedures. An appropriate information must be clearly labelled and differentiated on the respective request form**.**
5. Affix hospital barcode (if available) at the left hand side corner (or where applicable) on the request form. Do not affix any label on the information provided on the request form**.**
6. The referring clinician must ensure that high-risk samples are clearly identified on both the sample container and request form to reduce the risk of infection.
7. For urgent request, please mark 'URGENT' on the request form.

B. Frozen Section

1. Frozen section must be booked in advance with the histopathology laboratory at least 48 hours prior to the procedure via phone call followed by request form.
2. Frozen Section Form (please contact laboratory) must be clearly completed including the following essential information:
   i. Patient's details; Name, NRIC or Passport no, Age and Sex
   ii. Contact number of surgeon/consultant in charge of the case and operation theatre contact number.
   iii. Indications for frozen section, including specimen type and purpose of frozen section procedure; e.g. margins of tumor or to confirm malignancy of tumor tissue.
   iv. Previous HPE lab number (if applicable)
   v. Date and time of procedure
   Note: It is imperative that once a specimen has been sent, the operation theatre and consultants in charge telephone is kept free, so that the pathologist can communicate the result promptly.
   vi. Requestor details section
3. Contact histopathology services (03-40272806) to highlight its impending arrival.
4. If Frozen Section is cancelled or the time of expected arrival changes, ensure the histopathology services is notified.

C. Request for Second opinion

The client (requesting doctor/clinician) can communicate directly with the pathologist specialized in the respective field for any consultation of the reports or histopathology services.

For referral or cases for second opinion, the requesting doctor/clinician is required to fill up the request form as routine cases accompanied with paraffin embedded block, stained or unstained slides and a copy of report (primary report) and submit to Histopathology laboratory via email at lablinkhistocyto@gmail.com and lablink.report@gmail.com

The TAT of block retrieval:
Same year : 3 Working days
Previous years:3 to 5 Working days

Specimen Collection and Specimen Container

1. In general, the specimen container must be completed with:
   i. Patient details with at least two identifier : Name AND MRN number OR Date of birth OR Identification number
   ii. Nature and anatomical site of specimen
   iii. Date of collection
   iv. Itemized number if multiple specimen container.
   v. Proper fixatives; e.g. 10% buffered formalin for routine histology H&E testing.

2. Specimen for routine histological examination is to be fixed in 10% phosphate buffered formalin in adequately sized and suitable leak-proof container. The volume of formalin used more than sufficient to cover the specimen completely (at least 10 times the volume of specimen (10:1)) to be fixed. Large specimen must be entirely submerged in formalin to ensure proper fixation. The container must be labelled with an appropriate label indicating that it contains 10% buffered formalin.

   Note: It is vital that specimens are adequately covered in 10% Neutral Buffered Formalin to ensure adequate fixation. Poor fixation can compromise the quality of the specimen and subsequent histological examination.

3. Specimens from different anatomical sites should be sent in separate containers and must be itemized and labeled in the same request form and the specimen container respectively.

   Note: Write the patient's details, specimen type and anatomical site and date collection on each containers label. **DO NOT** label on the lid of container

4. Multiple small specimens such as gastrointestinal biopsies should ideally be mounted on a piece of filter paper and immediately put in formalin

5. If more than one specimen container is submitted for the same patient at the same operation/procedure, please use only one request form and clearly itemized in the request form and the specimen containers.

6. Do not put large specimen in a small container as this would prevent proper fixation of the tissue and also distort the specimen.

7. For specimen where orientation is important, mark or tag the specimen e.g., axillary tail of mastectomy specimen with important margins.

8. Specimen's container should have the same identifications as that written on the request forms.

9. Specimen for **Immunofluorescence studies** (Renal or Skin) is to be sent in Michel's transport medium or on filter paper moistened with phosphate buffered solution (PBS) to prevent specimen from drying.

10. For **Renal Biopsy studies**: Two specimens consist of formalin fixed tissue (light microscopy examination) and fresh tissue for immunofluorescent staining are recommended for each case for appropriate histological evaluation.

    Specimen collection guideline for renal biopsy immunofluorescence:
    a. Take at least 3mm cores of fresh tissue.
    b. The specimen should be sent fresh in Michel's transport medium or on filter paper immersed in the container filled phosphate buffered solution (PBS).
    c. Transport in ice pack.

Note: Do not put fresh tissue specimen on gauze.

11. Specimen for **Frozen Section** are to be sent fresh WITHOUT fixative or any other preservative, in a clean container and should send immediately to the histopathology department.

    Safety Notes: Don proper PPE and follow universal precaution when handling specimen. It is essential that all fresh tissue MUST be treated as though it is potentially infectious, regardless of the clinical history.

SPECIMEN PACKAGING AND TRANSPORTATION REQUIREMENTS

The purpose of this guidance document is to aid and provide guidance for transporting patient specimens collected at laboratory site for diagnosis and investigational activities.

Patient specimens collected directly from human such as excreta, secretion, blood, tissue and tissue fluid swabs, culture plate and body parts that need to be transported safely, timely and efficiently to main laboratory where they will be analysed. Patient specimens should be packaged and transported safely in order to protect those involve in the transportation process from risk of infection regardless of the status of the specimens.

This guidance addresses the pre-analytical stage in handling of clinical specimens, i.e. after collecting the specimens from patients to reaching the laboratory, and includes both within hospital transport and local inter-hospital/laboratory transport of specimens.

PACKAGING OF SPECIMEN FOR TRANSPORT

a. For clinics and hospitals each sample must be placed in one kangaroo bag provided with the request form

b. Clinical specimens must be packaged to avoid leakage. In general the basic triple packaging system should be adopted.

c. Triple packaging system

- All specimens shall be collected in a **primary container** that is watertight and leak proof. The cap should be correctly and securely closed. As far as practicable, the primary containers should be kept in an upright position in a rack during transport.
- The primary containers shall be put into a **secondary container** that is watertight. Several clinical specimens may be placed into one secondary container. Secondary containers have to be cleansed and disinfected if they are to be re-used.
- Examples of secondary containers are:
    - Disposable, zip-lock plastic bags
    - Large centrifuge tubes (50 ml) with screw caps.
- Do not stick the specimen on the request form. Specimen request forms should be put into a separate plastic bag. Alternatively, they can be put in the carrying pocket of the zip-lock plastic bag.

PROPER SPECIMEN HANDLING DURING TRANSPORT

a. The outer container (transport box) must be handled gently with care. Throwing or dropping of the transport box is prohibited.

b. Staff handling these transport boxes should maintain good personal hygiene. Hands should be washed after each session of work, when contaminated or soiled, or after removal of gloves.

c. Staff must not touch mouth, eyes, nose and mucosal membranes prior to hand washing and definitely not with gloved hands.

d. Specific PPE, except working uniforms, is not necessary if the packing and handling of transferred specimens and materials is properly followed.

COLD CHAIN AND ROOM TEMPERATURE PACKAGING

ROOM TEMPERATURE	COLD CHAIN (Temperature from 2°c to 8°c)
• Histopathology sample • Culture Plates (Transport ≤2 hours after 18 - 24 hours of incubation at 35-37° C) • LBC • PAP smears • FNAC slides • Biopsy for Histopathology • Hair specimen • Nail clipping specimen • Skin scrapping specimen • Blood culture bottle • PBF • CSF (For bacterial & fungal culture) • Inoculated CMB (Cooked Meat Broth) • Inoculated Alkaline Peptone water, Selenite Broth and Tryptone Soy Broth • Specimen mainly for Neisseria culture	☐ Molecular specimen ☐ Plain tube ☐ EDTA tube ☐ Urine sample ☐ Stool sample ☐ Fluid * ☐ Biopsy for culture ☐ Sputum sample ☐ Tracheal aspirate ☐ Bronchial lavage ☐ Pleural fluid * ☐ Sterile body fluid * ☐ Genital swab (with gel)* ☐ Pus * ☐ Swabs (with gel) * ☐ Nasopharyngeal aspirate * ☐ Frozen Section ☐ Fresh tissue for Immunofluorescence studies ☐ Cytology fluid ☐ FNAC fluid * > 24 hours

Handling of Specimen Leakage and Spillage

a. Leaking specimens are hazardous to all staff involved in their handling. Such specimens could be rejected or discarded according to the laboratory practice.
b. When leakage of fluid content to the outside of the outer container is encountered during transport within hospital / institution.
    - The spill should be decontaminated as soon as possible by using dedicated **Spillage Kit**.

TEST CATALOGUE AND REQUIREMENTS

PACKAGES / PROFILE: GENERAL LABORATORY SERVICES

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in hours and day.

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP1	**FULL BLOOD PICTURE / ANAEMIA PROFILE (GP1)** Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Erythrocyte Sedimentation Rate (ESR) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Reticulocyte count Platelet count White blood cell count (WBC) Differential count Blood film morphology comment	2 mL EDTA blood 2 Slide Smear	1 working day	3 working days
GP1A	**FULL BLOOD COUNT (GP1A)** Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Reticulocyte count Platelet count White blood cell count (WBC) Differential count	2 mL EDTA blood	1 hour	4 hours

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP1C	**FULL BLOOD COUNT (GP1C)** Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Platelet count White blood cell count (WBC) Differential count ESR	2 mL EDTA blood	2 hour	4 hours
GP1Z	**FULL BLOOD PICTURE / ANAEMIA PROFILE (GP1Z)** Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red Cell Distribution Width (RDW) Platelet count Mean Platelet Volume (MPV) White blood cell count (WBC) Differential count Reticulocyte count Blood film morphology comment by Haematologist	2.0 mL EDTA blood 2 Slide Smear	1 working day	3 working days
GP2	**ANAEMIA BIOCHEMICAL PROFILE (GP2)** Serum iron Total iron binding capacity (TIBC) Serum folate Serum vitamin B12 Percentage iron saturation	6 mL plain blood	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP2A	**ANAEMIA BIOCHEMICAL PROFILE (GP2A)** Serum folate Red blood cell folate folate Serum vitamin B12 Serum feritin Serum transferrin	2 mL EDTA blood 6 mL plain blood	Contact Lab	3 working days
GP4J	**ANTENATAL PROFILE (GP4J)** Full blood Count (GP1C) Blood group (ABO & Rh) Venereal disease research laboratory (VDRL) & titre Rubella IgG antibody Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab)	2 mL EDTA blood 6 mL plain blood	1 - 2 working days	3 working days
GP9	**ANTENATAL PROFILE (GP9D)** Full blood Count (GP1C) Blood group (ABO & Rh) Venereal disease research laboratory (VDRL) & titre Rubella IgG antibody Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab)	2 mL EDTA blood 6 mL plain blood 20 mL fresh urine	1 - 2 working days	3 working days
GP10	**ANTENATAL PROFILE (H) (GP10)** Haemoglobin (Hb) Blood group (ABO & Rh) Venereal disease research laboratory (VDRL) & titre Rubella IgG antibody Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab)	2 mL EDTA blood 6 mL plain blood	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP11A	**ARTHRITIS PROFILE (GP11A)** White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Anti-streptolysin O titre (ASOT) Rheumatoid arthritis factor test (RF) Venereal disease research laboratory (VDRL) & titre Anti-nuclear factor (ANF)	2 mL EDTA blood 6 mL plain blood 8 mL heparin blood	2 working days (Additional 2 working days for positive ANF Screening)	3 working days (Additional 3 working days for positive ANF Screening)
GP12	**ARTHRITIS PROFILE (B) (GP12)** White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Uric acid Anti-streptolysin O titre (ASOT) Rheumatoid arthritis factor test (RF) Venereal disease research laboratory (VDRL) & titre C-reactive protein (CRP) Anti-nuclear factor (ANF)	2 mL EDTA blood 6 mL plain blood	2 working days (Additional 2 working days for positive ANF Screening)	3 working days (Additional 3 working days for positive ANF Screening)
GP12A	**LUPUS ERYTHEMATOSUS STUDIES (GP12A)** Haemoglobin (Hb) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Protein Albumin Globulin A/G ratio Urea Creatinine Rheumatoid arthritis factor test (RF) Anti-nuclear factor (ANF)	2 mL EDTA blood 8 mL plain blood 20 mL (minimum) fresh urine	2 working days (Additional 2 working days for positive ANF Screening)	3 working days (Additional 3 working days for positive ANF Screening)

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Anti-DNA antibody Complement C3 Complement C4 Urine FEME			
GP13	**AMENORRHOEA STUDIES (GP13)** Free thyroxine (FT4) Prolactin Follicle stimulating hormone (FSH) Luteinising hormone (LH) Estradiol (E2)	7 mL plain blood	1 - 2 working days	3 working days
GP14	**ANTENATAL ANTIBODIES STUDIES (GP14)** Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) Toxoplasma IgG antibody Rubella IgG antibody Cytomegalovirus (CMV) IgG antibody Herpes simplex (HSV) type 1 & 2 IgG antibody Venereal disease research laboratory (VDRL) & titre	10 mL plain blood	1 - 2 working days	3 working days
GP17	**ANTIBODY STUDIES (GP17)** Immunoglobulin G Immunoglobulin M Immunoglobulin A	5 mL plain blood	1 - 2 working days	3 working days
GP18	**BONE METABOLISM STUDIES (GP18)** Alkaline phosphatase Calcium Phosphorus	4 mL plain blood	4 hours	24 hours

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP19	**CARDIAC ENZYMES (GP19)** Aspartate transaminase (SGOT/AST) Creatine Kinase (CK) Lactate dehydrogenase (LDH)	4 mL plain blood	4 hours	24 hours
GP24 **GP24A**	**LIPID PROFILE (GP24)** Cholesterol Triglycerides HDL cholesterol Non HDL cholesterol LDL cholesterol Cholesterol/HDL cholesterol ratio	FASTING SAMPLE 6 mL plain blood	4 hours	24 hours
GP25C	**FEBRILE STUDIES (GP25C)** Haemoglobin White blood cell count (WBC) Differential count Platelet count Widal test Weil felix test Monospot test Urine FEME	2 mL EDTA blood 5 mL (minimum) plain blood 20 mL fresh urine	1 working day	2 working days
GP31	**HEPATITIS B SCREENING (GP31)** Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab)	4 mL plain blood	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP31D	**INFECTIOUS DISEASE PANEL (GP31D)** Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) Hepatitis C antibodies Antibody to HIV1/HIV2 (AIDS) Venereal disease research laboratory (VDRL) & titre	4 mL plain blood	1 - 2 working days	3 working days
GP36 **GP36A**	**LIVER FUNCTION TEST** Total protein Albumin Globulin A/G ratio Total bilirubin Direct bilirubin Indirect bilirubin SGOT / AST SGPT / ALT Alkaline phosphatase Gamma – GT	6 mL plain blood	4 hours	24 hours
GP40A	**RENAL FUNCTION TEST (GP40A)** Uric acid Creatinine Urea Sodium Potassium Chloride	6 mL plain blood	4 hours	24 hours

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP40B	**RENAL FUNCTION TEST (GP40B)** Uric acid Creatinine Urea Sodium Potassium Chloride Urine FEME	6 mL (minimum) plain blood 20 mL fresh urine	4 hours	24 hours
GP43	**THALASSEMIA STUDIES (GP43)** Haemoglobin (Hb) Reticulocyte count Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Blood film morphology comment Haemoglobin electrophoresis Iron Total iron binding capacity (TIBC) Percentage Iron saturation	4 mL EDTA blood 6 mL plain blood	10 working days	14 working days
GP45A	**THYROID FUNCTION STUDIES (B) (GP45A)** Serum free thyroxine (FT4) Thyroid stimulating hormone (TSH)	4 mL plain blood	1 - 2 working days	3 working days
GP46A	**THYROID PROFILE (A) (GP46A)** Serum free triiodothyronine (FT3) Serum free thyroxine (FT4) Thyroid stimulating hormone (TSH)	4 mL plain blood	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP51A	**VENEREAL DISEASE ANTIBODIES PROFILE (GP51A)** Venereal disease research laboratory (VDRL) & titre TPHA & titre Chlamydia trichomatis IgG antibody Herpes simplex virus type 1 IgG antibody Herpes simplex virus type 2 IgG antibody Antibody to HIV1/HIV2 (AIDS)	6 mL plain blood	1 - 2 working days	3 working days
GP61M	**LABLINK EXECUTIVE PROFILE (GP61M)** Glucose TSH Uric acid Creatinine Urea Sodium Potassium Chloride Calcium Phosphorus Cholesterol Triglyceride HDL cholesterol LDL cholesterol Cholesterol/HDL cholesterol ratio Protein Albumin Globulin Albumin/globulin ratio Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Alkaline phosphatase (ALP) Gamma GT Venereal disease research laboratory (VDRL) & titre	2 ml EDTA blood 10 mL plain blood 1 ml fluoride blood 20 ml (minimum) urine	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Blood group (ABO & Rh) Rheumatoid arthritis factor test (RF) Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red cell Distribution Width (RDW) Platelet count Mean platelet volume (MPV) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Urine FEME Hepatitis B screen Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) Hepatitis A Virus Ab HAVAB AIDS screen Antibody to HIV1/HIV2 (AIDS)			
GP72H	**BRONZE EXECUTIVE HEALTH PROFILE (GP72H) – MALE & FEMALE** Glucose TSH Uric acid Creatinine Urea Sodium Potassium Chloride Calcium Phosphorus Cholesterol Triglyceride HDL cholesterol	2 ml EDTA blood 10 mL plain blood 1 ml fluoride blood 20 ml (minimum) urine	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	LDL cholesterol Cholesterol/HDL cholesterol ratio Protein Albumin Globulin Albumin/globulin ratio Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Alkaline phosphatase (ALP) Gamma GT Venereal disease research laboratory (VDRL) & titre Blood group (ABO & Rh) Rheumatoid arthritis factor test (RA) Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red cell Distribution Width (RDW) Platelet count Mean platelet volume (MPV) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Blood film morphology comment Urine FEME Appearance, urine Specific gravity, urine pH, urine Protein, urine Glucose, urine Ketone, urine Blood, urine WBC, urine RBC, urine Epithelial cell, urine			

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Cast, urine Crystal, urine Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) HAVAB Antibody to HIV1/HIV2 (AIDS) HbA1c MBG HCVAb			
GP72K	**PLATINUM EXECUTIVE HEALTH PROFILE (GP72K) – MALE** Glucose TSH Uric acid Creatinine Urea Sodium Potassium Chloride Calcium Phosphorus Cholesterol Triglyceride HDL cholesterol LDL cholesterol Cholesterol/HDL cholesterol ratio Protein Albumin Globulin Albumin/globulin ratio Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Alkaline phosphatase (ALP) Gamma GT Venereal disease research laboratory (VDRL) & titre	2 ml EDTA blood 10 mL plain blood 1 ml fluoride blood 20 ml (minimum) urine	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Blood group (ABO & Rh) Rheumatoid arthritis factor test (RA) Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red cell Distribution Width (RDW) Platelet count Mean platelet volume (MPV) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Blood film morphology comment Appearance, urine Specific gravity, urine pH, urine Protein, urine Glucose, urine Ketone, urine Blood, urine WBC, urine RBC, urine Epithelial cell, urine Cast, urine Crystal, urine Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) HAVAB Antibody to HIV1/HIV2 (AIDS) HbA1c MBG HCVAb EBV VCA IgA CEA AFP PSA			

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	CA199 H pylori Ab CRP			
GP72L	**PLATINUM EXECUTIVE HEALTH PROFILE (GP72L) – FEMALE** Glucose TSH Uric acid Creatinine Urea Sodium Potassium Chloride Calcium Phosphorus Cholesterol Triglyceride HDL cholesterol LDL cholesterol Cholesterol/HDL cholesterol ratio Protein Albumin Globulin Albumin/globulin ratio Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Alkaline phosphatase (ALP) Gamma GT Venereal disease research laboratory (VDRL) & titre Blood group (ABO & Rh) Rheumatoid arthritis factor test (RA) Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV)	2 ml EDTA blood 10 mL plain blood 1 ml fluoride blood 20 ml (minimum) urine	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red cell Distribution Width (RDW) Platelet count Mean platelet volume (MPV) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Blood film morphology comment Appearance, urine Specific gravity, urine pH, urine Protein, urine Glucose, urine Ketone, urine Blood, urine WBC, urine RBC, urine Epithelial cell, urine Cast, urine Crystal, urine Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) HAVAB Antibody to HIV1/HIV2 (AIDS) HbA1c MBG HCVAb EBV VCA IgA AFP CEA CA125 CA199 CA153 H pylori Ab CRP			

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP72M	**GOLD EXECUTIVE HEALTH PROFILE (GP72M) – MALE** Glucose TSH Uric acid Creatinine Urea Sodium Potassium Chloride Calcium Phosphorus Cholesterol Triglyceride HDL cholesterol LDL cholesterol Cholesterol/HDL cholesterol ratio Protein Albumin Globulin Albumin/globulin ratio Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Alkaline phosphatase (ALP) Gamma GT Venereal disease research laboratory (VDRL) & titre Blood group (ABO & Rh) Rheumatoid arthritis factor test (RA) Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red cell Distribution Width (RDW) Platelet count	2 ml EDTA blood 10 mL plain blood 1 ml fluoride blood 20 ml (minimum) urine	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Mean platelet volume (MPV) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Blood film morphology comment Appearance, urine Specific gravity, urine pH, urine Protein, urine Glucose, urine Ketone, urine Blood, urine WBC, urine RBC, urine Epithelial cell, urine Cast, urine Crystal, urine Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) HAVAB Antibody to HIV1/HIV2 (AIDS) HbA1c MBG HCVAb CRP CEA AFP PSA CA199			
GP72N	**GOLD EXECUTIVE HEALTH PROFILE (GP72N) – FEMALE** Glucose TSH Uric acid Creatinine Urea Sodium	2 ml EDTA blood 10 mL plain blood 1 ml fluoride blood 20 ml (minimum) urine	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Potassium Chloride Calcium Phosphorus Cholesterol Triglyceride HDL cholesterol LDL cholesterol Cholesterol/HDL cholesterol ratio Protein Albumin Globulin Albumin/globulin ratio Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Alkaline phosphatase (ALP) Gamma GT Venereal disease research laboratory (VDRL) & titre Blood group (ABO & Rh) Rheumatoid arthritis factor test (RA) Haemoglobin (Hb) Red cell count (RBC) Packed cell volume (PCV) Mean corpuscular volume (MCV) Mean corpuscular Hb (MCH) Mean corpuscular Hb conc (MCHC) Red cell Distribution Width (RDW) Platelet count Mean platelet volume (MPV) White blood cell count (WBC) Differential count Erythrocyte Sedimentation Rate (ESR) Blood film morphology comment Appearance, urine Specific gravity, urine pH, urine Protein, urine			

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Glucose, urine Ketone, urine Blood, urine WBC, urine RBC, urine Epithelial cell, urine Cast, urine Crystal, urine Hepatitis B surface antigen (Hbs Ag) Hepatitis B surface antibody (Hbs Ab) HAVAB Antibody to HIV1/HIV2 (AIDS) HbA1c MBG HCVAb hs CRP CEA AFP CA125 CA199 CA153			
LiverFASt	**LiverFASt SCREENING (LiverFASt)** Glucose Cholesterol Triglyceride Apolipoprotein A-1 Gamma GT Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Haptoglobin: Alpha-2 Macroglobulin Fibrosis score, Liver Activity score, Liver Steatosis score, Liver	5 mL plain blood 2 ml fluoride blood	1 - 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
SteatoT	**STEATOTEST SCREENING (SteatoT)** Glucose Cholesterol Triglyceride Apolipoprotein A-1 Gamma GT Bilirubin Alanine transaminase (SGPT/ALT) Aspartate transaminase (SGOT/AST) Haptoglobin Alpha-2 Macroglobulin Steatosis score, Liver	5 mL plain blood 2 mL fluoride blood	1 - 2 working days	3 working days
GP1R	**CD4/CD8 ABSOLUTE COUNT (GP1R)** White blood cell count Lymphocyte count Total CD3 (Mature T cells) count % CD3 (Mature T cells) Total CD4 (Helper T cells) count % CD4 (Helper T cells) Total CD8 (Suppressor T cells) count % CD8 (Suppressor T cells) CD4/CD8 ratio **Note:** **- Specimen must be properly packaged and labelled as a biohazards.** **- Send immediately at room temperature (20°C-25°C).** **- Specimen kept for more than 48 hours are not suitable for analysis.**	4 mL fresh EDTA blood	Contact lab	1 working day Cut off: 11.00am
SPE	**SERUM PROTEIN ELECTROPHORESIS** **Protein & Albumin Quantitation:** Total protein Albumin Globulin	5 mL plain blood	Contact lab	1 week

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	A/G ratio **Immunoglobulin Quantitation:** Immunoglobulin A (Ig A) Immunoglobulin G (Ig G) Immunoglobulin M (Ig M) **Protein Fractions Quantitation:** Alpha-1 globulin Alpha-2 globulin Beta globulin Beta-1 globulin Beta-2 globulin Gamma globulin Monoclonal protein (M-protein)			
SPEP	**SERUM PROTEIN ELECTROPHORESIS PLUS** **Protein & Albumin Quantitation:** Total protein Albumin Globulin A/G ratio **Immunoglobulin Quantitation:** Immunoglobulin A (Ig A) Immunoglobulin G (Ig G) Immunoglobulin M (Ig M) **Protein Fractions Quantitation:** Alpha-1 globulin Alpha-2 globulin Beta globulin Beta-1 globulin Beta-2 globulin Gamma globulin Monoclonal protein (M-protein)	5 mL plain blood	Contact lab	1 week

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
	Kappa/Lambda Free Light Chains Assay: Kappa free light chains Lambda free light chains Free Kappa/Lambda ratio			
Carlipin	**Cardiolipin Antibodies Profile** Cardiolipin IgA Cardiolipin IgM Cardiolipin IgG	5 mL plain blood	1 – 2 working days	3 working days
AB2GP	**β-2 Glycoprotein 1 Antibodies Profile** β-2 Glycoprotein 1 IgA β-2 Glycoprotein 1 IgM β-2 Glycoprotein 1 IgG	5 mL plain blood	1 – 2 working days	3 working days
VariZosAb	**Varicella-Zoster (Chicken Pox) Serology Profile** Varicella-Zoster IgM Varicella-Zoster IgG	5 mL plain blood	Contact Lab	1 week
MumpAb	**Mumps Virus Serology Profile** Mumps IgM Mumps IgG	5 mL plain blood	Contact Lab	1 week
MeaslesAb	**Measles (Rubeola) Antibody Profile** Measles IgM Measles IgG	5 mL plain blood	Contact Lab	1 week
GP29E	**Anti-Phospholipid Syndrome Profile (GP29E)** aPTT-LA dRVVT (with reflex testing) Phospholipid Antibodies: Anti-cardiolipin IgG Anti-cardiolipin IgM	5 mL plain blood, with: Minimum 3 tubes of 2mL 3.2% sodium citrate Or Minimum 3ml in 3 plastic vials each containing 1 mL of Platelet Free Plasma	5 days	1 week Additional 1 week if prolong aPTT-LA

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP29V	**Anti-Phospholipid Syndrome Comprehensive Profile (GP29V)** aPTT-LA dRVVT (with reflex testing) Phospholipid Antibodies: Anticardiolipin IgG Anticardiolipin IgM Anticardiolipin IgA Anti β2 Glycoprotein IgG Anti β2 Glycoprotein IgM Anti β2 Glycoprotein IgA Routine coagulation test: PT, INR, aPTT, Thrombin Time, Fibrinogen	5 mL plain blood, with: Minimum 3 tubes of 2mL 3.2% sodium citrate Or Minimum 3ml in 3 plastic vials each containing 1 mL of Platelet Free Plasma	5 days	1 week Additional 1 week if prolong aPTT-LA
GP29W	**Anti-Phospholipid Syndrome Profile (GP29W)** Lupus Anticoagulant: aPTT-LA dRVVT (with reflex testing) Phospholipid Antibodies: Anticardiolipin IgG Anticardiolipin IgM Anticardiolipin IgA Anti β2 Glycoprotein IgG Anti β2 Glycoprotein IgM Anti β2 Glycoprotein IgA	5 mL plain blood, with: Minimum 3 tubes of 2mL 3.2% sodium citrate Or Minimum 3ml in 3 plastic vials each containing 1 mL of Platelet Free Plasma	5 days	1 week Additional 1 week if prolong aPTT-LA

PACKAGES / PROFILE: ALLERGY SERVICES

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in day.

