4th Edition 2020

LAB USER MANUAL

DEPARTMENT OF PATHOLOGY
HOSPITAL TENGKU AMPUAN RAHIMAH KLANG

CONTENTS

FOREWORD

The Department of Pathology is committed to promote and provide services of the highest quality, including diagnostics and consulting services. Thus, this practical hand book provides brief, clear and useful information which will allow you to make use of our services. It is our hope that this manual will effectively serve as a bridge connecting us and our customers to foster better understanding and thereby enable mutual cooperation to bring about improved care to our patients. Ensuring quality at the pre-analytical phase is a mandatory pre-requisite towards achieving overall quality in our services. A special words of recognition is hereby expressed to the Department of Pathology's editor team for their remarkable efforts in putting together the third edition.

The Department of Laboratory Services on–going efforts of reviewing, updating and improving the contents of the laboratory handbook are to ensure accurate and clear information are communicated as well as making the laboratory handbook as a user-friendly guidelines for all healthcare providers. I hope the updated edition will be fully utilised by all healthcare facilities within and outside the Ministry of Health. I believe healthcare providers will continue to support the Department of Laboratory Services by providing their honest comments and feedback to further improve the quality of their services. Last but not least, I congratulate all editorial board members for their invaluable contributions towards the improvement and revision of this Laboratory Handbook and hope that the Department of Laboratory Services will continue to provide accurate, efficient, cost–effective and high quality services.

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Head of Department
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With the advancement of technology, the range of tests performed in the medical laboratories continues to increase and laboratory personnel need to be geared to handle them efficiently to meet the challenges. Just as the specimen, the relevant data input is also important to the laboratory staff to arrive at an accurate diagnosis. In addition, the quality of the laboratory report depends principally on the quality of the sample received by the laboratory. Therefore for the successful completion of tests, the samples should be properly collected according to the prescribed procedure and transported to the laboratory safely, as early as possible.

The new edition of the handbook will serve as a guide for doctors, nurses in the proper methods to be adopted in the collection of specimens for laboratory investigations. I wish to extend my sincere thanks to all staffs who have worked so hard to put this issue together. It is our hope that this Handbook will meet your needs by providing useful and up-to-date laboratory information. We welcome your feedback and suggestions so that together we will provide the best care to our patients. Thank you

Datin Paduka Dr Hasni Binti Hanapi
Hospital Director
Hospital Tengku Ampuan Rahimah

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VISION | OF HOSPITAL TENGKU AMPUAN RAHIMAH

To be leading organization in providing innovative and holistic healthcare

MISSION | OF HOSPITAL TENGKU AMPUAN RAHIMAH

Providing quality service, professional and caring to meet the needs and expectations of all customers

VISION | OF THE DEPARTMENT OF PATHOLOGY

Establishing the clinical diagnostic services that are comprehensive, accurate and quality while promoting academic development and research in the field of pathology

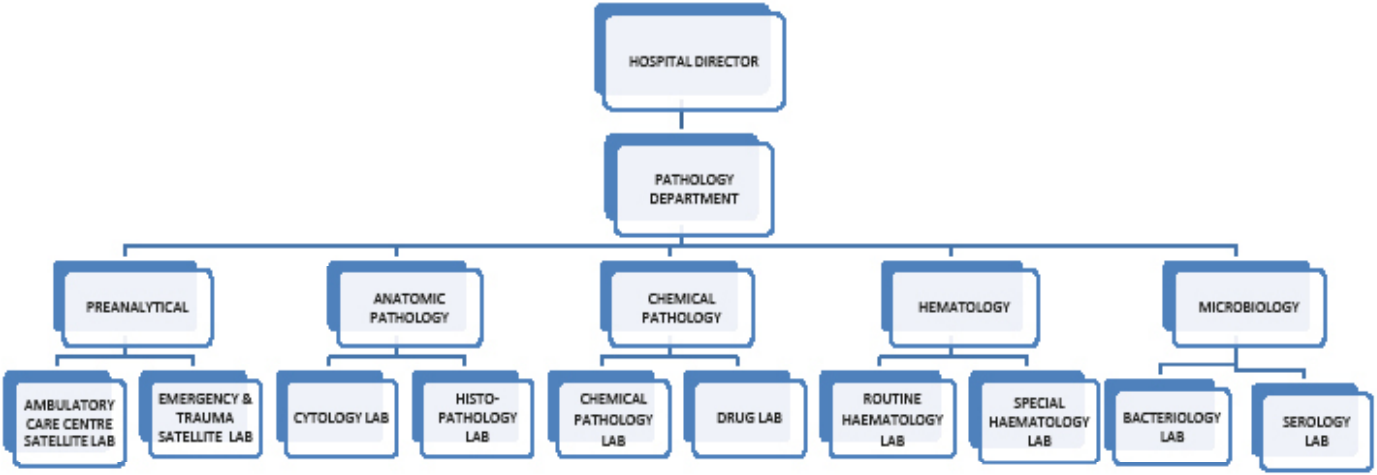
MISSION | OF THE DEPARTMENT OF PATHOLOGY

Responsible for providing clinical diagnostic services that are efficient, fast and accurate through quality service and ethical conduct, use of latest technology and professional personnel to meet the needs and expectations of all customers

CUSTOMER | CHARTER PATHOLOGY

Provide quality diagnostic services, fast, accurate and customer friendly

ORGANISATION CHART


HOSPITAL DIRECTOR
PATHOLOGY DEPARTMENT
PREANALYTICAL
ANATOMIC PATHOLOGY
CHEMICAL PATHOLOGY
HEMATOLOGY
MICROBIOLOGY
AMBULATORY CARE CENTRE SATELLITE LAB
EMERGENCY & TRAUMA SATELLITE LAB
CYTOLOGY LAB
HISTO-PATHOLOGY LAB
CHEMICAL PATHOLOGY LAB
DRUG LAB
ROUTINE HAEMATOLOGY LAB
SPECIAL HAEMATOLOGY LAB
BACTERIOLOGY LAB
SEROLOGY LAB

CONTACT NUMBERS

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ADMINISTRATIVE UNIT	
Head of Department	**1358**
Medical Lab Technologist U38/40	**1382 / 1429**
Personal Assistant / General Office	**1362**
PREANALYTICAL UNIT	
Head of Unit	**1454**
Specimen Reception Counter / Outsource Section	**1369**
Satellite Lab at Ambulatory Care Centre (ACC)	**6219**
Satellite Lab at Emergency and Trauma Dept (ETD)	**1605**
ANATOMICAL PATHOLOGY UNIT	
Head of Unit	**1270**
Pathologist	**1453 / 1270**
Medical Officer	**1240**
Scientific Officer	**1429**
Medical Lab Technologist U32	**1357 / 1356**
Histopathology Laboratory	**1357**
Cytopathology Laboratory	**1356**
Grossing Laboratory	**1364**

DEPARTMENT OF PATHOLOGY	EXTENSION
CHEMICAL PATHOLOGY UNIT	
Head of Unit	**1454**
Scientific Officer	**1372 / 1361**
Medical Lab Technologist U32	**1424**
Chemical Pathology Laboratory (CPL)	**1360**
Drug Lab	**1449**
HAEMATOLOGY UNIT	
Head of unit	**1444**
Pathologist	**1444 / 1270**
Medical Officer	**1240**
Scientific Officer	**1429**
Medical Lab Technologist U32	**1370**
Routine Haematology Laboratory (RHL)	**1370**
Special Haematology Laboratory (SHL)	**1359**
MICROBIOLOGY UNIT	
Head of Unit	**1454**
Pathologist	**1454**
Scientific Officer	**1365 / 1372**
Medical Lab Technologist U32	**1367**
Microbiology Laboratory	**1367**
Serology Laboratory	**1451**

GENERAL OPERATING POLICIES

1. INTRODUCTION

The Department of Pathology provides comprehensive laboratory services for Hospital Tengku Ampuan Rahimah (HTAR), Klang and acts as a referral Pathology service centre for government and private hospitals and clinics within its vicinity. The department has obtained MS ISO 9001 certification and currently embarking to obtain MS ISO 15189.

2. LOCATION

The Department of Pathology is located on the ground floor of the main building of Hospital Tengku Ampuan Rahimah, Jalan Langat, Klang, Selangor.

3. ORGANIZATIONAL STRUCTURE

The department is divided into 5 units. Please refer to the attached organization chart.

4. OBJECTIVES

4.1 To provide diagnostic and consultancy services in the field of Chemical Pathology, Microbiology and Serology, Histopathology, Cytopathology, Haematology to all clinical departments at Hospital Tengku Ampuan Rahimah, clinical laboratories of other government and private hospitals and health clinics within its vicinity.

4.2 To provide technical and analytical training for personnel and staff of Hospital Tengku Ampuan Rahimah, other government hospitals and trainee or students from other institutes.

4.3 To provide advisory and consultancy services to Hospital Director, State Health Director and Ministry of Health in matters related to the Pathology services.

4.4 To conduct and assist research and development in the Pathology and other relevant clinical fields.

5. SERVICE HOURS

5.1 All laboratories in this department operate during normal working hours.

5.2 Certain tests in Chemical Pathology, Haematology and Microbiology are offered 24 hours. These services are provided by Integrated Laboratory in the Pathology Department and Satellite Laboratory in Accident and Emergency Department.

5.3 There are 2 satellite laboratories located at Ambulatory Care Centre and Accident and Emergency Department. The operating hours for Ambulatory Care Centre laboratory is from 8am until 1pm from Monday to Friday and is closed during Saturday, Sunday and public holidays.

5.4 Specimens which need to send to other testing laboratories such as Institute Medical Research (IMR), National Blood Centre (NBC/PDN) and Hospital Kuala Lumpur (HKL) are sent out every working day at 9.00 am. The specimens should be last received at the counter by 8.45 am to facilitate the delivery.

5.5 There are pathologists and medical officer on 24 hours call duty each day. The contact numbers is provided in monthly call roster

6. TYPE OF SERVICES

6.1 Urgent – Test under urgent request which are vital for patient immediate management will be given priority and processed immediately within the stipulated turnaround time (TAT).

6.2 Routine – Routine tests are processed within the requirement of the turnaround time (TAT)

7. SERVICES FOR PRIVATE HOSPITAL /LABORATORY

7.1 Request for tests and services from private hospitals and clinic are attended post approval by the Head of Department.

7.2 All requests are charged according to the current Fee Ordinance and must be paid prior to analysis.

8. QUALITY ASSURANCE

The following Quality Assurance programs are carried out in the department:

8.1 Recognized External Quality Assurance Schemes.
8.2 Internal quality control monitoring
8.3 National Indicator Approach
8.4 Customer Satisfaction Survey
8.5 Regular Internal Audit MS ISO 15189 and MS ISO 9001
8.6 Key Performance Index
8.7 Hospital Performance Indicator for Accountability
8.8 Malaysian Patient Safety Goal

9. TRAINING PROGRAMME

9.1 Departmental / Unit Continuous Medical Education (CME) sessions including Journal Club.

9.2 Interdepartmental and inter-hospital Clinical-Pathological Conference sessions.

9.3 Regular in house training for staff and trainee are held at department and unit level.

9.4 Staffs are regularly sent to participate in external training programme.

9.5 Orientation programme is conducted for all new staff and trainee

10. SAFETY AND HEALTH OF STAFF

Strict safety measures are implemented according to the laboratory safety manual. HTAR has established a worker Safety and Health Committee, as required by National Institute for Occupational Safety and Health (NIOSH)

PREANALYTICAL REQUIREMENT

1. INTRODUCTION

Majority of laboratory requests are received at the Main Reception Counter which operates 24 hours. Laboratory requests for Anatomical Pathology examination and Drug of Abuse testing are received at the respective laboratories during office hours. The Main Reception Counter will sort laboratory requests and perform rejection when necessary.

2. REQUEST FORM

2.1 A standard laboratory request form (PER-PAT 301) is used for all categories of tests, unless stated otherwise. Refer to the chapters on list of tests and request forms.

2.2 Each request form must be sent according to the test required

2.3 All request forms must be filled in completely and accompanied by properly collected specimens. The request form must be filled legibly and completely with the following information:

- Patient's name–as stated in identification card (IC)/passport
- Full IC number for Malaysian (12 digits)*
- Registration number (RN)
- Age
- Race and Gender
- Ward/ Clinic/ Name of Hospital
- Relevant clinical history, diagnosis and treatment
- Test required
- Type of specimen and anatomic site (if relevant)
- Date and time of specimen collection
- Name of the requesting doctor
- Signature and stamp of the requesting doctor

*Note:

- Passport number should be used for non-Malaysian patient
- Nombor tentera or nombor polis can be used when necessary
- Twin babies must be stated clearly on the request form and specimen
- MyKid IC number is encouraged to be used for paediatric patients. In cases where MyKid is not available, mother's IC/ Passport number must be used. However it must be stated clearly on the request form
- HTAR number can only be used when IC/Passport number is not available

3. SPECIMEN

3.1 Specimen should be collected from patient in the ward or clinic and properly labelled. Each specimen must be labelled with at least 2 identifiers which include the following information; and the information must tally with the form:

- Patient's name AND
- Full IC number (12 digits) / Passport number / Registered Number (RN)/ HTAR number

3.2 Specimen containers shall be placed in biohazard plastic bag and stapled to the respective request form.

3.3 To ensure consistent and accurate result follow strictly the volume of blood required for the type of test specified on the label or fill the blood sample up to mark on the tube.

3.4 To prevent hemolysis:

- Use proper needle gauge size
- If use vacutainer tubes, do not remove the cap
- Fill the blood sample up to mark on the tube
- Avoid vigorous mixing
- Send the specimen to the laboratory as soon as possible.

3.5 Avoid clot formation by:

- Ensuring the smooth venepuncture and steady flow of blood into the syringe.
- Introducing the blood in the anticoagulated tube up to the mark as soon as the blood has been drawn.
- Immediately mix gently by inverting the tube at least 5–10 times.

4. TYPE OF CONTAINERS

The specimen should be sent to the laboratory in appropriate container as specified. Refer to the chapters on specimen containers, list of offered and referred tests.

5. TRANSPORTATION

All laboratory requests should be dispatched to the laboratory as soon as possible in appropriate medium as specified. Refer to the chapters on list of offered and referred tests.

6. REJECTION

Laboratory requests which do not fulfil the laboratory requirement will be rejected. Rejection can be done either through laboratory information system (LIS) or manually using rejection slip. Reasons for rejection can be classified into primary and secondary rejection, example as follows:

6.1 Primary rejection

- Duplicate test request
- Empty container
- Empty request form
- Incomplete patient's identifiers on specimen label
- Leaking specimen from container
- Mislabeled specimen
- Patient's identification number is not provided
- Patient's identification on the request form/specimen label is illegible
- Patient's identification on the request form and specimen label does not tally
- Request form has no requester signed and stamped
- Request form has no specialist approval (signed and stamped)
- Request form is received without specimen
- Requested test less than the specified interval
- Syringe is not capped with stopper
- Test is temporarily suspended
- Specimen is received without request form
- Specimen is not transported in ice
- Specimen in syringe with needle attached
- Test not offered
- Test not indicated
- Test request is not stated/ specified
- Unlabeled specimen
- Wrong container
- Wrong specimen sent

6.2 Secondary rejection (will be determined by respective units)

- Aged specimen
- Clotted specimen
- Grossly haemolysed specimen
- Hemorrhagic specimen
- Icteric specimen
- Insufficient specimen
- Lipaemic specimen
- Mucoid specimen
- Possible specimen contamination
- Purulent specimen
- Wrong sampling time

CRITICAL RESULTS IN PATHOLOGY DEPARTMENT

1. Critical Results in Pathology department

- Majorities of laboratory reports (except for referred tests) can be viewed through lab viewer terminals which are available in the clinics and wards.
- Printed reports will be dispatched into respective pigeon holes (if applicable).
- Reports for positive HIV are sealed in envelopes and to be collected from serology laboratory.
- Critical results will be notified to the requesting ward or doctor accordingly for first time result/current admission (inpatient) via bed watcher or phone call. Please refer to respective unit for list of critical values/results.
- Enquiries of test results over the phone are discouraged, to avoid mistake in conveying the results.

2. Critical limit for Chemical Pathology Unit

Analytes		Lower critical limit		Upper critical limit	
	Adult	Paediatric	Neonate	Adult	Paediatric
Total bilirubin			≥300 umol/l		
Potassium	≤ 2.8mmol/l	≤ 2.8mmol/l		≥6.0mmol/l	≥6.0mmol/l
Sodium	≤125mmol/l	≤125mmol/l		≥155mmol/l	≥155mmol/l
Calcium	≤1.5 mmol/l	1.7mmol/l		≥3.0mmol/l	≥3.1mmol/l
Ammonia					≥100mmol/l

3. Critical limit for Haematology Unit

Analytes		Lower critical limit		Upper critical limit		
	Adult	Paediatric	Neonate	Adult	Paediatric	Neonate
Haemoglobin	6.0g/dl	7.0g/dl	8.0g/dl	19.0g/dl	20.0g/dl	22.0g/dl
Hematocrit	20%	20%	25%	60%l	40%	70%
Platelet	20 x 10^3/µl	50 x 10^3/µl		1000 x 10^3/µl	1000 x 10^3/µl	
White blood cell		2.0 x 10^3/µl			50 x 10^3/µl	

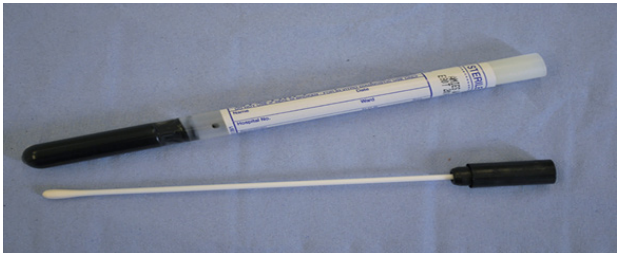
4. Critical findings for Microbiology Unit

Cerebrospinal fluid microscopy (gram stain & cell count)	Microscopy result (normal or abnormal)
Cerebrospinal fluid antigen detection	Positive rapid antigen detection
Cerebrospinal fluid India ink stain	Positive stain
Blood culture	Positive result from gram stain
Acid fast bacilli	Positive smear result or/and culture
Malaria parasite on blood film	Presence of malaria parasite
Stool culture	Salmonella typhi, Vibrio cholerae, Shigella
Any type culture	ESBL producer organism, MRSA, CRE, VRE, Multi-Resistant Organism (MRO)
Throat swab	Corynebacterium Diphteriae

5. Critical findings for Anatomical Pathology

Unexpected or discrepancy findings	• Unexpected malignancy • Wrong organ removed
Reports of infections	• Bacteria in heart valves or bone marrow • Organisms in an immune-compromised patient such as AFB, fungi, viral, protozoa • Organisms in cerebral spinal fluid (CSF) • Unusual organisms or organism in unusual sites e.g. Amoeba in the eye.
Reports on critically ill patients requiring immediate therapy	• Crescents in greater than 50% of glomeruli in a renal biopsy specimen • Transplant rejections
Cases that have immediate clinical consequences	• Fat in an endometrial curettage • Mesothelial cells in a heart biopsy • Fat in snare colon biopsy specimens.

SPECIMEN CONTAINERS



Transport media with charcoal

Viral Transport Media Bottle

ESR Tube

Paediatric Blood Culture Bottle

Myco/F Lytic Blood Culture Bottle

Anaerobic/Aerobic blood culture bottle

CSF Tube

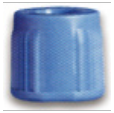
24 hour urine container

Universal sterile container

ORDER OF DRAW

Blood Culture Vial

Sodium Citrate Tube **Plain Tube** **Heparin Tube** **EDTA Tube** **Sodium Fluoride Tube**

COLOUR CODE	TUBE TYPE	ORDER OF DRAW	NO. OF INVERSIONS AFTER BLOOD COLLECTION	USAGE
	Blood Culture	• In adult patient, both anaerobic and aerobic bottle must be filled adequately. • In paediatric patient, use paediatric bottle • If using needle and syringe - inoculate **Anaerobic** bottle first followed by **Aerobic** bottle • If using a butterfly set - recommended sequence of draw is to inoculate **Aerobic** bottle first followed by **Anaerobic** bottle (to prevent introduction of gasses e.g oxygen into the anaerobic bottle)	2 - 3 (Do not shake)	For blood culture & sensitivity
	3.2% Sodium citrate	• Use 3.2% sodium citrate anticoagulant. The citrate stops blood clotting by removing calcium from the sample, which is essential for coagulation. • Routine coagulation should be sampled first in order to avoid clot activator. • Clotting action must be inhibited ASAP, otherwise might get a false result. • If the sample has already clotted no further clot formation can be produced and it can cause prolonged result, therefore it may appear the patient has been over anticoagulated and treatment may be stopped.	5 - 10	PT, INR, APTT, Fibrinogen, D-Dimer, Mixing test, all coagulant factor assay (for example: Factor VIII assay, Factor IX assay) and Factor inhibitor assay

COLOUR CODE	TUBE TYPE	ORDER OF DRAW	NO. OF INVERSIONS AFTER BLOOD COLLECTION	USAGE
	Plain Tube with gel	• The yellow tube contains a disc of gel in the bottom of the tube. When centrifuged this gel disc rises up the tube and forms an impenetrable layer between the cells and serum. • This layer means that potential problems caused by the serum being in contact with the cells for too long are virtually eliminated.	5 - 10	CHEMICAL PATHOLOGY TSH, FT4, FT3, Cord Blood TSH, Cortisol, Iron, TIBC, Vitamin B12, Folate, Ferritin, PSA, CEA, AFP, Beta HCG, CA125, LH, FSH, Estradiol, Progesterone, Prolactin, Troponin, Amylase, Lipid, CRP, Ethanol, Salicylate , Acetaminophen, Amikacin, Gentamycin, Vancomycin, Valproic Acid, Phenytoin, Carbamazepine, Digoxin, Phenobarbitone, Theophylline, Urea, Creatinine, Sodium,Potassium, Chloride, Mg, Ca, PO4, Uric acid, Total protein, Albumin, Total Bilirubin, ALT, AST, GGT, LDH, CK, C3, C4 SEROLOGY HIV, Hep B, Hep C, Dengue serology, RPR/TPPA, ASOT, Mycoplasma, ANA/dsDNA, RF, TORCHES, Leptospira

COLOUR CODE	TUBE TYPE	ORDER OF DRAW	NO. OF INVERSIONS AFTER BLOOD COLLECTION	USAGE
	Lithium Heparin	• Lithium Heparin is anticoagulant- stops blood clotting by a different method to citrate. It actually inhibits the natural clottingprocess. • It is important for tests when serum is not suitable. This is not common but useful for when cells need to be separated off quickly and not wait for the natural clotting mechanism • If the heparin tube was sampled before the serum, you could have elevated lithium results, may interfere within TFT, enzymes, it also interferes with calcium method. • If the heparin tube was sampled before the coagulation sample, there is a risk of false coagulation results.	5 - 10	HEMATOLOGY: Osmotic Fragility Test CHEM PATH: Suspected pseudohyperkalemia

COLOUR CODE	TUBE TYPE	ORDER OF DRAW	NO. OF INVERSIONS AFTER BLOOD COLLECTION	USAGE
	K_2EDTA	• EDTA tubes contain Potassium, which stops blood clotting by binding Calcium (which is essential for clotting mechanism). • If this sample was taken before the serum sample we could see (a) High or very high levels of K^+ (b) low or very low levels of calcium (Ca^{2+}) (c) low levels of ALP, CK and ALT • It is therefore very important that the serum sample is not contaminated with EDTA as it renders the sample virtually unusable or it may give dangerously misleading results.	5 - 10	HAEMATOLOGY Full Blood Count, Full Blood Picture, G6PD enzyme quantitation, Hb analysis for thalassemia screening, Sickling test, CD4/CD8 CHEMICAL PATHOLOGY Haemoglobin A1c, Ammonia, IPTH

COLOUR CODE	TUBE TYPE	ORDER OF DRAW	NO. OF INVERSIONS AFTER BLOOD COLLECTION	USAGE
	Sodium Fluoride/ Potassium Oxalate	• This tube contains Sodium fluoride and functions as an anticoagulant and preservative. • If this sample is taken before the serum sample, it may become contaminated and give incorrect results.	5 - 10	Glucose, Lactate

* Colour coding of vaccutainer may vary. The blood should be collected in the following order to prevent sample contamination

This contamination produces spurious and invalid results.

- Avoid haemolysis, drip contamination and prolonged venous constriction.
- Ensure thorough and instant mixing of blood with anticoagulant (heparin, or potassium EDTA) for plasma specimens.
- Do not transfer bloods from one tube to another tube eg: EDTA to plain tube.
- Send specimen to laboratory immediately after the blood been drawn.