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP94A	**ALLERGY PANEL (FOOD)** *IgE, Egg White, Egg Yolk, Cow's milk, Wheat, Peanut, Cashew nut, Cocoa, Rice, Cheddar cheese, Tuna, Anchovy, Crab, Shrimp, Clam, Chicken, Beef, Lemon, Orange, Banana, Pineapple*	10 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94B	**ALLERGY PANEL (INHALANT)** *IgE, , D. pteronyssinus, D. farinae, House dust (Greer Lab), Dog, Cat, Cockroach, Bermuda grass, Johnson grass, A. fumigatus, A. alternata, Mould Mix, Latex*	10 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94C	**MALAYSIAN ALLERGY PANEL 1 (FOOD & INHALANT)** *IgE, Egg White, Egg Yolk, Cow's milk, Wheat, Peanut, Soy bean, Squid, Crab, Anchovy, Chicken, Dog dander, Cat dander, Cockroach, D. pteronyssinus, D. farinae, B. tropicalis*	10 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94D	**DOMESTIC ALLERGY PANEL** *IgE, D. pteronyssinus, D. farinae, B. tropicalis, House dust (Greer Lab), Cockroach*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94E	**SEAFOOD PANEL** *IgE, Squid, Crab, Shrimp, Clam, Anchovy*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP94F	**PEDIATRIC FOOD ALLERGY PANEL** *IgE, Egg White, Egg Yolk, Cow's milk, Wheat, Peanut, Soy bean, Anchovy, Chicken*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94G	**MALAYSIAN ALLERGY PANEL 2 (FOOD, INHALANT, SEAFOOD, MOULD)** *IgE, Banana, Beef, Chicken, Orange, Cow's milk, Crab, Egg white, Egg Yolk, Peanut, Shrimp, Soy bean, Tuna, Anchovy, Clam, Wheat, A. alternata, A. fumigatus, Bermuda Grass, C. albicans, Cat, C. herbarum, Cockroach, Dog, House Dust (Greer Lab), Johnson Grass, Latex, D. farinae, D. pteronyssinus, M. racemosus, P. notatum*	10 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94H	**ATOPY ALLERGY PANEL** *IgE, Bermuda grass, Timothy grass, Grass mix 5 (sweet vernal-, Bermuda-, Timothy grass and cultivated rye), Acacia, Australian Pine, Oil palm, D. pteronyssinus, D. farinae, D. microceras, T. putrescentiae, G. domesticus B. tropicalis, Kapok, Feather mix 1 (chicken-, duck-, goose down feathers), Bovine serum albumin (BSA), Horse, Dog, Cat, C. albicans, Mould mix 1 (P. notatum, C. herbarum, A. fumigatus, A. alternata), Honey bee venom, Cockroach (German), Wheat flour, Gluten, Egg white, Cow's milk, α-lactalbumin, β-lactoglobulin, Casein, Chocolate, Peanut, Soybean , Hazelnut, Almond, Baker's yeast, Glutamate, Codfish, Tuna, Salmon, Crab, Prawn, Lobster, Duck meat, Beef (cooked), Pork (cooked), Chicken, Lamb meat, Cheddar cheese, Tomato, Garlic, Strawberry, Kiwi, Shellfish mix 1 (spiny lobster, oyster, clam), Coffee, Cross-reactive carbohydrate determinants*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94J	**FOOD ALLERGY PANEL** *IgE, Egg white, Egg yolk, Cow's milk, Wheat flour, Rice, Sesame, Soybean , Peanut , Hazelnut, Beef (cooked), Pork (cooked), Chicken, Shellfish mix 1 (spiny lobster, oyster, clam), Fish mix 1 (codfish, herring, mackerel, and plaice), Crab, Shrimp/Prawn, Lobster, Blue crab, Chocolate, Glutamate, Cross-reactive carbohydrate determinants*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
GP94K	**Paediatric Allergy Panel (Food & Inhalant)** *IgE, Grass mix 2 (Timothy grass, cultivated rye), Birch, Mugwort, D. pteronyssinus, D. farinae, Horse, Dog, Cat, C. herbarum, A. fumigatus, A. alternata, Egg white, Egg yolk, Cow's milk, Codfish, α-lactalbumin, β-lactoglobulin, Casein, Bovine serum albumin (BSA), Wheat flour, Rice, Peanut, Soybean, Hazelnut, Carrot, Potato, Apple, Cross-reactive carbohydrate determinants*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am
GP94L	**INHALATION ALLERGY PANEL** *IgE, Tree mix 1 (melaleuca, Australian pine, acacia, eucalyptus and willow), Australian Pine, Acacia, Grass mix 1 (sweet vernal-, Bermuda-, Timothy grass and cultivated rye), Oil palm, House dust mite mix 1 (D. pteronyssinus and D. farinae), Cockroach (German), Kapok, Dog, Cat, Cage bird mix 2 (budgerigar-, canary-, parrot-, lorebird-, and finch feathers), Guinea pig, Mouse, Rabbit, Hamster, Mould mix 1 (P. notatum, C. herbarum, A. fumigatus, A. alternata), Mould mix 2 (P. notatum, P. brevicompactum and P. roqueforti), C. albicans, A. pullulans, C. spicifera, Cross-reactive carbohydrate determinants*	5 mL plain blood	3 working days	7 working days *Wednesday Cut-Off 10.00 am

Please refer Appendix 2 - Allergy Profile Catalogue

PACKAGES / PROFILE: AUTOIMMUNE SERVICES

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in day.

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
AiCTDp1	CONNECTIVE TISSUE DISEASES AUTOIMMUNE PROFILE 1	1 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiCTDp4	CONNECTIVE TISSUE DISEASES AUTOIMMUNE PROFILE 4	1 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiCTDp5	CONNECTIVE TISSUE DISEASES / EXTRACTABLE NUCLEAR ANTIGENS PROFILE 5	1 mL of separated serum	1 – 2 working days	3 working days
AiSScp1	SYSTEMIC SCLEROSIS NUCLEOLI AUTOIMMUNE PROFILE	1 mL of separated serum	1 – 2 working days	3 working days
Carlipin	CARDIOLIPIN ANTIBODIES PROFILE	2 mL of separated serum	1 – 2 working days	3 working days
AB2GP	B-2-GLYCOPROTEIN 1 ANTIBODIES PROFILE	2 mL of separated serum	1 – 2 working days	3 working days
AiVasP1	VASCULITIS AUTOIMMUNE PROFILE 1	2 mL of separated serum	1 – 2 working days	3 working days
AiVasP2	VASCULITIS AUTOIMMUNE PROFILE 2	2 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
AiVasP3	VASCULITIS AUTOIMMUNE PROFILE 3	1 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiVasP4	VASCULITIS AUTOIMMUNE PROFILE 4	2 mL of separated serum	1 – 2 working days	3 working days
AiVasP5	NEPHRITIS AUTOIMMUNE PROFILE 5	2 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiNeuroP1	ENCEPHALITIS AUTOIMMUNE PROFILE 1	1 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiNeuroP2	ENCEPHALITIS AUTOIMMUNE PROFILE 2	1 mL of separated serum and 1 mL of CSF	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiNeuroP3	ENCEPHALITIS AUTOIMMUNE PROFILE 3	1 mL of separated serum	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiNeuroP4	ENCEPHALITIS RECEPTORS AUTOIMMUNE PROFILE 4	1 mL of separated serum	1 – 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
AiNeuroP5	ENCEPHALITIS RECEPTORS AUTOIMMUNE PROFILE 5	1 mL of CSF	1 – 2 working days	3 working days
AiNeuroP6	PARANEOPLASTIC ANTIGEN AUTOIMMUNE PROFILE 6	1 mL of separated serum or CSF	1 – 2 working days	3 working days
AiNeuroP7	ENCEPHALITIS AUTOIMMUNE PROFILE 7	1 mL of separated serum and 1 mL of CSF; or 1 mL (minimum) of separated serum only	2 working days (Additional 2 working days for positive ANAIF Screening)	3 working days (Additional 3 working days for positive ANAIF Screening)
AiNeuroP8	GANGLIOSIDE AUTOIMMUNE PROFILE 8	1 mL of separated serum or 2 mL of CSF	1 – 2 working days	3 working days
AiNeuroP9	NEUROMYELITIS OPTICA AUTOIMMUNE PROFILE 9	1 ml of separated serum or 1 ml of CSF	1 – 2 working days	3 working days
AiMGP1	MYASTHENIA GRAVIS (MG) AUTOIMMUNITY PROFILE	1 ml of separated serum	1 – 2 working days	3 working days
AiDMp1	DIABETES MELLITUS AUTOIMMUNE PROFILE 1	2 mL of separated serum	2 working days	3 working days
AiThyP1	THYROID AUTOANTIBODY SCREEN PROFILE	2 mL of separated serum	1 – 2 working days	3 working days
AiGasP1	LIVER AUTOIMMUNE PROFILE 1	1 mL of separated serum	1 – 2 working days	3 working days

GROUP	PROFILE TEST	SAMPLE REQUIREMENT	LAB TURNAROUND TIME (LTAT)	
			URGENT	STANDARD
AiGasP2	LIVER AUTOIMMUNE IMMUNOFLUORESCENCE ASSAY 2	1 mL of separated serum	1 – 2 working days	3 working days
AiGasP3	LIVER AUTOIMMUNE SPECIFIC AUTOANTIBODY PROFILE 3	1 mL of separated serum	1 – 2 working days	3 working days
AiMyoP1	MYOSITIS PANEL/AUTOIMMUNE INFLAMMATORY MYOPATHY PROFILE 1	1 mL of separated serum	1 – 2 working days	3 working days
AiMyoP2	MYOSITIS PANEL/AUTOIMMUNE INFLAMMATORY MYOPATHY PROFILE 2	1 mL of separated serum	1 – 2 working days	3 working days

Please refer Appendix 3 - Autoimmune Profile and Individual Catalogue

BIOCHEMISTRY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in hours.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
1	Albumin [Alb]	Serum	Plain	Bromocresol Green	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
2	ALP [Alp]	Serum	Plain	Roche AMP Buffer IFCC	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
3	ALT [SGPT]	Serum	Plain	IFCC Modified (with pyridoxal phosphate)	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
4	Amylase [Amy]	Serum	Plain	IFCC Based - EPS	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
5	Calcium [Ca]	Serum	Plain	5-nitro-5'-methyl-BAPTA	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
6	Alpha-1-Antitrypsin [AAT]	Serum	Plain	Immunoturbid imetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
7	AST [SGOT]	Serum	Plain	IFCC Modified (with pyridoxal phosphate)	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
8	Direct Bilirubin [Dbili]	Serum	Plain	Diazonium salt	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
9	Total Bilirubin [Tbili]	Serum	Plain	Diazonium salt	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
10	Complement C3 [C3]	Serum	Plain	Immunoturbid imetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
11	Complement C4 [C4]	Serum	Plain	Immunoturbid imetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
12	Total Cholesterol [Chol]	Serum	Plain	Cholesterol Oxidase	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
13	Creatine Kinase [CK]	Serum	Plain	CK-NAC IFCC	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
14	Creatinine [Crea]	Serum	Plain	Enzymatic	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
15	C-Reactive Protein [CRP]	Serum	Plain	Particle enhanced immuno-turbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
16	Gamma-Glutamyl Transferase [GGT]	Serum	Plain	Enzymatic colorimetric assay	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
17	Glucose [Glu]	Plasma	Fluoride	Hexokinase	Fasting/Non Fasting (fasting : at least 8 hours)	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
18	High-Density Lipoprotein - Cholesterol [HDL]	Serum	Plain	Direct HDL, Roche 4th Generation	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
19	IgA [IgA]	Serum	Plain	Immunoturbid imetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
20	IgM [IgM]	Serum	Plain	Immunoturbid imetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
21	IgG [IgG]	Serum	Plain	Immunoturbid imetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
22	Iron [Iron]	Serum	Plain	FerroZine	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
23	Lactate Dehydrogenase [LDH]	Serum	Plain	L to P, IFCC Modified	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
24	Urea [Urea]	Serum	Plain	Urease, Kinetic	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
25	Magnesium [Mg]	Serum	Plain	Xylidyl Blue	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
26	Phosphate [Phos]	Serum	Plain	Phosphomolybdate UV	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
27	Rheumatoid Factor [RF]	Serum	Plain	Immunoturbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
28	Fructosamine [Fructo]	Serum	Plain	Nitrotetrazolium Blue Colorimetric Assay	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
29	Total Protein [Prot]	Serum	Plain	Biuret Reaction	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
30	Triglyceride [Trig]	Serum	Plain	Lipase / GPO-PAP	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
31	Uric Acid [UA]	Serum	Plain	Uricase Peroxidase	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
32	UIBC [UIBC]	Serum	Plain	Direct Determination with FerroZine	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
33	Ceruloplasmin [Cerulo]	Serum	Plain	Immunoturbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
34	Sodium [Na]	Serum	Plain	ISE, indirect	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
35	Potassium[K]	Serum	Plain	ISE,indirect	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
36	Chloride [Cl]	Serum	Plain	ISE, indirect	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
37	Anti-Streptolysin O [ASOT]	Serum	Plain	Immunoturbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
38	HbA1c [HbA1c]	Whole Blood	EDTA	Turbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
39	Urine Amylase [uAMY]	Urine	Sterile Container	IFCC Based - EPS	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
40	Urine Creatinine [uCrea]	Urine	Sterile Container	Enzymatic	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
41	Urine Phosphate [uPhos]	Urine (24 hours)	Sterile Container	Phospho-molybdate UV	24 hours urine collection with no additive	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
42	Urine Uric Acid [uUA]	Urine	Sterile Container	Uricase Peroxidase	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
43	Urine Urea [uUrea]	Urine	Sterile Container	Urease, Kinetic	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
44	Urine Microalbumin [uMalb]	Urine	Sterile Container	Immunoturbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
45	Urine Magnesium [uMg]	Urine	Sterile Container	Xylidyl Blue	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
46	Urine Na [uNa]	Urine	Sterile Container	ISE, indirect	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
47	Urine K [uK]	Urine	Sterile Container	ISE,indirect	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
48	Urine Cl [uCl]	Urine	Sterile Container	ISE, indirect	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
49	Urine Cannabinoids (THC) [uCan]	Urine	Sterile Container	Kinetic Interaction of Microparticles in A Solution	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
50	Urine Amphetamines [uAmphe]	Urine	Sterile Container	Kinetic Interaction of Microparticles in A Solution	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
51	Urine Opiates (Morphine) [uOpi]	Urine	Sterile Container	Kinetic Interaction of Microparticles in A Solution	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
52	Urine Meth-amphetamines [uMethamph]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
53	Urine Ketamine [uKetamine]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
54	Urine Cocaine [uCocaine]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
55	Urine Barbiturates [uBarbi]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
56	Urine Phencyclidine [uPCP]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
57	Urine Benzodiazepine [uBenzodi]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
58	Urine Propoxyphene (PPX) [uPropoxy]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
59	Urine Methadone [uMethadone]	Urine	Sterile Container	Rapid Test	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
60	Stone Analysis [StoneAn]	Kidney Stone	Sterile Container	Fourier Transform Infrared Spectroscopy	Specialized Test	Room Temperature	Daily except Sunday & PH	4 hours	24 hours
61	Apolipoprotein A-1 [ApoA1]	Serum	Plain	Immuno-turbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
62	Haptoglobin [Hapto]	Serum	Plain	Immuno-turbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
63	Alpha-2 Macroglobulin	Serum	Plain	Immuno-turbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
64	Creatinine Clearance Test	Serum & 24 hours urine	Plain	Enzymatic	24 hours urine collection with no preservative. Information of patient's body	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
					weight and height are required.				
65	Bilirubin, Indirect	Serum	Plain	Calculation	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
66	Globulin	Serum	Plain	Calculation	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
67	LDL-Cholesterol	Serum	Plain	Calculation	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
68	TIBC	Serum	Plain	Calculation	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
69	Urine Total Protein [uProtMg/L]	Urine	Sterile Container	Turbidimetric	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
70	Urea Breath Test (UBT)	Breath	UBT collection bag	Liquid scintillation counting (LSC)	Fasting at least 4 hours	Room Temperature	Daily except Sunday & PH	2 hours	4 hours
71	CKMB	Serum	Plain	Immuno-turbidity	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

HAEMATOLOGY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in hours and day.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
1	Activated Partial Thromboplastin Time (APTT)	Blood	Citrate Tube	Electromagnetic mechanical clot detection system	-	Room Temperature	Daily except Sunday & PH.	2 hours	4 hours
2	Bone Marrow Aspirate by Haematologist	Bone Marrow (minimum 6 slides)	Slide casing	Leishman and hematognost stains	FBC Result 2 PBF slides Request form	Room Temperature	Daily except Sunday & PH.	1 working day	3 working days
3	Bone Marrow biopsy	Bone Marrow	Container with 10% buffered formalin	Haematoxylin and eosin stains	Send in 10% buffered formalin in the container	Room temperature	Daily except Sunday & PH.	2 working days	3 working days
4	Blood Group & Rhesus typing	Whole Blood (2ml)	EDTA Tube	Tile Method	-	2- 8 ºC	Daily except Sunday & PH.	1 hour	2 hours
5	Coomb's Test (Direct & Indirect)	2 ml EDTA blood, 5 ml plain blood	EDTA, Plain	Manual method	-	2- 8 ºC	Daily except Sunday & PH.	4 hours	24 hours
6	Differential count (DC)	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH.	1 hour	2 hours
7	Erythrocytes sendimentation rates (ESR)	Whole Blood (2ml)	EDTA Tube	Infrared Barrier	-	2- 8 ºC	Daily except Sunday & PH	2 hours	3 hours
8	G6PD	Blood spot	EDTA Tube	Immuno-flourecent	-	Room Temperature	Daily except Sunday & PH	1 hour	4 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
9	Haemoglobin (Hb)	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
10	Haemoglobin electrophoresis	Whole Blood (4ml)	EDTA Tube, Slide smear	Capillary method	2 tubes of 2ml EDTA, FBC Result 2 PBF Slides	2- 8 ºC (EDTA only)	Twice a week (Monday & Thursday only, schedule may be changed due to PH)	10 working days	14 working days
11	Malarial Parasites (Blood Film for Malaria Parasite, BFMP)	Whole Blood (2ml) with or without slides	EDTA Tube/ slide casing	Microscopic method. Giemsa stains	Thick and thin smear for slides	2- 8 ºC for EDTA, Room Temperature for slides	Daily except Sunday & PH	4 hours	24 hours
12	Mean corpuscular haemoglobin (MCH)	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
13	Mean corpuscular haemoglobin concentrate (MCHC)	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
14	Mean corpuscular volume (MCV)	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
15	Packed cell volume (PCV)	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
16	Peripheral blood film (PBF)	Whole Blood (2ml)	EDTA Tube	Leishman stain	FBC result if pbf slide is	2- 8 ºC for EDTA, Room Temperature	Daily except Sunday &	1 working day	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
		2 PBF Slides	Slide casing		sent	for slides	PH		
17	Platelet count	Whole Blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
18	Prothrombin time (PT/INR)	Whole Blood (2ml)	Citrate Tube	Electromagnetic mechanical clot detection system	-	Room Temperature	Daily except Sunday & PH	2 hours	4 hours
19	Reticulocytes count	Whole blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	-	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
20	Total red blood cells (TRBC)	Whole blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	Not applicable	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
21	Total white blood cells (TWBC)	Whole blood (2ml)	EDTA Tube	Fluorescence Flow Cytometry	Not applicable	2- 8 ºC	Daily except Sunday & PH	1 hour	2 hours
22	Peripheral blood film (PBF) by Haematologist	Whole blood (2ml)	EDTA Tube	Leishman stain	2 PBF slides FBC Result	-	Daily except Sunday & PH	1 working day	3 working days
23	Lupus Anticoagulant - aPTT-LA - dRVVT (with reflex testing)	Whole blood (2ml)	Citrate Tube	Viscosity based detection method (VBDS)	Minimum 3 tubes of 3.2% sodium citrate	Room temperature within 4 hours of blood collection for 3.2% sodium citrate.	Wednesday *Cut-off 10.30 am	5 days	1 week Additional 1 week if prolong aPTT-LA
		Platelet Free Plasma (PFP)			Minimum 3ml in 3 plastic vials each containing 1 mL of PFP	Dry ice for PFP			

SEROLOGY AND IMMUNOLOGY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in hours and day.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
1	Anti-HAV [HAVAB]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
2	Anti-HAV IgM [HAVM]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
3	Anti-HCV [HCVAb]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
4	Alpha-Feto Protein [AFP]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
5	Anti-HBs [HbsAb]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
6	CA125 [CA125]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
7	CA153 [CA153]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
8	CA199 [CA199]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
9	CEA [CEA]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
10	C-Peptide [Cpeptid]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
11	DHEAS [DHEAS]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
12	Estrogen (E2) [E2estra]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
13	Ferritin [Ferr]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
14	Free PSA [FPSA]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
15	FSH [FSH]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
16	FT3 [FT3]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
17	FT4 [FT4]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
18	HBsAg [HbsAg]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
19	B-HCG[BHCG]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
20	HIV [HIV]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
21	HSV-1 IgG [HSV1G]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
22	HSV-2 IgG [HSV2G]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
23	IgE [IgE]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
24	Insulin [Insulin]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
25	LH [LH]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
26	Total PSA [PSA]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
27	Prolactin [Prol]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
28	Progesterone [Prog]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
29	Parathyroid Hormone [PTH]	Serum Plasma	Plain EDTA	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
30	Thyroid Stimulating Hormone [TSH]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
31	Testosterone [Testo]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
32	Thyroglobulin [Thyroglo]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
33	Toxoplasma IgM [ToxoM]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
34	Neuron-Specific Enolase (NSE)	Serum	Plain	ECLIA	-	2 to 8 °C	Every Thursday	1-2 working days	3 working days
35	Rubella IgM [RubM]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
36	Anti-Mullerian Hormone (AMH)	Serum	Plain	ECLIA	-	2 to 8 °C	Every Thursday	1-2 working days	3 working days
37	Vitamin D [VitD]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
38	Anti-CCP [CCPAb]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
39	Anti-HBc Total [HbcAb]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
40	Anti-HBc IgM [HbcM]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
41	Anti-HBe [HbeAb]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
42	Anti-Thyroglobulin [ATG]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
43	Anti-Thyroid Peroxidase (Anti-TPO) / Anti-Microsomal Antibody (AMC)	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
44	Vitamin B12 [B12]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
45	CMV IgG [CMVG]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
46	Cortisol [Cortisol]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
47	Folate [Folate]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
48	Folate RBC [FolateRC]	Whole Blood	EDTA	CMIA	-	2 to 8 °C	Tuesday & Thursday *Cut-off 10.00 am	2 working days	3-5 working days
49	HbeAg [HbeAg]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
50	Homocysteine [Homocys]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
51	Toxoplasma IgG [ToxoG]	Serum	Plain	CMIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
52	Growth Hormone [GH]	Serum	Plain	Chemiluminescent Immunometric	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
53	CMV IgM [CMVM]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
54	Insulin-like Growth Factor (IGF) [IGF1]	Serum	Plain	Chemiluminescent Immunometric	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
55	Estradiol (E2)	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
56	Estriol (E3) [E3estri]	Serum	Plain	Chemiluminescent enzyme immunoassay	-	2- 8 ºC	Daily except Sunday & PH	1-2 working days	3 working days
57	Rubella IgG [RubG]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
58	Dengue IgG/IgM DenAb]	Serum / Whole Blood	Plain / EDTA	Rapid Test	-	2 to 8 °C	Daily except Sunday & PH	4 hours	24 hours
59	Dengue NS1 Antigen [DenNS1Ag]	Serum / Whole Blood	Plain / EDTA	Rapid Test	-	2 to 8 °C	Daily except Sunday & PH	4 hours	24 hours
60	Chikungunya IgM [ChikunM]	Serum / Whole Blood	Plain / EDTA	Rapid Test	-	2 to 8 °C	Daily except Sunday & PH	4 hours	24 hours
61	TPHA [TPHA]	Serum	Plain	Particle Agglutination	-	2 to 8 °C	Daily except Sunday & PH	1 working day	2 working days
62	Widal Weil Felix (WWF) [WWF1/WWF2]	Serum	Plain	Particle Agglutination	-	2 to 8 °C	Daily except Sunday & PH	1 working day	2 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
63	Monospot [Mspot]	Serum	Plain	Latex Agglutination	-	2 to 8 °C	Daily except Sunday & PH	1 working day	2 working days
64	Brucella Antibody [Bruc]	Serum	Plain	Particle Agglutination	-	2 to 8 °C	Daily except Sunday & PH	1 working day	2 working days
65	TB-Gold Quantiferon [TBqftG]	Plasma	TB-Gold Kit	ELISA	To consult Serology Services	2 to 8 °C	Every Friday *Cut-off 10.00 am	3 working days	7 working days
66	VDRL/RPR [VDRL]	Serum	Plain	Particle Agglutination	-	2 to 8 °C	Daily except Sunday & PH	1 working day	2 working days
67	HIVPA [HIVAbPA]	Serum	Plain	Particle Agglutination	-	2 to 8 °C	Daily except Sunday & PH	1 working day	2 working days
68	Anti-Nuclear Factor [ANF] / Anti-Nuclear Antibody [ANAIF]	Serum	Plain	Immunofluorescence	-	2 to 8 °C	Daily except Sunday & PH	2 working days (Additional 2 working days for positive screening)	3 working days (Additional 3 working days for positive screening)
69	DsDNA [DNAAb]	Serum	Plain	ELISA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
70	H. Pylori IgG Antibody [HPAbqn]	Serum	Plain	Chemiluminescent Immunometric	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
71	Epstein-Barr Virus (EBV) IgA [EBVvcaA]	Serum	Plain	ELISA	-	2 to 8 °C	Monday Wednesday Friday only *Cut-off: 10.00 am	1-2 working days	3 working days
72	HSV-1 IgM [HSV1M]	Serum	Plain	ELISA	-	2 to 8 °C	Thursday *Cut-off 10.00 am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
73	HSV-2 IgM [HSV2M]	Serum	Plain	ELISA	-	2 to 8 °C	Thursday *Cut-off 10.00 am	3 working days	7 working days
74	Chlamydia IgG [ChlaG/ChlaTraG]	Serum	Plain	ELISA	-	2 to 8 °C	Thursday *Cut-off 10.00 am	3 working days	7 working days
75	CA 242 [CA242]	Serum	Plain	ELISA	-	2 to 8 °C	Thursday *Cut-off 10.00 am	3 working days	7 working days
76	HIV Western Blot [HIVCfm]	Serum	Plain	Line Immunoassay	-	2 to 8 °C	Friday *Cut-off 10.00 am	3 working days	7 working days
77	HCV Western Blot [HCVAbCfm]	Serum	Plain	Line Immunoassay	-	2 to 8 °C	Friday *Cut-off 10.00 am	3 working days	7 working days
78	Anti-TSH Receptor Antibody [TSHRepAB]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
79	Sex Hormone Binding Globulin [SHBG]	Serum	Plain	ECLIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
80	Cyclosporine level (monoclonal)	2 ml EDTA blood	EDTA	Electro-chemiluminescence immunoassay ACLIA	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours
81	Acetaminophen (PCM level)	Serum	Plain	Homogeneous enzyme immunoassay	-	2- 8 ºC	Daily except Sunday & PH	4 hours	24 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
82	Muscle-Specific Tyrosine Kinase (MuSK) Antibody	Serum	Plain	Immunofluorescence	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
83	**Cardiolipin IgA**	Serum	Plain	ELISA-FEIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
84	**Cardiolipin IgM**	Serum	Plain	ELISA-FEIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
85	**Cardiolipin IgG**	Serum	Plain	ELISA-FEIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
86	**β-2 Glycoprotein 1 IgA**	Serum	Plain	ELISA-FEIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
87	**β-2 Glycoprotein 1 IgM**	Serum	Plain	ELISA-FEIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
88	**β-2 Glycoprotein 1 IgG**	Serum	Plain	ELISA-FEIA	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days
89	**Varicella-Zoster IgM**	Serum	Plain	CLIA	-	2 to 8 °C	Every Tuesday *Cut-off 10.30 am	Contact Lab	1 week

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
90	**Varicella-Zoster IgG**	Serum	Plain	CLIA	-	2 to 8 °C	Every Tuesday *Cut-off 10.30 am	Contact Lab	1 week
91	**Mumps IgM**	Serum	Plain	CLIA	-	2 to 8 °C	Every Tuesday *Cut-off 10.30 am	Contact Lab	1 week
92	**Mumps IgG**	Serum	Plain	CLIA	-	2 to 8 °C	Every Tuesday *Cut-off 10.30 am	Contact Lab	1 week
93	**Measles IgM**	Serum	Plain	CLIA	-	2 to 8 °C	Every Tuesday *Cut-off 10.30 am	Contact Lab	1 week
94	**Measles IgG**	Serum	Plain	CLIA	-	2 to 8 °C	Every Tuesday *Cut-off 10.30 am	Contact Lab	1 week
MATERNAL SCREENING									
1	First Trimester Prenatal Screening (FirstTrim2)	Serum	Plain	Chemiluminescent Immunometric	Specialized Test	2 to 8 °C	Daily except Sunday & PH	3 working days	7 working days
2	Second Trimester Prenatal Screening, Double Test (DownSnD2)	Serum	Plain	Chemiluminescent Immunometric	Specialized Test	2 to 8 °C	Daily except Sunday & PH	3 working days	7 working days
FREE LIGHT CHAIN									
1	Free Light Chain (Kappa & Lambda) (FreeLC)	Serum	Plain	Turbidimetry	-	2 to 8 °C	Daily except Sunday & PH	1-2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
AUTOIMMUNE									
Please refer Appendix 3 – Autoimmune Profile and Individual Catalogue									

URINALYSIS AND FLUIDS

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in hours and day.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
1	Urine FEME Urine Appearance (uApp), Specific Gravity (uSG), urine pH (upH), Urine Protein (uProt), Urine Glucose (uGlu), Urine Ketone (uKet), Urine Urobilinogen (uUrobilgen), Urine Bilirubin (uBili), Urine erythrocytes (UBlood), Urine white blood cells (uWBCul), Urine Red Blood Cells (uRBCul), Urine Epithelium (uEpi), Urine Cast (uCast), Urine Crystal (uCrys), Urine Bacteria (uBact), Urine Yeast (uYeast), Urine other (uOther).	Urine (min 20ml)	Sterilize Urine container	3-wavelength-reflectance photometer	Preferably mid-stream urine. Urine Stability: -Room Temperature : < 2 hours. - 2 -8°C: 24 hours. Urine that is not meet acceptance criteria, will be rejected.	Room Temperature or 2 to 8°C refer to stability.	Daily except Sunday & PH basis	1 hour	2 hours
2	Urine Pregnancy test	Urine (min 20ml)	Urine container	Immunochroma to-graphic tests	Preferably fresh morning urine. Urine Stability: -Room Temperature : < 2 hours. - 2 -8°C: 24 hours. Urine that is not meet acceptance criteria, will be rejected.	Room Temperature or 2 to 8°C refer to stability.	Daily except Sunday & PH basis	1 hour	2 hours

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
3	Urine Cannabinoids (Qualitative)	20 mL urine	Urine container	Kinetic Interaction of Microparticles in A Solution	-	Room Temperature	Daily except Sunday & PH	4 hours	24 hours
4	Urine Glucose (Qualitative)	20 mL fresh urine	Urine container	3-wavelengthreflectance photometer	-	Room Temperature or 2 to 8°C.	Daily except Sunday & PH basis	1 hour	2 hours
5	Urine Morphine & derivatives (Opiates)	Urine (min 20 mL)	Urine container	Kinetic Interaction of Microparticles in A Solution	-	Room Temperature	Daily except Sunday & PH basis	4 hours	24 hours
6	Urine Protein (Qualitative) –random	20 mL fresh urine	Urine Container	3-wavelengthreflectance photometer	-	Room Temperature or 2 to 8°C .	Daily except Sunday & PH	1 hour	2 hours
7	Urine Vanyl Mandelic Acid (VMA)	24 hrs urine with preservative acid HCL	Urine container	HPLC-EC	Patient shall not takes banana, coffee, tea, chocolate, ice cream/cake or any food which contains vanilla, and to discontinue aspirin, disulfiram, levopoda, reserpine, or pyridoxine two weeks prior to specimen collection.	2 to 8°C .	Daily except Sunday & PH	-	12 Days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
8	CSF FEME ● CSF appearance ● Cells counts ● Protein ● Glucose ● Chloride ● Microscopic ● Gram stain ● AFB stain ● Indian ink for Cryptococcus	CSF	Sterile Container	Microscopy	Specimen should be delivered to the lab promptly after aspiration.	Room Temperature	Daily except Sunday & PH.	1 working day	1 working day
9	Routine FEME for other body fluid ● Fluid appearance ● Related chemical analysis	Pleural fluid/synovial fluid/aspirates	Sterile Container	Microscopy	-	Room Temperature	Daily except Sunday & PH.	1 working day	2 working days

ALLERGY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in day.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
MIX INDIVIDUAL ALLERGENS (ELISA-FEIA: QUANTITATIVE)									
1	Phadiatop Inhalant Screen [s]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
2	House Dust Mix [hx2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
3	Mould Spore Mix [mx2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
4	Pet Dander Mix [ex2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
5	Feather Mix [ex71]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
6	Occupational Chemical Mix [pax6]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
7	Common Food Mix [fx5E]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
8	Nuts Mix [fx1]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
9	Seafood Mix [fx2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
10	Cereal Mix [fx3]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
11	Spice Mix [fx72]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
PROFILE (ELISA FEIA: QUANTITATIVE)									
1	Allergy Panel (Food) [GP94A]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
2	Allergy Panel (Inhalant) [GP94B]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
3	Malaysian Allergy Panel 1 (Food & Inhalant) [GP94C]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
4	Domestic Allergy Panel [GP94D]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
5	Seafood Allergy Panel [GP94E]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
6	Pediatric Food Allergy Panel [GP94F]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
7	Malaysian Allergy Panel 2 (Food, Inhalant, Seafood, Mould) [GP94G]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
PROFILE (IMMUNOBLOT: SEMI-QUANTITATIVE)									
1	Atopy Allergy Panel [GP94H]	Serum	Plain tube	Immunoblot	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
2	Food Allergy Panel [GP94J]	Serum	Plain tube	Immunoblot	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
3	Paediatric Allergy Panel (Food & Inhalant) [GP94K]	Serum	Plain tube	Immunoblot	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
4	Inhalation Allergy Panel [GP94L]	Serum	Plain tube	Immunoblot	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
INDIVIDUAL (ELISA-FEIA: QUANTITATIVE)									
1	Oil Palm Pollen [p]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
2	Dermatophagoides pteronyssinus [d1]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
3	Dermatophagoides farinae [d2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
4	Blomia tropicalis [Rd201]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
5	Cat Dander [e1]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
6	Dog Dander [e5]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
7	Cockroach [i6]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
8	Egg White [f1]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
9	Egg [f245]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
10	Egg Yolk [f75]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
11	Cow's Milk [f2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
12	Fish Cod [f3]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
13	Wheat [f4]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
14	Peanuts [f13]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
15	Soybean [f14]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
16	Rice [f9]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
17	Chicken [f83]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
18	Beef [f27]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
19	Cocoa [f93]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
20	Cheese [f81]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
21	Mutton [f88]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
22	Cashew Nuts [f202]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
23	Mushroom [Rf212]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
24	Curry [Rf281]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
25	Goat's Milk [Rf300]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
26	Crab [f23]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
27	Shrimp [f24]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
28	Tuna [f40]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
29	Sardine/Philchard [f61]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
30	Pacific Squid/Sotong [f58]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
31	Lobster [f80]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
32	Oyster [f290]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
33	Ikan Bilis [f313]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
34	Orange [f33]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
35	Banana [f92]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
36	Pineapple [f210]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
37	Lemon [f208]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
38	Papaya [Rf293]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
39	Latex [k82]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
40	Bermuda Grass [g2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
41	Johnson Grass [g10]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
42	Penicillium chrysogenum [m1]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
43	Cladosporium herbarum [m2]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
44	Aspergillus fumigatus [m3]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
45	Mucor racemosus [m4]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
46	Candida albicans [m5]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
47	Alternaria alternata [m6]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
48	Clam [f207]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days
49	Greer Labs [H1]	Serum	Plain tube	ELISA-FEIA	-	2 to 8 °C	Wednesday *Cut-off at 11.00am	3 working days	7 working days

MICROBIOLOGY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in day and week.

Note: **Preliminary result** will be released within 24 hours for culture & sensitivity.
Preliminary result will be released within 1 week for fungal culture.
Preliminary result will be released within 1 week for Mycobacterium culture and sensitivity.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
1	Culture and Sensitivity & Fungal Culture	Abscess or pus aspirate	Anaerobic transport media: Cooked Meat Broth (CMB) or Swab with gel or in sterile container (for fungal culture)	Culture and Sensitivity	Do not send sample in needle and syringe. *Indicate empirical therapy on ordering requisition.* **CMB:** Incubated at 35-37°Cfor 24 hours before transportation.	**Raw sample:** <24 hours, hold at room temperature. If delay in transportation, keep at 2-8°C **CMB :** <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 24 hours before transportation.	Daily	Negative: 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)	Culture and Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
2	Mycobacterium culture and sensitivity	Abscess or pus aspirate	Sterile, Screw capped specimen container.	Culture and Sensitivity	Do not send sample in needle and syringe.	Keep at 2-8°C	Daily except Sunday and PH.	Negative : 8 weeks Positive : within 8 weeks
3	Culture and Sensitivity & Fungal Culture	Swab (Abscess, pus, Wound)	Swab with gel	Culture and Sensitivity	If request more than one test on a swab i.e. bacterial culture aerobes, anaerobes and fungus culture, please ensure that a separate swab sample is submitted for each test requested. *Indicate empirical therapy on ordering requisition.*	**Raw sample:** <24 hours, hold at room temperature. If delay in transportation, keep at 2-8°C	Daily	Negative 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)	Culture and Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 24 hours before transportation **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
4	Culture and Sensitivity & Fungal Culture	Bartholin Cyst Fluid	Sterile, Screw capped specimen container. **OR** Anaerobic transport media: Cooked Meat Broth (CMB). **OR** Swab with gel.	Culture and Sensitivity	Do not send sample in needle and syringe. *Indicate empirical therapy on ordering requisition.*	**Raw sample** <24 hours at room temperature If delay in transportation, keep at 2-8°C **CMB :** <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 24 hours before transportation	Daily	Negative 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)	Culture and Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
5	Culture and Sensitivity & Fungal Culture	Bite Wound	Swab with gel. **OR** Sterile, screw capped specimen container. **OR** Anaerobic transport media: Cooked Meat Broth (CMB).	Culture and Sensitivity	Do not culture animal bite wounds <12 hours old as agents are usually not recovered <u>unless</u> bites are on the face or hand or there is evidence of infection. Indicate type of bite wound, i.e. human or animal, on the ordering requisition. *Indicate empirical therapy on ordering requisition.*	Swab, tissue or aspirated fluid – <24 hours at room temperature. If delay in transportation keep at 2-8°C **CMB** : <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 24 hours before transportation	Daily	Negative 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)	Culture and Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar:** Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
6	Blood culture and sensitivity	Blood	Volumes : <u>Adult</u>: 20 mL (10ml in aerobic and 10ml in anaerobic <u>Pediatric</u> : 1mL- 3mL.	Culture and Sensitivity	*Do not incubate blood culture prior to submitting to lab.* *Indicate empirical therapy on ordering requisition.*	<24 hours, hold at room temperature. Do not refrigerate the bottle.	Daily	**Positive**: 2-3 days (fast growing bacteria) detection by automated blood culture system. 3-5 days (anaerobic & fastidious bacteria) detection by blood culture system. **Negative :** 5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)	Culture and Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate).		
7	Culture and Sensitivity	Bone Marrow	0.5-2 mL into a pediatric blood culture bottle. OR sterile, screw capped specimen container.	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.	<24 hours, hold at room temperature.	Daily	3-5 days (Sterile container). 5 days (blood culture bottle).
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar(Mac),Chocolate agar (CA) & Schaedler agar (Sch)	Culture and Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation. **BA, MAC& CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate).	Daily	3-6 days.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
8	Culture and Sensitivity & Fungal Culture & Mycobacterium culture and sensitivity	Bronchial Washing Bronchial Brushing Broncho-Alveolar Lavage (BAL)	Sterile screw capped container. (Minimum volume at >1 mL for Bronchial Washing) **OR** Anaerobic transport media: Cooked Meat Broth (CMB)	Culture and Sensitivity	As much sample as possible. *Indicate empirical therapy on ordering requisition.*	<24 hours, Keep at 2-8°C. **CMB :** <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 18-24 hours before transportation	**Bacterial and Fungal Culture & Sensitivity:** Daily ***Mycobacterium* spp*:*** Daily except Sunday & PH	Negative 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks *Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: 8 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)	Culture and sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
9	Culture and Sensitivity	Specimen Burn (tissue or exudate swab)	Tissue: Anaerobic transport media: Cooked Meat Broth (CMB) Exudate swab: Swab with gel	Culture and Sensitivity	Surface cultures of burn wounds may be misleading. *Indicate empirical therapy on ordering requisition.*	**Raw sample** <24 hours at room temperature If delay in transportation, keep at 2-8°C **CMB :** <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 18-24 hours before transportation	Daily	Negative: 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler agar (Sch)		**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18- 24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		
10	Fungal Culture	Specimen Burn (tissue or exudate swab)	Tissue: Sterile screw capped container. Exudate swab: Swab with gel	Fungal Culture	-	<24 hours at room temperature If delay in transportation, keep at 2-8°C	Daily	Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
11	Culture and Sensitivity	Catheter (intravenous or intra-arterial)	Sterile screw capped container	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours, in sterile saline to prevent drying	Daily	3-5 days
		Bacteria culture plates	Blood Agar (BA), MacConkey Agar (Mac),Chocolate Agar (CA)		**BA, Mac & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		
12	Culture and Sensitivity	Cerebrospinal Fluid (CSF)	Bacteria: >1 mL Sterile screw capped container. **OR** Anaerobic transport media: Cooked Meat Broth (CMB)	Culture and Sensitivity	Avoid the use of larger capacity sterile containers. Do not submit samples for microbiologic investigation on ice *Indicate empirical therapy on ordering requisition.*	<24 hours at room temperature. Do not refrigerate the sample. **CMB :** <24 hours at room temperature. If delay in transportation Incubate at 35-37°C for 18-24 hours before transportation	Daily	Negative 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac), Chocolate Agar (CA) & Schaedler Agar (Sch)		**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18- 24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate).		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
13	Fungal Culture	Cerebrospinal Fluid (CSF) (>1ml)	Sterile screw capped container	Culture	Avoid the use of larger capacity sterile containers.	<24 hours at room temperature. Do not refrigerate the sample.	Daily	Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
14	Mycobacterium culture and sensitivity	Cerebrospinal Fluid (CSF) (>2ml)	Sterile Screw capped container.	Culture and Sensitivity	Avoid the use of larger capacity sterile containers.	<24 hours at room temperature.	Daily except Sunday & PH.	Mycobacterium spp Negative: 8 weeks Mycobacterium spp positive: Within 8 weeks
15	Culture and Sensitivity for *N. gonorrhoeae*	Cervical Swab	Swab with gel	Culture and Sensitivity	Do not use calcium alginate swab or cotton swabs as they may be inhibitory to *N. gonorrhoeae.* Transport as soon as possible to the lab. Viability of *N. gonorrhoeae* held in transport medium decreases substantially after prolonged storage. Direct inoculation of patient sample to appropriate bacteriologic media at the bedside (if available) has been shown to increase the sensitivity of culture. *Indicate empirical therapy on ordering requisition.*	<24 hours at room temperature.	Daily	3-5 days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
		Bacteria culture plates	Cultured on: Blood Agar (BA), Chocolate Agar (CA) or Modified Thayer Martin Agar (MTM)	Culture and Sensitivity	**BA, MAC, CA or MTM** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		
16	Culture and Sensitivity & Fungal culture	Corneal Scrapings	Direct culture at bedside using Blood Agar, MacConkey Agar, Chocolate Agar and Sabouraud Dextrose Agar + Gen + CHL for fungal culture. Slides of sample should also be prepared.	Culture and Sensitivity	Anesthetics may be inhibitory to some etiologic agents, a conjunctival sample may be collected prior to collecting corneal scrapings. *Indicate empirical therapy on ordering requisition.* **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation. **SDA:** incubated at 28°C for 18-24 hours, If delay in transportation.	Local: Transport fungal culture plates as soon as possible, store plates at room temperature. ≤ 2 hours at room Temperature (Do not refrigerate).	Daily	Bacteria: 3-5 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
17	Culture and Sensitivity	Ulcer Biopsy	Sterile screw capped container with sterile saline or in Cooked Meat Broth (CMB)	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours, store at room temperature. **CMB :** <24 hours at room temperature. If delay in transportation Incubate at 35-37°C for 18-24 hours before transportation (Do not refrigerate)	Daily	Negative: 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
18	Culture and Sensitivity	Device Culture (orthopedic hardware, heart valve,etc)	Sterile screw capped specimen container with sterile saline.	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<2 hours at room temperature, <24 hours at 2-8°C.	Daily	3-5 days
19	Bacterial Culture and Sensitivity & Fungal culture	Ear (inner and outer)	**Fluid sample:** Send in sterile screw capped container as much sample as possible. **Swab:** send in transport medium (with gel).	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	Fluid or swab - transport as soon as possible (<2 hours), store at room temperature. Fluid or swab - <24 hours, store fluid at 2-8°C	Daily	Bacteria: 3-5 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac), Chocolate Agar (CA)		**BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate)		
20	Bacterial Culture and Sensitivity & Fungal culture	Eye (conjunctiva)	Swab in transport medium (with gel).	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours, hold at room temperature. If delay in transportation keep at 2-8°C	Daily	Bacteria: 3-5 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac), Chocolate agar (CA)	Culture and Sensitivity	**BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate)		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
21	Culture and Sensitivity and	Faeces (stool)	Sterile screw capped container, > 5 gm (> 5 mL).	Culture and Sensitivity	Avoid contaminating sample with urine. Transport the sample promptly to the laboratory (< 1 hour). If transport is delayed, transfer a portion of the sample to an enteric pathogen transport medium such as Cary Blair. Rectal swabs for routine pathogens are not recommended except in infants.	Transport, unpreserved sample: <1 hour at room temperature, <24 hours at 4ºC. Transport, sample in transport medium: <48 hours at 4ºC or room temperature.	Daily	3-5 days
		Stool in enrichment Broth	Alkaline peptone water, Selenite F broth & Tryptone Soy Broth (TSB)	Culture and Sensitivity	**Peptone water**: Incubated at 35-37 ºC, 6-8 hours before transportation. **Selenite F Broth** : Incubated at 35-37 ºC, 12-18 hours before transportation. **Tryptone Soy Broth**: Incubated at 35-37 ºC, 18-24 hours before transportation.	Enrichment Broth ≤ 2 hours at room temperature prior incubation OR ≤ 1 hour at room temperature if not incubated.		
22	*Clostridium difficile* Toxin Assay	Faeces (stool): >5mls	Sterile screw capped container, volume:	Immuno-enzymatic (Rapid test)	Formed stool will not be tested unless there is an indication that the patient has	<1 hour at room temperature,	Daily	1 day

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
					toxic megacolon. Samples on infants (<1 year of age) will not be tested. Formed stool (no diagnosis of toxin megacolon) will not be processed - stool sample must be liquid, i.e. take the shape of the container.	<3 days at 2- 8°C.		
23	Stool microscopy (Ova & Parasites)	Faeces (stool) : >5 gm	Sterile screw capped container.	Microscopy	-	<24 hours, hold at room temperature.	Daily	1 day
24	Stool Occult Blood	Faeces (stool) : >5 gm	Sterile screw Capped container.	Immuno-chemical chromatographic	-	Transport to the laboratory as soon as possible. Do not refrigerate**.**	Daily	1 day
25	Culture and Sensitivity, Fungal culture, Mycobacterium culture & sensitivity.	Fluids (Includes all aseptically obtained fluids such as: abdominal, amniotic, ascites, bile, joint, paracentesis, pericardial, peritoneal, pleural, synovial, continuous	Sterile screw capped transport container. Volume as follows: Bacterial Culture >1 mL or transport using Cooked Meat Broth. Fungal Culture: >10ml	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours at room temperature. If delay in transportation keep at 2-8°C **CMB :** <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 18-24 hours before transportation (Do not refrigerate)	Daily	Negative 3-4 days Positive Aerobic: 3-5 days Positive Anaerobic: 4-6 days Fungal Negative: 2 weeks

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
		ambulatory peritoneal. **OR** Blood culture bottle aerobic and anaerobic for routine bacterial culture)	AFB (Mycobacteria Culture): >10 mL					Fungal Positive: 2-3 weeks *Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: Within 8 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac),Chocolate Agar (CA) & Schaedler Agar (Sch)	Culture & Sensitivity	**Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18- 24 hours before transportation. **BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		
26	Mycobacterium culture and sensitivity	Gastric Wash or Lavage	Sterile screw capped transport container.	Culture and Sensitivity	Collect first thing in the morning before patient eats. If delay is more than 4 hours add 100 mg of sodium carbonate to neutralize acidity.	<24 hours at room temperature.	Daily	*Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: Within 8 weeks
27	Fungal Culture	Hair	Sterile screw capped specimen container.	Culture	Minimum of 10 hairs.	<24 hours, at room temperature	Daily	Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
28	Fungal Culture	Nail	Sterile screw capped specimen container.	Culture	-	<24 hours, at room temperature	Daily	Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
29	Culture and Sensitivity	Nasal Swab	Swab in transport medium (Swab with gel).	Culture and Sensitivity	-	<24 hours, store at room temperature. If delay in transportation keep at 2-8°C	Daily	3-5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA) and MacConkey Agar (Mac)	Culture and Sensitivity	**BA, Mac & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate)		
30	Culture and Sensitivity	Nasopharyn-geal Aspirate	Sterile, screw capped specimen container.	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours, store at room temperature. If delay in transportation keep at 2-8°C	Daily	3-5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac) & Chocolate Agar (CA)	Culture and Sensitivity	**BA, Mac & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate)		
31	Fungal Culture	Skin Scraping	Sterile, screw capped specimen container.	Culture	-	<24 hours, at room temperature	Daily	Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
32	Culture and Sensitivity & Fungal Culture	Sputum – Expectorated / Induced	Sterile, screw capped specimen container, no preservatives.	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	Local: <24 hours, store at room temperature. If delay in transportation keep at 2-8°C.	Daily	3-5 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac) & Chocolate Agar (CA)	Culture & Sensitivity	**BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate)		
33	Mycobacterium culture and sensitivity	Sputum – Expectorated/ Induced	Sterile, screw capped specimen container, no preservatives.	Culture and Sensitivity	Optimal volume is 5-10 mL, minimum volume at 3 mL.	<24 hours, store at room temperature. If delay in transportation keep at 2-8°C.	Daily (Exclude weekend and public holiday)	*Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: Within 8 weeks
34	Culture and Sensitivity	Throat Swab	Swab in transport medium for culture (Swab with gel).	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours, store at room temperature. If delay in transportation keep at 2-8°C.	Daily	3-5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (MAC) & Chocolate Agar (CA)		**BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
35	Culture and Sensitivity & Fungal Culture	Tissue	Sterile, screw capped specimen container, with 1 mL saline. **OR** Anaerobic transport media: Cooked Meat Broth	Culture and Sensitivity	Always sent as much tissue as possible. *Indicate empirical therapy on ordering requisition.*	<24 hours, store at room temperature. **CMB :** <24 hours at room temperature If delay in transportation Incubate at 35-37°C for 18-24 hours before transportation (Do not refrigerate)	Daily	Negative 3-4 days Positive Aerobic: 3-5 days Positive (Anaerobic): 4-6 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks
		Bacteria culture plates	Cultured on: Blood Agar (BA),MacConkey Agar (MAC), Chocolate agar (CA) & Schaedler Agar (Sch)	Culture and Sensitivity	**BA, MAC & CA** incubated at 35-37°C for 18-24 hours before transportation. **Schaedler agar** Incubated at 35-37°C with anaerobic gas pack for 18-24 hours before transportation.	**Schadler agar**: Anaerobic container with gas pack. **Culture plates** ≤ 2 hours at Room temperature (Do not refrigerate)		
36	Mycobacterium culture and sensitivity	Tissue	Sterile, screw capped specimen container, with 1 mL saline.	Culture and Sensitivity	Always submit as much tissue as possible.	<24 hours, Keep at 2-8°C.	Daily (Exclude weekend and public holiday)	*Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: Within 8 weeks
37	Culture and Sensitivity & Fungal Culture	Tracheal Secretion	Sterile, screw capped specimen container.	Culture and Sensitivity	Increased volume of sample facilitates the isolation of fungi. *Indicate empirical therapy on ordering requisition.	<24 hours, store at room temperature. If delay in transportation keep at 2-8°C	Daily	3-5 days Fungal Negative: 2 weeks

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac) & Chocolate Agar (CA)	Culture and Sensitivity	**BA, Mac & CA** incubated at 35-37ºC for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		Fungal Positive: 2-3 weeks
38	Mycobacterium culture and sensitivity	Tracheal Secretion	Sterile, Screw capped specimen container.	Culture and Sensitivity	Increased volume of sample facilitates the isolation of mycobacteria.	<24 hours, store at room temperature. If delay in transportation keep at 2-8°C.	Daily except Sunday & PH.	*Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: Within 8 weeks
39	Culture and Sensitivity (For *Neisseria gonorrhoeae*)	Urethral Swab (male)	Swab in transport Medium (Swab with gel)	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours at room temperature.	Daily	3-5 days
40	Culture and Sensitivity	Urine (Indwelling Catheter)	Sterile, screw capped specimen container.	Culture and Sensitivity	Minimum volume >1 mL *Indicate empirical therapy on ordering requisition.*	<2 hours at room temperature, <24 hours at 2- 8ºC.	Daily	3-5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), or CNA Blood Agar (CNA) and MacConkey Agar (Mac)	Culture and sensitivity	**BA, MAC & CNA** incubated at 35-37ºC for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		
41	Culture and Sensitivity & Fungal Culture	Urine – Midstream Culture plates	Sterile, screw capped specimen container.	Culture and Sensitivity	Minimum volume >1 mL	<2 hours at room temperature, <24 hours at 2- 8ºC.	Daily	3-5 days Fungal Negative: 2 weeks

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
		Bacteria culture plates	Cultured on: Blood Agar (BA), or CNA Blood Agar (CNA) and MacConkey Agar (Mac)	Culture and sensitivity	**BA, MAC & CNA** incubated at 35-37ºC for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		Fungal Positive: 2-3 weeks
42	Mycobacterium culture and sensitivity	Urine – Midstream	Sterile, screw capped specimen container.	Culture and Sensitivity	Sample volume of at least 40 mL.	<2 hours at room temperature, <24 hours at 2-8ºC.	Daily except Sunday & PH.	*Mycobacterium* spp Negative: 8 weeks *Mycobacterium* spp positive: Within 8 weeks
43	Culture and Sensitivity	Urine - Straight Catheter	Sterile, screw capped specimen container.	Culture and Sensitivity	Minimum volume >1 mL *Indicate empirical therapy on ordering requisition.*	<2 hours at room temperature, <24 hours at 2- 8ºC.	Daily	3-5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), or CNA Blood Agar (CNA) and MacConkey Agar (MAC).	Culture and sensitivity	**BA, MAC & CNA** incubated at 35-37ºC for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		
44	Culture and Sensitivity	High Vaginal Swab and Cervical Swab	Swab in transport medium. (Swab in gel).	Culture and Sensitivity	*Indicate empirical therapy on ordering requisition.*	<24 hours, store at room temperature. If delay in transportation keep at 2-8ºC.	Daily	3-5 days
		Bacteria culture plates	Cultured on: Blood Agar (BA), MacConkey Agar (Mac), Chocolate Agar (CA) or MTM Agar	Culture and Sensitivity	**BA, MAC, CA or MTM** agar incubated at 35-37ºC for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate).		

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTIONS	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)
45	Culture and Sensitivity & Fungal Culture	Wound Swab	Swab in transport medium.(Swab with Gel)	Culture and Sensitivity	If requests more than one test on a swab taken from a specific site, i.e. bacterial culture aerobes, bacterial culture anaerobes and fungus culture, please ensure that a separate swab sample is submitted for each test requested. *Indicate empirical therapy on ordering requisition.*	<24 hours at room temperature. If delay in transportation keep at 2-8ºC (For fungal culture only)	Daily	3-5 days Fungal Negative: 2 weeks Fungal Positive: 2-3 weeks.
		Bacteria Culture Plates	Cultured on: Blood Agar(BA), MacConkey Agar (Mac) & Chocolate Agar (CA)	Culture and Sensitivity	**BA, Mac & CA** incubated at 35-37ºC for 18-24 hours before transportation.	≤ 2 hours at room temperature (Do not refrigerate)		

HISTOPATHOLOGY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting).The LTAT is defined in day (except for frozen section).

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTION	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
1	HPE (Histopathological Examination)	Human tissue/body parts	Appropriate saiz of clean container, suitable with specimen saiz in 10% neutral buffered formalin (NBF). Volume of Formalin: at least 10 times the volume of specimen (10:1) Large specimen must be entirely submerged in formalin to ensure Proper fixation. Note : Do not put large specimen in small containers as this would prevent proper fixation and distort the specimen.	Microscopic examination of FFPE (formalin fixed paraffin embedded) tissue sections Hematoxylin and Eosin (H&E) staining	Immediately put tissue specimen in 10% neutral buffered formalin (NBF) after surgical removal and keep at room temperature. Write the patient's details, specimen type and anatomical site on each container label. Do not label on the lid of container. Specimen from different anatomical sites should be sent in separate containers and must be itemized in the same request form. For specimen where orientation is important, mark or tag the specimen e.g., axillary tail of mastectomy specimen with important margins.	Room Temperature. Tissue specimen in 10% neutral buffered formalin (NBF) with proper fasten container lid. Container is placed in biohazard plastic/ specimen plastic bag to contain leakages.	Daily except Sunday and PH.	Small to Medium specimen: 1-2 working days. Large to Complex specimen: 3 working days. The LTAT may be extended subject to any additional investigation/ test required and will be informed to clinician by pathologist.	Small to Medium specimen 1 – 4 working days Large to Complex specimen: 4 – 7 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTION	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
					Multiple small specimens such as gastrointestinal biopsies should ideally be mounted on a piece of filter paper and immediately put in formalin. If more than one specimen container is submitted for the same patient at the same operation/ procedure, please use only one request form and clearly itemized in the request form.				
2	Frozen Section (FS)	Human tissue/body parts	Appropriate saiz of clean container, suitable with specimen saiz WITHOUT formalin/other preservatives.	Microscopic examination	Contact Histopathology Laboratory at least 24 hours (03 4027 2806) in advance to confirm scheduling. Record time of collection/removal from operation theatre on the request form.	Frozen specimens must be transported immediately after collection in a clean container surrounded by an ample amount of ice pack (cold chain) to keep the specimen fresh until it reaches the laboratory.	By appointment/ special arrangement with lab.	20 minutes to 45 minutes upon specimen received by pathologist. (verbal report)	Complete H&E report : 3 to 5 working days
3	Immuno-histochemical (IHC) stain studies	Tissue block	N/A	Microscopic examination of FFPE (formalin fixed	N/A	Room Temperature	Daily except Sunday and PH.	-	2 – 3 working days upon request and completion

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTION	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
	Refer Table 1 below			paraffin embedded) tissue sections					of HPE reporting
4	Second opinion	H&E stained or unstained slides Tissue blocks	N/A	Microscopic examination of FFPE (formalin fixed paraffin embedded) tissue sections.	Provide primary HPE report together with the second opinion request.	Room Temperature	Daily except Sunday and PH.	NA	3 – 5 working days

Note:

i. The LTAT (Laboratory Turnaround Time) might be extended for the case needs additional procedures such as decalcification (bone specimen), special stains, immunohistochemistry, discussion or second opinion depending on the complexity of the cases.
ii. Hence, the diagnostic accuracy should not be compromised for the sake of speed.
iii. Safety Notes: It is essential that all fresh tissue MUST be treated as though it is potentially infectious, regardless of the clinical history.