CHEMICAL PATHOLOGY

1. **INTRODUCTION**

Chemical Pathology Unit runs general pathology tests, endocrinology tests, anemia tests, therapeutic drug monitoring, drug of abuse, special protein, tumor markers on body fluids such as blood, urine, cerebrospinal fluid, synovial fluid, and peritoneal fluid for the purpose of diagnostic and patient management.

2. DIAGNOSTIC SERVICES

Type of diagnostic services offered:

A. Routine Tests : All routine test request (Refer to the chapter on list of offered tests) will be processed and the results will be released as stated in the list of offered tests. The service for routine chemistry tests is provided on a 24 hours basis.

B. Urgent Tests : All urgent test requests will be processed immediately upon receiving the specimens and the results will be available as stated in the list of offered tests. All urgent requests should indicate URGENT clearly on the request form and the diagnosis should be indicated. The service is offered 24 hours every day.

C. Batch Test : All batch requests will be processed on the same day of receipt and stored at 4-8°C or at -20°C. Analysis will be done according to the schedule. Result will be released within the stipulated turnaround time for each test.

3. REQUEST FORM

Only 1 copy of laboratory request forms (PER-PAT301) is required for all tests in Chemical Pathology lab except for therapeutic drug monitoring (2 copies).

4. LIST OF TESTS

Refer to the chapter on list of offered tests.

5. RECEIPT OF SPECIMEN

All specimens will be received at Main Reception Counter.

6. REPORTING OF RESULTS

Test results will be validated by Chemical Pathologists, Medical Officers and/or Biochemists. In case these officers are not present, Medical Laboratory Technologists (MLT) are authorized to validate the result after all quality requirement has been fulfilled.

7. REFERENCE RANGES

Reference ranges will be provided with the results.

8. SPECIMEN COLLECTION

8.1 URINE FOR DRUG DETECTION

Tests offered in this section are Screening and Confirmatory tests for Cannabis and Morphine pertaining to police cases of Drugs of Abuse (DOA) and Medical Checkup. PERPAT 301 request form will only be used for clinical cases for toxicology.

Please ensure all items below are available:

a) Fillin the request form "Borang Permintaan Pengesanan Dadah Dalam Urin" in 2 copies.
b) A minimum 30ml of urine is required for each subject/suspect.
c) The container must be sealed appropriately.
d) Name, IC number, date and time specimen collected in the request form and container label must be tally.

8.2 24 HOUR URINE COLLECTION

a) The 24 hour urine bottle which contains preservatives for the required test is available at the Main Reception Counter and provided on request, with accompanying request form.
b) On the day of collection, the first urine voided must be discarded.
c) Collect the second and subsequent voided urine for 24 hours from the time start into the 24 hour urine bottle.
d) At the end of 24 hour, the last urine voided is collected. For best result, refrigerate if possible.
e) It is advisable not to void the urine directly into the 24 hour urine bottle
f) Label the container and send immediately to the laboratory.

8.3 24 HOUR CATECHOLAMINE

a) Please refer to the above procedure on 24 hour urine collection. Please note that 10 mls of 25% HCL preservatives has been added into the urine bottle to preserve the analyte.
b) Drugs to avoid: alpha-methyldopa, salicylates, lithium, tetracycline, erythromycin, amynophylline and insulin for at least 48 hours before collecting urine as specimen.
c) Subject should avoid activities that can cause stress and vigorous exercise.
d) Subject should abstain from the following food;
    - Drinks containing caffeine
    - Fruits containing citrus
    - Foods containing vanilla

8.4 CREATININE CLEARANCE

a) Collect 24 hour urinespecimen
b) Take blood sample on the same day for bloodcreatinine.
c) Send 24 hour urine sample and blood sample to thelab.

The urine volume is measured and hence the minute volume (V) is calculated:

$$\text{Volume (V)} = \frac{\text{Urine total volume in ml}}{\text{Time of collection in minutes}}$$

The creatinine concentrations of urine (U) and plasma (P), are determined.

$$\text{Creatinine Clearance(ml/min)} = \frac{\text{U(µmol/l) x V(ml/min)}}{\text{P (µmol/l)}}$$

8.5 BLOOD GASES SAMPLES

Procedure of collection

a) Indicate time of arterial or venous puncture in the request form.
b) Use a 1 ml disposable syringe.
c) Rinse it by sucking heparin (5,000 units per ml) into the syringe and expel excess heparin-solution from the syringe.
d) Draw 1 ml of blood.
e) Invert the syringe upward and expel all air bubbles or any air space.
f) Cap the syringe with stopper.
g) Mix well by rolling the syringe between palms to prevent clotting
h) Put the syringe in a slurry ice bath and send immediately to the lab (The sample must reach the laboratory for analysis in 30 minutes after drawing of blood)

8.6 LACTATE

Procedure of collection

a) Patient should be fasting and at complete rest.
b) Venous specimen is best drawn without tourniquet or immediately after the tourniquet has been applied.
c) If the tourniquet has been applied for some time, it should be removed after the puncture has been performed and blood allowed to circulate for at least 2 minutes before the blood is withdrawn.
d) 3 ml of blood is collected in a container with fluoride oxalate as anti coagulant.

Notes

- Sample should be chilled in ice water and sent to the laboratory with in 1hour.
- Hemolysis may affect results.

8.7 AMMONIA

Procedure of collection

a) Patient should be fasting and at complete rest.
b) Venous specimen is best drawn without tourniquet or immediately after the tourniquet has been applied.
c) If the tourniquet has been applied for some time, it should be removed after the puncture has been performed and blood allowed to circulate for at least 2 minutes before the blood is withdrawn.
d) 3 ml of blood is collected in a container with EDTA as anticoagulant.

Notes

- Samples preferably chilled in ice water and send to the laboratory immediately.

8.8 ORAL GLUCOSE TOLERANCE TEST

Procedure of collection

a) Fast the patient overnight
b) 8.00 am: Collect fasting blood sample for glucose.
c) Give patient 75g (anhydrous) oral glucose dissolved in 250 to 300 ml water and drink within 5 minutes. For children, the recommended glucose dose is 1.75g/kg body weight up to a maximum of 75g anhydrous glucose.
d) 10.00 am: Collect blood sample at 2 hour post prandial.

8.9 SERUM ASCITES ALBUMIN GRADIENT (SAAG)

Procedure of collection

a) Collect a blood sample and ascites fluid at the same time during the days for albumin measurement

$$SAAG = \text{Albumin concentration of serum} - \text{Albumin concentration of ascitic fluid}$$

PROTOCOL FOR REQUESTING AND COLLECTING SAMPLES FOR PLASMA RENIN AND PLASMA ALDOSTERONE

Patient Preparation

1. Attempt to correct hypokalemia
    - Blood should be collected slowly with syringe and needle (preferably not vacutainer to minimize risk of spuriously raising potassium).
        - Avoid fist clenching – wait at least 5 seconds after tourniquet release to insert needle.
        - Separate plasma from cells as soon as possible or within 2 hours of collection.
    - Avoid hypokalaemia as it suppresses aldosterone secretion. Give potassium replacement (Slow K tabs) sufficient to raise plasma potassium >4.0 mmol/L.

2. Subject should be normally hydrated and has an adequate oral intake of sodium.
3. Drugs to avoid:
    - Spironolactone*, amiloride, triamterene.
        - *Spironolactone must be stopped for 6 weeks.
    - Potassium-wasting diuretics.
    - Product derived from licorice root.
4. If ARR testing is not diagnostic after withdrawing above agents and hypertension can be controlled with noninterfering medications, test again 2 weeks after withdrawing other medications
    - ACE inhibitors, ARB, beta-blockers, methyldopa, clonidine.
    - Oral contraceptives and hormone replacement therapy may lower direct-renin concentration and cause false positive ARR.
        - Do not withdraw oral contraceptives unless confident of alternative-effect contraception.
5. Drugs that do not interfere with the renin-aldosterone axis include: Prazosin, verapamil, hydralazine and terazosin.

Requirements

- Potassium EDTA (K_2EDTA) tube for renin (DRA).
- Potassium EDTA (K_2EDTA) tube for aldosterone.
- Blood samples should be sent rapidly to the laboratory but not in ice (within 30 minutes) as cooling would cause cryoactivation of prorenin to renin, leading to falsely raised renin.

Conditions for blood collection

- Collect mid morning after patient has been sitting, standing, or walking for at least 2 hours, and seated for 5-15 minutes.
- Collect blood carefully to avoid stasis and hemolysis during collection.
- Collect samples into 2 tubes of EDTA.

(Please use different tubes for Renin and Aldosterone. Suggest collecting minimum 3 mL blood per sample, as at least 500 µl plasma need for each analysis).

- Maintain sample at room temperature (not in ice) during transportation to laboratory for centrifugation.
- Fill-up the PER. PAT 301 form. Only single form is required for requesting Aldosterone Renin Ratio (ARR).
- Patient's clinical history, drug history and latest potassium (K^+) level are MANDATORY.
- Test should be requested by Specialist / Endocrine Specialist only.
- Please record patient's posture whether supine or upright.

Supine sample:
Sample taken in the early morning before the subject arises (If feasible).

Upright sample:
Subject should be upright for ≥ 2 hours prior to sampling.

- Samples should be taken between 8 am to 10 am.

ANATOMIC PATHOLOGY

HISTOPATHOLOGY

1. INTRODUCTION

Histopathology service is concerned with diagnosis by macroscopic and microscopic examination of tissue. This includes the histological assessment of surgical or non-surgical tissue and also investigation of disease at clinical autopsy. In each case the diagnostic histology examination is part of the clinical investigation of the patient and cannot be performed satisfactorily in isolation. The quality of histopathology interpretation and diagnosis may depend upon the clinical information written on the request form.

2. SERVICE PROVIDED

2.1 Surgical Pathology

- Histology examination Routine H&E
- Histochemistry
- Immunohistochemistry
- Immunofluorescence

2.2 Frozen section

2.3 Autopsy specimen

3. REQUEST FORM

3.1 PER-PAT 301 form (duplicate) for routine histological examination, frozen section and autopsy specimen.

3.2 For URGENT request, please mark on the request form "URGENT" in the right upper hand corner of the request form

3.3 Fill the form completely with clearly written name of doctor in-charge (especially the specialist in-charge) so he/she could be contacted if there is any enquiry.

3.4 Clearly indicate the ward/ clinic/ hospital where the report should be sent back.

3.5 Make sure the name and IC number of the patient is the same in the request form, specimen container and in the patient records.

3.6 Specimen must be itemised in the request form accordingly if more than one specimen container is submitted per request form.

3.7 For assessment of surgical excision in malignant neoplasm, the margins must be marked accordingly by sutures and accompanied by diagram in the request form by the doctor in-charge.

4. SPECIMEN CONTAINER

4.1 All specimens for routine histological examination are to be fixed in 10% buffered formalin in suitable leak-proof container.

4.2 The volume of the formalin is at least 10 times the size of the specimen to make sure the specimen is well fixed.
4.3 DO NOT PUT large specimen in small containers as this would prevent proper fixation of the tissue and also distort the specimen.
4.4 All specimens should have the same identification as that written on the request forms.
4.5 Specimens for frozen section and immunofluorescence are to be sent fresh without fixative in a closed container or in gauze moistened with normal saline to prevent drying.
4.6 Trephine biopsy specimen should be fixed in 10% neutral buffered formalin (NBF)

5. RECEPTION OF SPECIMEN

5.1 Specimen for routine histological examination should be sent directly to the histopathology laboratory during office hours.

Monday to Friday	8.00am to 4.30pm
Saturday	8.00am to 11.30am
Public holiday	Next working day

Note: Specimens should be fixed in the usual manner and dispatched to the laboratory.

5.2 Specimen for frozen section and IF should be sent immediately upon removal to the laboratory by a doctor.
5.3 Autopsy specimens can be sent by forensic staff.

6. WITH-HOLDING OF SPECIMEN

6.1 Specimen will be with-held if any discrepancy as stated in clarification criteria (PATH/HI/FORM-9).
6.2 Correction should be done by responsible ward/ clinic staff as soon as possible.

7. REPORTING OF RESULTS

7.1 Majority of laboratory reports (except for referred tests) can be viewed through lab viewer terminals which are available in the clinics and wards.
7.2 Lab Turn Around Time (LTAT) of HPE: Refer list of offered test

8. COLLECTION OF REPORTS

8.1 Printed histopathology reports will be put in envelopes and will be collected from the Histopathology laboratory by the clinic / ward person in-charge (if applicable).

9. ENQUIRY OF RESULTS

9.1 The histopathology report number (HPE number) and enquiry about the status of the report can be obtained by calling extension 1357 or can be viewed via LIS

9.2 Enquiry of the diagnosis of the case report over the phone is DISCOURAGED

9.3 The requesting doctors are welcome to discuss their cases directly with the reporting Pathologist.

10. SERVICE AFTER OFFICE HOUR

10.1 Frozen sections are not available after office hours except for transplant cases.

10.2 Clinical post mortem can be requested to the pathologist on call.

11. FROZEN SECTION

11.1 Frozen section can only be requested by the specialist treating the patient by appointment with the pathologist on-call.

11.2 Fill the request form(PATH/HI/FORM-2(Version-1)) and bring to the Histopathology laboratory to confirm date / time and to discuss with Pathologist on call at least 3 days or at the discretion of pathologist.

11.3 All cases scheduled for frozen section examination are best placed first in the operating list.

11.4 Please inform the laboratory at extension: 1357 when:

- The patient is wheeled into the operation room
- The frozen section specimen is on the way to the laboratory
- The frozen section examination is cancelled.

11.5 The tissues for frozen section are to be sent fresh without formalin or in gauze moistened by normal saline to prevent drying. The specimen must be sent immediately to the laboratory with the request form by doctor.

11.6 Write the contact number of the surgeon on the request form. The results of frozen section will be immediately informed to the surgeon via phone or a written report will be dispatched to the doctor who brought the specimen to the laboratory.

11.7 Cases are generally reported within LTAT mention in table 7.2, unless the cases need further studies, second opinion and etc.

12. CLINICAL POST-MORTEM

12.1 The post-mortem is conducted to ascertain the cause of death and study the effect of treatment in clinical (non-medico legal) cases.

12.2 The following procedures should be followed:

- The requesting clinician will first obtain written consent from the next of kin by completing the "Consent Form of Clinical Post-Mortem Examination".
- Request should then be communicated directly to the pathologist on call or Medical Officer.
- Clinical summary and case notes are prepared and made available to pathologist on duty.
- The requesting clinician should be present during the autopsy.

12.3 Report will be available within 8 weeks after completion of post-mortem.

12.4 Indication for clinical post-mortem was referring to "Garis Panduan Bedah Siasat Mayat di Hospital-hospital di Kementerian Kesihatan Malaysia, Surat Pekeliling Ketua Pengarah Kesihatan Bil 17/2008.

13. TAKING OUT TISSUE FROM HISTOPATHOLOGY UNIT

13.1 All specimens (tissue) sent to and officially received by Histopathology Laboratory will be kept in the unit up for 3 months after the official report is released.

13.2 The Histopathology Unit allows the patient to take their tissue, organ or limb back upon request. Please follow this procedure:

- The patient or next of kin must make a formal request by filling up a form Borang Tuntutan Organ HPE (PATH/HI/FORM- 6)
- This form is available in Histopathology Laboratoy
- The completed form should be submitted to Histopathology Laboratory
- The tissue is released only after the specimen has been reported by the Pathologist.

14. REQUEST TO OBTAIN MICROSCOPIC IMAGE FROM HISTOPATHOLOGY UNIT

14.1 Microscopic images are not archived as routine but images can be provided upon request.

14.2 A request shall be made or endorsed by specialist.

14.3 The requesting doctor should communicate directly with the Pathologist concerned.

14.4 A request shall be made by filling up a form Application for Histopathology Image (PATH/HI/FORM-8)Version 1 which is available at the Histopathology Laboratory. The completed form should be submitted to the Histopathology Laboratory.

14.5 The microscopic histopathology images will be available within 2-4 weeks upon submission of the form. Only soft copy of the images is provided and the requester should provide a CD or USB before collecting the images from the unit.

CYTOPATHOLOGY

1. INTRODUCTION

Cytopathology is a discipline that involves the morphologic study of cells. It is divided into two broad categories i.e. exfoliative cytology and aspiration cytopathology. Exfoliative cytology involves examination of specimens which contain exfoliated cells. The usual specimens received are cervical smears, sputum, urine, pleural effusion, peritoneal fluid and washing of various sites. Aspiration cytology involves examination of cells that are obtained by fine needle aspiration and brushing.

2. LISTS OF SERVICES

2.1 Gynaecological specimen
- Conventional(Smear)
- Liquid Base Cytology(Pap smear)

2.2 Non-gynaecological specimen
- BodyFluid
- Sputum
- Urine
- Brushing/lavage

2.3 Fine needle aspiration cytology(FNAC)
2.4 Seminal fluid analysis

3. REQUEST FORMS

3.1 Pap smear request form (PS 1/98 Pindaan 2007) for gynaecology specimen in duplicate (2)copies.
3.2 PER-PAT 301 request form for the other routine cytological examination in duplicate (2)copies.
3.3 If urgent result required, please indicate by marking "URGENT" over the upper right corner of the request form.
3.4 The request form must be completely filled, including the clinical history to avoid rejection of specimen.
3.5 Fill the form with clearly written name of doctor in charge (Medical doctor)

4. SPECIMEN CONTAINERS

4.1 All fluid specimens for cytological examination should be collected in clean universal leak-proof containers.

4.2 Conventional Pap smear slide and FNAC slides should be placed in a slide mailer before being dispatched to the laboratory.

4.3 Liquid based cytology Gynaecology specimen (Pap smear) should be dispatched to the laboratory in the supplied vial.

5. SPECIMEN COLLECTION

5.1 Gynaecology specimen (Pap smear)

5.1.1 Conventional

a) Smear the material onto a clean labelled frosted-end glass slide, thinly and evenly
b) Immediately place the slide in 95 % alcohol for 30 minutes or use alcohol spray.
c) If more than one slide is to be placed in the same container, ensure that they are not placed face to face.
d) Send the smear together in a slide mailer with completed form.

5.1.2 Liquid base cytology

a) Obtain an adequate sampling from the cervix using a broom-like device. Note: Do not use lubricant on the speculum
b) Rinse the broom into the vial containing the fixative solution by pushing the broom into the bottom of the vial 10 times, forcing the bristles apart. As a final step, swirls the broom vigorously to further release material. Discard the collection device.
c) Tighten the cap.
d) Record the patient's name and IC number on the vial.
e) Send the vial and completed request form in a biohazard bag to the laboratory.

5.2 Non-Gynaecology specimen

5.2.1 All non-gynaecology specimen:

a) Specimens are collected in clean dry containers and properly labelled.
b) Send immediately to the laboratory within office hours.
c) If delay in transportation to the laboratory is unavoidable, keep refrigerated at 20C to 80C (72 hours) and send immediately to the laboratory the next morning.

5.2.2 Nipple discharge

a) Make an imprint smear. Place the labelled slides (at least 2 slides) onto the nipple.
b) One slide is fixed in 95 % alcohol and label 'FIXED'.
c) The other slide is dried in air and label 'DRY / MGG'

5.3 Fine Needle Aspiration Cytology (FNAC)

a) The FNAC clinic is conducted twice a week, TUESDAY and FRIDAY. The FNAC clinic starts at 9.00 am to 12.00 noon at the Surgical Outpatient Department (SOPD), HTAR Klang.
b) Appointment for FNAC should be ordered by clinician in charge.
c) Appointment from SOPD clinic can be made through SOPD clinic.
d) Appointment from wards and other clinics, the clinician may call directly to cytology laboratory for the appointment. For urgent unstable and paediatric cases, please consult the pathologist.
e) Ultrasound guided FNAC is conducted three times a week. (Monday, Wednesday and Thursday) at 2-4pm.
f) Consent to be taken and form attached with the request form.
g) To ensure the quality in doing the FNAC, the number of cases is limited to 15 per session.
h) For district hospital running their own FNAC procedure, they can send slides to the laboratory together with PER PATH 301 form.

5.4 Seminal Fluid Analysis (SFA)

a) The appointment day is only on every working day of TUESDAY and THURSDAY.
b) Maximum number of appointments on each day is 5 appointments.
c) On the appointment day, at about 8.00 am, collect the whole amount of your semen into the container given.
d) Deliver the sample together with request form to the laboratory as soon as possible before 9.00 am.
e) Keep the specimen in the bag or pocket throughout the journey to the laboratory.
f) Sample must reach the lab within 1 hour of collection. Sample that arrive beyond that, high possibility being rejected.
g) Please hand in the sample to the counter staff. (sample delivery by other people is not acceptable).
h) If you unable to come on the appointment day, please inform the laboratory by contact us at 03-33757000 ext1369 for a change of appointment date.
i) Patient must practice abstinence 3 to 5 days prior to test.

6. RECEIPT OF SPECIMEN

6.1 All specimens for cytological examination should be sent directly to the laboratory specimen counter.

6.2 All specimens must arrive at the laboratory at:
Monday – Friday: 8.00 am – 5.00 pm (Working day)

7. REPORTING, DESPATCH AND TURN AROUND TIME OF RESULTS

7.1 Majorities of laboratory reports (except for referred tests) can be viewed through lab viewer terminals which are available in the clinics and wards.

7.2 Printed reports will be collected at Cytology laboratory by the respective wards/ clinic person in-charge.

7.3 Lab Turn Around Time (LTAT): Refer list of offered test

HAEMATOLOGY

1. INTRODUCTION

Haematology unit, Hospital Tengku Ampuan Rahimah (HTAR), Klang provides diagnostic services for routine tests (24 hours) and specialized tests (during office hours). We offer consultations in laboratory haematology for HTAR, district hospitals and health clinics (under HTAR supervision) in Selangor.

2. REQUEST FORM AND SAMPLE

2.1 Only 1 copy of laboratory request forms(PER-PAT301) is required for all tests in Haematology except for Full Blood Picture test (2 copies).

3. SPECIMEN COLLECTION

3.1 General

3.1.1 Venous blood specimens are preferred.

3.2 Method of collection

3.2.1 Please refer to table List of Offerred Tests

3.2.2 Bone Marrow Aspiration Trephine (BMAT) ± Cytogenetic, Molecular and Immunophenotyping.

a) On the appointment date, doctor and patient must be ready for procedure by 8 AM, laboratory technologist will be at the procedure room to prepare smears from the aspirated bone marrow performed by the doctor in charge.

b) The slides will be taken back to the haematology laboratory by the technologist for staining.

c) Specimen for bone marrow trephine biopsy will be sent to Histopathology lab in 10% buffered formalin.

d) Specimen for Immunophenotyping, Cytogenetic and DNA study will be sent to referral centre as requested by the doctor in charge.

4. RECEIVING OF SPECIMEN

All specimens should be sent in a separate biohazard plastic attached to the respective PER PAT 301 form to the Main Reception Counter, Department of Pathology as soon as possible.

5. SPECIMEN CONTAINER

Please refer specimen container section.

6. SERVICE AFTER OFFICE HOURS AND PUBLIC HOLIDAY

6.1 All tests that are available in Routine Haematology laboratory can be requested as usual.

6.2 Tests done in Specialised Haematology laboratory is only offered during office hours.
6.3 If there is urgent FBP required, the request will be screened by the Pathology Medical Officer on-call. The requesting doctor must call the MO on-call to get permission.
6.4 For any non-urgent FBP received after office hours or public holidays, the FBC and smear will be done by MLT on call. The slides and FBC results will be given to doctors on the next working day for reporting.

7. REPORTING AND DESPATCHING OF RESULTS

7.1 Results can be viewed in the laboratory information system (LIS).

MICROBIOLOGY

1. INTRODUCTION

Medical microbiology is one of the most essential components in Pathology services. Knowledge and services in this area is vital for the clinical management of infection. Microbiology unit is particularly involved in isolation or establishing the causative organism as well as monitoring and screening of disease. It is also, indirectly provide guidelines on antibiotic usage management and the control of healthcare associated infection.

2. LIST OF SERVICES

The unit provides services as the followings;

2.1 Diagnostic microbiology services which comprise of bacteriology, mycology, virology, serology, immunology and parasitology.

2.2 Participation in hospital wide infection control activities related to surveillance, control and prevention of healthcare associated infections.

2.3 Provision of microbiology studies of the hospital environment and sterility testing.

3. REQUEST FORM

3.1 Specimens must come with the designated request form i.e. PER PAT301.

3.2 Number of completed forms required:

- Bacteriology - 2 copies
- Serology - 2 copies
- Blood culture - 2 copies

3.3 The information required on the form is to be filled and completed by the requesting doctor.

3.4 Specimen requirement should follow the general guidelines as outlines.

4. SPECIMEN COLLECTION AND HANDLING

4.1 General Guidelines

4.1.1 The quality of laboratory results depends greatly on the proper collection and handling of the specimen as well as obtaining satisfactory material for examination.