Table 1: LIST OF ANTIBODY FOR IHC STAINING					
1. ALK-1	11. CD 10	21. CD 79a	31. CK 7	41. GFAP	51. p63
2. Alphafetoprotein (AFP)	12. CD 15	22. Mum-1	32. CK 20	42. HMB45 (melanosome)	52. PLAP
3. AMACR (p504s)	13. CD 20 (B-Cell)	23. CD 117 (c-kit)	33. Cyclin D1	43. HMWCK (anti-CK)	53.Progesterone Receptor (PR)
4. Bcl-2	14. CD 21	24. CD 138	34. Desmin	44. Pax8	54. PSA
5. Bcl 6	15. CD 23	25. CDX-2	35. Pax5	45. Ki 67	55. S100
6. C-Myc	16. CD 30	26. CEA	36. EMA	46. Mammaglobin	56. SMA
7. Calretenin	17. CD 34	27. Cerb2 (Her2/neu)	37. Estrogen Receptor (ER)	47. Vimentin	57. Synaptophysin
8. Gata-3	18. CD 45 (LCA)	28. Chromogranin A	38. E- Cadherin	48. Napsin A	58. Tdt
9. CD 3 (T-Cell)	19. CD 56	29.Pan,CK(AE1/AE3)	39. EP-CAM (Ber Ep4)	49. p16	
10.CD 5	20. CD 68	30. CK 5/6	40. TTF-1	50. p53	

CYTOPATHOLOGY

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting). The LTAT is defined in day.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTION	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
1	Conventional Pap (ps5)	Fixed smear	Slide casing	Pap stain	Fix slide immediately with 95% alcohol or fixative spray	Slide in slide casing at Room Temperature.	Daily except Sunday and PH.	1 to 2 working days	3 working days
2	Liquid Based Cytology (cylc3)	Surepath Vial (Commercial)	Surepath vial	Pap stain	Tip off the brush into the vial for optimum result	Tighten cap and dispatch to lab	Daily except Sunday and PH.	1 to 2 working days	3 working days
3	Body Fluids Cytology (cy1)	Peritoneal; Pericardial; Pleural	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Send immediately, if delay more than 12 hours, refrigerate at 2-8ºC	Daily except Sunday and PH.	1 to 2 working days	3 working days
4	Urine Cytology (cy1)	Urine	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Send immediately, if delay more than 12 hours, refrigerate at 2-8ºC	Daily except Sunday and PH.	1 to 2 working days	3 working days
5	CSF Cytology (cy1)	CSF	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday and PH. (treat as URGENT)	1 to 2 working days	1 to 2 working days
6	Fine Needle Aspiration Cytology (FNA1)	FNA Slides (eg: Thyroid, Lymph Node, Breast, Salivary gland, any body lumps)	Slide casing	Pap stain	Fix slide immediately with 95% alcohol or fixative spray	Insert slide into slide casing	Daily except Sunday and PH.	1 to 2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTION	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
7	Fine Needle Aspiration Cytology (FNA1)	FNA Fluids (eg: Thyroid, Lymph Node, Breast, Salivary gland, any body lumps)	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday and PH.	1 to 2 working days	3 working days
8	Bronchial Brushing Cytology (cy1)	Fixed smear	Slide casing	Pap stain	Fix slide immediately with 95% alcohol or fixative spray	Insert slide into slide casing	Daily except Sunday and PH.	1 to 2 working days	3 working days
9	Bronchial washing Cytology (cy1)	Bronchial washing	Sterile container	Pap Stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday and PH.	1 to 2 working days	3 working days
10	Bronchial alveolar lavage Cytology (cy1)	Bronchial alveolar lavage	Sterile container	Pap Stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday and PH.	1 to 2 working days	3 working days
11	Cyst Fluid Cytology (cy1)	Cyst fluid	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday & PH.	1 to 2 working days	3 working days

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL INSTRUCTION	TRANSPORTATION REQUIREMENT	TEST SCHEDULE	LAB TURNAROUND TIME (LTAT)	
								URGENT	STANDARD
12	Eye fluids/ Eye Washing Cytology (cy1)	Eye fluids/ Eye washing	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday & PH.	1 to 2 working days	3 working days
13	Oesophageal washing Cytology (cy1)	Oesophageal washing	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday & PH.	1 to 2 working days	3 working days
14	Oesophageal brushing cytology (cy1)	Fixed smear	Slide casing	Pap stain	Fix slide immediately with 95% alcohol or fixative spray	Insert slide into slide casing	Daily except Sunday & PH.	1 to 2 working days	3 working days
15	Sputum cytology (cy1)	Sputum	Sterile container	Pap stain	Tighten the cap and separate sample if sharing with other tests	Sent immediately, if delay anticipated, refrigerate at 2-8ºC	Daily except Sunday & PH.	1 to 2 working days	3 working days
16	Nipple discharge (cy1)	Fixed smear	Slide casing	Pap stain	Fix slide immediately with 95% alcohol or fixative spray	Insert slide into slide casing	Daily except Sunday & PH.	1 to 2 working days	3 working days

MOLECULAR DIAGNOSTICS

The turnaround time is defined as laboratory turnaround time, LTAT (time from specimen is registered by lab until result reporting).The LTAT is defined in day.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL NOTE	TEST SCHEDULE	LTAT
1	PCR FOR COVID-19, SARS-CoV-2 RNA DETECTION **Test code: PCRcovid19**	Nasopharyngeal Aspirate/ Bronchoalveolar Lavage (BAL)/ Sputum/ Saliva Nasopharyngeal Swab/ Oropharyngeal (Throat) Swab/ Combo (Nasal + Oral) Swab	Sterile Container (Min. Volume: 1mL) Universal Transport Medium (UTM)	Multiplex Real-Time Reverse Transcription PCR	Use triple layer packaging. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
2	PCR FOR RESPIRATORY PATHOGEN PANEL **Test code: PCR33rpp2**	Bronchoalveolar Lavage (BAL)/ Sputum Nasopharyngeal Swab/ Throat Swab/ Nasal Swab	Sterile Container (Min. Volume: 1mL) Universal Transport Medium (UTM)	Multiplex Real-Time Reverse Transcription PCR	Detection of 21 viral targets, 11 bacterial targets & 1 fungal target. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
3	PCR FOR RESPIRATORY BACTERIAL PATHOGEN PANEL **Test code: PCRRB1**	Nasopharyngeal Aspirate/ Bronchoalveolar Lavage (BAL)/ Sputum Nasopharyngeal Swab	Sterile Container (Min. Volume: 1mL) Universal Transport Medium (UTM)	Multiplex Real-Time PCR	Detection of 7 bacterial targets. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
4	PCR FOR MENINGITIS VIRAL PATHOGEN PANEL **Test code: PCRmeni2**	Cerebrospinal Fluid (CSF)	Bijou Bottle/ Sterile Container (Min. Volume: 1mL)	Multiplex Real-Time Reverse Transcription PCR	Detection of 12 viral targets. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL NOTE	TEST SCHEDULE	LTAT
5	PCR FOR MENINGITIS BACTERIAL PATHOGEN PANEL **Test code: PCRmeni3**	Cerebrospinal Fluid (CSF)	Bijou Bottle/ Sterile Container (Min. Volume: 1mL)	Multiplex Real-Time PCR	Detection of 6 bacterial targets. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
6	RAPID PCR FOR MENINGITIS/ ENCEPHALITIS PANEL **Test code: PCRmeniR1**	Cerebrospinal Fluid (CSF)	Bijou Bottle/ Sterile Container (Min. Volume: 0.5mL)	Multiplex Real-Time Reverse Transcription PCR	Detection of 7 viral targets, 6 bacterial targets & 1 fungal target. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.
7	PCR FOR GASTROINTESTINAL VIRAL PATHOGEN PANEL **Test code: PCRGI2**	Raw Stool Transport Media Preserved Stool	Sterile Container/ Stool Container (media/ preservative-free) (Min. Volume: 1mL) Cary Blair Transport Medium (liquid-based)	Multiplex Real-Time Reverse Transcription PCR	Detection of 6 viral targets. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
8	PCR FOR GASTROINTESTINAL BACTERIAL PATHOGEN PANEL **Test code: PCRGI3**	Raw Stool Transport Media Preserved Stool	Sterile Container/ Stool Container (media/ preservative-free) (Min. Volume: 1mL) Cary Blair Transport Medium (liquid-based)	Multiplex Real-Time PCR	Detection of 7 bacterial targets. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL NOTE	TEST SCHEDULE	LTAT
9	RAPID PCR FOR GASTROINTESTINAL PANEL **Test code: PCRGI1**	Transport Media Preserved Stool	Cary Blair Transport Medium (liquid-based)	Multiplex Real-Time Reverse Transcription PCR	Detection of 5 viral targets, 13 bacterial targets & 4 parasitic targets. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.
10	RAPID PCR FOR HCV VIRAL LOAD **Test code: PCRhcvVLR**	Plasma Serum	EDTA Blood Tube (Min. Volume: 3mL) Plain Blood Tube (Min. Volume: 3mL)	Quantitative Real-Time Reverse Transcription PCR	Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.
11	RAPID PCR FOR HBV VIRAL LOAD **Test code: PCRhbvQR**	Plasma Serum	EDTA Blood Tube (Min. Volume: 2mL) Plain Blood Tube (Min. Volume: 2mL)	Quantitative Real-Time PCR	Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.
12	RAPID PCR FOR HIV-1 VIRAL LOAD **Test code: PCRhivVLR**	Plasma	EDTA Blood Tube (Min. Volume: 3mL)	Quantitative Real-Time Reverse Transcription PCR	Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.
13	RAPID PCR FOR HIV-1 QUALITATIVE **Test code: PCRhivQLR**	EDTA Whole Blood	EDTA Blood Tube (Min. Volume: 0.5mL)	Qualitative Real-Time Reverse Transcription PCR	Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL NOTE	TEST SCHEDULE	LTAT
14	PCR FOR STI ESSENTIAL SCREENING PANEL **Test code: PCRsti1**	Genital Swab/ Oropharyngeal (Throat) Swab/ Anorectal Swab Urine (first void)/ Semen Liquid-Based Cytology (LBC)	Universal Transport Medium (UTM) Sterile Container (Min. Volume: 3mL) LBC Medium	Multiplex Real-Time PCR	Detection of 6 bacterial targets & 1 parasitic target. Transportation requirement: 2-8°C (Room Temperature for LBC)	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
15	PCR FOR STI GENITAL ULCER PANEL **Test code: PCRsti4**	Genital Swab Urine (first void) Liquid-Based Cytology (LBC)	Universal Transport Medium (UTM) Sterile Container (Min. Volume: 3mL) LBC Medium	Multiplex Real-Time PCR	Detection of 4 viral targets & 3 bacterial targets. Transportation requirement: 2-8°C (Room Temperature for LBC)	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
16	PCR FOR HPV GENOTYPING **Test code: PCRhpv1**	Cervical Swab Liquid-Based Cytology (LBC)	Universal Transport Medium (UTM) LBC Medium	Multiplex Real-Time PCR	Detection of 19 high-risk genotypes & 9 low-risk genotypes. Transportation requirement: 2-8°C (Room Temperature for LBC)	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
17	PCR FOR HPV GENOTYPING WITH LBC REPORT **Test code: PCRhpvLC1**	Liquid-Based Cytology (LBC)	LBC Medium	Multiplex Real-Time PCR & Pap Stain	Detection of 19 high-risk genotypes & 9 low-risk genotypes, with LBC report. Transportation requirement: 2-8°C (Room Temperature for LBC)	Daily except Sunday & PH **Cut-off time: 12pm**	3-4 working days after cut-off time.

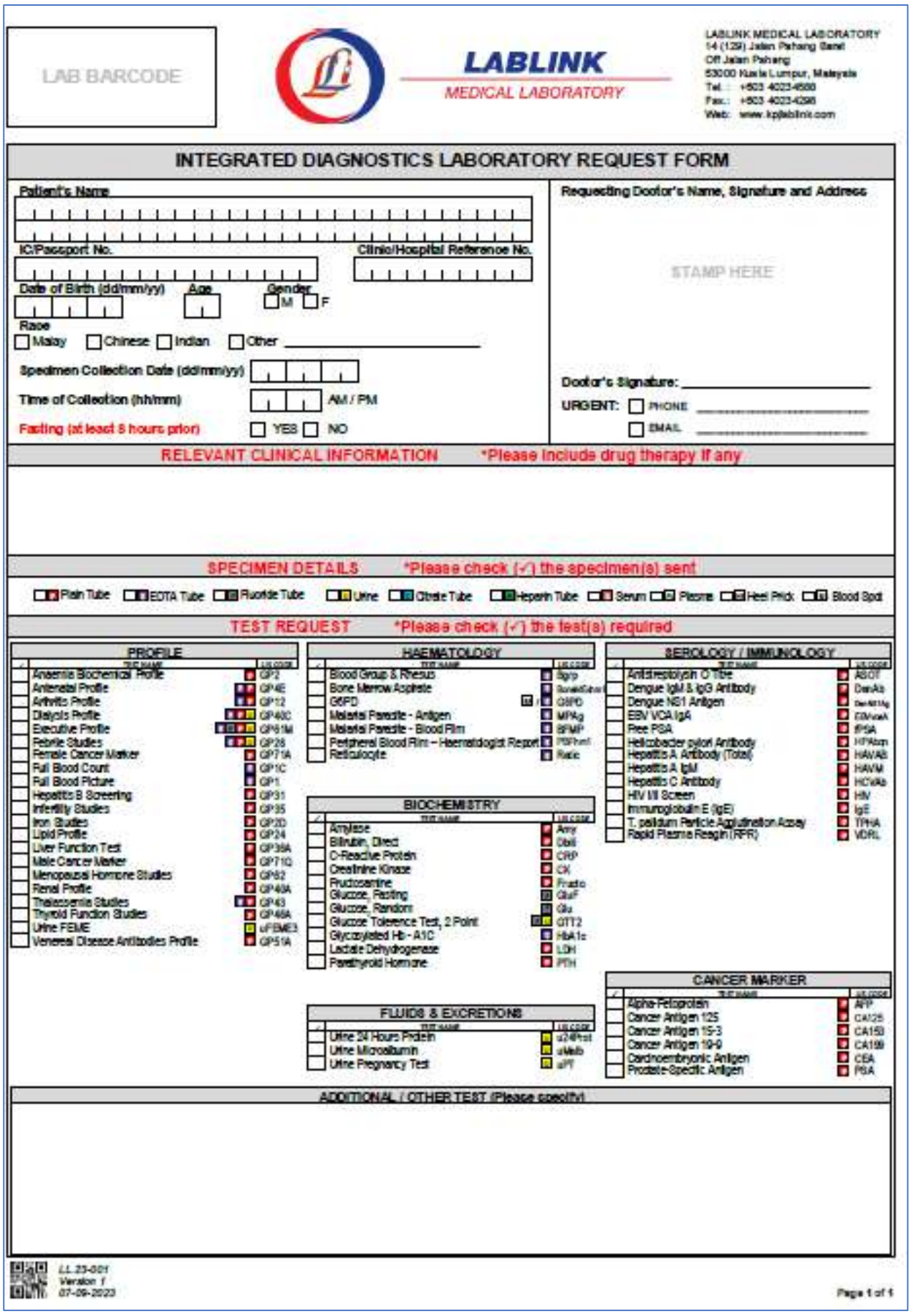
NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL NOTE	TEST SCHEDULE	LTAT
18	PCR FOR TROPICAL FEVER PATHOGEN PANEL **Test code: PCRfv1**	EDTA Whole Blood Urine (first void)	EDTA Blood Tube (Min. Volume: 1mL) Sterile Container (Min. Volume: 3mL)	Multiplex Real-Time Reverse Transcription PCR	Detection of 3 viral targets, 3 bacterial targets & 1 parasitic target. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
19	PCR FOR LEPTOSPIRA DNA DETECTION **Test code: PCRlepto**	EDTA Whole Blood Urine (first void)	EDTA Blood Tube (Min. Volume: 1mL) Sterile Container (Min. Volume: 3mL)	Real-Time PCR	If patient already subjected to antibiotic therapy or duration of febrile illness >7 days, then URINE is the preferred specimen. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
20	PCR FOR DENGUE DIFFERENTIATION PANEL **Test code: PCRdenDF1**	Plasma Serum	EDTA Blood Tube (Min. Volume: 1mL) Plain Blood Tube (Min. Volume: 1mL)	Multiplex Real-Time Reverse Transcription PCR	Kindly provide info on day of fever onset & serology (NS1, IgM, IgG) results. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.
21	PCR FOR PLASMODIUM (MALARIA) DIFFERENTIATION PANEL **Test code: PCRmpDF1**	EDTA Whole Blood	EDTA Blood Tube (Min. Volume: 1mL)	Multiplex Real-Time PCR	Kindly provide BFMP result. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 12pm**	1-2 working days after cut-off time.

NO	TEST	SPECIMEN	CONTAINER	METHOD	SPECIAL NOTE	TEST SCHEDULE	LTAT
22	PCR FOR ALPHA-THALASSEMIA DNA DETECTION **Test code: PCRaThal**	EDTA Whole Blood	EDTA Blood Tube (Min. Volume: 1mL)	Multiplex PCR & Flow-Through Hybridization	Detection of 7 deletions & 8 mutations. Transportation requirement: 2-8°C	Every Tuesday **Cut-off time: 12pm**	3-7 working days after cut-off time.
23	Rapid PCR for Mycobacteria Tuberculosis/ Rifampicin Resistance Mutation **Test code: PCRtbRIFRp**	Sputum/ Lymph Node Aspirate/ Pleural Fluid/ Urine/ Cerebrospinal Fluid (CSF)/ Bronchoalveolar Lavage (BAL)/ Gastric Aspirate/ Muscoskeletal TB (Joint Fluid) Lymph Node Tissue/ Pleural Tissue/ Muscoskeletal TB (Bone/ Tissue)	Sterile Container (Min. Volume: 3mL) Sterile Container with Saline	Real-Time PCR	Use triple layer packaging. Transportation requirement: 2-8°C	Daily except Sunday & PH **Cut-off time: 4pm**	1-2 working days after cut-off time.

APPENDICES

APPENDIX 1 – FORMS

LL.23-001 - Integrated Diagnostics Laboratory (IDL) Request Form



LAB BARCODE

LABLINK
MEDICAL LABORATORY

LABLINK MEDICAL LABORATORY
14 (1ST) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603 4023-4500
Fax.: +603 4023-4298
Web: www.kplablink.com

INTEGRATED DIAGNOSTICS LABORATORY REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Specimen Collection Date (dd/mm/yy)

Time of Collection (hh/mm) AM / PM

Fasting (at least 8 hours prior) ☐ YES ☐ NO

Requesting Doctor's Name, Signature and Address

STAMP HERE

Doctor's Signature: _____

URGENT: ☐ PHONE _____
☐ EMAIL _____

RELEVANT CLINICAL INFORMATION *Please include drug therapy if any

SPECIMEN DETAILS *Please check (✓) the specimen(s) sent

☐ Plain Tube ☐ EDTA Tube ☐ Fluoride Tube ☐ Urine ☐ Citrate Tube ☐ Heparin Tube ☐ Serum ☐ Plasma ☐ Heel Prick ☐ Blood Spot

TEST REQUEST *Please check (✓) the test(s) required

PROFILE

✓	TEST NAME	LIS CODE
☐	Anaemia Biochemical Profile	GP2
☐	Antenatal Profile	GP4E
☐	Arthritis Profile	GP12
☐	Dialysis Profile	GP40C
☐	Executive Profile	GP61M
☐	Febrile Studies	GP28
☐	Female Cancer Marker	GP71A
☐	Full Blood Count	GP1C
☐	Full Blood Picture	GP1
☐	Hepatitis B Screening	GP31
☐	Infertility Studies	GP35
☐	Iron Studies	GP2D
☐	Lipid Profile	GP24
☐	Liver Function Test	GP39A
☐	Male Cancer Marker	GP71Q
☐	Menopausal Hormone Studies	GP62
☐	Renal Profile	GP49A
☐	Thalassemia Studies	GP43
☐	Thyroid Function Studies	GP46A
☐	Urine FEME	uFEME3
☐	Venereal Disease Antibodies Profile	GP51A

HAEMATOLOGY

✓	TEST NAME	LIS CODE
☐	Blood Group & Rhesus	Bg/rp
☐	Bone Marrow Aspirate	BoneMarrow
☐	G6PD	G6PD
☐	Malaria Parasite - Antigen	MPAg
☐	Malaria Parasite - Blood Film	BFMP
☐	Peripheral Blood Film – Haematologist Report	PBFHaem
☐	Reticulocyte	Retic

BIOCHEMISTRY

✓	TEST NAME	LIS CODE
☐	Amylase	Amy
☐	Bilirubin, Direct	DBil
☐	C-Reactive Protein	CRP
☐	Creatinine Kinase	CK
☐	Fructosamine	Fructo
☐	Glucose, Fasting	GluF
☐	Glucose, Random	Glu
☐	Glucose Tolerance Test, 2 Point	GTT2
☐	Glycosylated Hb - A1C	HbA1c
☐	Lactate Dehydrogenase	LDH
☐	Parathyroid Hormone	PTH

FLUIDS & EXCRETIONS

✓	TEST NAME	LIS CODE
☐	Urine 24 Hours Protein	u24Prot
☐	Urine Microalbumin	uMalb
☐	Urine Pregnancy Test	uPT

SEROLOGY / IMMUNOLOGY

✓	TEST NAME	LIS CODE
☐	Antistreptolysin O Titre	ASOT
☐	Dengue IgM & IgG Antibody	DenAb
☐	Dengue NS1 Antigen	DenNS1Ag
☐	EBV VCA IgA	EBVVcaA
☐	Free PSA	fPSA
☐	Helicobacter pylori Antibody	HPAbsn
☐	Hepatitis A Antibody (Total)	HAVAb
☐	Hepatitis A IgM	HAVM
☐	Hepatitis C Antibody	HCVAb
☐	HIV I/II Screen	HIV
☐	Immunoglobulin E (IgE)	IgE
☐	T. pallidum Particle Agglutination Assay	TPHA
☐	Rapid Plasma Reagin (RPR)	VDRL

CANCER MARKER

✓	TEST NAME	LIS CODE
☐	Alpha-Fetoprotein	AFP
☐	Cancer Antigen 125	CA125
☐	Cancer Antigen 15-3	CA153
☐	Cancer Antigen 19-9	CA199
☐	Carcinoembryonic Antigen	CEA
☐	Prostate-Specific Antigen	PSA

ADDITIONAL / OTHER TEST (Please specify)

LL.23-001
Version 1
07-09-2023

Page 1 of 1

LL.7-005 - Quantiferon TB Gold Request Form

LAB USE ONLY

LABLINK
MEDICAL LABORATORY

Makmal Perubatan Lablink,
Lablink (M) Sdn. Bhd.
14 (129) Jalan Pahang Barat,
Off Jalan Pahang,
53000 Kuala Lumpur, Malaysia.
Tel.: +603 4023 4588 Ext: 6002, 6005
Fax.: +603 4023 4298

QUANTIFERON TB GOLD REQUEST FORM

Patient's Name

IC/Passport No.

Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) Age Gender ☐M ☐F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature:

URGENT ☐ PHONE
☐ FAX
☐ EMAIL

CLINICAL INFORMATION
(Please provide drug therapy if any including date & time given)

SPECIMEN DETAILS
(Compulsory to fill by sender)

Specimen Collection Date: (dd/mm/yy)

Time of Collection: (hh/mm) AM / PM

Taken by:

FOR LABORATORY USE ONLY
(Compulsory to fill by lab staff)

DATE & TIME TUBE RECEIVED: (dd/mm/yy) @ (hh/mm) AM / PM

INCUBATION:

Start Date & Time: @ AM / PM

End Date & Time: @ AM / PM

Lab Staff Signature

LL.7-005
Version 2
17-03-2016

LL.7-017 - Immunology Request Form

LAB BARCODE

LABLINK
MEDICAL LABORATORY

Integrated Diagnostics Laboratory
Makmal Perubatan Lablink
14 (129) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603 4023 4588 Ext: 3009
Fax.: +603 4023 4298

IMMUNOLOGY REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Specimen Collection Date (dd/mm/yy)

Time of Collection (hh/mm) AM / PM

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: _____

URGENT: ☐ PHONE _____
☐ FAX _____
☐ EMAIL _____

RELEVANT CLINICAL INFORMATION *Please include drug therapy if any

SPECIMEN DETAILS *Please check (✓) the specimen(s) sent

☐ Serum (Separated from Plain Tube) S ☐ Cerebrospinal Fluid (CSF) C ☐ Other: _____

TEST REQUEST *Please check (✓) the test(s) required

CONNECTIVE TISSUE DISEASES & RHEUMATOLOGY AUTOIMMUNE PROFILES

✓	TEST NAME	LIS CODE
☐	Connective Tissue Disease Autoimmune Profile 1	S AiCTDp1
☐	Connective Tissue Disease Autoimmune Profile 4	S AiCTDp4
☐	Connective Tissue Disease Autoimmune Profile 5	S AiCTDp5
☐	Inflammatory Myopathies/Myositis Profile	S AiMyoP1

ENDOCRINE AUTOIMMUNE PROFILES

✓	TEST NAME	LIS CODE
☐	Diabetes Mellitus Profile	S AiDMp1
☐	Thyroid Autoantibody Screen Profile	S AiThyP1

GASTROENTEROLOGY AUTOIMMUNE PROFILES

✓	TEST NAME	LIS CODE
☐	Liver Autoimmune Profile	S AiGasP1
☐	Liver Autoimmune Immunofluorescence Assay Profile	S AiGasP2
☐	Liver Autoimmune Specific Autoantibody Profile	S AiGasP3

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

✓	TEST NAME	LIS CODE
☐	Encephalitis Autoimmune Profile 1	S AiNeuroP1
☐	Encephalitis Autoimmune Profile 2	C S AiNeuroP2
☐	Encephalitis Autoimmune Profile 3	S AiNeuroP3
☐	Encephalitis Receptors Autoimmune Profile 4	S AiNeuroP4
☐	Encephalitis Receptors Autoimmune Profile 5	C AiNeuroP5
☐	Paraneoplastic Antigen Autoimmune Profile 6	S AiNeuroP6
☐	Encephalitis Autoimmune Profile 7	S AiNeuroP7
☐	Ganglioside Autoimmune Profile 8	C S AiNeuroP8
☐	Neuromyelitis Optica Autoimmune Profile 9	C S AiNeuroP9

TITRATION TEST

✓	TEST NAME	LIS CODE
☐	Anti-Neutrophil Cytoplasmic Antibody (ANCA)	S ANCATi
☐	Aquaporin 4 (AQP4)	S AQP4ti
☐	Aquaporin 4 (AQP4)	C AQP4CSFti
☐	Myelin Oligodendrocyte Glycoprotein Ab (MOG) - Serum	S MOGti
☐	Myelin Oligodendrocyte Glycoprotein Ab (MOG) - CSF	C MOGCSFti
☐	Anti-Mitochondrial Antibody (AMA)	S AMAti
☐	Anti-Smooth Muscle Antibody (SMA)	S SMAti
☐	Liver Kidney Microsomal Antibody (LKM)	S LKMti
☐	Parietal Cell Antibody (PCA)	S ParcelTi

VASCULITIS & IMMUNE NEPHRITIS AUTOIMMUNE PROFILES

✓	TEST NAME	LIS CODE
☐	Vasculitis Autoimmune Profile 1	S AiVasP1
☐	Vasculitis Autoimmune Profile 2	S AiVasP2
☐	Vasculitis Autoimmune Profile 3	S AiVasP3
☐	Vasculitis Autoimmune Profile 4	S AiVasP4
☐	Nephritis Autoimmune Profile	S AiVasP5

INDIVIDUAL TEST

✓	TEST NAME	LIS CODE
☐	Anti-Nuclear Antibody (ANA)	S ANAIF
☐	Double Stranded DNA (ds-DNA)	S DNAab
☐	Anti-Neutrophil Cytoplasmic Ab (ANCA) Screen	S ANCAIF
☐	Myeloperoxidase (MPO) pANCA Antibody	S MPO
☐	Proteinase 3 (PR3) cANCA Antibody	S PR3
☐	Glomerular Basement Membrane (GBM) Ab	S GBM
☐	N-methyl-D-aspartate Receptor Ab (NMDAR) - Serum	S NMDARab
☐	N-methyl-D-aspartate Receptor Ab (NMDAR) - CSF	C NMDARcsf
☐	Aquaporin 4 (AQP4) - Serum	S AQP4ab
☐	Aquaporin 4 (AQP4) - CSF	C AQP4csf
☐	Myelin Oligodendrocyte Glycoprotein Ab (MOG) - Serum	S MOGab
☐	Myelin Oligodendrocyte Glycoprotein Ab (MOG) - CSF	C MOGcsf
☐	Anti-Phospholipase-A2 Receptor (PLA2R) Ab Screen	S PLA2Rab
☐	Anti-Phospholipase-A2 Receptor (PLA2R) Ab Quantitative	S PLA2RQn
☐	Islet Cell Cytoplasmic Autoantibody (ICA)	S ICA
☐	Glutamic Acid Decarboxylase Autoantibody (GADA)	S GADA
☐	Insulinoma-Associated-2 Autoantibody (IA-2A)	S IA2A
☐	Insulin Autoantibody (IAA)	S IAA
☐	Acetylcholine Receptor Antibody (AChRAb)	S AChRAb
☐	Anti-Mitochondrial Antibody (AMA)	S AMA
☐	Anti-Smooth Muscle Antibody (SMA)	S SMA
☐	Liver Kidney Microsomal Antibody (LKM)	S LKMab
☐	Parietal Cell Antibody (PCA)	S ParCellAb
☐	Thyrotropin Receptor Antibody	S TSHRepAb
☐	Anti-Thyroid Peroxidase (TPO/AMC)	S AMC
☐	Anti-Thyroglobulin (Anti-TG)	S Thyroglo

ADDITIONAL / OTHER TEST (Please specify)

NOTE: Please refer the details of each panel at the back of this form

LL.7-017
Version 2
20-01-2021

Page 1 of 2

DETAILS OF TEST PROFILE

CONNECTIVE TISSUE DISEASES & RHEUMATOLOGY AUTOIMMUNE PROFILES	TEST CODE
CONNECTIVE TISSUE DISEASE AUTOIMMUNE PROFILE 1 *Anti-nuclear Antibody (ANA), double-stranded DNA (dsDNA)*	AiCTDp1
CONNECTIVE TISSUE DISEASE AUTOIMMUNE PROFILE 4 *Anti-nuclear Antibody (ANA), double-stranded DNA (dsDNA), AMA-M2, CENP-B (Centromere Protein B), Histones, Jo-1, nRNP, Nucleosome, PCNA, Sm, SS-A, SS-B, Scl-70, PM-Scl-100, Ro-52, Ribosomal P-protein, DFS70*	AiCTDp4
CONNECTIVE TISSUE DISEASE AUTOIMMUNE PROFILE 5 / EXTRACTABLE NUCLEAR ANTIGENS (ENA) *AMA-M2, CENP-B (Centromere Protein B), Histones, Jo-1, nRNP, Nucleosome, PCNA, Sm, SS-A, SS-B, Scl-70, PM-Scl-100, Ro-52, Ribosomal P-protein, DFS70*	AiCTDp5
INFLAMMATORY MYOPATHIES/MYOSITIS PROFILE *Jo-1, PM-Scl-100, Ku, Ro-52, OJ, EJ, PL-12, PL-7, SAE1, NXP2, MDA5, TIF1γ, SRP, Mi-2α, Mi-2β, PM-Scl-75*	AiMyoP1

VASCULITIS AND IMMUNE NEPHRITIS AUTOIMMUNE PROFILES	TEST CODE
VASCULITIS AUTOIMMUNE PROFILE 1 *Anti-Neutrophil Cytoplasmic Antibody (ANCA), Myeloperoxidase (MPO), Proteinase 3 (PR3), Glomerular Basement Membrane (GBM)*	AiVasP1
VASCULITIS AUTOIMMUNE PROFILE 2 *Anti-nuclear Antibody (ANA), Anti-Neutrophil Cytoplasmic Antibody (ANCA), Myeloperoxidase (MPO), Proteinase 3 (PR3), Glomerular Basement Membrane (GBM)*	AiVasP2
VASCULITIS AUTOIMMUNE PROFILE 3 *Anti-nuclear Antibody (ANA), Anti-Neutrophil Cytoplasmic Antibody (ANCA)*	AiVasP3
VASCULITIS AUTOIMMUNE PROFILE 4 *Myeloperoxidase (MPO), Proteinase 3 (PR3), Glomerular Basement Membrane (GBM)*	AiVasP4
NEPHRITIS AUTOIMMUNE PROFILE *Anti-nuclear Antibody (ANA), double-stranded DNA (dsDNA), Anti-Neutrophil Cytoplasmic Antibody (ANCA), Myeloperoxidase (MPO), Proteinase 3 (PR3), Glomerular Basement Membrane (GBM), Anti-Phospholipase-A2 receptor (PLA2R) Antibody Screening*	AiVasP5

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES	TEST CODE
NEUROLOGY AUTOIMMUNE PROFILE 1 *Anti-nuclear Antibody (ANA), NMDARab*	AiNeuroP1
NEUROLOGY AUTOIMMUNE PROFILE 2 *Anti-nuclear Antibody (ANA), NMDARab, NMDARcsf*	AiNeuroP2
NEUROLOGY AUTOIMMUNE PROFILE 3 *Anti-nuclear Antibody (ANA), NMDARab, AMPA1/2ab, CASPR2ab, LGI1ab, DPPXab, GABAab*	AiNeuroP3
NEUROLOGY AUTOIMMUNE PROFILE 4 *NMDARab, AMPA1/2ab, CASPR2ab, LGI1ab, DPPXab, GABAab*	AiNeuroP4
NEUROLOGY AUTOIMMUNE PROFILE 5 *NMDARcsf, AMPA1/2csf, CASPR2csf, LGI1csf, DPPXcsf, GABAcsf*	AiNeuroP5
NEUROLOGY AUTOIMMUNE PROFILE 6 *Amphiphysin, CV2, Hu, Yo, Ri, PnMA2, Recoverin, SOX1, Titin*	AiNeuroP6
NEUROLOGY AUTOIMMUNE PROFILE 7 *Anti-nuclear Antibody (ANA), NMDARab, AMPA1/2ab, CASPR2ab, LGI1ab, DPPXab, GABAab, Amphiphysin, CV2, Hu, Yo, Ri, PnMA2, Recoverin, SOX1, Titin*	AiNeuroP7
NEUROLOGY AUTOIMMUNE PROFILE 8 *Sulfatide IgM, GM1 IgM, GM2 IgM, GM3 IgM, GM4 IgM, GD1a IgM, GD1b IgM, GD2 IgM, GD3 IgM, GT1a IgM, GT1b IgM, GQ1b IgM Sulfatide IgG, GM1 IgG, GM2 IgG, GM3 IgG, GM4 IgG, GD1a IgG, GD1b IgG, GD2 IgG, GD3 IgG, GT1a IgG, GT1b IgG, GQ1b IgG*	AiNeuroP8
NEUROLOGY AUTOIMMUNE PROFILE 9 *Aquaporin 4 (AQP4), Myelin Oligodendrocyte Glycoprotein antibody (MOG)*	AiNeuroP9