4.1.2 Specimen must be taken from the actual infection site with minimum contamination from adjacent tissues, organs or secretions.

4.1.3 A sufficient quality of specimen must be obtained in order to perform the examination required.

4.1.4 Appropriate collection devices, specimen containers and culture media must be used to ensure optimal recovery of microorganisms.

4.1.5 Specimen should be obtained before the commencement of antimicrobial therapy.

4.1.6 The specimen container must be properly labeled and capped, placed in a biohazard plastic bag and accompanied by a completed laboratory request form.

4.1.7 Specimens are best transported immediately to the laboratory.

4.2 Specific Collection Guidelines

4.2.1 Bacteriology

4.2.1.1 Blood Cultures

An automated blood culture system with different types of bottle according to age used:

Adults	:	Aerobic and anaerobic culture bottle Volume : 8 – 10 mls into each bottle
Pediatric	:	A single blood culture bottle Volume : 1 - 3 mls
Fungal C&S	:	Myco/F Lytic bottle Volume : 1 - 5mls
TB blood culture	:	Myco/F Lytic bottle Volume : 1 - 5 mls

Method of collection:

Before venepuncture, the skin must be carefully disinfected with 2% chlorhexidine gluconate in 70% alcohol antiseptic

i) Allow time for drying and do not touch the cleaned area thereafter except with sterile gloves
ii) Clean the top of the bottle with alcohol
iii) Perform venepuncture and inoculate adequate volume of blood into each bottle
iv) The volume of the blood is more critical than the number of cultures
v) Invert (do not shake) inoculated blood culture bottle 2-3 times
vi) Do not store specimens in the refrigerator

Note : In the suspicion of catheter-related bacteraemia, paired blood drawn from catheter lumen and peripheral vein are indicated.

4.2.1.2 Cerebrospinal Fluid(CSF)

i) Collect 3 – 4 mls of CSF into sterile CSF tube
ii) Send the specimen immediately to the laboratory.
iii) Do not store in the refrigerator.

4.2.1.3 Genital samples

High Vaginal swabs

i) Indicated in cases suspected of candidiasis and other cause of vaginitis.
ii) Use sterile speculum lubricated with sterile normal saline and swab either from the posterior fornix or the lateral wall of vagina.
iii) Inoculate the swab into Amies transport media.

Endocervical swab

i) A suitable specimen for the diagnosis of gonorrhea and puerperal sepsis.
ii) Under direct vision, gently compress cervix with blades of speculum and use a rotating motion with swab, obtain exudates from the endocervical canal.
iii) Inoculate the swab into Amies transport media.

Urethral discharge (Male)

i) Wipe the urethra with a sterile gauze orswab.
ii) Collect the exudates with a sterile swab. If discharge cannot be obtained by 'milking' the urethra, use a sterile swab to collect material from about 2 cm inside the urethra.
iii) Place the swab into Amies transport media.

Note: Do not refrigerate swabs.

4.2.1.4 Pus / Swabs / Tissue (i.e., eye swab, ear swab)

i) Clean with sterile water or disinfect with mild alcohol antiseptic over the skin area.
ii) Send pus (if available) in a sterile universal container
iii) Swab is an inferior substitute,and should be sent in an Amies transport medium.
iv) Send all tissues for culture in a sterile container. Sterile saline can be added to prevent drying. Do not add formalin to the specimen.

4.2.1.5 Respiratory specimens Sputum

i) Collect the sputum early in the morning, after a deep cough or after a session of physiotherapy. If tuberculosis is suspected (AFB), send 3 consecutivespecimens.
ii) Ask the patient to cough deeply and spit directly into a sterile universal container.
iii) The material expectorated should be secretions from the bronchi and not saliva.
iv) If delay is anticipated, store the sample in a refrigerator.

Nasal Swab

This commonly done for screening of MRSA carriage

i) Moisten swab with sterile saline
ii) Swab both the anterior nares and insert the swab in to the nose- and gently rotate against the nasal mucosa

Pernasal/ Nasopharyngeal swab

This is especially useful for the diagnosis of whooping cough (Test to order is Bordetella pertussis PCR)

i) Moisten the tip of soft flexible wire swab with sterile saline
ii) Gently insert it into one of the nares and along the floor of the nasal cavity into the nasopharynx, rotates it and withdraws
iii) Replace it in the carrier tube/bag and send it immediately for processing

Throat swab

i) Ask the patient to open his mouth widely. Gently depress the tongue with a tongue depressor and rub the sterile swab over the tonsillar areas and the mucosa on the posterior pharyngeal wall behind the uvula.
ii) Gently turn the swab so that its whole surface comes in contact with the inflamed mucosa or lesion.
iii) Avoid touching the oral mucosa or tongue with the swab.
iv) Place the swab in Amies transport medium immediately.

Tracheal aspirate

i) Send to lab in mucus trap (if it is used).
ii) If taken manually, flushed tube using sterile water and put into a wide mouthed sterile container.

Bronchial alveolar lavage (BAL) / brushings / biopsies

i) Place the specimen which is obtained via bronchoscopy into a sterile container.
ii) Send the specimen to the laboratory immediately.

Swabs from mouth, gums and oral cavity

i) Rinse mouth with water before sampling
ii) Using a sterile swab, rub into areas of exudation or inflammation and place into Amies transport medium.

4.2.1.6 Stool

i) Collect faeces into a sterile / clean wide-mouth screw-capped plastic container.

ii) If the faeces is liquid, the container may be filled to one third full (excessive amount will result in spillage when opened)
iii) Enrichment medium i.e., Alkaline Peptone Water for Vibrios and Selenite F for Salmonella can be obtained from the laboratory for bedside inoculation.
iv) Send specimens to laboratory immediately.

Note:
1. Rectal swab is a poor second best alternative to faeces. If it is not possible to obtain faeces, collect a specimen by inserting a cotton swab into rectum.
2. For stool clearance culture in cases of typhoid, stool should only be sent upon completion of therapy.

4.2.1.7 Urine culture

Midstream urine

Male patients

i) Withdraw the prepuce and cleanse the glands penis with soapy water thoroughly rinse with water.
ii) Pass first stream of urine to flush out the bacteria from the urethra, then collect the midstream portion in a sterile universal container and close it tightly.

Female patients

i) Clean the periurethral area and perineum with soapy water and thoroughly rinse with water.
ii) Hold the labia apart during voiding and pass the first stream of urine.
iii) Collect the midstream portion in a sterile container and close it tightly.

Note: When culture for tubercle bacilli is required, collect at least 50 ml of early morning midstream urine of 3 consecutive mornings into sterile container.

Catheterized urine

i) Culturing urinary catheter should be taken by aseptic puncture of the catheter conduit and syringe out into a sterile container.
ii) Urine from catheter bags is unsuitable for culture.

Note: Culturing urinary catheter tips is a waste of time because the catheter tips are invariably contaminated with urethral organisms.

Bladder urine samples

i) This is obtained via suprapubic aspiration or cystoscopically.
ii) Urine is collected in a sterile container.

Note : Specimens should be kept with ice if unable to reach the lab within one hour after collection.

4.2.1.8 Serous fluid

i) Collect 3–5mls serous fluid in to sterile container for the examination of microscopy and culture for bacterial.
ii) Send the specimen immediately to the laboratory.
iii) Do not store in refrigerator.

4.2.2 Mycology

4.2.2.1 Skin, nails and hair

Clean cutaneous and scalp lesions with 70% alcohol prior to sampling as this will improve the chances of detecting fungus on microscopic examination, as well as reducing the likelihood of bacterial contamination of cultures. Prior cleaning is essential if ointments, creams or powders have been applied to the lesion. Skin, nails and hair specimens should be collected into folded squares of coloured paper, sterile container or directly onto an agar plate.

Skin

i) Material should be collected from cutaneous lesions by scraping outwards from the margin of the lesion with the edge of a glass microscope slide or a blunt scalpel.

Hair

i) Specimen from the scalp should include hair roots, the contents of plugged follicles and skin scales.
ii) Hairs should be plucked from the scalp with forceps or the scalp is brushed with a plastic hairbrush and collected onto agar plate.

Nails

i) Nail specimens should be taken from any discolored, dystrophic or brittle parts of the nail.
ii) Specimen should be cut as far back as possible from the edge of the nail and should include the full thickness of the nail.

4.2.2.2 Ear

i) Scraping of material from the ear canal is to be preferred, although swabs can also be used.

4.2.2.3 Ocular specimens

i) Material from patients with suspected fungal infection of the cornea (keratomycosis) should be collected by scrapping the ulcer. The entire base of the ulcer, as well as the edges, should be scraped. (Swabs are not suitable for sampling corneal lesions).
ii) The material is collected directly on to agar plates for culture and to glass slide for microscopic examination.

4.2.2.4 Blood

i) Blood culture for fungal is collected in the same manner as for blood culture for bacterial using a manufacturer fungal bottle.
ii) The request for fungal culture should be written clearly on the request form and a total of four weeks incubation will be carried out.

4.2.2.5 Cerebrospinal fluid

i) CSF specimens (3 – 5 ml) should be collected in a sterile container for microscopy and culture.

4.2.2.6 Bone marrow

i) This specimen is helpful for making the diagnosis of deep fungal infections, including histoplasmosis and cryptococcocis.
ii) 3–5 mls of aspirated material should be collected and transferred into the blood culture bottle.

4.2.2.7 Pus

i) Pus from undrained subcutaneous abscesses or sinus
ii) In mycetoma, if the crust at the opening of the sinus tracts is lifted, grains can often be found in the pus underneath, and should be sent for culture.

4.2.2.8 Tissue

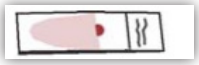
i) If possible, material should be obtained from both the middle and edge of thelesions.
ii) Small cutaneous, subcutaneous or mucosal lesions can often be excised completely.
iii) Tissue specimens should be placed in a sterile container without formalin.

4.2.3 Parasitology

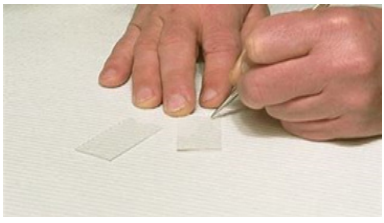
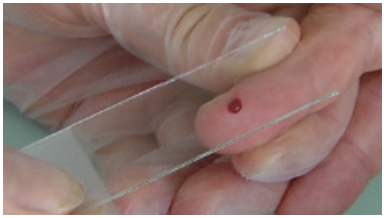
Preparation of Blood Film Malaria Parasite (BFMP)

Microscopic examination of both thick and thin film remains the gold standard for confirmation of malaria. Two types of blood film/smears prepared on separate slides should be sent to the

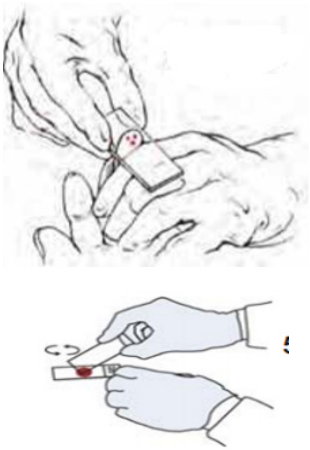
laboratory which are the THICK FILM and THIN FILM SLIDES.

Thick Film	
Thin Film	

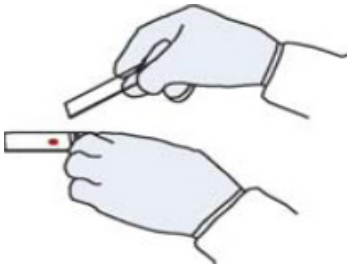
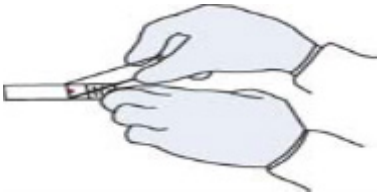
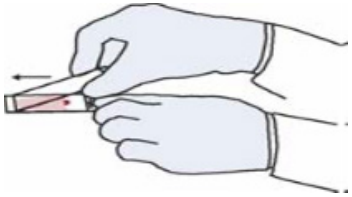
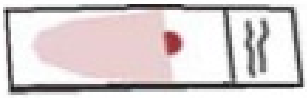
Blood Collection for BFMP (Thick and Thin film)

- Label glass slide with patient's name, IC, ward and date of collection.	
- Select finger to puncture usually the middle or ring finger and if the patient is infant, puncture the heel.	
- Clean the area to be punctured with 70% alcohol; allow to dry.	
- Apply pressure to the finger to be punctured, puncture the ball of the finger, or puncture the heel for infant. - Wipe away the first drop of blood with clean gauze.	
- Touch the next drop of blood with a labeled glass slide.	

Preparation of Thick Film

- Place two or three larger drops of blood collected on the labeled glass slide, use different glass slide corner side to spread the blood drops to the diameter (1.5 cm2).	
- Do not make the smear too thick and the thick film should be in round shape (You should be able to read newsprint through it)	
- Let the thick film to be air dried first before send it to the laboratory	

Preparation of thin film

- Place a single small drop of blood on the labeled glass slide near its frosted end.	
- Bring a clean spreader slide, held at a 45° angle, toward the drop of blood on the slide. - Wait until the blood spreads along the entire width of the spreader slide.	
- While holding the spreader slide at the same angle, push it forward rapidly and smoothly.	
- Wait until the thin film is completely dry (air dry) before send it to the laboratory	

4.2.5 Specimens for serological tests

These comprise the test of immunology, serology and virology.

Methods of blood collection:

i) Draw 3 – 5 mls of blood into a plain tube without anticoagulants

ii) Leave clot at ambient temperature.

iii) Dispatch to laboratory within 4 hours after collection of blood for serum separation by centrifugation

Note: Haemolysed, icteric or lipaemic specimens invalidate certain tests. If such specimens are received, the sample will be rejected to assure that results are on clinical value.

5. RECEIPT OF SPECIMEN

All specimens will be received at the main counter.

6. REPORTING OF RESULTS

Pathologists,medical officers and scientific officers will validate all results during office hour. Results for all tests will be released based on the turn-around time for the test requested. CSF results will be released as a preliminary report on the same day and informed by phone.

7. DISPATCHING OF RESULTS

The validated results will be viewed at the assigned terminal. Positive result of HIV test will be placed in sealed envelopes and should be collected from Serology lab.

8. SERVICE AFTER OFFICE HOURS AND DURING PUBLIC HOLIDAYS

Specimenssent for bacteriology and mycology cultures will be processed as usual on weekends and public holidays from 8:00 a.m. until 5:00 p.m. Virology tests for organ transplant and needle prick injury cases are offered 24 hours.

9. SUPPLIES

The supply of containers relevant to microbiological examination can be obtained from the supply room (sub-store) situated in Pathology Department during office hours, except for blood culture bottle, Viral Transport Media (VTM), Alkaline peptone water (APW) and Selenite F broth should be collected from Microbiology lab.

SATELLITE LABORATORIES

SATELLITE LAB AT EMERGENCY AND TRAUMA DEPARTMENT

1. INTRODUCTION

Pathology Satellite Laboratory at Emergency and Trauma Department, Hospital Tengku Ampuan Rahimah, Klang provides a basic diagnostic service for Emergency and Trauma Department to ensure early result can be delivered for immediate patient care.

2. LIST OF OFFERRED TESTS

2.1 Full Blood Count (FBC)
2.2 Blood Gases
2.3 Urine Biochemistry (Dipstick) 11 parameter
2.4 Urine Pregnancy Test
2.5 Dengue Combo Rapid Test
2.6 Methaemoglobin

3. REQUEST FORM AND SPECIMEN

3.1 Specimen must come with one copy of a designated request form, PER-PAT 301.
3.2 The information required on the form is to be filled and completed by the requesting doctor.
3.3 Specimen requirement should follow the general guidelines as outlined.

4. SPECIMEN COLLECTION

4.1 For methaemoglobin test:
- For external sample (outside HTAR): venous blood in lithium heparin tube
- For internal sample: venous blood in heparinised syringe
- Transport in room temperature

4.2 For other tests, refer chapter on list of offered test.

5. RECEIVING OF SPECIMEN

All specimens will be received at the Satellite Lab Counter.

6. OPERATION HOUR

Satellite Lab at Emergency and Trauma Department operates 24 hours everyday.

7. DESPATCHING OF RESULT

7.1 FBC and blood gases results can be viewed at the client's designated computer according to respective lab viewer.

7.2 Other test results can be obtained at the designated zone pigeon hole located at the Satellite Lab Counter.

SATELLITE LAB AT AMBULATORY CARE CENTRE

1. INTRODUCTION

Pathology Satellite Laboratory at Ambulatory Care Centre, Hospital Tengku AmpuanRahimah, Klang runs a basic and simple routine tests mainly for Obstetrics and Gynaecology Department and Klinik Warga Kerja, and also cater request from Surgical, Orthopaedic and Paediatric Clinic to ensure immediate patient care can be carried out by the clinician.

2. LIST OF OFFERED TESTS

2.1 Haemoglobin test

2.2 Urine Biochemistry (Dipstick) 2 parameters

2.3 Urine Biochemistry (Dipstick) 11 parameters

3. REQUEST FORM AND SPECIMEN

3.1 Specimen must come with one copy of a designated request form, PER-PAT 301.

3.2 The information required on the form is to be filled and completed by the requesting doctor.

3.3 Specimen requirement should follow the general guidelines as outlined.

4. SPECIMEN COLLECTION

Refer chapter on list of offered test.

5. RECEIVING OF SPECIMEN

All specimens will be received at the Satellite Lab Counter. For Haemoglobin Test, patient needs to be at the lab counter for needle prick procedure.

6. OPERATION HOUR

The operation hour is from 8am until 1pm from Monday to Friday and is closed during weekend, state and public holidays.

7. REPORTING AND DESPATCHING OF RESULT

Results can be obtained at the Satellite Lab Counter

LIST OF OFFERED TEST

ANATOMY PATHOLOGY

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
1	Urgent biopsy	Histopa-thology	10% Formalin Container	Tissue	1 volume of specimen to 10 volumes of formalin (1:10)	Monday to Friday : 8.00am to 4.30pm Saturday : 8.00am to 11.30am	3 working days	These Turn Around Time is not applicable a. Complex cases b. Further tests (deeper, special stain, IHC, regrossing)
2	Routine biopsy	Histopa-thology	10% Formalin Container	Tissue	1 volume of specimen to 10 volumes of formalin (1:10)	Daily (office hours)	5 working days	These Turn Around Time is not applicable a. Complex cases b. Further tests (deeper, special stain, IHC, regrossing)
3	Urgent big specimen	Histopa-thology	10% Formalin Container	Tissue	1 volume of specimen to 10 volumes of formalin (1:10)		14 working days (3 weeks)	
4	Routine specimen	Histopa-thology	10% Formalin Container	Tissue	1 volume of specimen to 10 volumes of formalin (1:10)		Within 6 weeks	
5	Frozen section	Histopa-thology	Universal sterile container	Fresh Tissue	NA	By Appointment (office hours)	40 minutes/ specimen (verbal)	1. Appointment must be made with Histopathologist on-call at least 3 days earlier or by consultation with the Histopathologist on-call for ad hoc cases. 2. Specimen for frozen must be sent fresh and immediately to the laboratory. 3. Adequate and relevant clinical indication for frozen is must be available. 4. To inform Histopathologist on-call if frozen appointment is cancelled.

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
6	Clnical Post mortem	Histopa-thology	10% Formalin Container	Tissue	1 volume of speci-men to 10 volumes of formalin (1:10)		8 weeks	Slides will be ready in 2 weeks follow-ing grossing.
7	Gynaecol-ogy	Cytology	Alcohol fixed-slide/ Slide jacket/ specimen vial	Cervical scraping		Daily (office hours)	2 weeks (LBC), 4 weeks (Conven-tional)	
8	Non-Gy-naecology	Cytology	Sterile Plastic Container	Fluid, sputum, urine etc Bronchial/ gastric brushing		Daily (office hours)	3 working days (Ur-gent), 2 weeks (routine)	
9	Fine Needle Aspiration (FNA)	Cytology	Glass Slides	Aspirates		Tuesday and Friday	3 working days (Ur-gent), 2 weeks (routine)	
10	Seminal fluid anal-ysis (SFA)	Cytology	Sterile Plastic Container	Seminal fluid		Tuesday and Thursday 8.00am to 9.00 am	Within 1 to 2 days	

CHEMICAL PATHOLOGY

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
1	Acetaminophen	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent)	Please use "Borang Pemonitoran Paras Paracetamol" form and indicate the time of paracetamol ingestion and sample collection
2	Alanine Transaminase (ALT)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
3	Albumin	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
4	Alkaline Phosphatase (ALP)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
5	Alpha Fetoprotein	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
6	Amikacin	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hour (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form and indicate the specific time for pre (trough) or post (peak) sample
7	Ammonia	CPL	K_2EDTA tube	Blood	3 ml	Daily	1 hour (Urgent)	
8	Amylase	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent)	
9	Aspartate Transaminase (AST)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
10	Beta Human Chorionic Gonadotrophin (Beta HCG)	CPL	Plain tube with gel	Blood	3 ml	Daily	3 working days, 1.5 hour (Urgent)	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
11	B12	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
12	Blood gases (ABG / VBG)	CPL	Heparinized syringe	Blood	1 ml	Daily	1 hour (Urgent)	
13	Bilirubin, Total & Direct	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
14	Bilirubin; Indirect (calculated)	CPL	-	Blood	-	Daily	1 hour (Urgent) 4 hours (Routine)	
15	Body Fluid biochemistry • Glucose • Total protein • LDH	CPL	Universal sterile container	Body fluid	5 ml -10 ml	Daily (office hour)	1 working day	
16	CA 125	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
17	CA 199	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
18	Calcium	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
19	Calcium (24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	
20	Cannabis	Drug lab	Universal sterile container	Urine	30 ml	Daily (office hour)	Screening (3 working days), Confirmation (5 working days)	
21	Carbamazepine	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hour (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
22	Carcino- embrionic antigen (CEA)	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
23	Chloride	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
24	Chloride (24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	
25	Chloride (random urine)	CPL	Universal sterile container	Urine	10 ml	Daily (office hour)	1 working day	
26	Cholesterol, Total	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine)	
27	Cholinesterase	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent)	
28	Complement 3 (C3)	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine)	
29	Complement 4 (C4)	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine)	
30	Cortisol	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
31	C-Reactive Protein (CRP)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
32	Creatine Kinase (CK)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
33	Creatinine	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
34	Creatinine (24 hour urine)	CPL	24 hour urine container	Urine	3 ml	Daily (office hour)	1 working day	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
35	CSF Biochemistry • Glucose • Total Protein • Chloride • Globulin	CPL	CSF tube	CSF Fluid	24 hour urine	Daily	1 hour (Urgent)	
36	Diastase	CPL	Universal sterile container	Urine	10 ml	Daily	1 hour (Urgent)	
37	Digoxin	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hours (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form
38	Ethanol	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
39	Ferritin	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
40	Folate	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
41	Follicle Stimulating Hormone (FSH)	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	1 working day for IVF cases, 3 working days,	
42	Gamma Glutamyl Transferase (GGT)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
43	Gentamycin	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hours (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form and indicate the specific time for pre (trough) or post (peak) sample
44	Glucose	CPL	Fluoride oxalate	Blood	2.5 ml	Daily	1 hour (Urgent) 4 hours (Routine)	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
45	Globulin serum (calculated)	CPL	-	Blood	-	Daily	1 hour (Urgent) 4 hours (Routine)	
46	HbA1c	CPL	K_2EDTA tube	Blood	3 ml	Daily (office hour)	5 working days	
47	High Density Lipoprotein (HDL)	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine)	
48	Iron	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
49	Lactate	CPL	Fluoride oxalate	Blood	3 ml	Daily	1 hour (Urgent)	
50	Lactate Dehydrogenase (LDH)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
51	Luteinizing Hormone (LH)	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	1 working day for IVF cases, 3 working days,	
52	Magnesium (Mg)	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
53	Magnesium (random urine)	CPL	Universal sterile container	Blood	10 ml	Daily (office hour)	1 working day	
54	Magnesium (24 hour urine)	CPL	24 hour urine container	Blood	24 hour urine	Daily (office hour)	1 working day	
55	Morphine	Drug lab	Universal sterile container	Urine	30 ml	Daily (office hour)	Screening (3 working days) Confirmation (5 working days)	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
56	Osmolality (serum)	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine)	
57	Osmolality (urine)	CPL	Universal sterile container	Urine	10 ml	Daily	4 hours (Routine)	
58	Paraquat	CPL	Universal sterile container	Urine	10 ml	Daily	1 hour (Urgent)	
59	Parathyroid Hormone	CPL	K_2EDTA tube	Blood	3 ml	Daily	3 working days	
60	Phenobarbital	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hours (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form
61	Phenytoin	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hours (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form
62	Phosphate	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine) 1 hour (Urgent)	
63	Phosphate (random urine)	CPL	Universal sterile container	Urine	10 ml	Daily (office hour)	1 working day	
64	Phosphate (24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	
65	Potassium	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hour (Routine) 1 hour (Urgent)	
66	Potassium(24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
67	Progesterone	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	1 working day for IVF cases, 3 working days	
68	Prolactin	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	1 working day for IVF cases, 3 working days	
69	Prostate Specific Antigen (PSA)	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
70	Protein total	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine) 1 hour (Urgent)	
71	Protein (24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	
72	Protein Creatinine Ratio	CPL	Universal sterile container	Urine	20 ml	Daily (office hour)	1 working day	
73	Salicylate	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent)	
74	Sodium	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hours (Routine) 1 hour (Urgent)	
75	Sodium (random urine)	CPL	Universal sterile container	Urine	3 ml	Daily (office hour)	1 working day	
76	Sodium (24 hour urine)	CPL	24 hour urine container	Urine	10 ml	Daily (office hour)	1 working day	
77	Testosterone	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
78	Thyroid Stimulating Hormone (TSH)	CPL	Plain tube with gel	Blood/ Cord Blood	3 ml	Daily (office hour)	3 working days	
79	Thyroxine (Free T4)	CPL	Plain tube with gel	Blood/ Cord Blood	3 ml	Daily (office hour)	3 working days	
80	Tri-Iodothyronine (Free T3)	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
81	Triglycerides	CPL	Plain tube with gel	Blood	3 ml	Daily	4 hour (Routine)	
82	Troponin I	CPL	Plain tube with gel	Blood	3 ml	Daily	1.5 hour (Urgent)	
83	UIBC	CPL	Plain tube with gel	Blood	3 ml	Daily (office hour)	3 working days	
84	Urea	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
85	Urea (24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	
86	Urea (urine random)	CPL	Universal sterile container	Urine	10 ml	Daily (office hour)	1 working day	
87	Uric Acid	CPL	Plain tube with gel	Blood	3 ml	Daily	1 hour (Urgent) 4 hours (Routine)	
88	Uric Acid(24 hour urine)	CPL	24 hour urine container	Urine	24 hour urine	Daily (office hour)	1 working day	
89	Uric Acid (random urine)	CPL	Universal sterile container	Urine	10 ml	Daily (office hour)	1 working day	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
90	Urine Biochemistry (Dipstick) • Acetone • Bilirubin • Blood • Glucose • Protein • Urobilinogen • PH • Specific Gravity • Leukocyte • Nitrite • Vitamin C	CPL	Universal sterile container	Urine	10 ml	Daily	4 hours (Routine)	Send the urine sample to the laboratory as soon as possible to avoid bacteria overgrowth
91	Urine Pregnancy Test (UPT)	CPL	Universal sterile container	Urine	10 ml	Daily	1 hour (Urgent)	
93	Valproic acid	CPL	Plain tube with gel	Blood	3 ml	Daily	2 hour (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form
93	Vancomycin	CPL	Plain tube with gel	Blood	3ml	Daily	2 hour (Urgent) 4 hours (Routine)	Please use Therapeutic Drug Monitoring (TDM) form and indicate the specific time for pre (trough) or post (peak) sample
94	Estradiol	CPL	Plain tube with gel	Blood	3ml	Daily (office hour)	1 working day for IVF cases, 3 working days	

*Test requested as profile (Renal profile, Liver Function Test and etc), the LTAT is 1.5 hour instead of 1 hour.