GASTROENTEROLOGY AUTOIMMUNE PROFILES	TEST CODE
LIVER AUTOIMMUNE PROFILE 1 *Mitochondrial Antibody (AMA), Smooth Muscle Antibody (SMA), Liver Kidney Microsomal Antibody (LKM), Parietal Cell Antibody (PCA), AMA-M2, gp210, LKM-1, LC-1, M2-3E, PML, Ro-52, Sp100, SLA/LP*	AiGasP1
LIVER AUTOIMMUNE PROFILE 2 *Mitochondrial Antibody (AMA), Smooth Muscle Antibody (SMA), Liver Kidney Microsomal Antibody (LKM), Parietal Cell Antibody (PCA),*	AiGasP2
LIVER AUTOIMMUNE PROFILE 3 *AMA-M2, gp210, LKM-1, LC-1, M2-3E, PML, Ro-52, Sp100, SLA/LP*	AiGasP3

ENDOCRINOLOGY AUTOIMMUNE PROFILES	TEST CODE
DIABETES MELLITUS PROFILE *Islet Cell Cytoplasmic Autoantibody(ICA), Glutamic Acid Decarboxylase Autoantibody(GADA), Insulinoma Associated-2 Ag Autoantibody(IA-2A), Insulin Autoantibody(IAA)*	AiMDp1
THYROID AUTOIMMUNE PROFILE *Thyrotropin Receptor Antibody (TSHRepAb), Anti-Thyroid Peroxidase (TPO/AMC), Anti-Thyroglobulin (Anti-TG)*	AiThyP1

LL.7-018 - SteatoTest@Liverfast Form

LAB USE ONLY

LABLINK
MEDICAL LABORATORY

Integrated Diagnostics Laboratory
Makmal Perubatan Lablink,
14 (129) Jalan Pahang Barat,
Off Jalan Pahang,
53000 Kuala Lumpur, Malaysia.
Tel.: +603 4023 4588 Ext: 3008
Fax.: +603 4023 4298

STEATOTEST / LIVERFAST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yyyy) | Age | Gender ☐ M ☐ F | Height ___ m | Weight ___ kg

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: _____

URGENT ☐ PHONE _____
☐ FAX _____
☐ EMAIL _____

CLINICAL INFORMATION (Please provide drug therapy if any including date & time given)

SPECIMEN DETAILS (Compulsory to fill by sender)

Specimen Collection Date: (dd/mm/yyyy)

Time of Collection: (hh/mm) ___ AM / PM

Fasting (at least 8 hours prior): Yes ☐ No ☐

PATIENT IS COMPULSORY TO FAST FOR AT LEAST 8 HOURS

Sample Requirement: 1 x 5mL Plain Tube & 1 x 2mL Fluoride Tube

LIVERFAST TEST (Compulsory to fill by sender)

STEATOTEST ☐
Test Code: SteatoT
Charge code: 61050970

LIVERFAST ☐
Test Code: LiverFAST
Charge code: 61050958

LL.7-018
Version 1
03-11-2020

LL.7-020 - Allergy Test Request Form

LAB BARCODE

LABLINK
MEDICAL LABORATORY

Integrated Diagnostics Laboratory
Makmal Perubatan Lablink
14 (129) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603 4023 4588 Ext: 3009
Fax.: +603 4023 4298

ALLERGY TEST REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Specimen Collection Date (dd/mm/yy)

Time of Collection (hh/mm) AM / PM

Specimen Type ☐ Plain Tube (P) ☐ Serum (Separated from Plain Tube) (Sr)

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: _____

URGENT: (Please tick) ☐ PHONE _____ ☐ FAX _____ ☐ EMAIL _____

RELEVANT CLINICAL INFORMATION *Please include drug therapy if any

TEST REQUEST *Please check (✓) the test(s) required

[1] PROFILE (ELISA-FEIA: Quantitative)

✓	PROFILE NAME		LIS CODE
☐	Allergy Panel (Food)	P Sr	GP94A
☐	Allergy Panel (Inhalant)	P Sr	GP94B
☐	Malaysian Allergy Panel 1 (Foods & Inhalant)	P Sr	GP94C
☐	Domestic Allery Panel	P Sr	GP94D
☐	Seafood Panel	P Sr	GP94E
☐	Paediatric Food Allergy Panel	P Sr	GP94F
☐	Malaysian Allergy Panel 2 (Food, Inhalant, Seafood, Mould)	P Sr	GP94G

[2] PROFILE (IMMUNOBLOT: Semi-quantitative)

✓	PROFILE NAME		LIS CODE
☐	Atopy Allergy Panel	P Sr	GP94H
☐	Food Allergy Panel	P Sr	GP94J
☐	Paediatric Food Allergy Panel	P Sr	GP94K
☐	Inhalation Allergy Panel	P Sr	GP94L

[3] MIX INDIVIDUAL ALLERGEN (ELISA-FEIA: Quantitative)

✓	PROFILE NAME		LIS CODE
☐	Nut Mix	P Sr	fx1
☐	Seafood Mix	P Sr	fx2
☐	Cereal Mix	P Sr	fx3
☐	Common Food Mix	P Sr	fx5E
☐	Spice Mix	P Sr	fx72
☐	Mould Spore Mix	P Sr	mx2
☐	Pet Dander Mix	P Sr	ex2
☐	Feather Mix	P Sr	ex71
☐	House Dust Mix	P Sr	hx2
☐	Occupational Chemical Mix	P Sr	pax6
☐	Phadiatop Inhalant Mix	P Sr	s

INDIVIDUAL (ELISA-FEIA: Quantitative)

FOOD

✓	TEST NAME		LIS CODE
☐	Egg White	P Sr	f1
☐	Egg Yolk	P Sr	f75
☐	Egg	P Sr	f245
☐	Rice	P Sr	f9
☐	Beef	P Sr	f27
☐	Cheddar Cheese	P Sr	f81
☐	Chicken	P Sr	f83
☐	Mutton	P Sr	f88
☐	Milk	P Sr	f2
☐	Goat Milk	P Sr	Rf300
☐	Wheat	P Sr	f4
☐	Peanut	P Sr	f13
☐	Soybean	P Sr	f14
☐	Cashew Nut	P Sr	f202
☐	Mushroom	P Sr	Rf212
☐	Cocoa	P Sr	f93
☐	Curry	P Sr	Rf281

SEAFOOD

✓	TEST NAME		LIS CODE
☐	Fish	P Sr	f3
☐	Crab	P Sr	f23
☐	Shrimp	P Sr	f24
☐	Squid Pacific	P Sr	f58
☐	Sardine	P Sr	f61
☐	Lobster	P Sr	f80
☐	Clam Allergen	P Sr	f207
☐	Oyster	P Sr	f290
☐	Anchovy	P Sr	f313
☐	Tuna	P Sr	f40

FRUITS

✓	TEST NAME		LIS CODE
☐	Orange	P Sr	f33
☐	Banana	P Sr	f92
☐	Lemon	P Sr	f208
☐	Pineapple	P Sr	f210
☐	Papaya	P Sr	Rf293

EPIDERMAL & INSECTS

✓	TEST NAME		LIS CODE
☐	Cockroach	P Sr	i6
☐	Cat Dander	P Sr	e1
☐	Dog Dander	P Sr	e5

HOUSE DUST MITES

✓	TEST NAME		LIS CODE
☐	*D. pteronyssinus*	P Sr	d1
☐	*D. farinae*	P Sr	d2
☐	*B. tropicalis*	P Sr	Rd201
☐	Greer Labs	P Sr	h1

MOULD

✓	TEST NAME		LIS CODE
☐	*P. notatum*	P Sr	m1
☐	*C. hebarum*	P Sr	m2
☐	*A. fumigatus*	P Sr	m3
☐	*M. racemosus*	P Sr	m4
☐	*C. albicans*	P Sr	m5
☐	*A. alternata*	P Sr	m6

OTHERS

✓	TEST NAME		LIS CODE
☐	Bermuda Grass	P Sr	g2
☐	Johnson Grass	P Sr	g10
☐	Latex	P Sr	k82
☐	Oil Palm	P Sr	p

Please refer the details of each panel test marked [1,2 & 3] at the back of this form

OTHER TEST (Please specify):

1. PROFILE (ELISA-FEIA: Quantitative)	LIS CODE
ALLERGY PANEL (FOOD) IgE, Egg White, Egg Yolk, Milk, Wheat, Peanut, Cashew nut, Cocoa, Rice, Cheddar cheese, Tuna, Anchovy, Crab, Shrimp, Clam, Chicken, Beef, Lemon, Orange, Banana, Pineapple	GP94A
ALLERGY PANEL (INHALANT) IgE, *D. pteronyssinus, D. farinae,* House dust (Greer Lab), Dog, Cat, Cockroach, Bermuda grass, Johnson grass, *A. fumigatus, A. alternata,* Mould Spore Mix, Latex	GP94B
MALAYSIAN ALLERGY PANEL 1 (FOOD & INHALANT) IgE, Egg White, Egg Yolk, Milk, Wheat, Peanut, Soybean, Squid, Crab, Anchovy, Chicken, Dog dander, Cat dander, Cockroach, *D. pteronyssinus , D. farinae, B. tropicalis*	GP94C
DOMESTIC ALLERGY PANEL IgE, *D. pteronyssinus , D. farinae, B. tropicalis,* House dust (Greer Lab), Cockroach	GP94D
SEAFOOD ALLERGY PANEL IgE, Squid, Crab, Shrimp , Clam, Anchovy	GP94E
PEDIATRIC FOOD ALLERGY PANEL IgE, Egg White, Egg Yolk, Milk, Wheat, Peanut, Soybean, Anchovy, Chicken	GP94F
MALAYSIAN ALLERGY PANEL 2 (FOOD, INHALANT, SEAFOOD, MOULD) IgE, Banana, Beef, Chicken, Orange, Milk, Crab, Egg white, Egg Yolk, Peanut, Shrimp, Soybean, Tuna, Anchovy, Clam, Wheat, *A. alternata, A. fumigatus ,* Bermuda Grass, *C. albicans,* Cat dander, *C. herbarum ,* Cockroach, Dog dander, House Dust (Greer Lab) , Johnson Grass , Latex, *D. farinae , D. pteronyssinus, M. racemosus, P. notatum*	GP94G

2. PROFILE (IMMUNOBLOT: Semi-quantitative)	LIS CODE
ATOPY ALLERGY PANEL IgE, Bermuda grass, Timothy grass, Grass mix 5 (sweet vernal-, Bermuda-, Timothy grass and cultivated rye), Acacia, Australian Pine, Oil palm, *D. pteronyssinus, D. farinae, D. microceras, T. putrescentiae, G. domesticus, B. tropicalis,* Kapok, Feather mix 1 (chicken-, duck-, goose down feathers) , Bovine serum albumin (BSA), Horse, Dog, Cat, *C. albicans,* Mould mix 1 *(P. notatum, C. herbarum, A. fumigatus, A. alternata),* Honey bee venom, Cockroach (German), Wheat flour, Gluten, Egg white, Cow's milk, α-lactalbumin, β-lactoglobulin, Casein, Chocolate, Peanut, Soybean , Hazelnut, Almond, Baker's yeast, Glutamate, Codfish, Tuna, Salmon, Crab, Prawn, Lobster, Duck meat, Beef (cooked), Pork (cooked), Chicken, Lamb meat, Cheddar cheese, Tomato, Garlic, Strawberry, Kiwi, Shellfish mix 1 (spiny lobster, oyster, clam), Coffee, Cross-reactive carbohydrate determinants	GP94H
FOOD ALLERGY PANEL IgE, Egg white, Egg yolk, Cow's milk, Wheat flour, Rice, Sesame, Soybean , Peanut , Hazelnut, Beef (cooked), Pork (cooked), Chicken, Shellfish mix 1 (spiny lobster, oyster, clam), Fish mix 1 (codfish, herring, mackerel, and plaice), Crab, Shrimp/Prawn, Lobster, Blue crab, Chocolate, Glutamate, Cross-reactive carbohydrate determinants	GP94J
FOOD ALLERGY ,PEDIATRIC PANEL IgE, Grass mix 2 (Timothy grass, cultivated rye), Birch, Mugwort, *D. pteronyssinus, D. farinae, Horse,* Dog, Cat, *C. herbarum, A. fumigatus, A. alternata,* Egg white, Egg yolk, Cow's milk, Codfish, α-lactalbumin, β-lactoglobulin, Casein, Bovine serum albumin (BSA), Wheat flour, Rice, Peanut, Soybean, Hazelnut, Carrot, Potato, Apple, Cross-reactive carbohydrate determinants	GP94K
INHALATION ALLERGY PANEL IgE, Tree mix 1 (melaleuca, Australian pine, acacia, eucalyptus and willow), Australian Pine, Acacia, Grass mix 1 (sweet vernal-, Bermuda-, Timothy grass and cultivated rye), Oil palm, House dust mite mix 1 *(D. pteronyssinus and D. farinae),* Cockroach (German), Kapok, Dog, Cat, Cage bird mix 2 (budgerigar-, canary-, parrot-, lorebird-, and finch feathers), Guinea pig, Mouse, Rabbit, Hamster, Mould mix 1 *(P. notatum, C. herbarum, A. fumigatus, A. alternata),* Mould mix 2 *(P. notatum, P. brevicompactum and P. roqueforti), C. albicans, A. pullulans, C. spicifera,* Cross-reactive carbohydrate determinants	GP94L

3. MIX INDIVIDUAL ALLERGEN (ELISA: Quantitative)	LIS CODE
NUT MIX Peanut, Hazel nut, Brazil nut, Almonds, Coconut	fx1
SEAFOOD MIX Fish, Shrimp, Blue mussel, Tuna, Salmon	fx2
CEREAL MIX Wheat, Oats, Maize, Sesame seed, Buckwheat	fx3
COMMON FOOD MIX Egg white, Milk, Fish, Wheat, Peanut, Soybean	fx5E
SPICE MIX Basil, Fennel seed, Ginger, Anise	fx72
MOULD SPORE MIX *P. chrysogenum, C. herbarum, A. fumigatus, A. alternate, C. albicans, S. rostrata*	mx2
PET DANDER MIX Cat Dander ,Dog dander, Guinea pig epithelium, Mouse, Rat	ex2
FEATHER MIX *Goose, Chicken, Duck, Turkey*	ex71
HOUSE DUST MIX *D. pteronyssinus, D. farinae, B. germanica (german cockroach), Hollister-Stier Labs.*	hx2
OCCUPATIONAL CHEMICAL MIX *Ethylene oxide, Phthalic anhydride, Formaldehyde, Chloramin T*	pax6
PHADIATOP INHALANT MIX *Pollens, Mould Spores, Mites, Dander, etc*	s

LL.7-004 - Prenatal Risk Screen Form

LAB BARCODE

LABLINK
MEDICAL LABORATORY

Makmal Perubatan Lablink
14 (129) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel. +603 4023 4586
Fax. +603 4023 4298
Email inquiry@kpjlablink.com
Web www.kpjlablink.com

PRENATAL RISK SCREEN FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Diabetes: ☐ Yes ☐ No Smoker: ☐ Yes ☐ No

Address _____

Referring Doctor's Name and Address

URGENT ☐ PHONE _____
☐ FAX _____
☐ EMAIL _____

Specimen Collection Date (dd/mm/yy)

Specimen Collection Time (hh/mm) AM / PM

Maternal Weight ____ kg

IVF Pregnancy ☐ Yes ☐ No

Previous History of T21, T18, T13, NTD ☐ Yes ☐ No

Foetus ☐ Single ☐ Twin ☐ _____

LMP Date (dd/mm/yy)

EDD (dd/mm/yy)

TEST REQUEST
(Specimen Requirement 5 ml Blood in Plain Container)

☐ **FIRST TRIMESTER SCREENING** **(Test Code:FirstTrim2 Hospital Code: 61040829)**
(Free Beta-HCG & PAPP-A)
Required timing for blood collection is **11 weeks 0 days to 13 weeks 6 days.**

CRL ____ . ____ mm Gestation ____ Weeks ____ Day(s)

NT Measurement ____ . ____ mm By FMF certified sonographer, Code No.: _____

SECOND TRIMESTER SCREENING **(Test Code: DownSnD2 Hospital Code: 61040830)**

☐ **DOUBLE TEST**
(AlphaBeta Test - AFP and Beta-HCG)

Required timing for blood collection is **14 weeks 0 days to 19 weeks 6 days.**

By Ultrasound performed on (dd/mm/yy) (Trans-vaginal / Abdominal scan) Gestation ____ Weeks ____ Day(s)

By Dates of LMP (dd/mm/yy) Gestation ____ Weeks ____ Day(s)

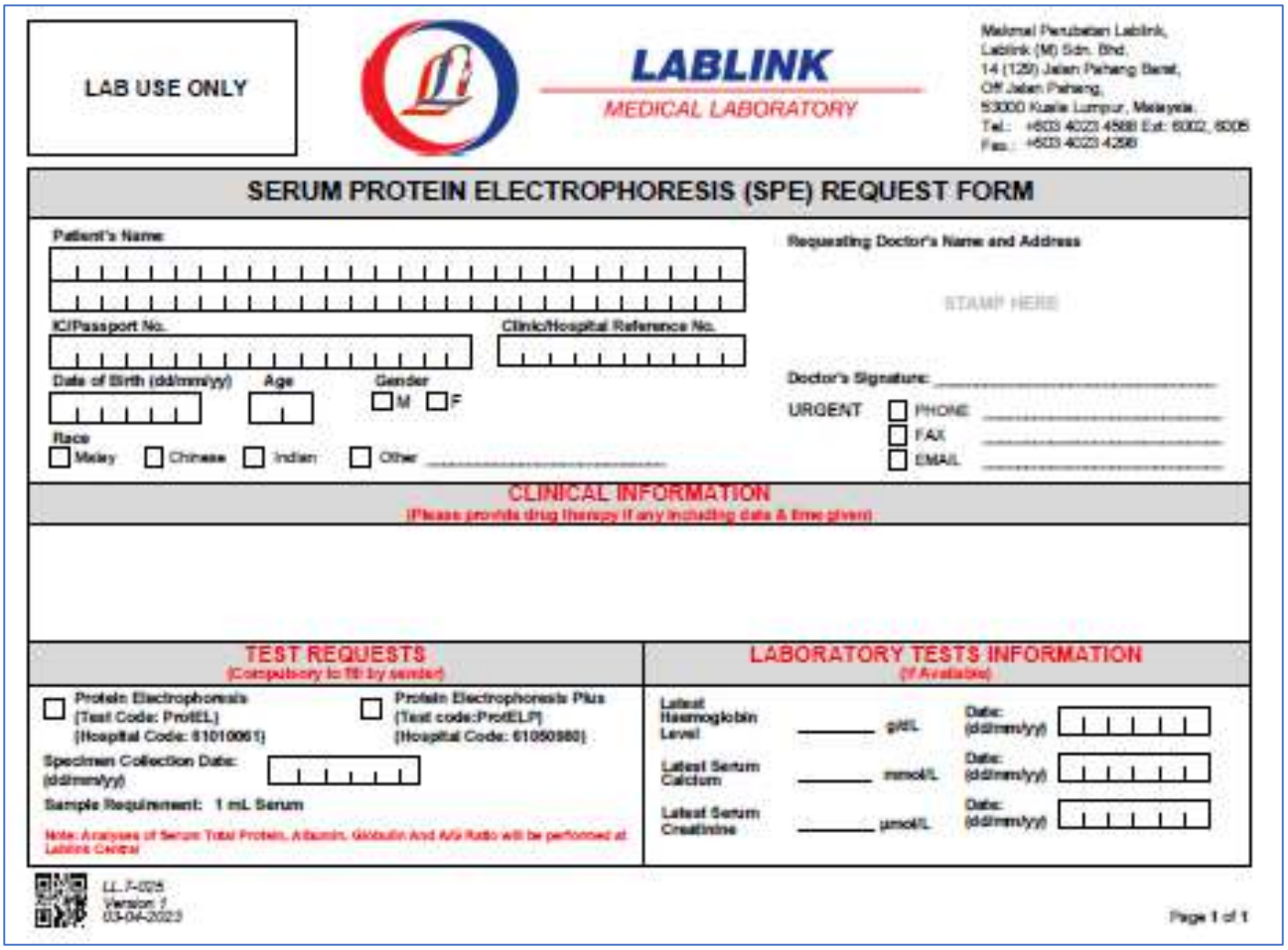
By Clinical Assessment Gestation ____ Weeks ____ Day(s)

CLINICAL HISTORY

Doctor's Signature: _____ Date: _____

LL.7-004
Version 5
06-09-2022

LL.7-025 - Serum Protein Electrophoresis (SPE) Request Form



LAB USE ONLY

LABLINK
MEDICAL LABORATORY

Makmal Perubatan Lablink,
Lablink (M) Sdn. Bhd.
14 (1St) Jalan Pahang Barat,
Off Jalan Pahang,
53000 Kuala Lumpur, Malaysia.
Tel.: +603 4023 4588 Ext: 6002, 6005
Fax.: +603 4023 4256

SERUM PROTEIN ELECTROPHORESIS (SPE) REQUEST FORM

Patient's Name:

IC/Passport No.

Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy)

Age

Gender ☐ M ☐ F

Race ☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: _____

URGENT ☐ PHONE _____ ☐ FAX _____ ☐ EMAIL _____

CLINICAL INFORMATION
(Please provide drug therapy if any including date & time given)

TEST REQUESTS
(Compulsory to fill by sender)

☐ Protein Electrophoresis (Test Code: ProtEL) (Hospital Code: 61010061)

☐ Protein Electrophoresis Plus (Test code:ProtELP) (Hospital Code: 61050080)

Specimen Collection Date: (dd/mm/yy)

Sample Requirement: 1 mL Serum

Note: Analyses of Serum Total Protein, Albumin, Globulin And A/G Ratio will be performed at Lablink Central

LABORATORY TESTS INFORMATION
(If Available)

Latest Haemoglobin Level _____ g/dL Date: (dd/mm/yy)

Latest Serum Calcium _____ mmol/L Date: (dd/mm/yy)

Latest Serum Creatinine _____ µmol/L Date: (dd/mm/yy)

LL.7-025
Version 7
03-04-2023

Page 1 of 1

LL.7-002 - Histopathology Laboratory Request Form

LAB USE ONLY

LABLINK
MEDICAL LABORATORY

Histopathology Laboratory
Makmal Perubatan Lablink
14 (129) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603 4023 4588 Ext: 4010, 4142
Fax.: +603 4023 4298

HISTOPATHOLOGY LABORATORY REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Specimen Collection Date (dd/mm/yy) | Time (hh/mm) AM / PM

No. of Specimen/Container Submitted:

FOR LABORATORY USE

Specimen Received Date (dd/mm/yy) | Time (hh/mm) AM / PM

Pathologist In Charge:

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: _____

URGENT: (Please tick) ☐ PHONE _____ ☐ FAX _____ ☐ EMAIL _____

Patient Type: ☐ Inpatient ☐ Outpatient

Payment Type: ☐ Bill ☐ Cash

CLINICAL INFORMATION

NATURE AND SITE OF SPECIMEN :

DIAGNOSIS :

RELEVANT CLINICAL INFORMATION :

ANY PREVIOUS EXAMINATION WITHIN OR OUTSIDE LABLINK? :

☐ YES ; Details (e.g. Date, Case No.,Results etc.): _____

☐ NO

TEST REQUEST

*Please check (✓) the appropriate box

HISTOPATHOLOGY EXAMINATION FOR:			
☐	ALL BIOPSIES	☐	OTHERS LARGE ORGANS (TUMOUR)
☐	APPENDIX	☐	OTHERS SMALL ORGANS
☐	BIOPSIES / ADDITIONAL SITE	☐	OTHERS SMALL ORGANS (TUMOUR)
☐	BONE MARROW BIOPSY / TREPHINE	☐	PARTIAL GASTRECTOMY
☐	CERVICAL POLYPS	☐	PROSTATIC CHIPS
☐	CONE BIOPSY	☐	RADICAL MASTECTOMY
☐	ENDOMETRIAL CURRETTING	☐	RENAL BIOPSY
☐	FALLOPIAN TUBE	☐	SINGLE OVARY
☐	FIBROIDS	☐	SKIN BIOPSY
☐	GALLBLADDER	☐	TWO OVARIES
☐	GUT RESECTION	☐	UTERUS & APPENDAGES
☐	LYMPH NODES	☐	UTERUS ALONE
☐	NEPHROTOMY	☐	UTERUS / DYSPLASIA
☐	OTHERS LARGE ORGANS	☐	VAS DEFERENS

ADDITIONAL TEST	
☐	ER / PR
☐	HER-2 DUAL IN SITU HYBRIDISATION (ISH)
☐	IMMUNOFLUORESCENCE
☐	IMMUNOHISTOCHEMISTRY (IHC)

☐	MISCELLANEOUS

NO RESULT WILL BE REPORTED UNLESS THE ABOVE PARTICULARS ARE GIVEN

LL.7-002
Version 1
10-01-2019

LL.9-001- Frozen Section Request Form

LABLINK MEDICAL LABORATORY	Frozen Section	Histopathology

REQUEST INFORMATION

i. PATIENT DETAILS

Name : _____ Lab No. : _____

Age : _____ Gender : _____ Race : _____

Date & Time of Procedure : _____ Previous HPE No. *(if applicable)* : _____

ii. TYPE OF SPECIMEN(S) AND FROZEN SECTION PURPOSE (e.g. Margin? Diagnosis? Malignancy etc.)

1. _____
2. _____

iii. REQUESTOR DETAILS

Hospital : _____

Doctor/Surgeon's Name : _____

Contact No : _____

Operation Theatre No./ext : _____

CLS/MLT In charge : _____

FOR HISTOPATHOLOGY LABORATORY USE ONLY

i. BOOKING INFORMATION

Booking Date & Time : _____

Booking request received by : _____ (Histopathology CLS/MLT)

Accepted & Approved by : _____ (Histopathologist)

Date & Time : _____

ii. SPECIMEN INFORMATION

Received Date & Time : _____

Processed by : _____ (Histopathology CLS/MLT)

iii. REPORTING

Verbal Report as : _____

Reported Date & Time : _____

Reporting Histopathologist : _____ (Name & Signature)

Reference: Work Instruction A9QD015 - Frozen Section

LL.9-001
Version 3
05-02-2024

Page **1** of **1**

LL.9-008 - Histopathology Specimen Rejection Form

LABLINK MEDICAL LABORATORY	Histopathology Specimen Rejection Form	Lab No.

Patient's Name:_____

MRN/ID No./DOB:_____ Clinic/Hosp.:_____

Date & Time Received:_____ Requesting Doctor's Name:_____

To Whom It May Concern,

In order for us to comply to MS ISO 15189:2014 and to ensure the quality of results produced, we would like to inform that your request to perform testing on the specimen for the above patients is rejected/on hold due to the following reasons:

No	Rejection Criteria	Tick (/)	Remarks
	SECTION A : REQUEST FORM		
1.	Incomplete of two identifiers of patient on request form or/and specimen container; Name **AND** NRIC/MRN/D.O.B		
2.	No Requesting Physician Name/Signature		
3.	No nature of specimen stated on request form		
4.	Incomplete diagnosis/clinical details		
	SECTION B : SPECIMEN CONTAINER		
1.	Improper fixative		
2.	No Fixative in specimen container		
3.	Illegible information on request form		
4.	No specimen in container		
5.	Illegible information on specimen container		
6.	No label of nature and anatomical site of specimen on specimen container		
7.	Information on specimen label mismatch with request form		
8.	Information on specimen container does not match with specimen received		
9.	Number of specimen received do not match with the number of specimen stated on the request form		
10.	Specimen leaked from container (Describe fixative quality)		
11.	Others (*Please specify*)		

Please take note that the TAT for processing of orders that have been rejected will exceed established TAT. Request order will NOT be processed until corrective action has been taken. Specimen will be hold in non-conformance box at room temperature until rectification done.