HAEMATOLOGY

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
1	Full Blood Count	RHL	K_2EDTA tube	Blood	2.5 ml or according to manufacturer recommendation	Daily	15 min (urgent), 1 hour (Routine)	Urgent: Doctor waiting for the sample at the laboratary and only bring maximum of 2 samples as urgent.
2	Prothrombin Time (PT) /INR	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily	4 hour (Routine)	Must write date & time sample taken in the form.
3	Activated Prothrombin Time (APTT)	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily	4 hour (Routine)	Must write date & time sample taken in the form.
4	Fibrinogen	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily	4 hour (Routine)	Must write date & time sample taken in the form.
5	D-Dimer	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily	4 hour (Routine)	Must write date & time sample taken in the form.
6	Mixing Test	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily (office hour)	2 days from the time test perfomed	Must get permission from medical officer oncall. Analysis done by batch
7	Factor VIII assay	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily (office hour)	2 days from the time test perfomed	Must get permission from medical officer oncall. Analysis done by batch
8	Factor IX assay	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily (office hour)	2 days from the time test perfomed	Must get permission from medical officer oncall. Analysis done by batch
9	Factor Inhibitor assay	RHL	3.2% Sodium citrate	Blood	2.5 ml or according to manufacturer recommendation	Daily (office hour)	1 week from the time test perfomed	Must get permission from medical officer oncall. Analysis done by batch

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
10	ESR	RHL	3.2% Sodium Citrate	Blood	1.2 ml	Daily	4 hours	Please ensure tube filled up to the line on sample tube.
11	G6PD screening	RHL	K_2EDTA tube	Umbilical blood	2.5 ml or according to manufacturer recommendation	Twice daily	1 working day	Performed only 2 times a day(10.00am & 3.00pm)
12	Full Blood Picture	SHL	K_2EDTA tube	Blood	2.5 ml or according to manufacturer recommendation	Daily (office hour)	1 day (urgent), 7 working days (Routine)	Must get permission from MO on-call for urgent cases
13	Hb analysis for thalassemia screening	SHL	K_2EDTA tube	Blood	2.5 ml or according to manufacturer recommendation	Daily (office hour)	6 weeks	
14	Bone marrow aspirate examination	SHL	Direct smear	Bone marrow aspirate	At least 10 slides	Daily except Friday (office hours only)	7 working days	By appointment only (at least 1 day before date of appointment)
15	Bone marrow trephine biopsy	SHL	10% Buffered Formalin (10ml)	Bone marrow trephine biopsy	At least 2 cm	Daily except Friday (office hours only)	30 working days	By appointment only (at least 1 day before date of appointment)
16	Kleihauer test	SHL	K_2EDTA tube		2.5 ml or according to manufacturer recommendation	Daily (office hour)	3 working days	Must get permission from medical officer oncall
17	CD4 / CD8	SHL	K_2EDTA tube	Blood	2.5 ml or according to manufacturer recommendation	Every Wednesday only	10 working days	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
18	Osmotic Fragility Test	SHL	Lithium Heparin	Blood	2.5 ml or according to manufacturer recommendation	Daily except Friday (office hours only)	3 working days	Send before 9am. By appointment only
19	Sickling test	SHL	K_2EDTA tube	Blood	2.5 ml or according to manufacturer recommendation	Daily except Friday (office hours only)	3 working days	Send before 9am. By appointment only
20	Urine haemosiderin	SHL	Universal sterile container	Urine	10 ml	24 hour / 7 days	3 working days	
21	LAP score	SHL	Finger prick in ward, direct smear	Blood	2 slides	Daily (office hour)	3 working days	To inform lab and submit request form to the lab before procedure.
22	Cryoglobulin	SHL	Plain tube without gel	Blood	3 ml	Daily (office hour only)	7 working days	By appointment only. Tube to be transported to lab in warm water in flask at 37c. all the equipment must be pre-warm at 37c (i.e : needle syringe, tube)

HL : Routine haematology laboratory SHL : Special haematology laboratory

MICROBIOLOGY

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
1	Acid Fast Bacilli Stain	Microbiology lab	Universal sterile container Brochial alveolar lavage Nasopharyngeal aspirate Tracheal aspirate Pus Gastric lavage Body fluid	Sputum	3 ml	Daily	24 hours Collect 3 consecutive early morning sputum aseptically into container.	Specify site of collection for body fluid specimen.
2	Blood C&S	Microbiology lab	<u>Adult</u> - Aerobic bottle - Anaerobic bottle <u>Peadiatric bottle</u>	Blood	Adult: 8-10 ml Paed: 1-3 ml	Daily	3-5 days Gram stain results will be informed as soon as positive culture is detected	Do not press/ touch disinfected venepuncture site Disinfect top of bottle with 70% alcohol before blood is inoculated Do not label on the bottle barcode.
3	Body fluids C&S	Microbiology lab	Universal sterile container	Body fluid	3-4 ml		3-5 days	Specify site of collection.
4	Bone marrow for C&S	Microbiology lab	<u>Adult</u> - Aerobic bottle -Anaerobic bottle <u>Paediatric bottle</u>	Bone marrow aspiration	Adult: 8-10 ml Paed: 1-3 ml	Daily	3-5 days Gram stain results will be informed as soon as positive culture is detected	Do not label on the bottle barcode.

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
5	Bone for C&S	Microbiology lab	Universal sterile container	Bone	N/A		3-5 days	Do not put in formalin. Please specify site of collection.
6	Cerebrospinal fluid (CSF) C&S	Microbiology lab	Sterile CSF tube	CSF	1-4 ml	Daily	3-5 days	Send specimen immediately.
7	CSF for Indian ink	Microbiology lab	Sterile CSF tube	CSF	1-4 ml	Daily	1 hour	Send specimen immediately.
8	CSF for Bacterial Antigen	Microbiology lab	Sterile CSF tube	CSF	3 ml	Daily	1 hour	
9	Catheter tip for C&S (Intravenous device catheter only)	Microbiology lab	Universal sterile container	Catheter tip	NA	Daily	3-5 days	Send 3-4 cm distal part of the catheter. Do not send tip of urinary catheter (CBD).
10	Corneal scrapping C&S (bacterial & fungal)	Microbiology lab	Chocolate agar + Blood agar + Sabouraud Agar + 2 smears onto glass slides (for Gram stain & KOH for fungal)	Corneal scrapping specimen	NA	Daily	1 hour for Gram stain & KOH (Gram stain & KOH will be informed through phone by lab personnel) 3-5 days for bacterial C&S For fungal culture up to 14 days	Clean eye area with disinfectant Scrub lesion on cornea and spread on glass slide (smear) and agar plates Let smear dried and send smear and agar plates immediately
11	Contact Lens C&S	Microbiology lab	Universal sterile container	Contact Lens	NA		3-5 days Do not send contact lens container.	Do not put in formalin.

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
12	Eye swab for C&S	Microbiology lab	Amies transport media	Eye discharge/ pus	NA	Daily	3-5 days	Please label right & left eye separately.
13	Eye swab for gonorrhea	Microbiology lab	Amies transport media with glass slide	Eye swab Smear on 1 slide	NA		3-5 days	Please provide relevant clinical history.
14	Ear swab for C&S	Microbiology lab	Amies transport media with glass slide	Pus / ear swab	NA		3-5 days	Please label right & left ear separately.
15	Environmental sample for C&S	Microbiology lab	Sterile swab	Environ-mental-samples	NA	Daily	3-5 days	
16	Gene Xpert MTB/ Rif Assay	Microbiology lab	Universal sterile container	Respi-ratory specimen, tissue, CSF	1-3 mL	By request	1 day	
17	High vaginal swab, vaginal & endocer-vical swab for C&S	Microbiology lab	Amies transport media	Sterile swab of secretion	NA	Daily	3-5 days	Please provide rele-vant clinical history.
18	Nasal swab for MRSA carrier	Microbiology lab	Amies transport media	Nasal swab	NA	Daily	3-5 days	Screening for MRSA carrier.
19	Nasopharyngeal aspirate for C&S	Microbiology lab	Universal sterile container	Naso-pharyn-geal aspirates	1-5 ml		3-5 days	
20	Pleural fluid for C&S	Microbiology lab	Universal sterile container	Pleural fluid	1-5 ml	Daily	3-5 days	Send specimen immediately.

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
21	Peritoneal fluid for C&S	Microbiology lab	Universal sterile container	Peritoneal fluid	3-5 ml	Daily	3-5 days	Send specimen immediately.
22	Pus for C&S	Microbiology lab	Universal sterile container	Aspirated pus	1-5 ml	By request	3-5 days	Please specify site of collection.
23	Sputum for C&S	Microbiology lab	Universal sterile container	Sputum	1-3 ml	Daily	3-5 days	
24	Sterility Attest	Microbiology lab	3M Attest tube		NA	Daily	2 days	
25	Stool for C&S	Microbiology lab	Universal sterile container	Fresh stool	Size of green pea / 5 gm	Daily	3-5 days	
26	Stool for Vibrio cholera	Microbiology lab Alkaline Peptone Water for rectal swab	Universal sterile container for fresh stool or Rectal swab	Fresh stool or	Size of green pea / 5 gm Daily	Daily 3-5 days	3-5 days Fresh stool is preferred.	Send immediately (within 1-2 hours of passage)
27	Stool for Salmonella or Shigella	Amies transport media Microbiology lab	Selenite F for rectal swab	Stool	Size of green pea / 5 gm	Daily	3-5 days	Fresh stool is preferred.
28	Swab for C&S (wound swab)	Microbiology lab	Amies transport media			Daily	3-5 days	
29	Tissue for C&S	Microbiology lab	Universal sterile container	Swab	NA	Daily	3-5 days	Do not put in formalin. Please specify site of collection.
30	Tracheal aspirate for C&S	Microbiology lab	Universal sterile container	Tissue	NA	Daily	3-5 days	
31	Throat swab for C&S	Microbiology lab	Sterile cotton swab in Amies transport media	Fluid	3-5 ml	Daily	3-5 days	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
32	Urethral swab for Gonorrhea C&S	Microbiology lab or / and smear on glass slide	Amies transport media Urethral swab	Throat swab	Smear on 1 slide Daily		3-5 days	Please provide relevant clinical history.
33	Urine for C&S	Microbiology lab	Universal sterile container	Urine	3-5 ml		3-5 days	Midstream urine sample. Do not send tip of urinary catheter (CBD).
34	Stool for Rotavirus (ICT)	Microbiology lab	Universal sterile container	Fresh stool	Size of green pea / 5 gm	Daily	1 day	
35	Blood for fungal culture	Microbiology lab	Myco / F Lytic bottle	Blood	Adult/Paeds : 1-5 ml	Daily	30 days	
36	Body fluid for fungal culture	Microbiology lab	Universal sterile container	Body fluid	1-3 ml	Daily	14-30 days	Please specify site of body fluid collection
37	Bone marrow for fungal culture	Microbiology lab	Myco / F Lytic bottle	Bone marrow aspirate	Adult/Paeds : 1-5 ml	Daily	30 days	
38	Cerebrospinal fluid for fungal culture	Microbiology lab	Sterile CSF tube	CSF	Adult: 5-10 ml Paed: 1-3 ml	Daily	3-21 days	Send immediately
39	Eye swab for fungal culture	Microbiology lab	Amies transport media		NA	Daily	3-21 days	
40	Ear swab for fungal culture	Microbiology lab	Amies transport media		NA	Daily	3-21 days	
41	Pleural fluid for fungal culture	Microbiology lab	Universal sterile container	Pleural fluid	3-5 ml	Daily	3-21 days	Send specimen immediately
42	Peritoneal fluid for fungal culture	Microbiology lab	Universal sterile container	Peritoneal fluid	3-5 ml	Daily	3-21 days	Send specimen immediately

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
43	Pus for fungal culture	Microbiology lab	Universal sterile container	Pus	3-5 ml	Daily	3-21 days	Please specify site of collection
44	Skin, hair and nail for fungal culture	Microbiology lab	Folded squares of paper in a sterile universal container	Skin, hair, nails	NA	Daily	14-30 days	
45	Sputum for fungal culture	Microbiology lab	Universal sterile container	Sputum	1-3 ml		3-21 days	
46	Tissue for fungal culture	Microbiology lab	Universal sterile container	Tissue	NA	Daily	3-21 days	Please specify site of collection
47	Urine for fungal culture	Microbiology lab	Universal sterile container	Urine	1-3 ml	Daily	3-21 days	
48	Wound swab for fungal culture	Microbiology lab	Amies transport media	Wound swab	NA	Daily	3-21 days	
49	Vitreous fluid for fungal culture	Microbiology lab	Universal sterile container	Vitreous fluid	1-3 ml	Daily	3-21 days	
50	Blood film for Malaria parasites (BFMP)	Microbiology lab	Smears on glass slide	Blood	Thick & Thin film	Daily	1 day	
51	Blood film for Microfilaria parasites	Microbiology lab	Smears on glass slide	Blood	Thick & Thin film	Daily	1 day	Sample must be taken at or after 10 pm.
52	Rapid Malaria (ICT)	Microbiology lab	K2-EDTA	Blood	1-3 ml	By request		
53	Stool for Clostridium difficile toxin	Microbiology lab	Universal sterile container	Stool	3ml	Daily	1 day	
54	Stool for Ova & Cyst	Microbiology lab	Universal sterile container	Stool	Size of green pea / 5 gm	Daily	1 day	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
55	Urine for strepto-coccus pneumoni-ae antigen	Microbiology lab	Universal sterile container	Urine	3 - 5 ml	Daily	1 day	
56	Anti-nuclear Anti-bodies (ANA)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	3x/ week	5-7 working days	
58	Anti dsDNA	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	3x/ week	5-7 working days	
59	Anti-Streptolysin 'O' Titre (ASOT)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	3x/ week	5-7 working days	
60	Hepatitis B Surface Antigen (HBsAg)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	
61	Hepatitis B surface antibody (Anti-HBs)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	
62	Hepatitis B envelope Antigen (HBeAg)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	
63	Hepatitis B en-velope Antibody (Anti-HBe)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	
64	Hepatitis B core Antibody (Anti-HBc)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	
65	Hepatitis C Anti-body (Anti-HCV)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	
66	HIV Antigen / Antibody(HIVAg/Ab)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
67	Rapid Dengue NS1 (Immunochro-matog- raphy,	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	By request		
68	Rapid Dengue IgM/ IgG (ICT)	Serology lab	Plain tube with gel	Blood	Paed: 1-2 ml Paed: 1-2 ml	By request		
69	Dengue NS1 (ELISA)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily/ alternate day	3-5 working days	
70	Dengue IgM (ELISA)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily/ alternate day	3-5 working days	
71	Toxoplasma IgM/ IgG	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	1x / week	5-7 working days	
72	Rubella IgM/IgG	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	1x / week	5-7 working days	
73	Cytomegalovirus IgM/IgG	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	1x / week	5-7 working days	
74	HSV 1/2 IgM/IgG	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	1x / week	5-7 working days	
75	Rapid Plasma Re-agin test (RPR)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Alternate day / daily	5-7 working days	
76	Treponema Pallidum Particle Agglutination (TPPA)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	3x/ week	5-7 working days	
77	Leptospira IgM (La-tex agglutination)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	3x/ week	5-7 working days	

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	**REMARKS**
78	Mycoplasma antibody	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	3x/ week	5-7 working days	
79	Legionella	Serology lab	Universal sterile container	Urine	3-5 ml	Daily	3- 5 working days	
80	Respiratory virus antigen (IFA)	Serology lab	Universal sterile container	Nasopha-ryngeal aspirate, bronchial lavage	5 ml	3x/ week	5-7 working days	
81	HCV Antigen (HCV Ag)	Serology lab	Plain tube with gel	Blood	Adult: 3-5 ml Paed: 1-2 ml	Daily	1-3 working days	

SATELLITE LABORATORIES

A. Ambulatory Care Centre (ACC) Laboratory

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
1	Haemoglobin		N/A	Blood	N/A	Daily	10 minutes	
2	Urine Biochemistry (Dipstick) -11 parameters • Acetone • Bilirubin • Blood • Glucose • Protein • Urobilinogen • PH • Specific Gravity • Leukocyte • Nitrite • Vitamin C	ACC Lab	Universal Sterile Container	Urine	10 ml	Daily	30 minutes	If urine biochemistry (dipstick) for 2 parameters is positive for glucose or protein, Lab will proceed to urine biochemistry (dipstick) for 11 parameters and results will despatch together.
3	Urine Biochemistry (Dipstick) - 2 parameters • Glucose • Albumin		Universal Sterile Container	Urine	10 ml	Daily	10 minutes	

B. Emergency and Trauma (ETD) Laboratory

NO	TEST	LAB	CONTAINER / PRESERVATIVE	SPECIMEN TYPE	VOLUME	SCHEDULE	LTAT	REMARKS
1	Full blood count	ETD Lab	ETDA	Blood	3 ml	Daily	10 minutes	
2	Blood gases (ABG/ VBG)		Heparinized syringe	Blood	1 ml	Daily	10 minutes	
3	Urine Biochemistry (Dipstick) • Acetone • Bilirubin • Blood • Glucose • Protein • Urobilinogen • PH • Specific Gravity • Leukocyte • Nitrite • Vitamin C		Universal Sterile Container	Urine	10 ml	Daily	30 minutes	
4	Urine pregnancy test		Universal Sterile Container	Urine	10 ml	Daily	15 minutes	
5	Dengue Combo Rapid Test		K_2EDTA tube	Blood	3 ml	Daily	30 minutes	
6	Methaemoglobin test		Lithium Heparin tube or heparinized syringe	Blood	4 ml in tube or 1 ml in syringe	Daily	10 minutes	Please call Lab ext 1605 to inform staff

LIST OF REFFERED TEST

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
1	Chemical Pathology	Amino Acid	Plasma	Lithium heparin tube	2 ml	Centrifuge and freeze immediately. Transport frozen in ice if delayed. Indication : Selective screening - hyperammonemia, amino acid disorder, epileptic enchepalopathy	Biochemistry Unit Institute Medical Research	19 days
2	Microbiology	*Naegleria spp* - Microscopy	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	sterile, air tight or contact lens storage	Not applicable	By Appointment at least 3 days before the sample is taken. Medium in container: sterile distilled water or saline	Parasitology Unit Institute Medical Research	7 days
3	Chemical Pathology	Orotic acid	Random urine	Universal sterile container	5 ml	Transport frozen in ice. Indication: Suspected Urea Cycle Defect, hyperammonemia, purine and pyrimidine disorder, suspected OTC carrier and allopurinol test.	Biochemistry Unit Institute Medical Research	9 days
4	Haematology	vWF: Ag	Blood	3.2% Sodium citrate tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
5	Haematology	vWF: RiCof	Blood	3.2% Sodium citrate tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
6	Chemical Pathology	17 Hydroxy Progesterone (17-OHP)	Blood	Plain tube	Minimum 50ul serum volume	Keep the specimen frozen or within 2-8oC during transportation	Diabetes and Endocrine Unit (CDNRC), Institute Medical Research	24 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
7	Chemical Pathology	5-Hydroxy-indoleacetic Acid (5-HIAA), Urine	24-Hour urine specimen	24 hour urine bottle with 10ml 25% HCl	2 ml of 24 hour urine specimen	Please state the 24 hour urine volume collected	Biochemistry Unit, Institute Medical Research	19 day
8	Microbiology	Acanthamoeba - microscopy & culture	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	sterile, air tight or contact lens storage	Not Applicable	By Appointment at least 3 days before the sample is taken. Medium in container: sterile distilled water or saline	Parasitology Unit IMR	Microscopy- 7 days, Culture- 14 days
9	Microbiology	Acanthamoeba - PCR	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	sterile, air tight or contact lens storage	Not Applicable	Medium in container: sterile distilled water or saline	Parasitology Unit IMR	11 days
10	Chemical Pathology	Acid Alpha Glucosidase	Dried Blood Spot	Whatman 903 filter paper	3 circles of dried blood spot	Ensure blood completely dried before putting in plastic sheet. Wet blood spot will be rejected	Biochemistry Unit Institute Medical Research	14 days
11	Chemical Pathology	Acid Amino	CSF	CSF Sterile tube	1 ml	MUST send together with plasma. Freeze immediately. Transport frozen in ice. Indication: Epileptic encephalopathy.	Biochemistry Unit Institute Medical Research	19 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
12	Chemical Pathology	Acid Amino	Random urine	Universal sterile container	2 ml	Early morning urine. Transport frozen in ice. Indication: Renal transport disorder. Hyperammonemia.	Biochemistry Unit Institute Medical Research	19 days
13	Haematology	Activated Protein C Resistance with Factor V	Blood	3.2% Sodium citrate tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	5 Weeks
14	Microbiology	Acute Flaccid Paralysis-AFP (Polio)	Stool	Universal sterile container	> 5g (thumb size)	Stool: Collect 2 consecutive stool specimen 24 to 48 hours apart. e.g. 1st stool: Day 1 2nd Stool : Day 2 or Day 3	Virology Unit Institute Medical Research	18 days
15	Microbiology	Acute Flaccid Paralysis-AFP (Polio)	CSF	CSF sterile tube	CSF- 1-3 mL	Other Specimen can be sent BUT stool specimen is preferred.	Virology Unit Institute Medical Research	18 days
16	Microbiology	Acute Flaccid Paralysis-AFP (Polio)	Throat Swab	Sterile plastic vial contain 2-3ml of VTM		Please use Acute Flaccid Paralysis Case Investigation Form for all AFP specimens	Virology Unit Institute Medical Research	18 days
17	Microbiology	Acute Flaccid Paralysis-AFP (Polio)	Organ biopsy	Sterile containers containing VTM to keep tissue moist	1.5 cm cube of various parts of affected organs	e.g CNS Tissues, Colon contents	Virology Unit Institute Medical Research	18 days
18	Microbiology	Acute Flaccid Paralysis-AFP (Polio)	Rectal Swab	Sterile plastic vial contain 2-3ml of VTM		Faecal matter must be seen on the swab and NOT perianal swab.	Virology Unit Institute Medical Research	18 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
19	Chemical Pathology	Acute Intermittent Porphyria (HMBS) MLPA	Blood	K_2 EDTA tubes (1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
20	Chemical Pathology	Acute Intermittent Porphyria (HMBS) Sequencing	Blood	K_2 EDTA tubes (1-2 tubes)	2.5 ml blood for each tube.	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
21	Chemical Pathology	Acylcarnitines	Dried Blood Spot	Whatman 903 filter paper	3 circles of dried blood spot	Ensure blood completely dried before putting in plastic sheet. Wet blood spot will be rejected	Biochemistry Unit Institute Medical Research	7 days
22	Haematology	ADAMTS 13	Blood	Trisodium Citrate Tube	To mark on tube	By Appoinment	Hospital Ampang	8 weeks 4 Days
23	Chemical Pathology	Adrenocorticotrophic Hormone (ACTH)	Blood	K2 EDTA tube in ice, Paediatric patient: K2 EDTA Paediatric tube in ice	2-3 ml (adult),0.5-1 ml (paediatric)	Send specimen in ice immediately to lab. Cortisol level should be provided with the request. Note to referring lab: Spin and separate immediately and keep plasma frozen.	Hospital Kuala Lumpur	4 weeks 4 days
24	Chemical Pathology	Alagille Syndrome (*JAG1*)-MLPA	Blood	K_2 EDTA tubes (1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
25	Chemical Pathology	Alagille Syndrome (*JAG1*)-Sequencing	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
26	Chemical Pathology	Albumin Creatinine Ratio, Urine (UACR)	Urine	Universal sterile container	10 ml		Hospital Kuala Lumpur	5 days
27	Chemical Pathology	Albumin Creatinine Ratio, Urine (UACR)	Urine	Universal sterile container	10 ml		Hospital Kuala Lumpur	5 days
28	Chemical Pathology	Aldosterone	Blood	K2 EDTA tube, Paediatric patient : K2 EDTA Paediatric tube	3 ml (adult), 0.5-1 ml (paediatric)	Please refer Protocol For Requesting Plasma Renin and Aldosterone Notes to referring lab: Centrifuge and separate sample and freeze sample as soon as possible at -20°C or lower. Protocol For Plasma Renin and Aldosterone (for referring lab)	Hospital Putrajaya	1 month 4 days
29	Chemical Pathology	Aldosterone Renin Ratio (ARR)	Refer specific tests (Aldosterone and Renin)	Refer specific tests	Refer specific tests		According to specific tests	1 month 4 days
30	Chemical Pathology	Alexander Disease (GFAP)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
31	Microbiology	Allergy (Tryptase) Testing	Blood	Plain tube with gel	3ml	Tryptase test: Within 15 min up to 24 hr after onset of allergic symptoms; Tryptase test after anaphylaxis: 1st sample within 15 min up to 3 hrs after onset of symptoms, 2nd sample after 24-48 hrs to confirm return to baseline level, 3rd sample after 1-2 wks if incidents of mastocytosis or other causes of elevated basal levels are suspected	Allergy Unit Institute Medical Research	18 days
32	Microbiology	Allergy Testing (Total IgE -Screening)	Blood	Plain tube with gel	5 ml		Allergy Unit Institute Medical Research	9 days
33	Microbiology	Allergy Testing(IgE specific)	Blood	Plain tube with gel	5 ml		Allergy Unit Institute Medical Research	9 days
34	Chemical Pathology	Alpha 1-Antitrypsin Deficiency (SERPINA1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	4-5 weeks