Informed to (Sender): _____ Informed by (Histopathology Personnel): _____ Date & Time: _____

Corrective Action:_____

_____

***I affirm the accuracy of the corrected information provided and request that the specimen to be processed.**

Consultan/Surgeon/Lab Manager/Lab In Charge
(Name & Stamp):

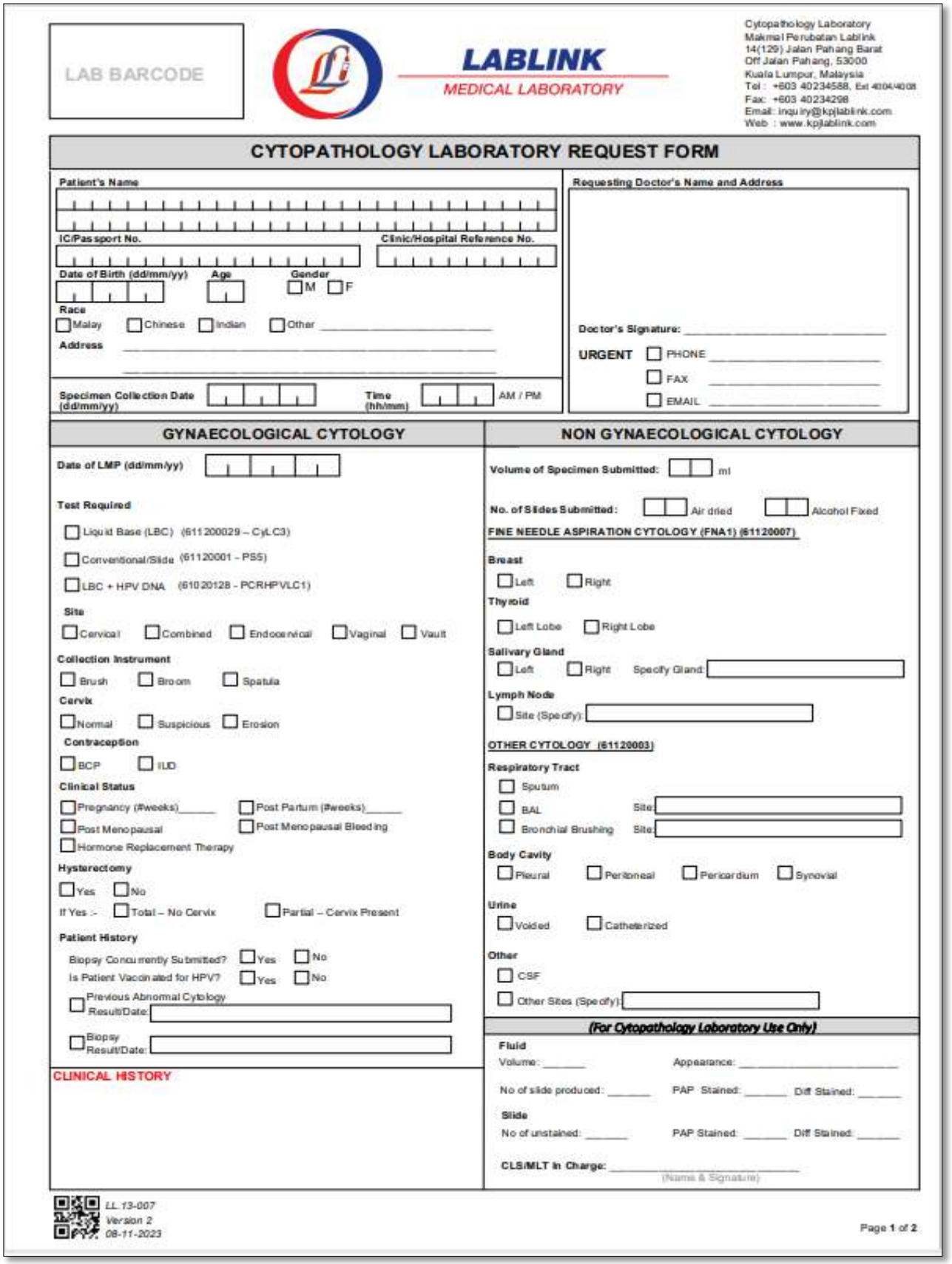
Signature:

Date & Time:

LL.9-008
Version 1
30-05-2018

Page **1** of **1**

LL.13-007- Cytology Request Form



LAB BARCODE

LABLINK
MEDICAL LABORATORY

Cytopathology Laboratory
Makmal Perubatan Lablink
14(129) Jalan Pahang Barat
Off Jalan Pahang, 53000
Kuala Lumpur, Malaysia
Tel : +603 40234588, Ext 4004/4008
Fax: +603 40234298
Email: inquiry@kpjlablink.com
Web : www.kpjlablink.com

CYTOPATHOLOGY LABORATORY REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐M ☐F

Race
☐Malay ☐Chinese ☐Indian ☐Other _____

Address _____

Specimen Collection Date (dd/mm/yy) | Time (hh/mm) AM / PM

Requesting Doctor's Name and Address

Doctor's Signature: _____

URGENT ☐PHONE _____
☐FAX _____
☐EMAIL _____

GYNAECOLOGICAL CYTOLOGY

Date of LMP (dd/mm/yy)

Test Required
☐Liquid Base (LBC) (611200029 – CyLC3)
☐Conventional/Slide (61120001 – PS5)
☐LBC + HPV DNA (61020128 - PCRHPVLC1)

Site
☐Cervical ☐Combined ☐Endocervical ☐Vaginal ☐Vault

Collection Instrument
☐Brush ☐Broom ☐Spatula

Cervix
☐Normal ☐Suspicious ☐Erosion

Contraception
☐BCP ☐IUD

Clinical Status
☐Pregnancy (#weeks)_____ ☐Post Partum (#weeks)_____
☐Post Menopausal ☐Post Menopausal Bleeding
☐Hormone Replacement Therapy

Hysterectomy
☐Yes ☐No
If Yes :- ☐Total – No Cervix ☐Partial – Cervix Present

Patient History
Biopsy Concurrently Submitted? ☐Yes ☐No
Is Patient Vaccinated for HPV? ☐Yes ☐No
☐Previous Abnormal Cytology Result/Date:
☐Biopsy Result/Date:

CLINICAL HISTORY

NON GYNAECOLOGICAL CYTOLOGY

Volume of Specimen Submitted: ml

No. of Slides Submitted: Air dried | Alcohol Fixed

FINE NEEDLE ASPIRATION CYTOLOGY (FNA1) (61120007)

Breast
☐Left ☐Right

Thyroid
☐Left Lobe ☐Right Lobe

Salivary Gland
☐Left ☐Right Specify Gland:

Lymph Node
☐Site (Specify):

OTHER CYTOLOGY (61120003)

Respiratory Tract
☐Sputum
☐BAL Site:
☐Bronchial Brushing Site:

Body Cavity
☐Pleural ☐Peritoneal ☐Pericardium ☐Synovial

Urine
☐Voided ☐Catheterized

Other
☐CSF
☐Other Sites (Specify):

(For Cytopathology Laboratory Use Only)

Fluid
Volume: _____ Appearance: _____
No of slide produced: _____ PAP Stained: _____ Diff Stained: _____

Slide
No of unstained: _____ PAP Stained: _____ Diff Stained: _____

CLS/MLT in Charge: _____
(Name & Signature)

LL.13-007
Version 2
08-11-2023

Page 1 of 2

(FOR CYTOPATHOLOGY LABORATORY USE ONLY)

Cytopathology Gynaecology Audit Form

LAB BARCODE

Type of specimen received

- ☐ Conventional
- ☐ Liquid based cytology

Site

- ☐ Cervix
- ☐ Vault

TZ component

- ☐ Absent
- ☐ Present: ☐ Endocervical ☐ Metaplastic

Sample adequacy

- ☐ Satisfactory for evaluation
- ☐ Satisfactory for evaluation with:
  - ☐ Relatively scanty squamous cells
  - ☐ Partially obscuring inflammatory cells
  - ☐ Partially obscuring blood
  - ☐ Areas of suboptimal fixations
  - ☐ Areas of suboptimal artifacts
- ☐ Unsatisfactory for evaluation due to:
  - ☐ Scanty squamous cells
  - ☐ Thick obscuring blood
  - ☐ Thick obscuring inflammatory cells
  - ☐ Suboptimal fixations
  - ☐ Mainly endocervical cells present
  - ☐ Other:_____

- ☐ **NILM**
  - ☐ Organism present: _____
  - ☐ Reactive, inflammation, radiation & IUD changes
  - ☐ Endometrial cells present
- ☐ **Epithelial cell abnormality**
  - ☐ Squamous: _____
  - ☐ Glandular: _____

Suggestion :

- ☐ Advise appropriate treatment as clinically indicated
- ☐ Repeat smear in 3 / 3-6 / 6 months / 1 year
- ☐ Repeat smear as scheduled
- ☐ Repeat smear earlier than screening interval
- ☐ Correlate with clinical findings, patient's age, hormonal and menstrual status
- ☐ Advise colposcopic examination
- ☐ Advise colposcopic and biopsy
- ☐ Advise further investigations _____
- ☐ Refer Gynaecologist for _____
- ☐ Other: _____

Activity	Date	Name	Interpretation
Cytopreparation			
Primary screener			
Rapid screener (Pathologist)			

Review of Previous Cytology Smers for Patient with Current Abnormal Smears

Date Reviewed:			Review of previous slide(s)	
No.	Prev. Cytology Lab No.	Date reported & diagnosis	Primary screener	Rapid screener

Comment:

LL.13-007
Version 2
08-11-2023

Page 2 of 2

LL.7-006 - Microbiology Laboratory Request Form

LAB BARCODE

LABLINK
MEDICAL LABORATORY

Microbiology Laboratory
Makmal Perubatan Lablink
14 (128) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603 4023 4588 Ext: 5000, 5007
Fax.: +603 4023 4296

MICROBIOLOGY LABORATORY REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Specimen Collection Date (dd/mm/yy)

Time of Collection (hh/mm) AM / PM

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: _____

URGENT: (Please tick) ☐ PHONE _____ ☐ FAX _____ ☐ EMAIL _____

RELEVANT CLINICAL INFORMATION *Please include antimicrobial therapy if any

SPECIMEN DETAILS *Please check (✓) the specimen(s) sent

☐ Abscess[1,2]	☐ Cervical Swab	☐ Groin Swab	☐ Pus Aspirate[1,2]	☐ Sterile Body Fluid in Blood Culture Bottle (Aerobic)[1]
☐ Actis swab	☐ Colon Biopsy	☐ Hair	☐ Pus Swab[1,2]	☐ Sterile Body Fluid in Blood Culture Bottle (Anaerobic)[1]
☐ Bartholin Cyst / Abscess[1]	☐ CVL Tip	☐ High Vaginal Swab	☐ Rectal Swab	☐ Tip[1]
☐ Bile Fluid / Swab	☐ Cyst[1]	☐ Knee Aspirate[1,2]	☐ Semen	☐ Tissue[1,2]
☐ Blood or Bone Marrow	☐ Discharge[1,2]	☐ Low Vaginal Swab	☐ Skin Scrapping[1]	☐ Tracheal Aspirate
☐ Bone[1,2]	☐ Ear Swab[1]	☐ Nail Scrapping[1]	☐ Skin Swab[1]	☐ Urethral Swab
☐ Bronchial Lavage	☐ Environmental Screen[1]	☐ Nasal Swab	☐ Sputum	☐ Urine
☐ Bronchial Washing	☐ ETT Secretion	☐ Penile Swab	☐ Stool/Faeces	☐ Wound Swab[1]
☐ Catheter Tip[1]	☐ Eye Swab[1]	☐ Peritoneal Fluid[1,2]	☐ Synovial Fluid[1,2]	☐ Other: _____
☐ CSF	☐ Gastric Biopsy	☐ Pleural Fluid[1]	☐ Throat Swab	

[1]OTHER SPECIMEN DETAILS
Site: ☐ Left ☐ Right From what/which organ/body/area: _____

NOTE: Please refer the details of specimen mark "1" and "2" at the back of this form

TEST REQUEST *Please check (✓) the test required

CULTURE & SENSITIVITY TEST

✓	Counter code	TRC test	LIS code
☐	01020102	*Alert Organism Surveillance Culture	AlertScreen
☐	01020101	Bacteria ID & Sensitivity	BacSen
☐	01020102	Bacteria ID	BacID
☐	01020103	Bacteria Susceptibility Testing	BacSen
☐	01020004	Blood Culture & Sensitivity, Aerobic	CBSA
☐	01020004	Blood Culture & Sensitivity, Anaerobic	CBSA
☐	01020004	Blood Culture & Sensitivity, Paediatric	CBSA
☐	01020170	Blood Fungal Culture	CFBA
☐	01020144	*CRE Culture	CREscr
☐	01020003	Culture & Sensitivity, Aerobic	CS
☐	01020004	Culture & Sensitivity, Anaerobic	CSAna
☐	01020105	Culture & Sensitivity, Aerobic & Anaerobic	AeAnCS
☐	01020164	Ear Specimen Culture & Sensitivity	EarSpCS
☐	01020035	Environmental Culture	Env
☐	01020104	Comprehensive Environmental Culture	Genl
☐	01020106	Eye Specimen Culture & Sensitivity	EyeSpCS
☐	01020005	*Fungal Culture	CF
☐	01020168	*Fungal Culture, Extended	CFX
☐	01020056	Fungal ID	FungalID
☐	01020155	Group B Streptococcus Screening by Culture	GBStrep
☐	01020171	Helicobacter pylori Culture & Sensitivity	HPCS
☐	01020196	HVS Culture & Sensitivity	CSHVS
☐	01020100	MRSA Infection Control Screen	MRSAIC
☐	01020172	Yeast Culture & Sensitivity	YeastS
☐	01020056	Yeast Identification	YeastID
☐	01020057	Yeast Sensitivity	YeastSn
☐	01020174	Sensitivity, Anaerobic	AnaSen
☐	01020175	*Stool Culture & Sensitivity, Basic - Panel 1	sCS1

MYCOBACTERIUM TEST

✓	Counter code	TRC test	LIS code
☐	01020133	Atypical Mycobacterium Culture	CultAty
☐	01020167	MTB Liquid Culture	CultMycLiq
☐	01020168	MTB Liquid Sensitivity - 1st Line Agents	SenMycLiq
☐	01020003	MTB Liquid Culture & Sensitivity - 1st Line Agents	CSatMycLiq
☐	01020004	Non-Tuberculosis Mycobacterium (NTM) Culture & Sensitivity	CSatMyc
☐	01020169	Non-Tuberculosis Mycobacterium (NTM) Sensitivity	SenMyc
☐	01020154	PCR for MTB & Extensive Drug Resistance (XDR) Detection	PCRMtbXDR
☐	01020153	PCR for MTB & Multi Drug Resistance (MDR) Detection	PCRMtbMDR
☐	01020152	PCR for MTB & Non-Tuberculosis Mycobacterium (NTM) Detection	PCRMtbNTM
☐	01020155	PCR MTB, Multi-Drug & Extensive Drug Resistance Detection	PCRMtbXDR
☐	01020150	PCR MTB & NTM Detection for FFPE Tissue Block	PCRMtbNTM
☐	01020115	Rapid PCR for Detection of MTB DNA and Rifampicin Resistance	PCRMtbRif

RAPID TEST

✓	Counter code	TRC test	LIS code
☐	01020043	Adenovirus Antigen, Stool	Adenoty

MICROSCOPY TEST

✓	Counter code	TRC test	LIS code
☐	01020014	AFB Stain	AFBSt
☐	01020040	Direct Microscopy (Wet Preparation)	WetPrep
☐	01020048	Gram Stain	GramSt
☐	01020013	Indian Ink Stain	CNFtx
☐	01020007	KOH Preparation for Fungal	KOH
☐	01060007	Stool Ova & Cyst	OCSt
☐	01020175	TB Auramine O Fluorescent Stain	AFBAuStain

OTHER TEST (Please specify):

*Please refer the details of each panel test marked (*) at the back of this form

DETAILS

*Details of Culture & Sensitivity Test

Fungal Culture (CF)	*Fungal Culture (CF1)*
Ear & Eye specimen; Environmental sampling (ENV); Nasal, Axilla, Groin & Rectal swab; Skin, Hair & Nails; Throat, Genital & Urine.	Sputum, Bronchial Lavage, Tracheal Aspirate; Sterile Body Sites:- Maxillary Sinus, Biopsy, Polyps, Cystic Masses, Tissue, Wound Specimen, CSF, Peritoneal Fluid, Pleural Effusion, Synovial Fluid, Knee Aspirate, Blood Culture, Bone, Pus, Abscess, Aspirate etc.

Stool Culture & Sensitivity Panel 1
(Basic Bacterial Enteric Pathogen)

Salmonella species;
Salmonella typhi;
Shigella species;
Vibrio cholerae;
Vibrio parahaemolyticus

Carbapenem Resistant Enterobacteriaceae (CRE)

Carba-NP enzymatic detection;
Etest to determine minimum inhibitory concentration

Alert Organism Screening

Methicillin Resistant *Staphylococcus aureus* (MRSA);
Extended Spectrum Beta-Lactamase (ESBL) microorganism;
Carbapenem Resistant Enterobacteriaceae (CRE);
Multidrug Resistant (MDR) *Acinetobacter baumannii/Pseudomonas aeruginosa*;
Extremely Drug Resistant (XDR) *Acinetobacter baumannii/Pseudomonas aeruginosa*;
Vancomycin Resistant Enterococcus (VRE)

Specimen Details (Marked with "2" and "3")

Sterile Body Fluid:	*Kindly use anaerobic transport media:*
Bone marrow Knee aspirate Liver abscess Peritoneal fluid Pleural fluid Pus aspirate Pericardial fluid Synovial fluid	Cooked Meat Broth

FOR LAB USE ONLY

Lab. No.
Barcode Here

Primary Receiving Information	Secondary Receiving Information
Date Received: _____	Date Received: _____
Time Received: _____	Time Received: _____
	Sample Temp. (°C) upon Receiving: _____
Received by: _____	Received by: _____

Additional Information:

FOR LAB USE ONLY

*Please check (√) and fill in the appropriate box

Specimen Registration by: _____

Specimen Batch Registration by: _____

Specimen Processed by: _____

MACROSCOPIC EXAMINATION

Urine Specimen

Colour: ◯Yellow ◯Brown ◯Blood Stain ◯Amber ◯Green ◯Other: _____
Turbidity: ◯Clear ◯Cloudy

Sputum Specimen

Appearance: ◯Purulent ◯Mucoid ◯Salivary ◯Mucopurulent ◯Mucosalivary ◯Contains Blood

Stool Specimen

Consistency (Based on Bristol Stool Chart):

◯Type 1 ◯Type 2 ◯Type 3

◯Type 4 ◯Type 5 ◯Type 6

◯Type 7

Blood Stain: ◯Not Seen ◯Seen
Mucous: ◯Not Seen ◯Seen

MICROSCOPIC EXAMINATION

Wet Preparation:

WBC: _____ ; Unit: ◯pL/mL ◯hpf
RBC: _____ ; Unit: ◯pL/mL ◯hpf
Epithelial Cell: ◯Not Seen ◯Occ. ◯1+ ◯2+ ◯3+
Bacteria: ◯Not Seen ◯Occ. ◯1+ ◯2+ ◯3+
Monilia: ◯Not Seen ◯Seen
Trichomonas vaginalis: ◯Not Seen ◯Seen

Gram Stain:

Polymorph: _____ /hpf
Epithelial Cell (Sputum, Bl. Lavage, Tracheal Asp.): _____ /hpf
Epithelial Cell (Genital Specimen): ◯Not Seen ◯Occ. ◯1+ ◯2+ ◯3+
Gram Negative Intracellular Diplococci: ◯Not Seen ◯Seen
Clue Cell: ◯Not Seen ◯Seen
Monilia: ◯Not Seen ◯Seen
Gram Positive Cocci: ◯Not Seen ◯Seen
Gram Positive Rod: ◯Not Seen ◯Seen
Gram Negative Rod: ◯Not Seen ◯Seen

AFB Stain:

◯Not Seen (0 AFB /300 hpf)
◯_____ /100 hpf (1 - 9 AFB /100 hpf)
◯1+ (10 - 99 AFB /100 hpf)
◯2+ (1 - 10 AFB in each hpf /50 hpf)
◯3+ (>10 AFB in each hpf /20 hpf)

INCUBATION INFORMATION

Date & Time Start: _____
Date & Time End: _____
Duration (Hours): _____

LL-T-008
Version 7
18-03-2021

Page 2 of 2

LL.7-008 - Molecular Diagnostics Laboratory (MDL) Request Form

LAB BARCODE

LABLINK
MEDICAL LABORATORY

Molecular Diagnostics Laboratory
Makmal Perubatan Lablink
14 (1229) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603-4023 4588 Ext: 6002, 6005
Fax.: +603-4023 4296

MOLECULAR DIAGNOSTICS LABORATORY (MDL) REQUEST FORM

Patient's Name

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other

Specimen Collection Date (dd/mm/yy) | Time of Collection (hh/mm) ☐☐☐☐ AM / PM

Requesting Doctor's Name and Address

STAMP HERE

Doctor's Signature: .....

URGENT: ☐ PHONE ..... ☐ FAX ..... ☐ EMAIL .....

RELEVANT CLINICAL INFORMATION *Please include antimicrobial therapy if any

SPECIMEN DETAILS *Please check (✓) the specimen(s) sent

☐ SurePath	☐ Blood in Plain Tube	☐ CSF	☐ NP Aspirate	☐ Nasal Washes	☐ NOS Swab
☐ LBC	☐ Blood in EDTA	☐ Sputum	☐ Nasal Swab	☐ OP Swab	☐ Other: .....
☐ Cervical Swab	☐ Serum	☐ BAL	☐ Throat Swab	☐ Stool	
☐ Genital Swab	☐ Plasma	☐ Tracheal Aspirate	☐ NP Swab	☐ Urine	

TEST REQUEST *Please check (✓) the test(s) required

RESPIRATORY INFECTIONS

- ☐ 610201B1 PCR for Covid-19 SARS-CoV-2 RNA Detection (PCRcovid19)
- ☐ 610201T3 PCR for Respiratory Pathogen Panel; 33 Targets (PCR33rppE)
- ☐ 610201B0 PCR for Respiratory Bacterial Pathogen Panel; 7 Targets (PCRRB1)
- ☐ 610201D7 PCR for MERS-CoV RNA Detection (PCRmersCoV)

MENINGITIS, CENTRAL NERVOUS SYSTEM (CNS) INFECTIONS

- ☐ 610201A8 Rapid PCR for Meningitis/Encephalitis Panel; 14 Targets (PCRmeniR1)
- ☐ 610201B0 PCR for Meningitis Viral Pathogen Panel; 12 Targets (PCRmeniV)
- ☐ 610201B6 PCR for Meningitis Bacterial Pathogen Panel; 6 Targets (PCRmeniB)

GASTROINTESTINAL INFECTIONS

- ☐ 610201E7 Rapid PCR for Gastrointestinal Panel; 22 Targets (PCRGI1)
- ☐ 610201E2 PCR for Gastrointestinal Viral Pathogen Panel; 6 Targets (PCRGIV)
- ☐ 610201E3 PCR for Gastrointestinal Bacterial Pathogen Panel; 7 Targets (PCRGIB)

HEPATITIS & HIV-1 INFECTIONS

- ☐ 610201J6 Rapid PCR for HCV Viral Load (PCRhcvVLR)
- ☐ 610402B0 Rapid PCR for HBV Viral Load (PCRhbvQR)
- ☐ 610201J4 Rapid PCR for HIV-1 Qualitative (PCRhivQLR)
- ☐ 610201J5 Rapid PCR for HIV-1 Viral Load (PCRhivVLR)

BLOOD DONOR SCREENING

- ☐ 610205D70 Nucleic Acid Testing (NAT) for Blood Donor Screening (NAATI , NATbd)

TROPICAL AND EMERGING INFECTIOUS DISEASES

- ☐ 610201A6 PCR for Tropical Fever Pathogen Panel; 7 Targets (PCRfev1)
- ☐ 610201A8 PCR for Dengue Differentiation Panel; 4 Targets (PCRdenDF1)
- ☐ 610201D71 PCR for Leptospira DNA Detection (PCRlepto)
- ☐ 610201B8 PCR for Zika Virus RNA Detection (PCRzikV1)
- ☐ 610201A9 PCR for Plasmodium (Malaria) Differentiation Panel; 5 Targets (PCRmpDF1)

SEXUALLY TRANSMITTED INFECTIONS

- ☐ 610201B9 PCR for STI Essential Screening Panel; 7 Targets (PCRsti1)
- ☐ 610201B75 PCR for STI Genital Ulcer Panel; 7 Targets (PCRsti4)
- ☐ 610201J27 PCR for Human Papilloma Virus (HPV) Genotyping; 28 Genotypes (PCRhpv1)

THALASSEMIA

- ☐ 610300B0 PCR for Alpha-Thalassemia DNA Detection; 15 Deletions/Mutations (PCRaThal)

MYCOBACTERIUM TUBERCULOSIS INFECTIONS

- ☐ 610201I15 Rapid PCR for Detection of MTB DNA and Rifampicin Resistance (PCRtbRIFRp)
- ☐ 610201I53 PCR for MTB and Multi Drug Resistance Detection (PCRmtbMDR1)
- ☐ 610201I52 PCR for MTB and Non-Tuberculosis Mycobacterium Detection (PCRmtbNTM1)
- ☐ 610201I55 PCR for MTB and Multi Drug Resistance & Extensively Drug Resistance Detection (PCRmtbXMR1)
- ☐ 610201I54 PCR for MTB & Extensively Drug Resistance Detection (PCRmtbXDR1)
- ☐ 610201I60 PCR for MTB and Non-Tuberculosis Mycobacterium Detection for FFPE Tissue Block (PCRmtbNTM2)

OTHER

- ☐ .....

NOTE: Please refer the details of each panel at the back of this form

LL.7-008
Version 5
20-06-2022

Page 1 of 2

DETAILS OF TEST PANEL

MENINGITIS, CENTRAL NERVOUS SYSTEM (CNS) INFECTIONS

Rapid PCR for Meningitis/Encephalitis Panel, PCRmensR1 (61020145)

Bacterial Targets - *Escherichia coli* K1, *Haemophilus influenzae*, *Listeria monocytogenes*, *Neisseria meningitidis*, *Streptococcus agalactiae* & *Streptococcus pneumoniae*

Viral Targets - Cytomegalovirus, Enterovirus, Herpes Simplex virus 1 & 2, Human Herpes virus 6, Human Parechovirus & Varicella Zoster virus

Fungal Target - *Cryptococcus neoformans/Cryptococcus gattii*

PCR for Meningitis Viral Pathogen Panel, PCRmen/2 (61028160)

Cytomegalovirus (CMV), Epstein-Barr virus (EBV), Adenovirus, Herpes Simplex virus 1 & 2 (HSV1&2), Varicella Zoster virus (VZV), Enterovirus, Parechovirus, Human Herpes virus 6 & 7 (HHV6&7) & Parvovirus B19 (B19), Mumps virus.

PCR for Meningitis Bacterial Pathogen Panel, PCRmen/3 (61028166)

Neisseria meningitidis, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Streptococcus agalactiae* (Group B Streptococcus/GBS), *Listeria monocytogenes* & *Escherichia coli* K1

SEXUALLY TRANSMITTED INFECTIONS

PCR for STI Essential Screening Panel, PCRsti1 (61028159)

Bacterial Targets - *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Mycoplasma hominis*, *Mycoplasma genitalium*, *Ureaplasma urealyticum* & *Ureaplasma parvum*

Parasitic Target - *Trichomonas vaginalis*

PCR for STI Genital Ulcer Panel, PCRsti4 (61028175)

Viral Targets - Cytomegalovirus (CMV), Herpes Simplex Virus Type 1 (HSV1), Herpes Simplex Virus Type 2 (HSV2), *Varicella-Zoster Virus (VZV)*

Bacterial Targets - *Chlamydia trachomatis* serovar L, *Haemophilus ducreyi*, *Treponema pallidum*

PCR for HPV Genotyping, PCRhpv1 (61020127)

19 High-risk HPV genotype:	16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 69, 73, 82
9 Low-risk HPV genotype:	6,11, 40, 42, 43, 44, 54, 61, 70

MYCOBACTERIUM TUBERCULOSIS INFECTIONS

Rapid PCR MTB/RIF, PCRtbRIFRp (61020116)

Detect *Mycobacterium tuberculosis* complex (MTBC) and resistance to Rifampicin (RIF) in *rpoB* gene.

PCR for MTB & Multi Drug Resistance (MDR) Detection, PCRmtbMDR1 (61028153)

Detect *Mycobacterium tuberculosis* complex (MTBC), detect 7 mutations causing isoniazid resistant in *katG* gene and *inhA* promoter region and detect 18 mutations causing rifampicin resistant in *rpoB* gene.

PCR for MTB & NTM, PCRmtbNTM1 (61028152)

Detect *Mycobacterium tuberculosis* complex (MTBC) and also Non-tuberculous mycobacterium (NTM) DNA.

PCR for MTB & Extensively Drug Resistance (XDR) Detection, PCRmtbXDR1 (61028154)

Detect Mycobacterium tuberculosis complex (MTBC) DNA, detect 7 mutations causing fluoroquinolone resistant in *gyrA* gene, 6 mutations causing injectable drugs resistant in *rrs* gene and *eis* promoter region.

PCR for MTB & Multi Drug Resistance (MDR) & Extensively Drug Resistance Detection, PCRmtbXMR1 (61028156)

Detect *Mycobacterium tuberculosis* complex (MTBC) DNA, detect 7 mutations causing isoniazid resistant in *katG* gene and *inhA* promoter region, detect 18 mutations causing rifampicin resistant in *rpoB* gene, detect 7 mutations causing fluoroquinolone resistant in *gyrA* gene, 6 mutations causing injectable drugs resistant in *rrs* gene and *eis* promoter region.

PCR for MTB & NTM Detection for FFPE Tissue Block, PCRmtbNTM2 (61028180)

Detect *Mycobacterium tuberculosis* complex (MTBC) and also Non-tuberculous mycobacterium (NTM) DNA using Formalin-Fixed Paraffin-Embedded (FFPE) tissue.

BLOOD DONOR SCREENING

NAT for Blood Donor Screening (NAATi, NATbd) (61020070)

HIV-1 RNA, HIV-2 RNA, HBV DNA & HCV RNA

RESPIRATORY INFECTIONS

PCR for Respiratory Pathogen Panel, PCR33rpp2 (61028173)

Viral Targets - Influenza A, Influenza B, Influenza C, Influenza A(H1N1) swl, Human Rhinovirus, Human Coronaviruses (NL63, 229E, OC43, HKU1), Human Parainfluenza (1, 2, 3, 4), Human Metapneumoviruses A/B, Human Bocavirus, Human Respiratory Syncytial Viruses A/B, Human Adenovirus, Enterovirus, Human Parechovirus

Bacterial Targets - *Chlamydophila pneumoniae*, *Streptococcus pneumoniae*, *Haemophilus influenzae B*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Legionella pneumophila1,orgbeaches*, *Salmonella spp.*, *Moraxella catarrhalis*, *Bordetella spp. (except Bordetella pertussis)*, *Haemophilus influenzae*, *Mycoplasma pneumoniae*

Fungal Target - *Pneumocystis jirovecii*

PCR for Respiratory Bacterial Pathogen Panel, PCRRB1 (61020150)

Chlamydophila pneumoniae, *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Bordetella pertussis*, *Bordetella parapertussis*, *Mycoplasma pneumoniae*, *Legionella pneumophila*

GASTROINTESTINAL INFECTIONS

Rapid PCR for Gastrointestinal Panel, PCRGI1 (61028157)

Bacterial Targets - *Campylobacter sp. (jejuni/coli/upsaliensis)*- *Clostridium difficile* (toxin A/B), *Plesiomonas shigelloides*, *Salmonella sp.*, *Vibrio sp. (parahaemolyticus/vulnificus/cholerae)* including specific identification of *Vibrio cholerae*, *Yersinia enterocolitica*, *Enteroaggregative Escherichia coli* (EAEC), *Enteropathogenic Escherichia coli* (EPEC), *Enterotoxigenic Escherichia coli* (ETEC) *lt/st*, *Shiga-like toxin-producing Escherichia coli* (STEC) *stx1/stx2* (including specific identification of *E.coli* O157 serogroup within STEC), *Shigella/Enteroinvasive Escherichia coli* (EIEC)

Viral Targets - Adenovirus F 40/41, Astrovirus, Norovirus GI/GII, Rotavirus A & Sapovirus (I,II, IV & V)

Parasitic Targets - *Cryptosporidium sp.*, *Cyclospora cayetanensis*, *Entamoeba histolytica* & *Giardia lamblia* (also known as *G.intestinalis*, *G.duodenalis*)

PCR for Gastrointestinal Viral Pathogen Panel, PCRGI2 (61028162)

Norovirus GI, Norovirus GII, Rotavirus A, Adenovirus F, Astrovirus, Sapovirus

PCR for Gastrointestinal Bacterial Pathogen Panel, PCRGI3 (61028163)

Campylobacter spp., *Clostridium difficile* toxin B, *Salmonella spp.*, *Enteroinvasive E. coli (EIEC)/ Shigella spp.*, *Vibrio spp.*, *Yersinia enterocolitica*, *Aeromonas spp.*

TROPICAL AND EMERGING INFECTIOUS DISEASES

PCR for Tropical Fever Pathogen Panel, PCRfv1 (61020146)

Viral Targets - Chikungunya virus, West Nile virus, Dengue virus

Bacterial Targets - *Salmonella spp.*, *Rickettsia spp.*, *Leptospira spp.*

Parasitic Target - *Plasmodium spp.*

PCR for Dengue Differentiation Panel, PCRdenDF1 (61020148)

Dengue virus serotype 1, 2, 3 & 4

PCR for Plasmodium (Malaria) Differentiation Panel, PCRmpDF1 (61020149)

P. falciparum, *P. vivax*, *P. ovale*, *P. malariae* & *P. knowlesi*

THALASSEMIA

PCR for Alpha-Thalassemia DNA Detection, PCRaThal (61030090)

7 deletions: $--^{SEA}$, $--^{MED}$, $--^{FIL}$, $--^{THAI}$, $-(\alpha)^{20.5}$, 3.7 kb, 4.2 kb

8 mutations:

Hb - CD142, CD125, CD59, CD35, CD142
HBA2 - c.300+34G>A
A2 - gene initiation codon mutation
3 bp deletion - CD30

LL 7-008
Version 5
25-08-2022

LL.7-021- 1 -Covid-19 Test Request Form

LAB BARCODE

LABLINK
MEDICAL LABORATORY

Molecular Diagnostics Laboratory
Makmal Perubatan Lablink
14 (139) Jalan Pahang Barat
Off Jalan Pahang
53000 Kuala Lumpur, Malaysia
Tel.: +603-4023-4588 Ext: 5002, 5005
Fax.: +603-4023-4298

COVID-19 TEST REQUEST FORM

Patient's Name

Requesting Doctor's Name and Address

STAMP HERE

IC/Passport No. | Clinic/Hospital Reference No.