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
35	Chemical Pathology	Alpha 2 Macroglobulin	Blood	Plain Tube	3ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
36	Chemical Pathology	Alpha-1-Acid Glycoprotein	Blood	Plain Tube	3ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
37	Chemical Pathology	Alpha-1-Antitrypsin (Quantitation)	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Kuala Lumpur	2 weeks 4 days
38	Chemical Pathology	Alpha-1-Antitrypsin-(Phenotyping)	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1 month 4 days
39	Haematology	AML mutation study:FLT 3 Internal Tandem Duplication, D 835 mutation, NPM1 mutation, c-Kit mutatin, CEPBA mutation, Blood	Blood	K2 EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Institute Medical Research	34 working days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
40	Haematology	AML mutation study:FLT 3 Internal Tandem Duplication, D 835 mutation, NPM1 mutation, c-Kit mutation, CEPBA mutation, Bone marrow	Bone marrow	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately Form : Molecular Analysis For Leukaemia	Haematology Unit Institute Medical Research	34 working days
41	Microbiology	Amoebiasis Antibody (Entamoeba histolytica IgG)	Blood	Plain tube with gel, k2 EDTA	5 ml	Send sample in ice	Parasitology Unit Institute Medical Research/ HSB	9 days
42	Microbiology	Amoebiasis Diagnosis PCR	Blood, pus/aspirate/ biopsy/ scrapings	K2 EDTA/sterile container	2.5 ml	Send sample in ice	Parasitology Unit Institute Medical Research	11 days(
43	Chemical Pathology	Amphetamine Type Stimulants (ATS), screening & confirmation	Random urine	Universal sterile container	30 ml	Borang Permintaan Ujian Pengesanan Dadah Dalam Air Kencing	Hospital Kuala Lumpur	1-2 months
45	Chemical Pathology	Angelman Syndrome (*UBE3A*) - MLPA	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
46	Chemical Pathology	Angelman Syndrome (*UBE3A*) - Sequencing	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
47	Microbiology	Anti Glomerular Basement Membrane	Blood	Plain tube with gel	5 ml		Autoimmune Unit Institute Medical Research	14 days
48	Chemical Pathology	Anti islet cells (ICA)	Blood	Plain tube (serum),	5 ml (adult), 3 ml (paediatric)	Send Immediately to the lab. Anti islet cells (ICA) is part of Diabetes antibody panel	Allergy and Immunology Research Centre (AIRC), Institute Medical Research	18 days
49	Chemical Pathology	Anti- Thyroglobulin Ab	Blood	Plain tube with gel	5 ml	Aid in diagnosing Hashimoto thyroiditis .Substantiate thyroid disease in patients with non-thyroidal illness. Predict postpartum thyroiditis	Hospital Selayang	18 days
50	Microbiology	Anti-acetylcholine receptor Antibody (ACR)	Blood	Plain tube with gel	5 ml		Autoimmune Unit Institute Medical Research	25 days
51	Microbiology	Anti-Aquaporin 4	Blood	Plain tube with gel	5 ml		Autoimmune Unit Institute Medical Research	14 days
52	Haematology	Anti-Beta-2 Glycoprotein I	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	5 Weeks
53	Haematology	Anti-Cardiolipin Antibodies (ACA)	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	5 Weeks
54	Microbiology	Anti-Cyclic Citrullinated Peptide Antibodies (CCP)	Blood	Plain tube with gel	5 ml	Restricted to rheumatologist only	Selayang / Autoimmune Unit Institute Medical Research	11 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
55	Microbiology	Anti-Gastric Parietal (Triple Antigen Test)	Blood	Plain tube with gel	5 ml	Indicated for patients with megaloblastic anemia and a suspicion of pernicious anemia	Hospital Selayang	11 days
56	Chemical Pathology	Anti-Glutamic acid decarboxylase (GAD)	Serum	Plain tube (serum), Paediatric patient: Paediatric tube	5 ml (adult), 3 ml (paediatric)	Anti-Glutamic acid decarboxylase (GAD) is part of Diabetes antibody panel	Allergy and Immunology Research Centre (AIRC), Institute Medical Research	1 8 days
57	Chemical Pathology	Anti-insulin G	Serum	Plain tube (serum), Paediatric patient: Paediatric tube	5 ml (adult), 3 ml (paediatric)	Anti-insulin G is part of Diabetes antibody panel	Allergy and Immunology Research Centre (AIRC), Institute Medical Research	1 8 days
58	Chemical Pathology	Anti-Insulinoma-Associated Antigen 2 (IA2)	Serum	Plain tube (serum), Paediatric patient: Paediatric tube	5 ml (adult), 3 ml (paediatric)	Anti-insulinoma associated antigen 2(IA2) is part of Diabetes antibody panel	Allergy and Immunology Research Centre (AIRC), Institute Medical Research	1 8 days
59	Microbiology	Anti-Mitochondrial Ab (Triple Antigen test)	Blood	Plain tube with gel	5 ml		Autoimmune Unit Institute Medical Research	14 days
60	Microbiology	Anti-Neutrophil Cytoplasmic Ag(c-ANCA & p-ANCA)	Blood	Plain tube with gel	5 ml	Indication for testing: Multisystem disease presentation (including upper airway disease, pulmonary disease, palpable purpura, urticaria or mononeuritis multiplex)	Autoimmune Unit Institute Medical Research	25 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
61	Microbiology	Anti-N-Methyl-D- aspartate receptor (NMDAR)	Blood/ CSF	Plain tube with gel/ CSF tube	5 ml		Autoimmune Unit Institute Medical Research	11 days
62	Microbiology	Anti-phospholipid ab: Anti-Cardiolipin IgG & IgM, Anti Beta 2 glycoprotein	Blood	Plain tube with gel	5 ml	Unexplained pregnancy loss (≥1 normal fetus at or beyond 19 weeks POA, ≥1 prem < 34/52 due to PE or placental insufficiency, > 3 spont abortions ≤ 10/52. For inconclusive results, consider repeat testing. All positive results should be confirmed at least 12 weeks apart	Autoimmune Unit Institute Medical Research	14 days
63	Microbiology	Anti-Smooth Muscle Ab (ASMA) (Triple Antigen Test)	Blood	Plain tube with gel	5 ml		Autoimmune Unit Institute Medical Research	18 days
64	Haematology	Antithrombin	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	5 Weeks
65	Chemical Pathology	Anti-Thyroid Peroxidase (TPO)	Blood	Plain tube with gel	5 ml		Hospital Selayang	18 hari
66	Chemical Pathology	Argininosuccinate Lyase Deficiency (ASL)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
67	Chemical Pathology	Argininosuccinate Synthase Deficiency (ASS1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
68	Chemical Pathology	Aromatic Amino Acid Decarboxylase Deficiency (DDC)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
69	Microbiology	Bartonella henselae Antibody detection (Cat Scratch Disease)	Blood	Plain tube with gel	5 ml		Bacteriology Unit Institute Medical Research	9 days
70	Chemical Pathology	Berardinelli Congenital Lipodystrophy	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
71	Chemical Pathology	Beta-2 Microglobulin	Blood	Plain Tube	3ml		Hospital Ampang	11 days
72	Microbiology	Bartonella henselae Antibody detection (Cat Scratch Disease)	Blood	Plain tube with gel	5 ml		Bacteriology Unit Institute Medical Research	9 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
73	Chemical Pathology	Berardinelli Congenital Lipodystrophy	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
74	Chemical Pathology	Beta-2 Microglobulin	Blood	Plain Tube	3ml		Hospital Ampang	11 days
75	Chemical Pathology	Beta-2 Microglobulin, CSF	CSF	Universal sterile container	1-2 ml		Hospital Ampang	11 days
76	Chemical Pathology	Beta-2 Microglobulin, Urine	Random Urine	Universal sterile container	10ml		Hospital Ampang	11 days
77	Chemical Pathology	Biogenic Amines, CSF	CSF	container	0.5 ml	Cover from light. Transport FROZEN. (Easily destroyed by heat)	Biochemistry Unit Institute Medical Research	19 days
78	Chemical Pathology	Biogenic Amines, Urine	Random urine	Universal sterile container	2 ml	Cover from light. Transport FROZEN. (Easily destroyed by heat)	Biochemistry Unit Institute Medical Research	19 days
79	Chemical Pathology	Biotinidase Enzyme Activity	Dried blood spot in filter paper	Whatmann 903 Filter paper	3 circles of DBS	Ensure blood completely dried before putting in plastic sheet. Wet blood spot will be rejected	Biochemistry Unit Institute Medical Research	14 days
80	Microbiology	Bordetella pertussis PCR	Nasopharyngeal Aspirate/ Nasopharyngeal swab	Universal sterile container/ Dacron swab in Stuart's transport media	1-2 mls	For nasopharyngeal swabs do not use calcium alginate or cotton swabs. Transport nasopharyngeal aspirate in ice.	Bacteriology Unit IMR	9 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
81	Microbiology	Borrelia burgdoferi Antibody	Blood	Plain tube with gel	5 ml		Bacteriology Unit IMR/ HSB	13 days
82	Haematology	Breakages Chromosome Analysis	Blood	Lithium Heparin	10 ml (Patient) 10 ml (Control)	Monday or Tuesday by Appointment (Can be stored at 2-8°C for 72 Hours Form : Bone Marrow Cytogenetic Form	Institute Medical Research	22 work days
83	Microbiology	Brucella Antibody (igM & IgG)	Blood	Plain tube with gel	5 ml	Transport at 2-8°C	Bacteriology Unit IMR	9 days
84	Microbiology	Brucella species PCR	Blood	K2EDTA	5 ml	Must be fresh specimen, taken prior to antibiotic treatment. Laboratory must be informed prior to sending sample.	Bacteriology Unit IMR	8 days
85	Microbiology	Burkholderia pseudomallei Antibody (Meliodosis)	Blood	Plain tube with gel	5 ml	Transport at ambient temperature; if delayed keep at 2-8°C	Bacteriology Unit IMR	9 days
86	Chemical Pathology	CADASIL (NOTCH3) - Full Sequencing	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
87	Chemical Pathology	CADASIL (NOTCH3) - Hotspots	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
88	Chemical Pathology	Cadmium	Blood	K2 EDTA tube	3 ml	No special preparation	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	14 days
89	Chemical Pathology	Caeruloplasmin	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Kuala Lumpur	14 days
90	Chemical Pathology	Canavan Disease (ASPA)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
91	Chemical Pathology	Cancer Antigen 15-3 (CA 15-3)	Blood	Plain Tube (serum) or Lithium Heparin Tube (plasma)	3 ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Kuala Lumpur	1 month 4 days
92	Chemical Pathology	Carbamoylphosphate Synthetase 1 Deficiency (CPS1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
93	Chemical Pathology	Carnitine Palmitoyltransferase 1A (CPT1) Deficiency (CPT1A)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
94	Chemical Pathology	Carnitine Palmitoyltransferase II (CPT 2) Deficiency (CPT2)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
95	Chemical Pathology	Carnitine Uptake Deficiency (OCTN2)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
96	Chemical Pathology	Carnitine-Acylcarnitine Translocase Deficiency (SLC25A20)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
97	Chemical Pathology	Cathecholamines, Urine	24-hour urine specimen	24-hour urine container with 10 mls of 25% HCL	Minimum urine volume: 500 mls (adult)	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Hospital Putrajaya	1 month 4 days
98	Microbiology	Chikungunya Antibody(IgM/IgG)	Blood	Plain tube with gel	5 ml		Virology Unit IMR	14 days
99	Microbiology	Chikungunya PCR	Blood	Plain tube with gel	5 ml		Virology Unit IMR	14 days
100	Microbiology	Chlamydia trachomatis / pneumoniae / psittaci Antibody	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	6 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
101	Microbiology	Chlamydia trachomatis / pneumoniae/ psittacii-IF	Eye Swab / Tracheal Aspirate	Smears on slide	Not Applicable	Smears on teflon coated microwell slide. Air dry the slide for 5-10 mins.	Hospital Sungai Buloh	6 days
102	Chemical Pathology	Chromium, urine	Random urine	Universal sterile container	20 ml	No special preparation	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	7 days
103	Haematology	Chromosome Analysis BM	Bone Marrow	Transport media	Not available	By Appoinment Form : Bone Marrow Cytogenetic Form (Institute Medical Research), Special Haematology Lab Requisition (Hospital Ampang)	Hospital Ampang / Institute Medical Research	22 work days
104	Haematology	Chromosome Analysis BM	Bone Marrow	Transport media	Not available	By Appoinment Form : Bone Marrow Cytogenetic Form (Institute Medical Research), Special Haematology Lab Requisition (Hospital Ampang)	Hospital Ampang / Institute Medical Research	22 work days
105	Haematology	Chromosome Analysis PB	Blood	Lithium Heparin	6 ml		Hospital Ampang	22 work days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
106	Chemical Pathology	Citrin Deficiency (SLC25A13)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	7 days
107	Chemical Pathology	Classical Homocystinuria (CBS)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	7 days
108	Haematology	CML mutation study: BCR-ABL T315I mutation, Blood	Blood	EDTA tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang	34 work days
109	Haematology	CML mutation study: BCR-ABL T315I mutation, Bone marrow	Bone marrow	EDTA tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang	34 work days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
110	Haematology	Coagulation Factor Anti-Xa	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Hospital Ampang	2 Working Days
111	Haematology	Coagulation Factor V Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
112	Haematology	Coagulation Factor V Inhibitors	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	10 working days
113	Haematology	Coagulation Factor VII Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
114	Haematology	Coagulation Factor VII Inhibitors	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	10 working days
115	Haematology	Coagulation Factor X Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
116	Haematology	Coagulation Factor X Inhibitors	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	10 working days
117	Haematology	Coagulation Factor XI Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
118	Haematology	Coagulation Factor XI Inhibitors	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	10 working days
119	Haematology	Coagulation Factor XII Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
120	Haematology	Coagulation Factor XII Inhibitors	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	10 working days
121	Haematology	Coagulation Factor XIII Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days
122	Haematology	Coagulation Factor XIII Inhibitors	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	10 working days
123	Microbiology	Coelic antibodies (Anti-TTG & gliadin, Anti endomysium)	Blood	Plain tube with gel	5 ml		Autoimmune Unit Institute Medical Research	25 days
124	Chemical Pathology	Copper	Blood	Plain Tube without gel	3 ml	No special preparation	Toxicology Unit, Institute Medical Research	7 days
125	Chemical Pathology	Copper, urine	Random urine	Universal sterile container	20 ml	No special preparation	Toxicology Unit, Institute Medical Research	7 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
126	Chemical Pathology	Cortisol, Free, Urine	24-hour urine specimen	24-hour urine container without preservative	Minimum urine volume: 500 mls (adult)	1. Incomplete 24 hours urine collection may affect validity of the results 2. Patients' hydration status and renal disease also influence urine cortisol excretion. 3. Cortisol production and therefore urinary excretion may increase during stress, surgery, acute illness and trauma. 4. The use of any glucorcorticoid preparation should be avoided during the collection of urine.	Hospital Selayang	7 days
127	Microbiology	Coxiella burnettii Antibody (Q fever)	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	6 days
128	Microbiology	Coxsackie virus (PCR)	Throat Swab / Rectal Swab	VTM	Swabs to be put into 2-3mls of VTM	Use plastic-shafted polyester swab and place in VTM. Send specimen in ice bag	Autoimmune Unit Institute Medical Research	14 days
129	Microbiology	Coxsackie virus (virus isolation)	Throat/Rectal swab	VTM	Swabs to be put into 2-3mls of VTM	Use plastic-shafted polyester swab and place in VTM. Send specimen in ice bag	Autoimmune Unit Institute Medical Research	14-35 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
130	Chemical Pathology	C-Peptide	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)	Glucose result should be provided with the request.	Hospital Kuala Lumpur	7 days
131	Chemical Pathology	Creatine and Guanidinoacetate, Urine	Random urine	Universal sterile container	2 ml	Transport frozen in ice. Indication: Suspected for creatine deficiency (Creatine Transport Defect, guanidinoacetate methyltransferase deficiency and Arginine: glycine amidinotransferase deficiency.	Biochemistry Unit Institute Medical Research	7 days
132	Chemical Pathology	Cryoglobulin	Refer to performing laboratory	Refer to performing laboratory	Refer to performing laboratory	Test offered by appointment (03 4279 6000 Ext 6216) Only patient referred to Hospital Ampang, Hospital Kuala Lumpur & IJN Cryoglobulin: Patient preparation and collection procedure	Hospital Ampang	7 days
133	Microbiology	Cryptococcal Antigen	CSF	CSF tube	3 ml		Hospital Sungai Buloh	6 days
134	Microbiology	Cryptococcal Antigen	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	6 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
135	Chemical Pathology	CSF Oligoclonal band	CSF and blood	Sterile container (CSF) and Plain tube (Serum)	3ml (CSF) and 5ml (Serum)	CSF sample must paired with serum sample within 4hours of collection. CSF must be frozen immediately after collection and shall be send in 2-8˚C within 7 days.	Hospital Ampang	25 days
136	Chemical Pathology	Cyclosporin	Blood	K2 EDTA tube	2 ml	Use TDM form. Send in 2-8˚C within 7 days. Please refer to TDM Sampling Guide	Hospital Kuala Lumpur	5 days
137	Microbiology	Cysticercosis/ Taeniasis Antibody	Blood	Plain tube with gel	5 ml	Send specimen in ice bag	Parasitology Unit Institute Medical Research	9 days
138	Chemical Pathology	Cystine, Urine	Random urine	Universal sterile container	2 ml	Transport frozen in ice. Indication: Suspected for cystinuria, screening for potential kidney donor.	Women and Child Hospital Kuala Lumpur	7 days
139	Microbiology	Cytomegalo-virus Genome Detection (PCR)-Blood	Blood	K2EDTA	5 ml	Send specimen in ice bag	Hospital Sungai Buloh	7 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
140	Microbiology	Cytomegalovirus Isolation	Nasopharyngeal aspiration, Nasopharyngeal swab, Throat swab, BAL , Sputum, Nasal swab, Organ biopsies, Urine	NPA/NPS/ Nasal swab/ throat swab: Sterile plastic vial contain 2-3ml of VTM, BAL/ sputum:sterile container, Biopsy: Sterile containers containing VTM to keep tissue moist, Urine: sterile container	NPA: Mucous secretion in VTM, NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils BAL/ sputum:sterile container, Biopsy: 1.5cm cube of various parts of affected organs, Urine :1-3mls		Virology Unit, Institute Medical Research	18 - 32 days
141	Chemical Pathology	Dehydroepiandrosterone Sulphate (DHEAS)	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)	No special preparation.	Hospital Kuala Lumpur	18 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
142	Chemical Pathology	Delta-amino-levulinic acid (ALA), Urine	Random urine or 24-Hour urine specimen	Sterile container (Randomurine) or 24-Hour urine container without preservative.	5 ml	Protect from light, D-ALA easily destroyed by light	Biochemistry Unit Institute Medical Research	19 days
143	Microbiology	Dengue IgG	Blood	Plain tube with gel	5 ml		Hospital Kuala Lumpur	6 days
144	Microbiology	Dengue Virus Genome Detection-Blood/CSF	Blood / CSF	Plain tube / CSF tube	5 ml	Send specimen in dried ice	Virology Unit Institute Medical Research	14 days
145	Microbiology	Dengue Virus Genome Detection-Tissue	Tissue	VTM/Sterile containers containing sterile saline to keep tissue moist	About 1.5cm cube of various parts of affected organs	Specify site of collection. Do not put in formalin. Packed specimen in dried ice. Send immediately.	Virology Unit Institute Medical Research	14 days
146	Chemical Pathology	Dihydropyrimidinase (DHP) Deficiency (DPYS)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
147	Microbiology	Dihydrorhodamine test (flow cytometry)	Blood	Lithium Heparin	2ml fresh blood from patient 2ml from unrelated healthy person(control)	By appointment and consultation only	PID Unit Institute Medical Research	14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
148	Chemical Pathology	DNA Extraction & Storage	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	9 days
149	Haematology	DNA Sequencing for Thalassaemia	Blood	EDTA	5 ml	Send the sample immediately Form : DNA Analysis For Thalassaemia Syndrome and Haemoglobinopathies	Haematology Unit Institute Medical Research	4 Months
150	Histopathology	Dual Hapten Dual In situ Hybridisation (DDISH) for HER-2	Unstained slide/Block	mailer box	NA	1. Hospital Kuala Lumpur Request form for immunohistochemistry and histochemistry test must be sign by pathologist/ Surgeon/ oncologist. 2. Packed unstained slide/ block	Hospital Kuala Lumpur	14 days
151	Microbiology	Ebola PCR	Blood/Tissue	After consultation only	After consultation only	After consultation only	Virology Unit IMR	14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
152	Microbiology	ENA specific: Anti-Centromere Antibodies, Anti-Scl 70 Antibodies,Anti-Sm Antibodies, Anti-SSB/La Antibodies, Anti-Jo-1 Antibodies, Anti-RNP 70 Antibodies,Anti-SSA/Ro Antibodies	Blood	Plain tube with gel	5 ml	Screening ENA positive	Autoimmune Unit Institute Medical Research	20 days
153	Microbiology	Enterovirus (Acute Respiratory syndrome)-PCR	Nasopharyngeal aspiration, Nasopharyngeal swab, Throat swab, Throat gargle, BAL ,Sputum, Nasal swab, Organ biopsies	i) Nasopharyngeal aspirate: VTM ii) Nasopharyngeal Swab: VTM iii) Throat Swab:VTM iv) Throat gargle: sterile container v) BAL:sterile container vi) Sputum: sterile container vii) Nasal swab : VTM viii) Biopsy: Sterile containers containing VTM to keep tissue moist	NPS: Use different swab for each nostrils Nasal swab: Sterile swab. Use different swabs for each nostrils Organ Biopsy: remove portions, about 1.5cm cube of various parts of affected organs	Send specimen in dried ice	Virology Unit Institute Medical Research	14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
154	Microbiology	Enterovirus Isolation (Enterovirus 71, Coxsackie A and Coxsackie B, Echovirus,Other non enteroviruses)	Nasopharyngeal aspiration, Nasopharyngeal swab, Throat swab, BAL , Sputum, Nasal swab, Organ biopsies, Pericardial aspiratel, Rectal swab, Stool, Vesicular Swab/ Scraping,	NPA/NPS/throat swab/nasal swab: Sterile vial contain 2-3ml of VTM, BAL/sputum:sterile container Organ biopsy: Sterile containers containing VTM to keep tissue moist, Pericardial aspirate: sterile plastic vial contain 2-3ml VTM, Rectal swab: Sterile plastic vial contain 2-3ml of VTM, Stool: Sterile bottle, Vesicular swab/scraping: Sterile plastic vial	NPA: Mucous secretion in VTM, NPS: A flexible, fine shafter polyester swab. Use different swab for each nostril Biopsy: 1.5cm cube of various parts of affected organs, Stool: >5gm (thumb size), Vesicular swab/scrapings: Swabs to be put into 2-3mls of VTM		Virology Unit, Institute Medical Research	18- 32 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
155	Microbiology	Enterovirus qRT-PCR (Inclusive of Pan Entero, EV71 and CA16)	Nasopharyngeal aspiration, Nasopharyngeal swab, Throat swab, BAL , Sputum, Nasal swab, Organ biopsies, Pericardial aspiratel, Rectal swab, Stool	NPA/NPS/ Throat swab/ nasal swab: Sterile plastic vial contain 2-3ml of VTM BAL/sputum:sterile container, Biopsy: Sterile containers containing VTM to keep tissue moist, Pericardial aspirate: sterile plastic vial contain 2-3ml VTM, Rectal swab: Sterile plastic vial contain 2-3ml of VTM, Stool: Sterile container	NPA: Mucous secretion in VTM, NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils, Biopsy: 1.5cm cube of various parts of affected organs Stool: >5gm (thumb size)		Virology Unit, Institute Medical Research	5 - 14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
156	Histopathol-ogy	Epidermal Growth Factor Receptor (EGFR)	Block	mailer box	NA	1. Hospital Kuala Lumpur Request form for EGFR/ KRAS test must be sign by pathologist/ Surgeon/ oncologist. 2. Packed unstained slide/ block	Department of Genetic, Hospital Kuala Lumpur	14 days
157	Microbiology	Epstein Barr Virus Capsid IgG / IgM	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	6 days
158	Microbiology	Epstein Barr Virus Genome Detection-NPA	Nasopha-ryngeal Aspirate/ tracheal aspirate	Universal sterile container	Not Applicable	Send specimen in dried ice	Hospital Sungai Buloh	7 days
159	Microbiology	Epstein Barr Virus Genome Detection-Blood	Blood	K2EDTA	5 ml	Send specimen in dried ice	Hospital Sungai Buloh	7 days
160	Microbiology	Epstein Barr Virus Genome Detection-CSF	CSF	CSF tube	5 ml	Send specimen in dried ice	Hospital Sungai Buloh	7 days
161	Chemical Pathology	Ethylmalonic Encephalopa-thy (ETHE1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
162	Chemical Pathology	Everolimus	Blood	K2 EDTA tube	2 ml	Use TDM form. Send in 2-8˚C within 3 days.	Hospital Kuala Lumpur	5 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
163	Microbiology	Extractable nuclear antigen (ENA) screening	Blood	Plain tube with gel	5 ml	Screening followed by detailed profile (ENA specific) if positive	Aitoimmune Unit Institute Medical Research	18 days
164	Microbiology	Filaria PCR	Blood	K2EDTA	3ml	Blood taken between 6pm-12am	Parasitology Unit Institute Medical Research	11 days
165	Microbiology	Filariasis Serology	Blood	Plain tube with gel	3 ml	Clinical symptoms without parasitaemia, difficulties in taking blood at night, infection at patent stage (adult worm still alive). Specimen must packed in ice	Parasitology Unit Institute Medical Research	5 days
166	Chemical Pathology	Floating-Harbor Syndrome (FHS) (SRCAP)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
167	Chemical Pathology	Fluconazole	Blood	Lithium heparin tube	3 ml	Use TDM form	Hospital Ampang	11 day
168	Chemical Pathology	Free Kappa Light Chain	Blood	Plain Tube	5ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
169	Chemical Pathology	Free Kappa Light Chain, Urine	Random Urine	Universal sterile container	20ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
170	Chemical Pathology	Free Lambda Light Chain	Blood	Plain Tube	5ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
171	Chemical Pathology	Free Lambda Light Chain, Urine	Random Urine	Universal sterile container	20ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
172	Haematology	Free Protein S	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	5 Weeks
173	Chemical Pathology	Fructosamine	Blood	Plain tube (serum) or Lithium heparin tube (plasma), Paediatric patient: Paediatric tube	2-3 ml (adult)	No special preparation	Hospital Ampang	11 days
174	Chemical Pathology	Fructose-1,6-Bisphos-phatase Deficiency (FBP1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
175	Chemical Pathology	Fucosidosis (FUCA1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
176	Chemical Pathology	Galactokinase Deficiency (GALK1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
177	Microbiology	Galactoman-nan Antigen	Blood/BAL	Plain tube with gel/universal sterile container	5 ml		Hospital Sungai Buloh	9 days
178	Chemical Pathology	Galactose, Total/ Screening, blood spot	Dried blood spot	Whatmann 903 Filter paper	3 circles of DBS	Ensure blood completely dried before putting in plastic sheet. Wet blood spot will be rejected	Biochemistry Unit Institute Medical Research	9 days
179	Chemical Pathology	Galactose-1-phosphate	Blood	K2 EDTA tubes	5 ml whole blood for each tube	Do not spin, send whole blood.	Biochemistry Unit Institute Medical Research	14 days
180	Chemical Pathology	Galactose-1-phosphate Uridyl Transferase (GALT/G1PUT), blood spot	Dried blood spot	Whatmann 903 Filter paper	3 circles of DBS	Ensure blood completely dried before putting in plastic sheet. Wet blood spot will be rejected	Biochemistry Unit Institute Medical Research	9 days
181	Chemical Pathology	Galactose-6-sulphatase	Blood	K2 EDTA tubes	6 ml whole blood for each tube	Do not spin, send whole blood. After consultation only.	Biochemistry Unit Institute Medical Research	24 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
182	Chemical Pathology	Galactosemia Epimerase Deficiency (GALE)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
183	Microbiology	Gangliosides antibodies	Blood	Plain tube with gel	5 ml	Gullain-Barre syndrome.	Autoimmune Unit Institute Medical Research	11 days
184	Chemical Pathology	Gaucher Disease (GBA)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
185	Chemical Pathology	Glutaric Aciduria Type 1 (GCDH)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
186	Chemical Pathology	Glycogen Storage Disease Type Ia (GSDI) (G6P6)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
187	Chemical Pathology	Glycogen Storage Disease Type Ib (GSDI) (SLC37A4)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
188	Chemical Pathology	Glycogen Storage Disease Type III (GSDIII) (AGL)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
189	Chemical Pathology	Growth Hormone (Somatotrophin)	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)		Hospital Kuala Lumpur	1 month 4 days
190	Microbiology	Hanta Virus IgM	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	6 days
191	Microbiology	Hanta Virus PCR	Blood/Tissue biopsy	Plain tube with gel/universal sterile container	5 ml	After consultation only	Virology Unit Institute Medical Research	14 days
192	Chemical Pathology	Haptoglobin	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Kuala Lumpur	18 days
193	Microbiology	Hepatitis A IgM	Blood	Plain tube with gel	5 ml	LFT results to be noted on the request form.	Hospital Sungai Buloh	6 days
194	Microbiology	Hepatitis B Virus DNA (Viral Load) (Quantitative)	Blood	K2EDTA	5 ml	LFT and Hepatitis B ELISA results to be noted on the request form.	HKL / Hospital Sungai Buloh	18 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
195	Microbiology	Hepatitis C Immunoblot	Blood	K2EDTA	3-5 ml	LFT and Hepatitis B ELISA results to be noted on the request form.	Hospital Sungai Buloh	7 days
196	Microbiology	Hepatitis C Virus RNA (Viral Load) (Quantitative)	Blood	K2EDTA	5 ml	LFT and Hepatitis C ELISA results to be noted on the request form. Packed specimen in dried ice	Hospital Sungai Buloh	18 days
197	Microbiology	Hepatitis C Virus RNA Detection (Qualitative)	Blood	Plain tube with gel	5 ml	LFT and Hepatitis C ELISA results to be noted on the request form. Packed specimen in dried ice	Virology Unit IMR	18 days
198	Histopathol-ogy	HER-2 Fluo-rosence In-situ Hybridisation (FISH)	Unstained slide/Block	mailer box	NA	1. Hospital Kuala Lum-pur Request form for immunohistochemistry and histochemistry test must be sign by pathologist/ Surgeon/ oncologist. 2. Packed unstained slide/ block	Hospital Kuala Lumpur	14 days
199	Chemical Pathology (Molecular Genetics)	Hereditary Orotic Aciduria (UMPS)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient tem-perature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
200	Microbiology	Herpes sim-plex Virus PCR	CSF	Universal ster-ile container	3 ml	Send specimen in ice bag	Hospital Sungai Buloh	7 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
201	Microbiology	Herpes Virus Isolation (Herpes Simplex 1& 2)	Nasopharyngeal swab, Throat swab, Cardiac biopsy, Rectal swab, Stool, Pericardial aspirate, Vesicular swab/scraping, Eye swab, lacrimal tears	NPS/throat swab: Sterile plastic vial contain 2-3ml of VTM Organ biopsy: Sterile containers containing VTM to keep tissue moist, Stool: Sterile container, Pericardial aspirate: sterile plastic vial contain 2-3ml VTM, Vesicular swab/scrapping: Sterile plastic vial, Eye swab: Sterile plastic vial contain 2-3ml of VTM	NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils, Biopsy: 1.5cm cube of various parts of affected organs, Stool: >5gm (thumb size), Vesicular Swab/Scrapping:Swabs to be put into 2-3mls of VTM, Eye swab: Sterile swab moistened with distilled water		Virology Unit, Institute Medical Research	18-32 days
202	Histopathology	Histochemistry stain (Special stain)	Unstained slide/Block	mailer box	NA	1. Hospital Kuala Lumpur Request form for immunohistochemistry and histochemistry test must be sign by pathologist/ Surgeon/ oncologist. 2. Packed unstained slide/ block	Hospital Kuala Lumpur	14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
203	Microbiology	HIV Genome Detection (Nucleic acid) - Peadiatrics	Blood	K2EDTA	5 ml	Please fill IMR/Viro/ HIV/2 form. Mother must be HIV positive. Transport in ice	Virology Unit IMR	14 days
204	Microbiology	HIV Genome Detection (PCR)	Blood	K2EDTA	5 ml	LFT and HIV ELISA results to be noted on the request form.	Virology Unit IMR	14 days
205	Microbiology	HIV Genotype Resistance testing	Blood	K2EDTA	5-10 ml	Please fill in IMR/ Viro/HIV/24 form. Treatment failure patient, patient's viral load must be>1000. Transport in DRY ICE	Virology Unit IMR	44 days
206	Microbiology	HIV Immunoblot	Blood	Plain tube with gel	5 ml	Request by Laboratory only	Hospital Sungai Buloh	7 days
207	Microbiology	HIV RNA Viral Load	Blood	K2EDTA	5 ml	For patient on HAART treatment only	Hospital Sungai Buloh	7 days
208	Chemical Pathology	Homocysteine	Blood	EDTA tube	2 ml	Separate plasma immediately	Biochemistry Unit Institute Medical Research	14 days
209	Chemical Pathology	Homocysteine, Urine	Random urine	Universal sterile container	2 ml	Transport frozen in ice. Indication: Suspected Homocystinuria, Marfan like syndrome, Cobalamine disorder, sulphur amino acid disorder.	Women and Child Hospital Kuala Lumpur	1 month 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
210	Microbiology	Human leukocyte antigens (HLA) Antibody Detection (Donor Specific Antibody)	Blood	Plain tube with gel	10 ml	Appointment is not required	Transplantation Immunology Unit Institute Medical Research	24 days
211	Microbiology	Human leukocyte antigens (HLA) Antibody Screening (Panel Reactive Antibody)	Blood	Plain tube with gel	10 ml	Appointment is not required	Transplantation Immunology Unit Institute Medical Research	14 days
212	Microbiology	Human leukocyte antigens (HLA) Crossmatch (Complement Dependent Cytotoxicity)	Blood	Sodium Heparin (donor) Plain (patient)	18 ml (donor), 5 ml (patient)	By appointment only	Transplantation Immunology Unit Institute Medical Research	14 days
213	Microbiology	Human leukocyte antigens (HLA) Crossmatch (Flow Cytometry)	Blood	Sodium Heparin (donor) Plain (patient)	18 ml (donor), 5 ml (patient)	By appointment only	Transplantation Immunology Unit Institute Medical Research	14 days
214	Microbiology	Human leukocyte antigens (HLA) Typing Class I (Loci A, B and C)	Blood	K2EDTA	6 ml	By appointment only	Transplantation Immunology Unit Institute Medical Research	14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
215	Microbiology	Human leukocyte antigens (HLA) Typing Class I and II (Loci A, B and DR)	Blood	K2EDTA	6 ml	By appointment only	Transplantation Immunology Unit Institute Medical Research	14 days
216	Microbiology	Human leukocyte antigens (HLA) Typing Class II (Loci DR and DQ)	Blood	K2EDTA	6 ml	By appointment only	Transplantation Immunology Unit Institute Medical Research	14 days
217	Microbiology	Human leukocyte antigens (HLA) Typing for Disease Association	Blood	K2EDTA	6 ml	By appointment only	Transplantation Immunology Unit Institute Medical Research	14 days
218	Microbiology	Hydatid Disease / Echinococcosis Serology	Blood	Plain tube with gel	5 ml	Send specimen in ice bag	Parasitology Unit Institute Medical Research	9 days
219	Chemical Pathology	Hypophosphatasia (ALPL)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
220	Chemical Pathology	Immunoglobulin A (IgA)	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
221	Chemical Pathology	Immunoglobulin E (IgE) specific	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Allergy and Immunology Research centre (AIRC),Institute Medical Research	9 days
222	Chemical Pathology	Immunoglobulin E (IgE) Total	Blood	Plain tube. Paediatric patient: Paediatric plain tube	5ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Allergy and Immunology Research centre (AIRC),Institute Medical Research	9 days
223	Chemical Pathology	Immunoglobulin G (IgG)	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
224	Microbiology	Immunoglobulin IgA	Blood	Plain tube with gel	5 ml		PID Unit Institute Medical Research	9 days
225	Microbiology	Immunoglobulin IgE (Specific)	Blood	Plain tube with gel	5 ml		Allergy Unit Institute Medical Research	9 days
226	Microbiology	Immunoglobulin IgE (Total)	Blood	Plain tube with gel	5 ml		Allergy Unit Institute Medical Research	9 days
227	Microbiology	Immunoglobulin IgG	Blood	Plain tube with gel	5 ml		PID Unit Institute Medical Research	9 days
228	Microbiology	Immunoglobulin IgM	Blood	Plain tube with gel	5 ml		PID Unit Institute Medical Research	9 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
229	Chemical Pathology	Immunoglobulin M (IgM)	Blood	Plain tube. Paediatric patient: Paediatric plain tube	3 ml (adult), 0.5-1 ml (paediatric)	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
230	Histopathology	Immunohistochemistry stain (IHC)	Unstained slide/Block	mailer box	NA	1. Hospital Kuala Lumpur Request form for immunohistochemistry and histochemistry test must be sign by pathologist/ Surgeon/ oncologist. 2. Packed unstained slide/ block	Hospital Kuala Lumpur, Hospital Selayang & Hospital Serdang	14 days
231	Haematology	Immunophenotyping Leukaemia Lymphoma Bone Marrow	Bone Marrow	EDTA Tube	2.5 ml	Monday-Thursday Friday - By appoinment	Women and Child Hospital Kuala Lumpur Hospital Ampang	14 Working days
232	Haematology	Immunophenotyping Leukaemia Lymphoma Blood	Blood	EDTA Tube	2.5 ml	Send the sample immediately	Women and Child Hospital Kuala Lumpur / Hospital Ampang	14 Working days
238	Haematology	Immunophenotyping PNH	Blood	EDTA Tube	2.5 ml	Send the sample immediately	Hospital Kuala Lumpur	14 Working days
239	Microbiology	Indirect Immunoperoxidase (IIP) for Rickettsial	Blood	Plain tube with gel	3-5 ml		Hospital Sungai Buloh	7 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
240	Chemical Pathology	Inferior Petrosal sinus Sampling (IPSS)	Refer specific tests (ACTH, Cortisol, Prolactin)	Refer specific tests	Refer specific tests	Indication(s): To help distinguish between ACTH dependent Cushing's syndrome of ectopic and pituitary causes. Test(s) required: ACTH, Cortisol and Prolactin (Timed sample collection from right and left inferior petrosal sinuses and peripheral vein) Protocol For IPSS Test, HPJ	According to specific tests	5 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
241	Microbiology	Influenza viruses PCR	Nasopharyngeal swab, Throat swab, Cardiac biopsy, Rectal swab, Stool, Pericardial aspirate	NPS: Sterile plastic vial contain 2-3ml of VTM TS: Sterile plastic vial contain 2-3ml of VTM organ biopsy: Sterile containers containing VTM to keep tissue moist Rectal swab: Sterile plastic vial contain 2-3ml of VTM Stool: Sterile universal container Pericardial aspirate: sterile plastic vial contain 2-3ml VTM	NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils TS: Sterile swab Organ biopsy: remove portions, about 1.5cm cube of various parts of affected organs Rectal swab: Stool on sterile swab moistened with distilled water Stool: >5gm (thumb size)		Virology Unit Institute Medical Research	14 days
242	Chemical Pathology	Insulin	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)	Glucose level should be provided with the request	Hospital Kuala Lumpur	18 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
243	Chemical Pathology	Insulin-like Growth Factor 1 (IGF-1)	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)	Fasting sample is preferable	Diabetes and Endocrine Unit (CDNRC), Institute Medical Research	24 days
245	Chemical Pathology	Iodine, urine	Random urine	Universal sterile container	5 ml	Note to referring lab: Send in 2-8˚C or keep at -20˚C if delay	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	10 days
246		Isospora belli IF	Stool	Universal sterile container	5 gm (thumb-nail size) / 5 ml diarrhea stool		Hospital Sungai Buloh	6 days
247	Microbiology	Japanese Encephalitis PCR	Blood	Plain tube with gel	5 ml		Makmal Kesihatan Awam Kebangsaan Sungai Buloh	7 days
248	Microbiology	Japanese Encephalitis PCR	CSF	CSF tube	1-3 ml		Makmal Kesihatan Awam Kebangsaan Sungai Buloh	7 days
249	Microbiology	Japanese Encephalitis serology	Blood	Plain tube with gel	5 ml		Makmal Kesihatan Awam Kebangsaan Sungai Buloh	11 days
250	Histopathol-ogy	KRAS	Block	mailer box	NA	1. Hospital Kuala Lumpur Request form for EGFR/ KRAS test must be sign by pathologist/ Surgeon/ oncologist. 2. Packed unstained slide/ block	Department of Genetic, Hospital Kuala Lumpur	14 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
251	Chemical Pathology	Lead	Blood	Lithium heparin tube (Plasma) or K2 EDTA tube (Whole Blood)	3 ml	No special preparation	Toxicology Unit, Institute Medical Research (Plasma) or Makmal Kesihatan Awam Kebangsaan Sungai Buloh (Whole Blood)	15 days
252	Chemical Pathology	Leber's hereditary optic neuropathy (LHON)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
253	Chemical Pathology	Leigh Syndrome (SURF1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
254	Microbiology	Leishmaniasis PCR	Blood Lymph node / Tissue aspirate	K2EDTA /Universal sterile container	5 ml	Suspicion of visceral / cutaneous leishmaniasis. Specimen must packed in ice	Parasitology Unit Institute Medical Research	11 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
255	Chemical Pathology	Leopard Syndrome (PTPN11)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
256	Chemical Pathology	Lesch-Nyhan Syndrome (HPRT 1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
257	Chemical Pathology	Lipoprotein (a) Electrophoresis	Blood	Plain Tube	3ml	Serum must reach the lab not more than 7 days (at 2°C-8°C) after collection date	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	14 days
258	Chemical Pathology	Lissencephaly (LIS1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
259	Chemical Pathology	Lithium	Blood	Plain Tube without gel	3 ml		Hospital Kuala Lumpur/ Hospital Kajang	14 days
260	Microbiology	Liver Autoab Screening (Anti-Smooth muscle, Anti-Mitochondrial and Anti-Liver Kidney Microsome Ab (LKM))	Blood	Plain tube with gel	5 ml	Determine autoimmune disease responsible for liver disease - autoimmune hepatitis, primary biliary cirrhosis, primary sclerosing cholangitis, ulcerative colitis, cryptogenic chronic hepatitis or autoimmune cholangitis	Hospital Selayang/ Autoimmune Unit Institute Medical Research	18 days
261	Microbiology	Liver Specific Autoab (Anti-M2, LKM1, AMA M2, Sp 100, PML, gp 210, LC 1, SLA/LP, +/- M2-3E(BPO), Ro52	Blood	Plain tube with gel	5 ml	Restricted to Hepatologists or consultation only	Autoimmune Unit Institute Medical Research	18 days
262	Chemical Pathology	Long-Chain 3-Hydroxyacyl-CoA Dehydrogenase (HADHA)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
263	Haematology	Lupus Anticoagulant	Blood	Trisodium Citrate Tube	To mark on tube(6 tubes)	Send the sample immediately	Pusat Darah Negara	5 Weeks
264	Chemical Pathology	Lysinuric Protein Intolerance (SLC7A7)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
265	Chemical Pathology	Macroprolactin	Blood	Plain tube (serum) or Lithium heparin tube (plasma), Paediatric patient: Paediatric tube	2-3 ml (adult), 1 ml (paediatric)	Refer to performing lab	Pusat Perubatan Universiti Kebangsaan Malaysia with money order	15 days
266	Microbiology	Malaria PCR	Blood	K2EDTA	3ml	Failure to identify species through blood film	Parasitology Unit Institute Medical Research	11 days
267	Microbiology	Malaria PCR	Blood sample on filter paper	Sealed plastic bag		Failure to identify species through blood film	Parasitology Unit Institute Medical Research	11 days
268	Microbiology	Malaria PCR	Giemsa stain thick / thin blood film	Slide mailer		Failure to identify species through blood film	Parasitology Unit Institute Medical Research	11 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
269	Microbiology	Malaria Serology	Blood	Plain tube with gel	5 ml	Type of patient : Chronic malaria, symptomatic without parasitaemia, liver/lymph abscess	Parasitology Unit Institute Medical Research	9 days
270	Chemical Pathology	Maple Syrup Urine Disease (*BCKDHA*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
271	Chemical Pathology	Maple Syrup Urine Disease (*BCKDHB*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
272	Chemical Pathology	Maple Syrup Urine Disease (*DBT*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
273	Chemical Pathology	Maple Syrup Urine Disease (*DLD*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
274	Chemical Pathology	Maroteaux-Lamy Syndrome, MPS VI (ARSB)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
275	Chemical Pathology	MCT8-Specific Thyroid Hormone Cell Transporter Deficiency (SLC16A2)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
276	Microbiology	Measles Serology	Blood	Plain tube with gel	5 ml	Blood should be taken any time up to 28 days of rash onset.Use MSLF: 01/2004 form	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	8 days
278	Microbiology	Measles virus isolation	Urine	Universal sterile container	10 ml	Use MSLF: 01/2004 form	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	25 days
279	Microbiology	Measles virus isolation	Throat Swab	VTM	Swabs to be put into 2-3mls of VTM	Respiratory secretion (nasopharyngeal specimen) should be taken 1 – 7 days of rash onset. Use MSLF: 01/2004 form	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	25 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
280	Microbiology	Measles virus isolation	Nasopharyngeal secretion/ Tracheal aspirate	Universal sterile container	1-3 ml	Respiratory secretion (nasopharyngeal specimen) should be taken 1 – 7 days of rash onset. Use MSLF: 01/2004 form	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	25 days
281	Chemical Pathology	Medium Chain Acyl-CoA Dehydrogenase (MCAD) Deficiency (ACADM)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
282	Chemical Pathology (Trace Elements)	Mercury, urine	Random urine	Universal sterile container	20 ml	No special preparation	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	15 days
283	Chemical Pathology (Biochemical Genetics)	Metabolic Screening, blood spot	Dried blood spot	903 Filter paper	3 circles of Dried Blood Spot (DBS)	Ensure blood completely dried before putting in plastic sheet.	Biochemistry Unit Institute Medical Research	7 days
284	Chemical Pathology (Biochemical Genetics)	Metabolic Screening, Urine	Random urine	Universal sterile container	2 ml		Biochemistry Unit Institute Medical Research	14 days
285	Chemical Pathology (Molecular Genetics)	Metachromatic Leukodystrophy (MLD) (ARSA)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Keep sample chilled at all time. All Molecular testing can only be requested by Clinical geneticist/Neurologist/ Physician/Paediatrician using Institute Medical Research / UMDP/02 form and accompanied by consent form.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
286	Chemical Pathology	Methanol	Blood/urine	Sodium Fluoride tube	3 ml	No special preparation	Forensic Department, Hospital Sungai Buloh	6 days
287	Chemical Pathology	Methotrexate (MTX)	Blood	Plain Tube without gel	3 ml	Use TDM form. Send in 2-8˚C within 7 days. Please refer to TDM Sampling Guide	Hospital Kuala Lumpur	5 days
288	Chemical Pathology	Methylenetetrahydrofolate Reductase Deficiency (MTHFR)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
289	Chemical Pathology	Methylmalonic Acidemia (*MMAA*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
290	Chemical Pathology	Methylmalonic Acidemia (*MMAB*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
291	Chemical Pathology	Methylmalonic Acidemia (*MMAB*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
292	Chemical Pathology	Methylmalonic Acidemia (*MUT*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
293	Chemical Pathology	Methylmalonic Acidemia (*MUT*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
294	Chemical Pathology	Methylmalonic Aciduria and Homocystinuria Type C (MMACHC)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
295	Chemical Pathology	Methylmalonic Aciduria and Homocystinuria Type D (MMADHC)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
296	Chemical Pathology	Methylmalonyl-CoA Epimerase Deficiency (MCEE)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
297	Microbiology	Middle East Respiratory Syndrome Coronavirus(MERS CoV) PCR	Sputum/Bronchial Alveolar Lavage / Tracheal aspirate / Nasopharyngeal aspirate	Universal sterile container	Not applicable		Hospital Sungai Buloh	5 days
298	Chemical Pathology	Mitochondrial DNA Deletion Syndromes - Chronic Progressive External Ophthalmoplegia (CPEO)	Muscle biopsy/Urine sediment/ Blood	K2 EDTA tubes(1-2 tubes)	muscle biopsy/ urine sediment (10-20 mL of early morning urine)/2.5 ml blood for each tube	Send blood at ambient temperature. If >3 hours, keep sample cooled. Urine must be refrigerated after collection and kept chilled at all times until it arrives at the laboratory Tissue biopsy must be placed inside sterile container. Tissue biopsy must be frozen immediately after collection and sent in ice.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
299	Chemical Pathology	Mitochondrial DNA Deletion Syndromes - Kearn-Sayre Syndrome (KSS)	Muscle biopsy/Urine sediment/ Blood	Sterile Container/ K2 EDTA tubes(1-2 tubes)	muscle biopsy/ urine sediment (10-20 mL of early morning urine)/2.5 ml blood for each tube	Send blood at ambient temperature. If >3 hours, keep sample cooled. Urine must be refrigerated after collection and kept chilled at all times until it arrives at the laboratory Tissue biopsy must be placed inside sterile container. Tissue biopsy must be frozen immediately after collection and sent in ice.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
300	Chemical Pathology	Mitochondrial DNA Deletion Syndromes - Pearson Syndrome	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
301	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*ANT1*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
302	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*DGUOK*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
303	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*MPV17*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
304	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*POLG*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
305	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*RRM2B*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
306	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*SUCLA2*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
307	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*SUCLG1*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
308	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*TWINKLE*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
309	Chemical Pathology	Mitochondrial DNA Depletion Syndromes (*TYMP*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
310	Chemical Pathology	Mitochondrial Encephalomy-opathy, Lactic Acidosis, and Stroke-Like Episodes (ME-LAS) Syndrome (3243 hotspot)	Blood/ Urine sediment/ muscle biopsy	K2 EDTA tubes(1-2 tubes)	muscle biopsy/ urine sediment (20 mL of early morning urine)/2.5 ml blood for each tube	Send blood at ambient temperature. If >3 hours, keep sample cooled. Urine must be refrigerated after collection and kept chilled at all times until it arrives at the labora-tory Tissue biopsy must be placed inside sterile container. Tissue biopsy must be frozen imme-diately after collection and sent in ice.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
311	Chemical Pathology	Mitochondrial Encephalomy-opathy, Lactic Acidosis, and Stroke-Like Episodes (ME-LAS) Syndrome (Full Panel)	Blood/ Urine sediment/ muscle biopsy	K2 EDTA tubes(1-2 tubes)	muscle biopsy/ urine sediment (20 mL of early morning urine)/2.5 ml blood for each tube	Send blood at ambient temperature. If >3 hours, keep sample cooled. Urine must be refrigerated after collection and kept chilled at all times until it arrives at the labora-tory Tissue biopsy must be placed inside sterile container. Tissue biopsy must be frozen imme-diately after collection and sent in ice.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
312	Chemical Pathology	Mitochondrial HMG-CoA Synthase Deficiency (*HMGCS2*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
313	Chemical Pathology	Mitochondrial Neurogastrointestinal Encephalopathy (*TYMP*)	Blood	Sterile Container	30 ml	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Hospital Kuala Lumpur	3 months 4 days
314	Chemical Pathology	Mitochondrial Short-Chain Enoyl-CoA Synthase Deficiency (*ECHS1*)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
315	Haematology	Molecular Alpha Thalassaemia	Blood	EDTA Tube	2.5 ml	Send the sample immediately	Hospital Kuala Lumpur	4 months
316	Haematology	Molecular BCR-ABL t(9;22) Quantitative, Bone Marrow	Bone Marrow	EDTA Tube	2.5ml (2 tubes)	send the sample immediately	Hospital Ampang	34 work days
317	Haematology	Molecular BCR-ABL t(9;22), Bone Marrow (Qualitative)	Bone Marrow	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang	34 work days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
318	Haematology	Molecular BCR-ABL t(9;22), Peripheral blood (Qualitative)	Blood	EDTA Tube	2.5ml (4 tubes)	Send the sample immediately	Hospital Ampang	34 work days
319	Haematology	Molecular BCR-ABL t(9;22), Peripheral blood (Quantitative)	Blood	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang	34 work days
320	Haematology	Molecular Beta Thalassaemia	Blood	EDTA Tube	2.5 ml	Send the sample immediately	Institute Medical Research	90 working days
321	Haematology	Molecular Detection of Mutations in Acute Leukaemia (28 common translocations of acute leukaemias), Bone marrow	Bone marrow	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Institute Medical Research	34 work days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
322	Haematology	Molecular Detection of Mutations in Acute Leukaemia, (28 common translocations of acute leukaemias), Blood	Blood	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Institute Medical Research	34 work days
323	Haematology	Molecular JAK2 mutation detection, Blood (Qualitative)	Blood	EDTA Tube	2.5ml (2 tubes)	By appointment & send the sample immediately	Hospital Ampang	8 Weeks 4 Days
324	Haematology	Molecular PML-RARA t(15;17), Blood (Qualitative)	Blood	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang / Institute Medical Research	34 work days
325	Haematology	Molecular PML-RARA t(15;17), Blood (Quantitative)	Blood	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang / Institute Medical Research	34 work days
326	Haematology	Molecular PML-RARA t(15;17), Bone marrow (Qualitative)	Bone marrow	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang / Institute Medical Research	34 work days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
327	Haematology	Molecular PML-RARA t(15;17), Bone Marrow (Quantitative)	Bone Marrow	EDTA Tube	2.5ml (2 tubes)	Send the sample immediately	Hospital Ampang / Institute Medical Research	34 work days
328	Haematology	Molecular Study for Haemophilia A	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	8 weeks 4 days
329	Haematology	Molecular Study for Haemophilia B	Blood	EDTA	2.5 ml	Send the sample immediately	Institute Medical Research	34 work days
330	Haematology	Molecular Study for Haematology Malignancy	Blood	EDTA Tube	2.5 ml	Send the sample immediately	Hospital Ampang / Institute Medical Research	34 work days
330	Haematology	Molecular Study for Haematology Malignancy	Bone Marrow	EDTA Tube	2.5 ml	Send the sample immediately	Hospital Ampang / Institute Medical Research	34 work days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
332	Chemical Pathology	Mucopoly -saccarides (MPS)- Screening	First morning urine	Sterile container	5 ml	First morning urine. Transport frozen in ice. Indication: Suspected MPS- Coarse facies, hepatosplenomegaly, dystosis multiplex, scoliosis, soft tissue and joint problem, mental retardation, corneal cloudy, short stature .	Biochemistry Unit Institute Medical Research	14 days
333	Chemical Pathology	Multiple Respiratory Chain Deficiencies (Mitochondrial Translation Defect) (GFM1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
334	Microbiology	Mumps-Serology-IgM/IgG	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	7 days
335	Microbiology	Mycobacterium C&S	Blood, Bone marrow	MycoF Lytic bottle	1-5 mL	Please use TBIS 20C Form	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	13 weeks
336	Microbiology	Mycobacterium C&S	Sputum, Bronchial Lavage, Tracheal Asp, pus swab, urine (early morning), tissue biopsy	Universal Sterile container	3-5 mL	Please use TBIS 20C Form	Institut Perubatan Respiratori	13 weeks

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
337	Microbiology	Mycobacterium C&S (BACTEC MGIT)	Extrapulmonary sample e.g CSF, body fluids	Universal sterile container	1-3 mL	Please use TBIS 20C Form	Institut Perubatan Respiratori	11 wks
338	Microbiology	Mycobacterium TB Genome Detection / PCR	Sputum/Bronchial Alveolar Lavage / Tracheal aspirate / pus/urine / CSF/bone marrow	Universal sterile container	3-5 mL	Please use TBIS 20C Form	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	11 days
339	Microbiology	Mycobacterium TB Genome Detection / PCR	Tissue	Universal sterile container	Not applicable	Specify site of collection. Do not put in formalin.Please use TBIS 20C Form.	Makmal Kesihatan Awam Kebangsaan Sungai Buloh	11 days
340	Chemical Pathology	Mycophenolic Acid (MPA)	Blood	K2 EDTA tube	3 ml	Use TDM form. Send in 2-8˚C within 7 days. Please refer to TDM Sampling Guide	Hospital Kuala Lumpur	5 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
341	Chemical Pathology	Myoclonic Epilepsy with Ragged-Red Fibers (MERRF) Syndrome (8344 hotspot)	Blood/ Urine sediment/ muscle biopsy	K2 EDTA tubes(1-2 tubes)//Urine Container/ Sterile Container	2.5ml blood EDTA or dried blood spot/urine sediment (20 mL of early morning urine)/muscle biopsy	Send blood at ambient temperature. If >3 hours, keep sample cooled. Urine must be refrigerated after collection and kept chilled at all times until it arrives at the laboratory Tissue biopsy must be placed inside sterile container. Tissue biopsy must be frozen immediately after collection and sent in ice.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1 months 4 days
342	Chemical Pathology	Myoglobin	Blood	Plain Tube (serum) or Lithium Heparin Tube (plasma)	5ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
344	Chemical Pathology	Myoglobin urine (Quantitative)	Random Urine	Sterile Container (add with 200mg sodium bicarbonate for each 10ml)	10ml	Transport immediately in ice	Hospital Ampang	11 days
345	Chemical Pathology	N-Acetylglutamate Synthase Deficiency (NAGS)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
346	Microbiology	*Naegleria spp* - PCR	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	sterile, air tight or contact lens storage	Not Applicable	By Appointment at least 3 days before the sample is taken. Medium in container: sterile distilled water or saline	Parasitology Unit Institute Medical Research	11 days
347	Chemical Pathology	Neuropathy, Ataxia and Retinitis Pigmentosa (NARP) Syndrome (8993 hotspot)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1 months 4 days
348	Microbiology	Nipah Serology (IgM/G)	Blood/ CSF	Blood - Plain tube with gel CSF- sterile CSF tube	Blood- 3-5 mL CSF 1-3 mL		Virology Unit Institute Medical Research	23 days
349	Chemical Pathology	Non Ketotic Hyperglycinemia (AMT)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
350	Chemical Pathology	Non Ketotic Hyperglycinemia (GCSH)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
351	Chemical Pathology	Non Ketotic Hyper-glycinemia (GLDC)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
352	Chemical Pathology	Noonan Syndrome (PTPN11)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
353	Chemical Pathology	Oligo-saccharide & tetraglucoside, urine	First morning urine	Universal sterile container	5 ml		Biochemistry Unit Institute Medical Research	19 days
354	Chemical Pathology	Organic acid	Random Urine	Universal sterile container	5 ml	Collect during urine crisis, freeze immediately and transport frozen in ice. Indication: Selective screening: unexplained metabolic crisis, organic aciduria, amino aciduria, FAOD, mitochondria disorder, neurological/neuro-muscular disorder, epileptic encephalopathy, multisystem disorder, unexplained mental retardation.	Biochemistry Unit Institute Medical Research	9 days
355	Chemical Pathology	Ornithine Transcarba-mylase (OTC) Deficiency (OTC)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
356	Microbiology	Paraneoplastic neurological syndrome antibodies	Blood/CSF	Blood - Plain tube with gel CSF- sterile CSF tube	Blood- 3-5 mL CSF 1-3 mL		Autoimmune Unit Institute Medical Research	18 days
357	Microbiology	Parvo Virus B19 IgM/G	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	7 days
358	Chemical Pathology	Phosphomannomutase 2 Deficiency (PMM2)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
359	Chemical Pathology	Pipecolic Acid	Blood	Lithium heparin tube	2 ml		Biochemistry Unit Institute Medical Research	19 days
360	Microbiology	Pneumocystis carinii / jirovec-BAL (Stain	Bronchial Alveolar Lavage	Universal sterile container	3 ml	Send immediately.	Hospital Sungai Buloh	7 days
361	Microbiology	Pneumocystis carinii/ jirovec-Induced Sputum (Stain & IF)	Induced Sputum	Universal sterile container	3 ml	Collect early morning (after rising mouth) sputum aseptically into the container.	Hospital Sungai Buloh	7 days
362	Chemical Pathology	POLG-Related Disorders	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
363	Chemical Pathology	Pompe Disease (GAA)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
364	Chemical Pathology	Porphobilinogen, Urine	Random urine	Universal sterile container	5 ml	Protect from light. Porphobilinogen easily destroyed by light	Biochemistry Unit Institute Medical Research	19 days
365	Chemical Pathology	Porphyrin, Urine	Random urine	Universal sterile container	5 ml	Protect from light. Porphyrin easily destroyed by light	Biochemistry Unit Institute Medical Research	19 days
366	Chemical Pathology	Prader-Willi Syndrome (SNRPN)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
367	Chemical Pathology	Pre Albumin	Blood	Plain Tube	3ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	11 days
368	Chemical Pathology	Primary Dystonia (THAP1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
369	Chemical Pathology	Primary Dystonia (TOR1A)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
370	Microbiology	Primary Immuno-deficiency Screening iii) Immuno-globulin & Complement	Blood	Plain tube with gel	3-5 ml	By appointment. Please use AIRC, IMR Primary Immunodefi-ciency Screening Form. Transport specimen at ambient temperature (not in ice)	Primary immunodefi-ciency Disease Unit Institute Medical Research	16 days
372	Microbiology	Primary Immuno-deficiency Screening ii) T&B Cell enumeration	Blood	K2EDTA	2.5 ml	By appointment. Please use AIRC, IMR Primary Immunodefi-ciency Screening Form. Transport specimen at ambient temperature (not in ice)	Primary immunodefi-ciency Disease Unit Institute Medical Research	9 days
372	Chemical Pathology	Procalcitonin	Blood	Plain tube (serum), Pae-diatric patient: Paediatric tube	2-3 ml (adult), 1 ml (paedi-atric)	Please consult Chemi-cal Pathologist	Institut Kanser Negara	7 days
373	Chemical Pathology	Prostate Spesific Antigen (PSA), Free	Blood	Plain Tube (serum) or Lithium Heparin Tube (plasma)	3 ml	Aliquoted sample shall be kept at -20 degree if not analysed within 24 hours	Hospital Kuala Lumpur	1 months 4 days
374	Haematology	Protein C Activity	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample imme-diately	Pusat Darah Negara	5 Weeks
375	Haematology	Protein C Antigen	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample imme-diately	Pusat Darah Negara	5 Weeks
376	Chemical Pathology	Protein Electro-phoresis	Blood	Plain Tube	5ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Ampang	25 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
377	Chemical Pathology	Protein Electro-phoresis, Urine	Random Urine (preferred early morning)	Universal sterile container	20ml	Sample urine must paired with serum. Sample must reach within 7days of collection at 2-8 degree C	Hospital Ampang	25 days
378	Microbiology	Protozoa Culture for Acanthamoeba / Naegleria spp. Diagnosis	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	sterile, air tight or contact lens storage	Not Applicable	By Appointment at least 3 days before the sample is taken. Medium in container: sterile distilled water or saline	Parasitology Unit IMR	14 days
379	Chemical Pathology	Pseudo-rheumatoid Dysplasia (WISP3)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
380	Chemical Pathology	PTEN-associated Diseases (PTEN) - Sequencing	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
381	Chemical Pathology	PTEN-associated Diseases (PTEN)- MLPA	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
382	Chemical Pathology	Pterins, CSF	CSF	Sterile container	0.5 ml	Cover from light, Transport FROZEN. (Pterins easily destroyed by heat and light)	Biochemistry Unit Institute Medical Research	19 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
383	Chemical Pathology	Pterins, Urine	Random urine	Universal sterile container	2 ml	Cover from light, Transport FROZEN. (Pterins easily destroyed by heat and light)	Biochemistry Unit Institute Medical Research	19 days
384	Chemical Pathology	Purine & Pyrimidine, Urine	Random urine	Universal sterile container	2 ml	Transport frozen in ice. Indication: Purine & Pyrimidine disorder.	Woman and Children Hospital Kuala Lumpur	30 days
385	Chemical Pathology	Purine Nucleoside Phosphorylase Deficiency (PNP)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
386	Chemical Pathology	Pyruvate Dehydrogenase Deficiency (PDHA1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
387	Microbiology	Rabies PCR	Neck biopsy, Saliva, CSF, Brain biopsy	After consultation only		After consultation only	Virology Unit IMR	14 days
388	Microbiology	Rabies virus isolation	Neck biopsy, Saliva, CSF, Brain biopsy	After consultation only		After consultation only	Virology Unit IMR	39 days
389	Chemical Pathology	Renin	Blood	K2 EDTA tube, Paediatric patient:K2 EDTA Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)	Please refer protocol For Requesting Plasma Renin and Aldosterone	Hospital Putrajaya	1 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
390	Chemical Pathology	Retino-blastoma (RB1) MLPA	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
391	Chemical Pathology	Retino-blastoma (RB1) Sequencing	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
392	Microbiology	Respiratory Virus Isolation and Identification (Influenza Virus A and B, Adenovirus,Respiratory Syncytial Virus,Parainfluenza Virus 1, 2 and 3, Human Metapneumovirus)	Nasopharyngeal aspiration, Nasopharyngeal swab, Throat swab, BAL , Sputum, Nasal swab, Organ biopsies	NPA/NPS/ throat swab/ nasal swab: Sterile plastic vial contain 2-3ml of VTM BAL/sputum:sterile container Biopsy: Sterile containers containing VTM to keep tissue moist	NPA: Mucous secretion in VTM, NPS/nasal swab: A flexible, fine shafter polyester swab. Use different swab for each nostrils, Biopsy: 1.5cm cube of various parts of affected organs		Virology Unit, Institute Medical Research	18 - 32 days
393	Chemical Pathology	Schinzel Giedion Syndrome (SETBP1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
394	Microbiology	Schistosomiasis Serology	Blood	Plain tube with gel/ EDTA Tube	2 ml	Clinical symptom and / or history of exposure to infection source, medical preliminary screening for going overseas. Send sample in ice.	Parasitology Unit Institute Medical Research	9 days
395	Chemical Pathology	SCN1A-Related Seizure Disorders (SCN1A)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
396	Haematology	Serum Erythropoietin	Blood	Plain tube with gel	5 ml	Send the sample immediately at room temperature OR Separate serum from cells as soon as possible. Store frozen at -40°C and transport frozen serum on dry ice	Hospital Ampang	12 Weeks
397	Chemical Pathology	Severe Congenital Neutropenia (ELANE)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
398	Chemical Pathology	Sex Hormone Binding Globulins (SHBG)	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)		Hospital Putrajaya	18 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
399	Chemical Pathology	Short-Chain 3-Hydroxya-cyl-CoA Dehydro-genase Deficiency (HADH)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient tem-perature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
400	Chemical Pathology	Sialic Acid (Total & Free), Urine	First Morning Urine	Universal sterile container	5 ml		Biochemistry Unit Insti-tute Medical Research	19 days
401	Chemical Pathology	Sirolimus	Blood	K2 EDTA tube	2 ml	Use TDM form. Send in 2-8˚C within 7 days. Please refer to TDM Sampling Guide	Hospital Kuala Lumpur	5 days
402	Microbiology	Skin antiboies (PPA: Pemphigoid & Pemphigus antibodies)	Blood	Plain tube with gel	5 ml	Pemphigoid and Pem-phigus Diseases	Autoimmune Unit Insti-tute Medical Research	18 days
403	Chemical Pathology	Spinal Muscular Atrophy (SMN) - MLPA	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient tem-perature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
404	Chemical Pathology	Spinal Muscular Atrophy (SMN) - Sequencing	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient tem-perature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
405	Chemical Pathology	S-Sulpho-cysteine, urine	Random urine	Universal sterile container	2 ml	Collect without preservative	Biochemistry Unit Institute Medical Research	19 days
406	Microbiology	Stool for: Opportunistic protozoa 1) *Cryptosporidium spp* 2) *Microsporidium spp*	Stool	Universal sterile container	Fresh stool (6g)	Fresh stool in plain container (specimen to reach lab within 24hr at room temperature)	Protozoa Unit Institute Medical Research/ Hospital Sungai Buloh	9 days
407	Chemical Pathology	Succinyl-acetone, Urine	Random urine	Universal sterile container	5 ml	Cover from light	Biochemistry Unit Institute Medical Research	19 days
408	Chemical Pathology	Sugar and Polyol, Urine	Random urine	Universal sterile container	5 ml		Biochemistry Unit Institute Medical Research	19 days
409	Chemical Pathology	Sulfite Oxidase (SUOX) Deficiency (SUOX)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
410	Chemical Pathology	Sulphite, Urine	Random urine	Universal sterile container	2 ml	Transport frozen in ice. Indication: Suspected Sulphite oxidase or molybdenum co factor deficiency, dystonia, seizure	Woman and Children Hospital Kuala Lumpur	19 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
411	Chemical Pathology	Sweat Test	Sweat	Sweat collector	15ul	Indication: Suspected Cystic Fibrosis - recurrent chest infection, malabsorption syndrome. Can only be requested by Respiratory Paeditrician. By appointment only. Sample collection and analysis done by laboratory staff.	Paed Lab Paediatric Institute Hospital Kuala Lumpur	30 days
412	Chemical Pathology	Tacrolimus	Blood	K2 EDTA tube	2 ml	Use TDM form. Send in 2-8˚C within 7 days. Please refer to TDM Sampling Guide	Hospital Kuala Lumpur	5 days
413	Microbiology	Taeniasis/ Cysticercosis Serology	Blood	Plain tube/ K2EDTA	2 ml	Send sample in ice	Parasitology Unit IMR	9 days
414	Chemical Pathology	Thyroglobulin	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)	Note to referring lab: Keep the specimen frozen or within 2-8°C during transportation	Diabetes and Endocrine Unit (CDNRC), Institute Medical Research	30 days
415	Chemical Pathology	Thyrotropin (TSH) receptor antibody (TRAb)	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	2-3 ml (adult), 0.5-1 ml (paediatric)		Hospital Kuala Lumpur	