Date of Birth (dd/mm/yy) | Age | Gender ☐ M ☐ F

Race
☐ Malay ☐ Chinese ☐ Indian ☐ Other _____

Doctor's Signature: _____

URGENT: ☐ PHONE _____ ☐ FAX _____ ☐ EMAIL _____

Specimen Collection Date (dd/mm/yy) | Time of Collection (hh/mm) AM / PM

SPECIMEN DETAILS *Please tick (✓) the specimen(s)

☐ Nasopharyngeal Swab (NP) ☐ Oropharyngeal Swab (OP) ☐ Nasopharyngeal & Oropharyngeal Swabs (NP&OP) ☐ Bronchoalveolar Lavage (BAL) ☐ Sputum ☐ Nasal Swab ☐ Saliva ☐ Blood/Serum

TESTING INDICATION *Please tick (✓) the related indication below

☐ Work
☐ Study
☐ Travel: _____ (Country)
☐ Pre-Admission/Operation (Schedule on: _____)
☐ PUI- Severe Acute Respiratory Infection (SARI)
☐ PUI- Suspected Case (With Clinical & Epidemiology Criteria)
☐ Close Contact
☐ Probable Case
☐ Patient Under Surveillance (PUS)
☐ Other: _____

RELEVANT CLINICAL INFORMATION *Please tick (✓) and answer all the questions below

CLINICAL CRITERIA/SIGN & SYMPTOMS:

☐ YES; Onset: _____
☐ Fever (_____ °C) ☐ Cough ☐ Flu ☐ Headache ☐ Myalgia ☐ Coryza
☐ Nausea/Vomiting/Anorexia ☐ Sore Throat ☐ Anosmia ☐ Ageusia ☐ Dyspnea ☐ Diarrhoea
☐ Fatigue/General Weakness ☐ Altered Mental Status ☐ Other: _____
☐ NO

EPIDEMIOLOGICAL HISTORY:

☐ YES;
☐ Living/working in the same proximity with the COVID-19 patient
☐ Working in the healthcare setting with the COVID-19 patient
☐ Travelling to any RED ZONE/HIGH RISK area within 14 days prior to sign and symptom onset
☐ Other: _____
☐ Travelling together with COVID-19 patient in any kind of conveyance
☐ NO

POST COVID INFORMATION (EVIDENCED BY, IF ANY):

☐ PCR Test — Date Reported: _____
☐ RTK Antigen — Date Reported: _____
☐ Self-test Kit (Saliva/Swab) — Date Reported: _____
☐ Other: _____ — Date Reported: _____

COVID-19 VACCINATION HISTORY:

☐ NO ☐ YES

	☐ Comirnaty® (Pfizer-Biontech)	☐ Astra Zeneca (Oxford)	☐ Johnson & Johnson	☐ CoronaVac® (Sinovac)	☐ Moderna	☐ Other: _____
1st Dose Date						
2nd Dose Date						
3rd Dose/Booster Date						

TEST REQUEST *Please tick (✓) the test(s) required

☐ **61028181** RT-PCR Covid-19 (PCRcovid19) (Detection of E gene, N gene, RdRp/S gene)
☐ **61028185** RAPID PCR FOR COVID-19/SARS CoV-2 (PCRcovidR1) (Detection of N gene & ORF1ab gene)
☐ **61028187** RAPID PCR FOR COVID-19/SARS-CoV-2 (PCRcovidR2) (Detection of E gene & N2 gene)
☐ **61040828** Anti-SARS-CoV-2 S, SPIKE PROTEIN (COVIDsAb)
☐ Others: _____

LL.7-021
Version 1
02-12-2021

Page 1 of 1

APPENDIX 2 – ALLERGY PROFILE CATALOGUE

LABLINK
MEDICAL LABORATORY

PHADIATOP ALLERGEN SCREEN
(S, 61040301)

ALLERGEN NAME

Phadiatop Allergen

Qualitative screening tests useful for identifying patients with a high likelihood of an allergic disease (so called atopic individuals).

Phadiatop utilize balanced mixtures of relevant allergens, often implicated in causing allergic diseases in adults and in young children, respectively.

Ref: Reference: Williams PB, et al. Ann Allergy Asthma Immunol. 2001;86:195-202

SPECIMEN

Minimum 1ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy ".
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

FOOD ALLERGY PANEL
(GP94A, 61050602)

ALLERGEN NAME

TOTAL IgE

FOOD	
Egg/Milk Yeast	Egg white Egg yolk Cow's Milk Cheddar Cheese
Protein/ Grains/ Additive/ Cooking Oil	Wheat Rice
Vegs. / Fruits	Banana Orange Lemon Pineapple

FOOD	
Egg/Milk Yeast	Egg white Egg yolk Cow's Milk Cheddar Cheese
Protein/ Grains/ Additive/ Cooking Oil	Wheat Rice
Vegs. / Fruits	Banana Orange Lemon Pineapple

SEA FOOD	
Fish	Tuna Anchovy
Shellfish	Crab Shrimp Clam

SPECIMEN

Minimum 2ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy" .
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

+

LABLINK
MEDICAL LABORATORY

INHALANT ALLERGY PANEL

(GP94B, 61050603)

ALLERGEN NAME

TOTAL IgE

INHALATION	
Grasses	Bermuda grass Johnson grass
Tree	Rubber Tree (Latex)
Mites	Dermatophagoides pter. Dermatophagoides farinae House dust (Greer Lab)

INHALATION	
Animals/ Insects	Cat Dog Cockroach
Molds	Aspergillus fumigatus Alternaria alternata Mould Spore Mix

SPECIMEN

Minimum 2ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy".
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

INHALANT ALLERGY PANEL

(GP94B, 61050603)

ALLERGEN NAME

TOTAL IgE

INHALATION	
Grasses	Bermuda grass Johnson grass
Tree	Rubber Tree (Latex)
Mites	Dermatophagoides pter. Dermatophagoides farinae House dust (Greer Labs)

INHALATION	
Animals/ Insects	Cat Dog Cockroach
Molds	Aspergillus fumigatus Alternaria alternata Mould Spore Mix

SPECIMEN

Minimum 2ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy" .
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

DOMESTIC ALLERGY PANEL
(GP94D, 61050636)

ALLERGEN NAME	
TOTAL IgE	
INHALATION	
Mites	Dermatophagoides pter. Dermatophagoides farinae. House dust Blomia tropicalis
Animals/ Insects	Cockroach

SPECIMEN

Minimum 2ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy" .
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

SEAFOOD FOOD ALLERGY PANEL

(GP94E, 61050637)

ALLERGEN NAME

TOTAL IgE	
SEA FOOD	
Fish	Anchovy
Shellfish	Crab Shrimp Clam
Squid	

SPECIMEN

Minimum 2ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy" .
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

PEDIATRIC FOOD ALLERGY PANEL

(GP94F, 61050638)

ALLERGEN NAME

TOTAL IgE

SEA FOOD	
Fish	Anchovy

FOOD	
Nuts	Peanut Soybean
Meats / Poultry	Chicken
Egg/Milk Yeast	Egg white Egg yolk Cow's Milk
Protein/ Grains/ Additiv./ Cooking Oil	Wheat

SPECIMEN

Minimum 2ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy".
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

LABLINK
MEDICAL LABORATORY

MALAYSIAN ALLERGY PANEL 2

(GP94G, 61050651)

ALLERGEN NAME

INHALATION	
Grasses	Bermuda grass Johnson grass
Tree	Rubber Tree (Latex)
Mites	Dermatophagoides pter. Dermatophagoides farinae. House dust
Animals/ Insects	Cat Dog Cockroach
Moulds	Candida albicans Cladosporium herbarum Aspergillus fumigatus Alternaria alternata Mucor Racemosus Penicillium S

FOOD	
Nuts	Peanut Soybean
Meats / Poultry	Beef Chicken
Egg/Milk/ Yeast	Egg white Egg yolk Cow's Milk
Fruits/ Grains/ Additive/ Cooking Oil	Wheat
Vege. / Fruits	Banana Orange

SEA FOOD	
Fish	Tuna Anchovy
Shellfish	Crab Shrimp Clam

TOTAL IgE

SPECIMEN

Minimum 5ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

ImmunoCAP EIA

"1 out of 3 Malaysians is currently suffering from some form of allergy" .
Assoc Prof Dr Ranbir Kaulsay (President of Malaysian Society of Allergy & Immunology, MSAI)

LABLINK
MEDICAL LABORATORY

ATOPY ALLERGY PANEL
(GP94H,61050887)

ALLERGEN NAME

INHALATION	
Grasses	Bermuda grass Timothy grass Grass mix 1: Sweet vernal grass Bermuda grass Timothy grass Cultivated rye
Tree	Acacia Kapok Locust
Mites	Dermatophagoides pter Dermatophagoides farinae Dermatophagoides microceras Tyrophagus putrescentiae Glycyphagus domesticus Blomia tropicalis
Animals/ Insects	Cat Dog Horse Feather mix 1: Chicken feathers Duck feathers Goose feathers Cockroach (German)
Molds	Candida albicans Mould mix 1: Penicillium notatum Cladosporium herbarum Aspergillus fumigatus Alternaria alternata

FOOD	
Nuts	Peanut Soybean Hazelnut Almond
Meats / Poultry	Duck meat Beef (cooked) Pork (cooked) Chicken Lamb
Egg/Milk/ Yeast	Egg white Cow's Milk rBos d4 alpha-lactalbumin (Milk) rBos d5 beta-lactoglobulin (Milk) rBos d8 Casein (Milk) rBos d6 BSA (Milk) Cheddar Cheese Baker's yeast
Poultry/ Grains/ Additive / Cooking Oil	Wheat flour Gluten Chocolate Glutamate Coffee Oil palm
Vege. / Fruits	Tomato Garlic Strawberry Kiwi

SEA FOOD	
Fish	Codfish Tuna Salmon
Shellfish	Crab Shrimp (Pacific) Lobster Shellfish mix 1: Spiny lobster Oyster Clam

INSECT VENOMS	
Insect	Honey bee

CROSS REACTIVITY	
Marker	CCD Marker

TOTAL IgE

SPECIMEN

Minimum 1ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m)
Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

Immunoblot

LABLINK
MEDICAL LABORATORY

FOOD ALLERGY PANEL

(GP94J, 61050947)

ALLERGEN NAME

FOOD	
Nuts	Peanut Soybean Hazelnut
Meats / Poultry	Beef (cooked) Pork (cooked) Chicken
Egg/Milk Yeast	Egg white Egg yolk Cow's Milk
Protein/ Grains/ Additive/ Cooking Oil	Rice Wheat flour Chocolate Glutamate Sesame

SEA FOOD	
Fish	Fish mix 1 Codfish Herring Mackerel Plaice
Shellfish	Crab Blue Crab Shrimp (Pacific) Lobster Shellfish mix 1 Spiny lobster Oyster Clam

CROSS REACTIVITY	
Marker	CCD Marker

TOTAL IgE

SPECIMEN

Minimum 1ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m) Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

Immunoblot

LABLINK
MEDICAL LABORATORY

PEDIATRIC ALLERGY PANEL

(GP94K, 61050948)

ALLERGEN NAME

INHALATION	
Grasses	Grass mix Timothy grass Cultivated rye
Tree	Birch Mugwort
Mites	Dermatophagoides pter Dermatophagoides farinae
Animals/ Insects	Cat Dog Horse
Moulds	Cladosporium herbarum Aspergillus fumigatus Alternaria alternata

FOOD	
Nuts	Peanut Soybean Hazelnut
Egg/Milk Yeast	Egg white Egg yolk Cow's Milk nBos d0 alpha-lactalbumin (Milk) nBos d0 beta-lactoglobulin (Milk) nBos d0 Casein (Milk) nBos d0 BSA (Milk)
Protein/ Grains/ Additive/ Cooking Oil	Rice Wheat flour
Vege. / Fruits	Apple Potato Carrot

SEA FOOD	
Fish	Codfish

CROSS REACTIVITY	
Marker	CCD Marker

TOTAL IgE

SPECIMEN

Minimum 1ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m) Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

Immunoblot

LABLINK
MEDICAL LABORATORY

INHALATION ALLERGY PANEL

(GP94L, 61050949)

ALLERGEN NAME

INHALATION	
Grasses	Grass mix: Sweet vernal grass Bermuda grass Timothy grass Cultivated rye
Tree	Acacia Pine (Australia) Oil palm Tree mix: Melaleuca Pine (Australia) Acacia Eucalyptus Willow
Animals/ Insects	Cat Dog Rabbit Hamster Mouse Guinea pig Cage bird mix: Budgerigar feathers Canary feather Parrot feathers Lovebird feathers Finch feathers Cockroach (German)

INHALATION	
Molds	Candida albicans Aureobasidium pullulans Curvularia spicifera Mould mix: Penicillium notatum Cladosporium herbarum Aspergillus fumigatus Alternaria alternata Penicillia mix: Penicillium notatum P. brevicompactum P. roqueforti
Mites	House dust mite mix: Dermatophagoides pter. Dermatophagoides farinae.

CROSS REACTIVITY	
Marker	CCD Marker

TOTAL IgE

SPECIMEN

Minimum 1ml Serum - Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Ship refrigerated (for Klang Valley) or frozen (compulsory for outstation). Sample to arrive Lablink Central within 24 hours.

TEST SCHEDULE

By Batch: Wednesday (Before 11 a.m) Report on Thursday

TURNAROUND TIME (TAT)

7 working days

METHOD

Immunoblot

LABLINK
MEDICAL LABORATORY

LIST OF TEST

LABLINK
MEDICAL LABORATORY

LIST OF TEST

LABLINK
MEDICAL LABORATORY

LIST OF TEST

CONNECTIVE TISSUE DISEASES & RHEUMATOLOGY AUTOIMMUNE PROFILES

CONNECTIVE TISSUE DISEASES AUTOIMMUNE PROFILE 1 (AiCTDp1, 61050918)

TEST LIST	METHOD
• ANAIF - Anti-nuclear Antibody (ANA) IFA/IIFT	IFA/IIFT
• DNAAb - Ds-DNA Antibody	ELISA

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.
Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

CONNECTIVE TISSUE DISEASES & RHEUMATOLOGY AUTOIMMUNE PROFILES

CONNECTIVE TISSUE DISEASES AUTOIMMUNE PROFILE 4 (AiCTDp4, 61050921)

TEST LIST	METHOD
• ANAIF - Anti-nuclear Antibody (ANA) IFA/IIFT	IFA/IIFT
• DNAAb - Ds-DNA Antibody	ELISA
• Cell-nuclear and Cytoplasmic Antigens	
• Anti-nRNP/Sm	Immunoblot
• Anti-Sm	Immunoblot
• Anti-SS-A/Ro	Immunoblot
• Anti-Ro-52	Immunoblot
• Anti-SS-B/La	Immunoblot
• Anti-Scl-70	Immunoblot
• Anti-PM-Scl 100	Immunoblot
• Anti-Jo-1	Immunoblot
• Anti-CENP-B, Centromere protein B	Immunoblot
• Anti-PCNA	Immunoblot
• Anti-nucleosomes	Immunoblot
• Anti-Histones	Immunoblot
• Anti-Ribosomal P-Protein	Immunoblot
• Anti-AMA-M2	Immunoblot
• Anti-DFS70	Immunoblot

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.
Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

CONNECTIVE TISSUE DISEASES / EXTRACTABLE NUCLEAR ANTIGENS PROFILE 5 (AiCTDp5, 61050922)

TEST LIST

- Anti-nRNP/Sm
- Anti-Sm
- Anti-SS-A/Ro
- Anti-Ro-52
- Anti-SS-B/La
- Anti-Scl-70
- Anti-PM-Scl 100
- Anti-Jo-1
- Anti-CENP-B, Centromere protein B
- Anti-PCNA
- Anti-nucleosomes
- Anti-Histones
- Anti-Ribosomal P-Protein
- Anti-AMA-M2
- Anti-DFS70

METHOD

Immunoblot

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

CONNECTIVE TISSUE DISEASES & RHEUMATOLOGY AUTOIMMUNE PROFILES

SYSTEMIC SCLEROSIS NUCLEOLI AUTOIMMUNE PROFILE (AiSScP1, 61050977)

TEST LIST

- Anti-Scl-70
- Anti-CENP-A
- Anti-CENP-B
- Anti-RP11
- Anti-RP155
- Anti-Fibrillarin
- Anti-NOR90
- Anti-Th/To
- Anti-PM-Scl00
- Anti-PM-Scl75
- Anti-Ku
- Anti-PDGFR
- Anti-RO-52

METHOD

Immunoblot

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

ANTI PHOSPHOLIPID SYNDROME PROFILES

CARDIOLIPIN ANTIBODIES PROFILE (Carlipin, 61040295)

TEST LIST	METHOD
• Anti-Cardiolipin IgA	ELISA
• Anti-Cardiolipin IgM	ELISA
• Anti-Cardiolipin IgG	ELISA

SPECIMEN

2 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

ANTI PHOSPHOLIPID SYNDROME PROFILES

β-2-GLYCOPROTEIN 1 ANTIBODIES PROFILE (AB2GP, 61040617)

TEST LIST	METHOD
• Anti-β-2-Glycoprotein 1 IgA	ELISA
• Anti-β-2-Glycoprotein 1 IgM	ELISA
• Anti-β-2-Glycoprotein 1 IgG	ELISA

SPECIMEN

2 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LABLINK
MEDICAL LABORATORY

VASCULITIS & IMMUNE NEPHRITIS AUTOIMMUNE PROFILES

VASCULITIS AUTOIMMUNE PROFILE 1 (AiVasP1, 61050923)

TEST LIST	METHOD
• ANCAIF - Anti-neutrophil cytoplasmic antibody	IFA/IFT
• Autoimmune Vasculitis Screening:	
• ANCApMPO - Myeloperoxidase (MPO) pANCA antibody	ELISA
• ANCAcPR3 - Proteinase 3 (PR3) cANCA antibody	ELISA
• GBM - Glomerular basement membrane (GBM) antibody	ELISA

SPECIMEN

2 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LABLINK
MEDICAL LABORATORY

VASCULITIS & IMMUNE NEPHRITIS AUTOIMMUNE PROFILES

VASCULITIS AUTOIMMUNE PROFILE 2 (AiVasP2, 61050924)

TEST LIST	METHOD
• ANAIF - Anti-nuclear antibody (ANA) IFA/IIFT	IFA/IIFT
• ANCAIF - Anti-neutrophil cytoplasmic antibody, ANCA IFA/IIFT	IFA/IIFT
• Autoimmune Vasculitis Screening:	
• ANCApMPO - Myeloperoxidase (MPO) pANCA antibody	ELISA
• ANCAcPR3 - Proteinase 3 (PR3) cANCA antibody	ELISA
• GBM - Glomerular basement membrane (GBM) antibody	ELISA

SPECIMEN

2 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

VASCULITIS & IMMUNE NEPHRITIS AUTOIMMUNE PROFILES

VASCULITIS AUTOIMMUNE PROFILE 3 (AiVasP3, 61050925)

TEST LIST	METHOD
• ANAIF - Anti-nuclear antibody (ANA) IFA/IIFT	IFA/IIFT
• ANCAIF - Anti-neutrophil cytoplasmic antibody, ANCA IFA/IIFT	IFA/IIFT

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

VASCULITIS & IMMUNE NEPHRITIS AUTOIMMUNE PROFILES

VASCULITIS AUTOIMMUNE PROFILE 4 (AiVasP4, 61050926)

TEST LIST	METHOD
• ANCApMPO - Myeloperoxidase (MPO) pANCA antibody	ELISA
• ANCAcPR3 - Proteinase 3 (PR3) cANCA antibody	ELISA
• GBM - Glomerular basement membrane (GBM) antibody	ELISA

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LABLINK
MEDICAL LABORATORY

VASCULITIS & IMMUNE NEPHRITIS AUTOIMMUNE PROFILES

NEPHRITIS AUTOIMMUNE PROFILE 5 (AiVasP5, 61050927)

TEST LIST	METHOD
• ANAIF - Anti-nuclear Antibody (ANA) IFA/IIFT	IFA/IIFT
• ANCAIF - Anti-neutrophil cytoplasmic Antibody, ANCA IFA/IIFT	IFA/IIFT
• DNAAb - Ds-DNA Antibody	ELISA
• Autoimmune Vasculitis Screening:	
• ANCApMPO - Myeloperoxidase (MPO) pANCA Antibody	ELISA
• ANCAcPR3 - Proteinase 3 (PR3) cANCA Antibody	ELISA
• GBM - Glomerular basement membrane (GBM) Antibody	ELISA
• Autoimmune Renal Membranous Nephropathy Screening:	
• Anti-phospholipase-A2-receptor (PLA2R) Antibody	IFA/IIFT

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.
Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

ENCEPHALITIS AUTOIMMUNE PROFILE 1 (AiNeuroP1, 61050928)

TEST LIST	METHOD
• ANAIF - Anti-nuclear Antibody (ANA) IFA/IIFT	IFA/IIFT
• NMDAR - N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), blood	IFA/IIFT

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

ENCEPHALITIS AUTOIMMUNE PROFILE 2 (AiNeuroP2, 61050929)

TEST LIST	METHOD
• ANAIF - Anti-nuclear antibody (ANA) IFA/IIFT	IFA/IIFT
• NMDARcsf - N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), CSF	IFA/IIFT
• NMDAR - N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), blood	IFA/IIFT

SPECIMEN

1 ml of separated serum and 2 ml of CSF. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

ENCEPHALITIS AUTOIMMUNE PROFILE 3 (AiNeuroP3, 61050930)

TEST LIST		METHOD
• ANAIF - Anti-nuclear antibody (ANA) IFA/IIFT		IFA/IIFT
• Autoimmune Encephalitis Receptor Antibodies:		
• NMDAR	–N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), blood	IFA/IIFT
• AMPA12	–Glutamate receptor, type AMPA 1/2 Antibody (Anti-AMPA1/2), blood	IFA/IIFT
• CASPR2	–Contactin-associated protein 2 receptor Antibody (Anti-CASPR2), blood	IFA/IIFT
• LGI1	–Leucine-rich glioma-inactivated protein 1 receptor Antibody (Anti-LGI1), blood	IFA/IIFT
• DPPX	–Dipeptidyl aminopeptidase-like protein 6 receptor Antibody (Anti-DPPX), blood	IFA/IIFT
• GABA B	–GABA B receptor Antibody (Anti-GABAb), blood	IFA/IIFT

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.
Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

ENCEPHALITIS RECEPTORS AUTOIMMUNE PROFILE 4 (AiNeuroP4, 61050931)

TEST LIST		METHOD
• Anti-NMDAR	– N-methyl-D-Aspartate Receptor Antibody, blood	IFA/IIFT
• Anti-AMPA1/2	– Glutamate receptor, type AMPA 1/2 Antibody, blood	IFA/IIFT
• Anti-CASPR2	– Contactin-associated protein 2 receptor Antibody, blood	IFA/IIFT
• Anti-LGI1	– Leucine-rich glioma-inactivated protein 1 receptor Antibody, blood	IFA/IIFT
• Anti-DPPX	– Dipeptidyl aminopeptidase-like protein 6 receptor Antibody, blood	IFA/IIFT
• Anti-GABA B	– GABA B receptor Antibody, blood	IFA/IIFT

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

ENCEPHALITIS RECEPTORS AUTOIMMUNE PROFILE 5 (AiNeuroP5, 61050932)

TEST LIST		METHOD
• Anti-NMDAR	– N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), CSF	IFA/IIFT
• Anti-AMPA1/2	– Glutamate receptor, type AMPA 1/2 Antibody (Anti-AMPA1/2), CSF	IFA/IIFT
• Anti-CASPR2	– Contactin-associated protein 2 receptor Antibody (Anti-CASPR2), CSF	IFA/IIFT
• Anti-LGI1	– Leucine-rich glioma-inactivated protein 1 receptor Antibody (Anti-LGI1), CSF	IFA/IIFT
• Anti-DPPX	– Dipeptidyl aminopeptidase-like protein 6 receptor Antibody (Anti-DPPX), CSF	IFA/IIFT
• Anti-GABA B	– GABA B receptor Antibody (Anti-GABA B), CSF	IFA/IIFT

SPECIMEN

2 mL of CSF. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

PARANEOPLASTIC ANTIGEN AUTOIMMUNE PROFILE 6 (AiNeuroP6, 61050933)

TEST LIST	METHOD
• AmphiAb – Amphiphysin Antibody	Immunoblot
• CV2Ab - CV2 Antibody	Immunoblot
• PNMA2Ab - PNMA2 Antibody	Immunoblot
• RiAb – Ri Antibody	Immunoblot
• YoAb – Yo Antibody	Immunoblot
• HuAb – Hu Antibody	Immunoblot
• RecovAb – Recoverin Antibody	Immunoblot
• SOX1Ab - SOX1 Antibody	Immunoblot
• TitinAb – Titin Antibody	Immunoblot

SPECIMEN

1 mL of separated serum or 2 mL of CSF. Refrigerated or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

ENCEPHALITIS AUTOIMMUNE PROFILE 7
(AiNeuroP7, 61050934)

TEST LIST		METHOD
• ANAIF - Anti-nuclear antibody (ANA) IFA/IIFT		IFA/IIFT
• Autoimmune Encephalitis Receptor Antibodies:		
• Anti-NMDAR	–NMDARab - N-methyl-D-Aspartate Receptor Antibody, blood	IFA/IIFT
• Anti-AMPA1/2	–Glutamate receptor, type AMPA 1/2 Antibody	IFA/IIFT
• Anti-CASPR2	–Contactin-associated protein 2 receptor Antibody, Anti-CASPR2	IFA/IIFT
• Anti-LGI1	–Leucine-rich glioma-inactivated protein 1 receptor Antibody	IFA/IIFT
• Anti-DPPX	–Dipeptidyl aminopeptidase-like protein 6 receptor Antibody	IFA/IIFT
• Anti-GABA B	–GABA B receptor Antibody	IFA/IIFT
• Paraneoplastic Antigens Antibodies:		
• Amphiphysin • CV2 • PNMA2	• Ri • Yo • Hu	• Recoverin • SOX1 • Titin	Immunoblot

SPECIMEN
1 mL of separated serum and 2 mL of CSF or 1 mL of separated serum only. Refrigerated or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT
Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)
2 – 3 working days upon receiving sample at Lablink Central.
Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.

GANGLIOSIDE AUTOIMMUNE PROFILE 8
(AiNeuroP8, 61050935)

TEST LIST

- **Anti Ganglioside-monosialic Acid Autoimmune IgM:**
  - Sulfatide IgM
  - GM1 IgM
  - GM2 IgM
  - GM3 IgM
  - GM4 IgM
  - GD1a IgM
  - GD1b IgM
  - GD2 IgM
  - GD3 IgM
  - GT1a IgM
  - GT1b IgM
  - GQ1b IgM
- **Anti Ganglioside-monosialic Acid Autoimmune IgG:**
  - Sulfatide IgG
  - GM1 IgG
  - GM2 IgG
  - GM3 IgG
  - GM4 IgG
  - GD1a IgG
  - GD1b IgG
  - GD2 IgG
  - GD3 IgG
  - GT1a IgG
  - GT1b IgG
  - GQ1b IgG

METHOD

Immunoblot

SPECIMEN

1 mL of separated serum or 2 ml of CSF. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

NEUROMYELITIS OPTICA AUTOIMMUNE PROFILE 9 (AiNeuroP9, 61050936)

TEST LIST	METHOD
• Anti-Aquaporin 4, AQP4	IFA/IIFT
• Anti-Myelin oligodendrocyte glycoprotein, MOG	IFA/IIFT

SPECIMEN

1 ml of separated serum or 2 ml of CSF. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

NEUROLOGY & ENCEPHALITIS AUTOIMMUNE PROFILES

Myasthenia Gravis (MG) Autoimmune Profile (AiMGp1, 61050991)

TEST LIST	METHOD
• Anti-Muscle-Specific Tyrosine Kinase, MuSK	IFA/IIFT
• Anti-Acetylcholine Receptor, AChR	ELISA

SPECIMEN

1 ml of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LABLINK
MEDICAL LABORATORY

ENDOCRINE AUTOIMMUNE PROFILE

DIABETES MELLITUS AUTOIMMUNE PROFILE 1 (AiDMp1, 61050917)

TEST LIST	METHOD
• Islet cell cytoplasmic Autoantibody, ICA	CLIA
• Glutamic acid decarboxylase Autoantibody, GADA	CLIA
• Insulinoma associated protein-2 Autoantibody, IA-2A	CLIA
• Insulin Autoantibody, IAA	ELISA

SPECIMEN

2 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LABLINK
MEDICAL LABORATORY

ENDOCRINE AUTOIMMUNE PROFILE

THYROID AUTOANTIBODY SCREEN PROFILE (AiThyP1, 61050941)

TEST LIST	METHOD
• Thyrotropin Receptor Antibody (TSH Receptor Antibody - TSHRepAb)	CLIA
• Thyroid Peroxidase (Anti-Thyroid peroxidase - Anti-TPO/AMC)	CMIA
• Thyroglobulin (Anti-Thyroglobulin - Anti-TG)	CMIA

SPECIMEN

2 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

GASTROENTEROLOGY AUTOIMMUNE PROFILES

LIVER AUTOIMMUNE PROFILE 1 (AiGasP1, 61050937)

TEST LIST

- **Liver Autoimmune Immunofluorescence Assay:**
  - Mitochondrial Antibody
  - Smooth Muscle Antibody
  - Liver Kidney Microsomal Antibody
  - Parietal Cell Antibody
- **Liver Autoimmune Specific Autoantibodies:**
  - Ro-52
  - AMA M2
  - M2-3E
  - Sp100
  - SLA/LP
  - gp210
  - PML
  - LKM-1
  - LC-1

METHOD

Liver Autoimmune Immunofluorescence Assay	- IFA/IIFT
Liver Autoimmune Specific Autoantibodies	- Immunoblot

SPECIMEN

1 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LIVER AUTOIMMUNE IMMUNOFLUORESCENCE ASSAY PROFILE 2 (AiGasP2, 61050938)

TEST LIST	METHOD
• Mitochondrial Antibody	IFA/IIFT
• Smooth Muscle Antibody	IFA/IIFT
• Liver Kidney Microsomal Antibody	IFA/IIFT
• Parietal Cell Antibody	IFA/IIFT

SPECIMEN

1 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LIVER AUTOIMMUNE SPECIFIC AUTOANTIBODY PROFILE 3 (AiGasP3, 61050939)

TEST LIST	METHOD
• Anti-Ro-52	Immunoblot
• Anti-AMA-M2	Immunoblot
• Anti-M2-3E	Immunoblot
• Anti-Sp100	Immunoblot
• Anti-gp210	Immunoblot
• Anti-PML	Immunoblot
• Anti-LKM-1	Immunoblot
• Anti-LC-1	Immunoblot
• Anti-SLA/LP	Immunoblot

SPECIMEN

1 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

INFLAMMATORY MYOPATHIES PROFILE (AiMyoP1, 61050946)

TEST LIST

- Anti-isoleucyl-tRNA synthetase (OJ)
- Anti-glycyl-tRNA synthetase (EJ)
- Anti-alanyl-tRNA synthetase (PL-12)
- Anti-threonyl-tRNA synthetase (PL-7)
- Anti-54 kDa recombinant signal recognition particle (SRP)
- Anti-histidyl-tRNA synthetase (Jo-1)
- Anti-PM-Scl75
- Anti-PM-Scl100
- Anti-Ku
- Anti-SUMO activating enzyme subunits 1 (SAE1)
- Anti-MJ-p140-MU 140 kD protein/MORC3 (NXP2)
- Anti-melanoma differentiation-associated gene 5 (MDA5)
- Anti-transcriptional intermediary factor 1-gamma (TIF1γ)
- Anti-chromodomain-helicase-DNA-binding protein 4 (Mi-2β)
- Anti-chromodomain-helicase-DNA-binding protein 3 (Mi-2α)
- Anti-Ro-52

METHOD

Immunoblot

SPECIMEN

1 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

LABLINK
MEDICAL LABORATORY

INFLAMMATORY MYOPATHIES PROFILES

INFLAMMATORY MYOPATHIES PROFILE 2 (AiMyoP2, 61050978)

TEST LIST

- Anti-isoleucyl-tRNA synthetase (OJ)
- Anti-glycyl-tRNA synthetase (EJ)
- Anti-alanyl-tRNA synthetase (PL-12)
- Anti-threonyl-tRNA synthetase (PL-7)
- Anti-54 kDa recombinant signal recognition particle (SRP)
- Anti-histidyl-tRNA synthetase (Jo-1)
- Anti-PM-Scl75
- Anti-PM-Scl100
- Anti-Ku
- Anti-SUMO activating enzyme subunits 1 (SAE1)
- Anti-MJ-p140-MU 140 kD protein/MORC3 (NXP2)
- Anti-melanoma differentiation-associated gene 5 (MDA5)
- Anti-transcriptional intermediary factor 1-gamma (TIF1γ)
- Anti-chromodomain-helicase-DNA-binding protein 4 (Mi-2β)
- Anti-chromodomain-helicase-DNA-binding protein 3 (Mi-2α)
- Anti-Ro-52
- Anti-Mup44, cN1A, NT5C1A, NT5c1A, NT5C1a (cN-1A)
- Anti-3-hydroxyl-3-methylglutaryl coenzyme A reductase (HMGCR)

METHOD

Immunoblot

SPECIMEN

1 mL of separated serum. Refrigerated (2-8°C) or freeze (-20°C) immediately.

TRANSPORTATION REQUIREMENT

Refrigerated (for Klang Valley customer) or frozen (for outstation customer).
Sample shall arrive Lablink Central within 24 hours.

TURNAROUND TIME (TAT)

2 – 3 working days upon receiving sample at Lablink Central.

INDIVIDUAL TEST

NO	TEST	TEST CODE	SPECIMEN	TRANSPORTATION REQUIREMENT	METHOD	TAT
1	ANAIF - Anti-nuclear Antibody (ANA) IFA/IIFT	ANAIF, 61040602	1 mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central. Additional 2 – 3 working days for Positive Anti-nuclear antibody (ANA) IFA/IIFT for titration procedure.
2	Double Stranded DNA Antibody (Ds-DNA)	DNAAb, 61040009	1 mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
3	ANCAIF - Anti-Neutrophil Cytoplasmic Antibody, ANCA IFA/IIFT	ANCAIF, 61040216	1 mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
4	N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), CSF	NMDARcsf, 61040699	1mL CSF refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
5	N-methyl-D-Aspartate Receptor Antibody (Anti-NMDAR), Blood	NMDARab, 61040638	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
6	Acetylcholine receptor (AChR) antibody	AChRAb, 61040504	1 mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.

INDIVIDUAL TEST

NO	TEST	TEST CODE	SPECIMEN	TRANSPORTATION REQUIREMENT	METHOD	TAT
7	Aquaporin 4 Antibody, AQP4	AQP4, 61040639	1 ml of separated serum or 1 ml of CSF refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
8	Myelin oligodendrocyte glycoprotein, (MOG) Antibody	MOGAb, 61040733	1 ml of separated serum or 1 ml of CSF refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
9	ANCApMPO - Myeloperoxidase (MPO) pANCA Antibody	ANCApMPO 61040546	2mL separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
10	ANCAcPR3 - Proteinase 3 (PR3) cANCA Antibody	ANCAcPR3, 61040547	2mL separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
11	Glomerular Basement Membrane (GBM) Antibody	GBM, 61040282	2mL separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
12	Anti-phospholipase-A2-receptor (PLA2R) Semiquantitative	PLA2RAb, 61040694	1mL separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.

INDIVIDUAL TEST

NO	TEST	TEST CODE	SPECIMEN	TRANSPORTATION REQUIREMENT	METHOD	TAT
13	Anti-phospholipase-A2-receptor (PLA2R) Quantitative	PLA2Qn 61040774	2mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
14	Islet Cell Cytoplasmic Autoantibodies, ICA	IsletAb, 61040079	2mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	CLIA	2 – 3 working days upon receiving sample at Lablink Central.
15	Glutamic Acid Decarboxylase Autoantibodies, GADA	GADA, 61040618	2mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	CLIA	2 – 3 working days upon receiving sample at Lablink Central.
16	Insulinoma-Associated-2 Autoantibodies, IA-2A	IA2A, 61040619	2mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	CLIA	2 – 3 working days upon receiving sample at Lablink Central.
17	Insulin Autoantibodies, IAA	InsulinAb, 61040078	2mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
18	TSH Receptor antibody	TSHRepAb, 61040636	2mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	CLIA	2 – 3 working days upon receiving sample at Lablink Central.

INDIVIDUAL TEST

NO	TEST	TEST CODE	SPECIMEN	TRANSPORTATION REQUIREMENT	METHOD	TAT
19	Anti-Mitochondrial Antibody (AMA)	AMA, 61040010	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
20	Anti-Mitochondrial Antibody (AMA) - Titration	AMAti, 61040806	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
21	Anti-Smooth Muscle Antibody (SMA)	SMA, 61040012	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
22	Anti-Smooth Muscle Antibody (SMA) - Titration	SMAti, 61040807	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
23	Liver-Kidney-Microsomal Antibody (LKM)	LKMab, 61040502	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
24	Liver-Kidney-Microsomal Antibody (LKM) - Titration	LKMti, 61040808	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.

INDIVIDUAL TEST

NO	TEST	TEST CODE	SPECIMEN	TRANSPORTATION REQUIREMENT	METHOD	TAT
25	Anti-Parietal Cell Antibody (APCA)	PariCellAb, 61040507	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
26	Anti-Parietal Cell Antibody (APCA) - Titration	PariCellti, 61040809	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
27	Anti-Neutrophil Cytoplasmic Antibody, ANCA IFA/IIFT – Titration	ANCAIFti, 61040803	1 mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IIFT	2 – 3 working days upon receiving sample at Lablink Central.
28	Aquaporin 4 Antibody, AQP4 – Titration (Serum)	AQP4ti, 61040805	1 ml of separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
29	Aquaporin 4 Antibody, AQP4 – Titration (CSF)	AQP4CSti, 61040810	1mL of CSF refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
30	Aquaporin 4 Antibody, AQP4 – (CSF)	AQP4CSF, 61040792	1mL of CSF refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.
31	Myelin oligodendrocyte glycoprotein, (MOG) Antibody - (CSF)	MOGAbCSF, 61040793	1mL of CSF refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.

INDIVIDUAL TEST

NO	TEST	TEST CODE	SPECIMEN	TRANSPORTATION REQUIREMENT	METHOD	TAT
32	Anti-Cardiolipin IgA	CardioA, 61040616	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
33	Anti-Cardiolipin IgM	CardioM, 61040610	1mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
34	Anti-Cardiolipin IgG	CardioG, 61040545	1 mL separated serum refrigerated or freeze immediately	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
35	Anti-β-2-Glycoprotein 1 IgA	b2GPIgA, 61040836	1 ml of separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
36	Anti-β-2-Glycoprotein 1 IgM	b2GPIgM, 61040834	1 ml of separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
37	Anti-β-2-Glycoprotein 1 IgG	b2GPIgG, 61040835	1 ml of separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours	ELISA	2 – 3 working days upon receiving sample at Lablink Central.
38	Anti-Muscle-Specific Tyrosine Kinase, MuSK	MuSKAb, 61040840	1mL of separated serum refrigerated or freeze immediately.	Refrigerated (for Klang Valley customer) or frozen (for outstation customer). Sample shall arrive Lablink Central within 24 hours.	IFA/IIFT	2 – 3 working days upon receiving sample at Lablink Central.

APPENDIX 4 – BIOCHEMISTRY REFERENCE INTERVAL

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Albumin	g/L	0 - 4 Days	28 - 44		Burtis et al. (2006)
		4 Days - 1 Year	38 - 54		
		1 - 14 Years	38 - 54		
		14 - 18 Years	32 - 45		
		> 18 Years	35 - 52		Junge et al. (2007)
Alkaline Phosphatase	U/L	0 - 14 Days	83 - 248		Estey et al. (2013)
		2 Weeks - 1 Year	122 - 469		
		1 - 10 Years	142 - 335		
		10 - 13 Years	129 - 417		
		13 - 15 Years	116 - 468	57 - 254	
		15 - 17 Years	82 - 331	50 - 117	
		17 - 19 Years	55 - 149	45 - 87	
		> 19 Years	40 - 129	35 - 104	Abitcht et al. (2001)
Alanine Aminotransferase	U/L	All	10 - 50	10 - 35	Klauke et al. (1993)
Aspartate Aminotransferase	U/L	All	10 - 50	10 - 35	Klauke et al. (1993)
Calcium	mmol/L	0 -10 Days	1.90 - 2.60		Wu et al. (2006)
		10 Days - 2 Years	2.25 - 2.75		
		2 - 12 Years	2.20 - 2.70		
		12 - 18 Years	2.10 - 2.55		
		18 - 60 Years	2.15 - 2.50		
		60 - 90 Years	2.20 - 2.55		
		> 90 Years	2.05 - 2.40		
Chloride	mmol/L	All	98 - 107		Tietz et al. (2001)
Cholesterol	mmol/L	All	< 5.2		Clinical Practice Guidelines, Management of Dyslipidemia, 6th Edition (2023)
Creatinine	umol/L	0 – 1 Month	27 - 77		Schlebusch et al. (2001)
		1 Month – 1 Year	14 - 34		
		1 - 3 Years	15 - 31		
		3 - 5 Years	23 - 37		
		5 - 7 Years	25 - 42		
		7 - 9 Years	30 - 47		
		9 - 11 Years	29 - 56		
		11 - 13 Years	39 - 60		
		13 - 15 Years	40 - 68		
		15 - 50 Years	59 - 104	45 - 84	Mazzachi et al. (2000)
		50 - 70 Years			
		>70 Years			
GGT	U/L	All	< 60	< 40	Thomas et al. (2005)

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Glucose	Mmol/L	All	Fasting blood glucose interpretation: - Normal: 3.9 – 6.0 mmol/L (70 - 108 mg/dL) - Impaired Fasting Glucose (Pre-diabetes): 6.1 - 6.9 mmol/L (110 - 125 mg/dL) *Recommend Oral Glucose Tolerance Test (OGTT) for glucose level 6.1 - 6.9 mmol/L ** Individual with pre-diabetes is more likely to progress to Type 2 Diabetes Mellitus and associated with a higher lifetime risk for development of cardiovascular complication. - Type 2 Diabetes Mellitus: ≥ 7.0 mmol/L (126 mg/dL). Random blood glucose interpretation: - Normal: < 7.8 mmol/L (140 mg/dL) - Indeterminate: 7.8 - 11.0 (140 – 199) mg/dL *Recommend Oral Glucose Tolerance Test (OGTT) for glucose level 7.8 - 11.0 mmol/L. - Type 2 Diabetes Mellitus: ≥ 11.1 mmol/L (200 mg/dL)		Clinical Practice Guidelines, Management of Type 2 DM, 6th Edition (2020)
HBA1c	%	All	< 5.7		Clinical Practice Guidelines, Management of Type 2 DM, 6th Edition (2020)
HDL Cholesterol	mmol/L	All	> 1.00	> 1.20	Clinical Practice Guidelines, Management of Dyslipidemia, 6th Edition (2023)
LDL Cholesterol	mmol/L	All	According to patient's CV risk:		Clinical Practice Guidelines, Management of Dyslipidemia, 6th Edition (2023)

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
			Low CV Risk: < 3.0 mmol/L Intermediate (Moderate) CV Risk: < 2.6 mmol/L High CV Risk: ≤ 1.8 mmol/L and a reduction of >50% from baseline Very High CV Risk: ≤ 1.4 mmol/L and a reduction of >50% from baseline		
Non-HDL Cholesterol	mmol/L	All	According to patient's CV risk: Low CV Risk: < 3.8 mmol/L Intermediate (Moderate) CV Risk: < 3.4 mmol/L High CV Risk: ≤ 2.6 mmol/L and a reduction of >50% from baseline Very High CV Risk: ≤ 2.2 mmol/L and a reduction of >50% from baseline		Clinical Practice Guidelines, Management of Dyslipidemia, 6th Edition (2023)
Potassium	mmol/L	All	3.5 - 5.1		Tietz et al. (2001)
Phosphate	mmol/L	0-30 Days	1.25 - 2.25	1.40 - 2.50	Soldin et al. (2005)
		1 Month - 1 Year	1.15 - 2.15	1.20 - 2.10	
		1-3 Years	1.00 - 1.95	1.10 - 1.95	
		3-6 Years	1.05 - 1.80	1.05 - 1.80	
		6-9 Years	0.95 - 1.75	1.00 - 1.80	
		9-12 Years	1.05 - 1.85	1.05 - 1.70	
		12-15 Years	0.95 - 1.65	0.90 - 1.55	
		15-18 Years	0.85 - 1.60	0.80 - 1.55	
		> 18 Years	0.81 - 1.45	0.81 - 1.45	Burtis et al. (2006)
Sodium	mmol/L	All	136 - 145		Tietz et al. (2001)
Total Bilirubin	umol/L	1 Day	< 85.5		Paediatric Protocols for Malaysian Hospitals, 4th Edition, 2019.
		1 - 2 Days	< 136.8		
		2 - 3 Days	< 171.0		
		3 - 4 Days	< 188.1		
		4 - 14 Days	< 205.2		
		14 - 28 Days	< 34.2		
		28 Days - 1 Years	< 17.1		Thomas et al. (2007)
		1 - 15 Years	< 17.1		
		> 15 Years	< 21.0		
Total Protein	g/L	0 - 7 Days	46 - 70		Tietz et al. (1995)
		7 Days - 7 Months	44 - 76		
		7 Months - 1 Year	51 - 73		
		1 - 2 Years	56 - 75		
		2 - 15 Years	60 - 80		

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
		> 15 Years	64 - 83		
Triglycerides	mmol/L	All	< 1.70		Clinical Practice Guidelines, Management of Dyslipidemia, 6th Edition (2023)
Urea	mmol/L	0-30 Days	1.4 - 4.3		Wu et al. (2006)
		30-365 Days	1.4 - 6.8		
		1-18 Years	1.8 - 6.4		
		18-60 Years	2.1 - 7.1		
		> 60 Years	2.9 - 8.2		
Uric Acid	umol/L	0-30 Days	119 - 369		Mosby 's Diagnostics and Laboratory Test Reference, 12 edition, (2015)
		1 Month - 1 Year	149 - 327		
		1-18 Years	149 - 327		
		>18 Years	202 - 417	143 - 339	Thefeld et al. (1973)

APPENDIX 5 – SEROLOGY AND IMMUNOLOGY REFERENCE INTERVAL

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Thyroid stimulating hormone	mIU/L	0 - 6 Days	0.70 - 20.00		Roche Diagnostics GmbH. Reference intervals for chidren and adults. Elecsys Thyroid tests. (2020)
		6 Days - 3 Months	0.72 - 12.70		
		3 Months - 1 Years	0.73 - 8.92		
		1 - 6 Years	0.69 - 5.89		
		6 - 11 Years	0.60 - 4.66		
		11 - 20 Years	0.51 - 4.17		
		> 20 Years	0.27 - 4.20		Wu et al. (2006)
IgE	IU/mL	0 – 1 Years	<15		Dati et al. (1982)
		1 – 5 Years	<60		
		> 5 Years	<100		

APPENDIX 6 – HAEMATOLOGY REFERENCE INTERVAL

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Haematocrit	%	0 - 3 Days	47 - 62		John Hunter Hospital (2017)
		3 - 7 Days	42 - 62		
		1 - 2 Weeks	38 - 70		
		2 - 4 Weeks	32 - 54		
		1 - 3 Months	27 - 39		
		3 - 6 Months	28 - 45		
		6 - 12 Months	29 - 40		
		1 - 5 Years	32 - 41		
		5 - 10 Years	35 - 45		
		10 - 15 Years	35 - 48		
		15 - 18 Years	36 - 46	36 - 46	
		>18 Years	38 - 52	32 - 46	
Hemogobulin (HB)	g/dL	0 - 3 Days	14.0 - 22.5		John Hunter Hospital (2017)
		3 - 7 Days	13.5 - 20.5		
		1 - 2 Weeks	12.5 - 20.5		
		2 - 4 Weeks	10.1 - 18.3		
		1 - 3 Months	9.5 - 13.0		
		3 - 6 Months	9.5 - 14.0		
		6 - 12 Months	9.8 - 13.5		
		1 - 3 Years	10.5 - 13.8		
		3 - 5 Years	11.0 - 13.9		
		5 - 10 Years	11.5 - 14.0		
		10 - 15 Years	11.5 - 15.0		
		15 - 18 Years	13.0 - 16.0	12.0 - 15.0	
		>18 Years	13.0 - 18.0	11.5 - 16.5	
Mean Corpuscular Haemoglobin (MCH)	pg	0 - 3 Days	31 - 37		John Hunter Hospital (2017)
		3 - 7 Days	28 - 40		
		1 - 2 Weeks	28 - 40		
		2 - 4 Weeks	28 - 40		
		1 - 3 Months	23 - 31		
		3 - 6 Months	24 - 36		
		6 - 12 Months	22 - 29		
		1 - 3 Years	22 - 30		
		3 - 5 Years	24 - 30		
		5 - 10 Years	24 - 31		
		10 - 15 Years	25 - 33		
		15 - 18 Years	25 - 35		
		>18 Years	27 - 32		

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Mean Corpuscular Haemoglobin Concentration (MCHC)	g/dL	All	31 - 37		John Hunter Hospital (2017)
Mean Corpuscular Volume	fL	0 - 3 Days	100 - 135		John Hunter Hospital (2017)
		3 - 7 Days	100 - 120		
		1 - 2 Weeks	85 - 110		
		2 - 4 Weeks	85 - 110		
		1 - 3 Months	73 - 103		
		3 - 6 Months	70 - 85		
		6 - 12 Months	70 - 84		
		1 - 3 Years	70 - 88		
		3 - 5 Years	72 - 89		
		5 - 10 Years	75 - 90		
		10 - 15 Years	77 - 95		
		15 - 18 Years	78 - 95		
		>18 Years	80 - 100		
Mean Platelet Volume (MPV)	fL	0 - 200 Years	7.0 - 12.0		Keohane et al. (2016)
Platelet	10^3/uL	0 - 200 Years	150 - 400		John Hunter Hospital (2017)
Red Blood Cells	10^{12}/L	0 - 3 Days	5.0 - 7.0		John Hunter Hospital (2017)
		3 - 7 Days	4.5 - 6.5		
		1 - 2 Weeks	4.0 - 6.0		
		2 - 4 Weeks	3.5 - 5.5		
		1 - 3 Months	3.0 - 4.5		
		3 - 6 Months	3.0 - 4.8		
		6 - 12 Months	3.2 - 4.5		
		1 - 3 Years	3.5 - 4.8		
		3 - 5 Years	3.5 - 4.8		
		5 - 10 Years	3.5 - 4.8		
		10 - 15 Years	3.5 - 4.8		
		15 - 18 Years	4.5 - 5.5	4.0 - 5.2	
		>18 Years	4.5 - 6.5	3.8 - 5.8	
Red Distribution Wide	%	0 - 7 Days	< 18.0		John Hunter Hospital (2017)
		7 - 30 Days	< 17.0		
		1 - 3 Months	< 16.5		
		3 - 12 Months	< 16.0		
		1 - 3 Years	< 16.0		
		3 - 18 Years	< 15.6		
		>18 Years	< 15.6		

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
White Blood Cells	10^3/uL	0 - 3 Days	9.0 - 30.0		John Hunter Hospital (2017)
		3 - 7 Days	5.0 - 21.0		
		1 - 2 Weeks	5.0 - 19.5		
		2 - 4 Weeks	5.0 - 19.0		
		1 - 3 Months	6.0 - 18.0		
		3 - 6 Months	5.0 - 17.0		
		6 - 12 Months	4.3 - 17.0		
		1 - 3 Years	4.7 - 15.2		
		3 - 5 Years	4.8 - 13.6		
		5 - 10 Years	5.0 - 14.5		
		10 - 15 Years	4.5 - 13.5		
		15 - 18 Years	4.0 - 11.5		
		>18 Years	4.0 - 11.0		
Neutrophils	%	0-4 Days	34.2 - 76.3	33.2 - 75.8	Tahmasebi et al. (2020)
		4-7 Days	20.4 - 59.7	23.2 - 66.2	
		7-14 Days	21.7 - 62.2	20.1 - 57.2	
		14-30 Days	16.6 - 55.7	18.6 - 61.8	
		1-2 Months	16.0 - 63.0	17.8 - 62.0	
		2-6 Months	13.2 - 51.5	17.5 - 61.0	
		6-24 Months	15.8 - 71.4	17.2 - 60.2	
		2-6 Years	23.2 - 69.1	23.3 - 70.4	
		6-12 Years	28.4 - 71.3	27.6 - 70.9	
		12-18 Years	32.2 - 73.1	35.7 - 72.7	
		> 18 Years	40.0 - 80.0	40.0 -80.0	Dacie and Lewis , 11th Edition(2012)
Lymphocytes	%	0-4 Days	15.6 - 40.2	15.0 - 48.2	Tahmasebi et al. (2020)
		4-7 Days	30.1 - 57.9	19.2 - 57.8	
		7-14 Days	25.2 - 60.6	30.2 - 61.3	
		14-30 Days	34.1 - 64.4	34.0 - 65.0	
		1-2 Months	27.9 - 66.4	30.9 - 64.5	
		2-6 Months	37.6 - 76.4	24.4 - 73.9	
		6-24 Months	17.6 - 73.0	29.1 - 73.9	
		2-6 Years	16.6 - 65.4	17.6 - 66.4	
		6-12 Years	14.3 - 58.8	13.8 - 59.9	
		12-18 Years	14.0 - 53.3	15.0 - 52.4	
		> 18 Years	20.0 - 40.0	20.0 - 40.0	Dacie and Lewis , 11th Edition(2012)
Monocytes	%	0-14 Days	6.7 - 19.9	5.2 - 20.6	Sysmex Europe GmbH, Sysmex Paediatric reference intervals on Sysmex XE-2100 Haematological Analyser (2010)
		14-30 Days	4.3 - 18.3	5.6 - 13.8	
		1-2 Months	4.4 - 14.0	3.8 - 15.5	
		2-6 Months	3.8 - 13.4	3.8 - 12.6	
		6-24 Months	4.4 - 13.4	3.8 - 12.8	
		2-6 Years	4.2 - 12.2	4.1 - 11.4	
		6-12 Years	4.2 - 12.3	4.2 - 11.3	
		12-18 Years	4.4 - 12.3	4.1 - 10.9	
		> 18 Years	2.0 - 10.0	2.0 - 10.0	Dacie and Lewis , 11th Edition(2012)

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Eosinophils	%	0-14 Days	0.3 - 5.2	0.4 - 4.6	Sysmex Europe GmbH, Sysmex Paediatric reference intervals on Sysmex XE-2100 Haematological Analyser (2010)
		14-30 Days	0.2 - 5.4	<5.3	
		1-2 Months	< 4.5	<4.1	
		2-6 Months	< 4.0	<3.6	
		6-24 Months	< 3.7	<3.2	
		2-6 Years	< 4.1	<3.3	
		6-12 Years	< 4.7	<4.0	
		12-18 Years	< 4.0	<3.4	
		> 18 Years	1.0 - 6.0	1.0 - 6.0	Dacie and Lewis , 11th Edition(2012)
Basophils	%	0-4 Days	0.2 - 1.0	0.3 - 1.0	Tahmasebi et al. (2020)
		4-7 Days	0.2 - 1.0	0.2 - 1.1	
		7-14 Days	0.2 - 0.9	0.2 - 0.9	
		14-30 Days	0.1 - 0.7	0.1 - 0.7	
		1-2 Months	0.1 - 0.5	0.1 - 0.7	
		2-6 Months	0.1 - 1.2	0.2 - 0.5	
		6-24 Months	0.1 - 1.0	0.1 - 0.8	
		2-6 Years	0.1 - 1.2	0.1 - 1.0	
		6-12 Years	0.2 - 1.2	0.1 - 1.2	
		12-18 Years	0.2 - 1.4	0.1 - 1.2	
		> 18 Years	< 2.0	<2.0	Dacie and Lewis , 11th Edition(2012)
Neutrophils count	10^3/uL	0 - 3 Days	1.50 - 25.00		John Hunter Hospital (2017)
		3 - 7 Days	1.50 - 10.00		
		1 - 2 Weeks	1.00 - 9.00		
		2 - 4 Weeks	1.00 - 8.00		
		1 - 3 Months	0.80 - 8.00		
		3 - 6 Months	0.80 - 8.00		
		6 - 12 Months	0.80 - 7.30		
		1 - 3 Years	0.80 - 6.60		
		3 - 5 Years	1.00 - 7.00		
		5 - 10 Years	1.00 - 8.00		
		10 - 15 Years	1.50 - 8.00		
		15 - 18 Years	2.00 - 8.00		
		>18 Years	2.00 - 8.00		
Lymphocytes count	10^3/uL	0 - 3 Days	2.00 - 11.00		John Hunter Hospital (2017)
		3 - 7 Days	2.00 - 17.00		
		1 - 2 Weeks	2.50 - 15.00		
		2 - 4 Weeks	2.00 - 13.00		
		1 - 3 Months	4.00 - 10.00		
		3 - 6 Months	2.00 - 13.00		
		6 - 12 Months	2.00 - 10.80		
		1 - 3 Years	2.20 - 9.60		
		3 - 5 Years	1.90 - 7.40		
		5 - 10 Years	1.50 - 10.00		
		10 - 15 Years	1.50 - 7.00		
		15 - 18 Years	1.40 - 4.00		
		>18 Years	1.00 - 4.00		

TEST	UNIT	AGE	REFERENCE INTERVAL		REFERENCE
			MALE	FEMALE	
Monocytes count	10^3/uL	0 - 7 Days	0.10 - 1.70		John Hunter Hospital (2017)
		1 - 4 Weeks	0.10 - 1.70		
		1 - 3 Months	0.10 - 1.20		
		3 - 6 Months	0.20 - 1.20		
		6 - 12 Months	< 1.80		
		1 - 3 Years	< 1.20		
		3 - 5 Years	< 1.00		
		5 - 10 Years	0.20 - 1.20		
		10 - 18 Years	0.20 - 1.00		
		>18 Years	0.20 - 1.00		
Eosinophils count	10^3/uL	0 - 7 Days	0.10 - 1.10		John Hunter Hospital (2017)
		7 - 30 Days	0.10 - 1.10		
		1 - 6 Months	0.10 - 1.10		
		6 - 12 Months	< 0.90		
		1 - 3 Years	< 0.90		
		3 - 5 Years	< 1.10		
		5 - 15 Years	0.10 - 1.10		
		15 - 18 Years	0.10 - 0.70		
		>18 Years	< 0.50		
Basophils count	10^3/uL	0 - 7 Days	< 0.20		John Hunter Hospital (2017)
		7 - 30 Days	< 0.20		
		1 - 12 Months	< 0.20		
		1 - 15 Years	< 0.20		
		15 - 18 Years	< 0.10		
		>18 Years	< 0.10		
ESR	mm/hr	0 -50 Years	< 10	< 12	Dacie and Lewis , 11th Edition(2012)
		50 -60 Years	< 12	< 19	
		60 -70 Years	< 14	< 20	
		> 70 Years	< 30	< 35	

END OF DOCUMENT

LABLINK

MEDICAL LABORATORY

www.kpjlablink.com