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
416	Chemical Pathology	Toxicology screening (except TDM)	Random urine	Universal sterile container	30 ml	Borang Permintaan Ujian Pengesanan Dadah Dalam Air Kencing	Hospital Kuala Lumpur	1 months 4 days
417	Microbiology	Toxocariasis Serology	Blood	Plain tube with gel/ k2 EDTA	5 ml	Type of patient : Asthma / difficulty in breathing, have history exposure to infection source	Parasitology Unit IMR	9 days
418	Chemical Pathology	Transferrin	Blood	Plain tube (serum) or Lithium heparin tube (plasma), Paediatric patient: Paediatric tube	2-3 ml (adult), 1 ml (paediatric)	No special preparation	Hospital Kuala Lumpur	30 days
419	Chemical Pathology	Transferrin (Phenotyping)	Blood	Plain Tube	1ml	Serum must reach the lab not more than 7 days (at 2°C-8°C) after collection date	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	30 days
420	Chemical Pathology	Transferrin (Quantitation)	Blood	Plain Tube	3ml	Aliquoted sample shall be send in 2-8°C within 7 days.	Hospital Kuala Lumpur	9 days
421	Microbiology	Treponema Pallidum (VDRL)-CSF	CSF	Sterile CSF tube	3 ml	Send immediately.	Hospital Sungai Buloh	6 days
422	Microbiology	Trichinellosis serology	Blood	Plain tube with gel/k2 EDTA	5 ml	Send sample in ice	Parasitology Unit IMR	9 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
423	Chemical Pathology	Tyrosine Hydroxylase Deficiency (TH)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
424	Microbiology	Varicella zoster IgG/ IgM	Blood	Plain tube with gel	5 ml	Send immediately.	Hospital Sungai Buloh	7 days
425	Microbiology	Varicella zoster Virus (PCR)	Blood	Plain tube with gel	5 ml		Hospital Sungai Buloh	7 days
426	Chemical Pathology	Very Long Chain Acyl-CoA Dehydrogenase (VLCAD) Deficiency (ACADVL)	Blood	K2 EDTA tubes(1-2 tubes)	2.5 ml blood for each tube	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
427	Chemical Pathology	Very Long Chain Fatty Acid (VLCFA), plasma/serum	Blood	EDTA tube	2 ml	Freeze immediately. Transport frozen in ice. Indication: Suspected peroxisomal disorder, mental retardation, developmental delay, neuroregression	Biochemistry Unit Institute Medical Research	14 days
428	Microbiology	Viral culture	Bronchialveolar Lavage/ Tracheal Asp/ Nasopharyngeal aspirate/ Sputum/Body Fluids/CSF	Universal sterile container/ CSF sterile tube	3 ml	Send specimen in ice bag. Please specify type of virus to culture with relevant clinical history	Virology Unit Institute Medical Research	39 days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
429	Microbiology	Viral culture	Tissue	Universal sterile container with viral transport media (VTM)	1.5cm cube of various parts of affected in 2-3 ml VTM	Specify site of collection. Do not put in formalin. Send specimen in ice bag. Please specify type of virus to culture with relevant clinical history	Virology Unit Institute Medical Research	39 days
430	Microbiology	Viral culture	Stool	Universal sterile container	> 5g (thumb size)	Send specimen in ice bag. Please specify type of virus to culture with relevant clinical history	Virology Unit Institute Medical Research	39 days
431	Microbiology	Viral culture	Eye swab / Rectal swab / Throat swab / Nasal swab/ Nasopharygeal swab / Vesicular scrapping swab	Sterile plastic vial contain 2-3 ml of VTM	Swabs should be put 2-3 ml of VTM	Send specimen in ice bag. Please specify type of virus to culture with relevant clinical history	Virology Unit Institute Medical Research	39 days
432	Chemical Pathology	Vitamin D, Total (25-OH Vitamin D)	Blood	Plain tube (serum), Paediatric patient: Paediatric tube	4 ml (adult), 0.5-1 ml (paediatric)	No special preparation	Hospital Putrajaya	30 days
433	Haematology	VWF:CB	Blood	Trisodium Citrate Tube	To mark on tube	Send the sample immediately	Pusat Darah Negara	19 working days

NO	TEST DISCIPLINE	TEST NAME	TEST SPECIMEN	TEST CONTAINER	TEST VOLUME	TEST PREPARATION	TEST PERFORMING LAB	TAT
434	Chemical Pathology	Whole mitochondrial DNA (Full panel)	Blood/ Urine sediment/ muscle biopsy	K2 EDTA tubes(1-2 tubes)/Urine Container/ Sterile Container	Request only by Clinical Geneticist/Neurologist. Send 1-2 x 2.5ml blood EDTA or dried blood spot/urine sediment (20 mL of early morning urine)/ muscle biopsy	Send blood at ambient temperature. If >3 hours, keep sample cooled. Urine must be refrigerated after collection and kept chilled at all times until it arrives at the laboratory Tissue biopsy must be placed inside sterile container. Tissue biopsy must be frozen immediately after collection and sent in ice.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	1.3 months 2.3 months
435	Chemical Pathology	Whole mitochondrial DNA (mtDNA hotspots)	Blood	K2 EDTA tubes(1-2 tubes)	2.5ml blood EDTA or dried blood spots	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
436	Chemical Pathology	X-Chromosome Inactivation (AR)	Blood	K2 EDTA tubes(1-2 tubes)	2.5ml blood EDTA or dried blood spots	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days
437	Chemical Pathology	X-linked Adrenoleukodystrophy (ABCD1)	Blood	K2 EDTA tubes(1-2 tubes)	2.5ml blood EDTA or dried blood spots	Send at ambient temperature. If >3 hours, keep sample cooled. Protect from freezing.	Unit of Molecular Diagnostics and Protein (UMDP), Institute Medical Research	3 months 4 days

REQUEST FORM

KEMENTERIAN KESIHATAN MALAYSIA
PERKHIDMATAN PATOLOGI
HOSPITAL TENGKU AMPUAN RAHIMAH KLANG

PER-PAT 301

UNTUK KEGUNAAN MAKMAL

LAB NO.

1. Nama :
2. No. Pendaftaran :
3. No. K/P :
4. Jantina ☐ Lelaki ☐ Perempuan
5. Umur :
6. Keturunan :
7. Wad / Klinik :
8. Tarikh Masuk Wad :
9. Pekerjaan :
10. Taraf Perkahwinan
11. ☐ Bayar ☐ Percuma
12. No. Laporan Dahulu
13. Butiran Penting

	Ya	Tidak
Jaundice	☐	☐
Lymphadenopathy	☐	☐
Hepatomegaly	☐	☐
Splenomegaly	☐	☐
Bleeding Tendency	☐	☐
H/O Transfusion	☐	☐

Haematinics _____

Drug/Chemical History _____

Data Makmal Terdahulu

Hb _____

Platelet _____

TWDC _____

14. Ringkasan Klinikal, Penemuan Pembedahan dan Riwayat Keluarga :

15. Diagnosis :

16. Kategori Permohonan / Jenis Ujian :

Patologi Kimia		Klinikal		Hematologi		Histo/Saitologi	Mikro/Immunologi	
						Spesimen	Spesimen	Ujian
B. Sugar	☐	Bld. Count	☐	PBP	☐			
B. Urea	☐	ESR	☐	BM Asp.	☐			
S. Elec	☐	BFMP	☐	Hb Analysis	☐			
B. Gases	☐	U. Sugar	☐	Coagulation	☐			
S. Bilirubin	☐	U. Alb.	☐		☐			
LFT	☐	U. ME	☐		☐			
Se. Creatinine	☐	Stool ME	☐		☐			

Lain-lain _____

17. Pengambilan Spesimen : Tarikh : ☐☐☐☐☐☐ Masa : ☐☐☐☐

18. Nama Doktor : _____

19. Tarikh : _____

Tandatangan dan Cop Doktor

LAPORAN " SILA LIHAT SEBELAH "

BONE MARROW CYTOGENETICS
Genetic Laboratory
Haematology Unit, Cancer Research Centre
Institute for Medical Research
Jalan Pahang
50588 Kuala Lumpur, Malaysia

Phone : 03-2616 2711
Fax : 03-2616 2530
Website : http://www.imr.gov.my

Specimen requirements:

1. **Chromosome analysis:** Please send at least 2mL of FIRST bone marrow aspirate or blood *(white blood count is >10,000 WBC/mL and at least 20% blasts)* into sterile transport medium available from Genetic Laboratory. Transport as soon as possible. Protect from extreme heat and freeze.

2. **Chromosome breakages:** An appointment is necessary for the performance of this analysis. Please contact the Genetic Laboratory for further instruction. Please send 10mL peripheral blood in sterile lithium heparin tube. A control sample, matched for age and sex is required.

FOR GENETIC LAB USE ONLY

Genetic No. : BM
Serial No. :

Previous Cytogenetic Result:

_____

PATIENT INFORMATION

1. Patient Name :		**2. IC No.** :
3. Age :	**4. Ethnicity:** ☐ Malay ☐ Chinese ☐ Indian ☐ Others, Please specify: _____	**5. Gender:** ☐ Male ☐ Female
6. Clinical History :	**7. Address to send test report** :	

CLINICAL DIAGNOSIS

- ☐ Acute Lymphoblastic Leukaemia
- ☐ Acute Myeloid Leukaemia
  FAB type: _____
- ☐ Chronic Myeloid Leukaemia
  ☐ Chronic phase ☐ Accelerated phase
  ☐ Blast phase
- ☐ Myeloproliferative Neoplasms
- ☐ Myelodysplastic Syndrome
- ☐ Myelodysplastic/Myeloproliferative Neoplasms
- ☐ Multiple Myeloma
- ☐ Lymphoma
  Please specify: _____
- ☐ Chronic Lymphocytic Leukaemia
- ☐ Aplastic Anaemia
- ☐ Others: _____

DISEASE STATUS

- ☐ New Case
- ☐ Marrow Assessment
- ☐ Remission
- ☐ Relapse
- ☐ Post-Stem Cell Transplant
  Sex of Donor
  ☐ Male ☐ Female

SPECIMEN INFORMATION

Date Drawn : ___/___/_____ Time : _____
Date Sent : ___/___/_____ Time : _____

Specimen Type:

- ☐ Bone Marrow Aspirate
  Volume of aspirates: ____mL
- ☐ Peripheral Blood
  WBC count: _____WBC/mL % Blast: _____

TEST REQUESTED

- ☐ Chromosome Analysis
- ☐ Chromosome Breakages
- ☐ FISH
  ☐ BCR/ABL ☐ PML/RARA

FISH analysis: Unless otherwise specified, this test will be done on selective cases under the discretion of the Laboratory Supervisor.

Official stamp of Requesting Doctor:

Name & Signature

Date:

HKL/GE/TPMN-1-(1)

TEL : 03-26166666 ext 6837/6836
Fax : 03- 26970417

UNIT GENETIK
JABATAN PATOLOGI
HOSPITAL KUALA LUMPUR
Jalan Pahang, 50586,
Kuala Lumpur, Malaysia.

FOR LAB USE

GENETIC NO :

CYTOGENETICS REQUEST FORM FOR PERIPHERAL BLOOD SAMPLES

Date of sample collected :..... Ward/ Clinic :.....

Previous Genetics No. :..... Date/ Place of previous analysis :...../.....

If this is a repeat sample kindly state reason for repeating chromosomal studies : (this includes genetics studies done in other institutions / universities/ private labs)

I. A) Name of patient : ..... B) IC No : .....

C) Date of Birth : ...../...../..... D) Age : .....yrs/ .....mths

E) Sex : Male/ Female/ Undetermined

II. Clinical Features observed :

III. Clinical Diagnosis :

IV. Details of family :

A i) Name of Father :..... ii) IC No: .....

iii) Date of Birth :...../...../..... iv) Age : .....yrs/ .....mths

v) Ethnic group : ..... vi) Occupation : .....

B i) Name of Mother :..... ii) IC No: .....

iii) Date of Birth :...../...../..... iv) Age : .....yrs/ .....mths

v) Ethnic group : ..... vi) Occupation : .....

C Consanguineous marriage : YES/NO. If YES, state relationship with details :
.....

D Address : .....

.....

Contact Tel. No. :.....

E FAMILY TREE

HOSPITAL AMPANG SPECIAL HEMATOLOGY LAB REQUISITION

Clinical Hematology Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor.
☎ 03-42896219 🖷 03-42970059

Lab N° 17- Patient N°

PATIENT

Name

I/C ☐☐☐☐☐☐○○☐☐☐☐

○/☒appropriate choice

Age ____ Malay / Chinese / Indian / Other_____ Male / Female

Ward, Hospital

CLINICAL, THERAPY & TRANSFUSION HISTORY

Incomplete clinical history will compromise test interpretation

Fever ☐ Jaundice ☐ Bleeding ☐ Transfusion ☐ ESA ☐ Hepatomegaly ☐

Lymphadenopathy ☐ Splenomegaly ☐ Immunosuppression ☐ GCSF ☐

REASON FOR SAMPLING Do you require **urgent or expedited** results? ☐

DIAGNOSIS

CONSENT YOUR SIGNATURE CONFIRMS THAT YOU HAVE OBTAINED PATIENT'S CONSENT FOR USAGE OF THIS EXTRACTED DNA AND RNA FOR ASSAY OPTIMISATION. THIS USAGE WILL BE ANONYMISED AND WILL NOT BE LINKED TO THIS PATIENT.

DOCTOR'S NAME, MOBILE N° & SIGNATURE

Signature verifies the identity of this sample. Any edit should be initialled. Incomplete requisition form **will** result in sample rejection.

SAMPLE

Date of Sampling_____ 2017

Marrow ☐ Blood ☐ Lymph Node ☐ CSF ☐

Other_____

Complete one form for each sample type

MORPHOLOGY ☎42896532

☐ FBP Retic/IPF ☐ ☐ CSF/Body Fluid ☐ Aspirate Trephine ☐

CYTOGENETICS ☎42896055 (Transport medium preferred; Na Heparin acceptable)

FISH ☐ 'Y' Chimerism (Donor Male ☐ Female ○)

☐ CLL Myeloma ☐ Hypereosinophilia ☐ **KARYOTYPE** ☐

FLOW CYTOMETRY (EDTA) ☎42896218

☐ Leukemia/ Lymphoma/ Myeloma PNH ☐

MOLECULAR (EDTA) ☎42896056

☐ JAK2V617F PML/RARA ☐ RUNX1/RUNX1T1 ☐ CBFB/MYH11 ☐

☐ BCR/ABL1 FLT3/NPM1 ☐ AML Mutation Panel ☐

Chimerism PRE (donor & recipient) ☐ POST [2 Heparin tubes] ☐

☐ Thalassemia Hemophilia ☐ B/T cell gene rearrangement ☐

HEMOSTASIS (TRISODIUM CITRATE 3.2%)☎42896461

☐ DIC screen INR ☐ Fibrinogen ☐ Factor assay ☐ D dimer ☐

☐ Anti Thrombin ☐ Protein C ☐ Protein S Anti Xa [UMWH] ☐

☐ Lupus anticoagulant ☐ ADAMTS 13

☐ Platelet aggregation (**by appointment only**)

RBC MEMBRANE, HEMOGLOBIN, ENZYME DISORDERS (ACD)☎42896217

☐ Hb analysis (EDTA) sEPO [plain tube] ☐ ☐ Kleihauer

☐ Osmotic Fragility (Heparin) (**by appointment only**)

HEMATOPATHOLOGY ☎42896222

Site of Biopsy_____

Biopsy Trucut / Excision Block N°_____

Slides N°_____ Unstained / Stained

OTHER_____

Guidelines on reverse HA:HEMA2017 12/17/16

DNA ANALYSIS FOR THALASSAEMIA SYNDROMES & HAEMOGLOBINOPATHIES

For IMR/ HKL/ HSB used only
Type of specimen ☐blood ☐gDNA ☐others

Please ☑ below, WHERE you wish to send the sample and TEST request:

☐ DNA analysis of the beta globin gene ☐ Further testing for alpha globin gene* ☐ Confirmation for haemoglobinopathy *Note: Only after common alpha globin gene mutations have been excluded by IMR/HKL	☐ DNA analysis of the alpha globin gene	
Molecular Genetics Laboratory ☐ Haematology Unit, Cancer Research Centre Institute for Medical Research Jalan Pahang 50588 Kuala Lumpur, Malaysia Phone: 03-2616 2720 | Fax: 03-2616 [illegible] Email: [illegible] Website: [illegible]	**Molecular Haematology Laboratory** ☐ Haematology Unit, Pathology Department Hospital Kuala Lumpur 50586 Kuala Lumpur, Malaysia Phone: 03-2615 5740/ 5746 Fax: 03-2697 0417 Email: [illegible] Website: [illegible]	**Haematology Unit** ☐ Pathology Department Hospital Sultanah Bahiyah Km6, Jln Langgar, Bandar Alor Setar, 05460 Alor Setar, Kedah, Malaysia. Phone: 04-740 [illegible] Fax: 04-740 [illegible]

Patient Name	**Date of Birth:** **Age :**	**Ethnicity** ☐ Malay ☐ Chinese ☐ Indian ☐ Others(specify)________
Patient ID/IC Number	**Gender** ☐ Male ☐ Female If female; Pregnant? ☐ YES, Weeks: ______ ☐ No	**Hosp/ Ward/ Clinic:**
Address of KK or hospital to send report: **Tel/ Fax No :**		**Date of Sampling:**
	Type of Specimen:	**Date of Sent:**

CLINICAL SUMMARY/ FAMILY HISTORY/ FAMILY TREE.

Parental consanguinity: ☐ YES ☐ NO

This information is crucial for baseline correlation of molecular results. Please ☑ all that applies

INDICATION OF TEST:
☐ Diagnostic : ☐ Antenatal ☐ Others ________________
☐ Screening : ☐ Form Four ☐ Cascade screening
☐Others (specify) : ________________

CLINICAL DIAGNOSIS:

CLINICAL STATUS:

☐ New Case	☐ Follow Up
☐ Trait	☐ TDT (≥6 transfusions/ year)
☐ Intermedia	☐ NTDT
☐ Major	

Hb level at diagnosis : _______ g/dL

Hepatomegaly : ☐ NO ☐ YES ______ cm.

Splenomegaly : ☐ NO ☐ YES ______ cm.

Transfusion History ☐ NIL yet
☐ YES ______ No./Year

Official stamp of Requesting Doctor
[Name, Signature & Date]

THIS PART EXPLAINS SPECIMEN & TEST REQUIREMENTS/ CHECKLIST:

SPECIMEN REQUIREMENTS:
Peripheral blood in EDTA tube(must arrive at lab within 2 week)
☐ Adults: ~2.5 mL ☐Peads: ~0.5mL

TEST REQUIREMENTS :
☐ A copy of recent FBC [<3 months] result of this patient
☐ A copy of Hb Analysis result of this patient
☐ All paediatrics (≤12y/o) samples to be referred to IMR, must be accompanied with parents' samples.

ADDITIONAL REQUIREMENTS FOR CASCADE SCREENING: ☐ Index case i) Name:________________
ii) IC/Lab No: ________________
iii) Diagnosis: ________________
iv) Relationship to index case: ________________

☐ A copy of DNA analysis for thalassaemia syndromes/ haemoglobinopathy result of INDEX case
☐ If Hb analysis report of this patient is pending :
i) Hospital performing the test :________________
ii) Date of sample sent :

DNA Ana for Thal (Synd & Hbpathy(s) REQform | Haematology Unit, CaRC IMR | Date of Issue: 05.04.2017 | Version 3.0 | Page 1 of 2

KEBENARAN UNTUK UJIAN DNA

Maklumat ujian yang di jalankan: *DNA ANALYSIS OF THALASSEMIA SYNDROMES & HAEMOGLOBINOPATHIES*

Nama Pesakit: ______________________________ ID Pesakit: ____________________

Saya memahami penerangan yang berikut:

Ujian ini khusus untuk **THALASSEMIA SYNDROMES & HAEMOGLOBINOPATHIES*

***Keputusan ujian POSITIF adalah indikasi bahawa saya terdedah kepada atau menghidapi penyakit/ keadaan yang tertentu. Oleh itu ujian lanjutan adalah diperlukan bagi mengesahkan penyakit tersebut.**

***Sekiranya keputusan ujian NEGATIF, masih ada kemungkinan saya mempunyai masalah genetik tersebut dan ia tidak dapat dikesan disebabkan oleh limitasi teknologi kaedah ujian yang digunakan dan ilmu pengetahuan berkenaan perubahan DNA atau protein pada gen yang menyebabkan penyakit tersebut belum dikenalpasti.**

***Ada juga kemungkinan keputusan ujian TIDAK dapat ditafsirkan atau TIDAK diketahui kepentingannya. Dalam keadaan tertentu, keputusan ujian mungkin menunjukkan keputusan yang tidak selaras dengan diagnosis asal yang telah dijangkakan.**

1. **Kebaikan ujian ini adalah untuk pengesahan diagnosis sesuatu penyakit dan mengenalpasti pembawa atau ahli keluarga yang berisiko tinggi mempunyai gen yang tidak normal.**
2. **Keputusan dan interpretasi yang tidak tepat berkemungkinan boleh berlaku berpunca daripada variasi DNA yang jarang pada seseorang individu, kesilapan teknikal yang tidak lazim, gabungan pembentukan tapak DNA yang tidak lazim oleh enzim yang digunakan untuk sesuatu ujian, kesilapan pengenalpastian identiti sampel, kontaminasi sampel, mutasi pada tapak primer dan kesilapan umum makmal.**
3. **Ketepatan interpretasi keputusan DNA bergantung kepada ketepatan maklumat diagnosis klinikal dan hubungan biologikal antara ahli keluarga pesakit.**
4. **Ujian DNA boleh mengenalpasti jika ibu/bapa adalah biologikal atau tidak.**
5. **Ujian yang ditawarkan adalah ujian yang terbaik boleh didapati pada masa ini. Jika teknologi dan mutasi (kecacatan gen) yang baru dapat dikesan pada masa akan datang , saya memberi kuasa kepada makmal untuk menganalisis semula sampel DNA tersebut tanpa perlu memaklumkan kepada saya. Jika sampel tidak mencukupi, doktor boleh memohon kepada saya untuk sampel yang baru. Berkemungkinan terdapat kos tambahan bagi ujian tersebut.**
6. **Bagi tujuan membantu saya memahami laporan keputusan ujian, ianya akan dimaklumkan kepada saya hanya melalui doktor atau kaunselor genetik.**
7. **Keputusan ujian ini digunakan HANYA untuk interpretasi klinikal**
8. **Keputusan ujian ini tidak boleh digunakan untuk apa-apa tujuan forensik atau TIDAK SAH untuk tafsiran forensik.**
9. **Keputusan ujian ini tidak boleh digunakan dalam mana-mana mahkamah undang-undang atau dalam hal-hal berkaitan perundangan dan TIDAK SAH untuk tafsiran undang-undang.**

Bagi ujian prenatal, syarat-syarat berikut adalah termaktub:

1. **Ujian DNA ini akan menentukan status fetus bagi penyakit berkaitan ujian ini SAHAJA.**
2. **Selain variasi DNA yang luar biasa dan dan kesilapan teknik, kesilapan hasil keputusan juga boleh berlaku sekiranya terdapat kontaminasi (pencemaran) bahan maternal ke dalam sampel fetus.**

PERSETUJUAN TERMAKLUM BERTULIS

1. **Suatu spesimen biologi (darah, tisu badan, cecair amniotic atau vilus korioni) akan diambil untuk ujian-ujian DNA bagi penyakit seperti di atas.**
2. **Selepas ujian DNA selesai, sebahagian DNA saya akan dilabel tanpa nama dan digunakan untuk tujuan pembelajaran, kawalan kualiti atau penyelidikan. Keputusan ujian tersebut tidak akan dimaklumkan kepada saya kerana sampel tersebut telah dilabel tanpa nama. Saya faham bahawa spesimen biologi yang diambil untuk tujuan ujian genetik adalah hak milik eksklusif Makmal IMR/HKL. Selepas ujian yang diminta selesai diproses, makmal berhak melupus, menyimpan atau menggunakan kembali spesimen tersebut untuk tujuan validasi atau pembelajaran.**
3. **Keputusan DNA adalah SULIT dan tidak akan didedahkan kepada sesiapa termasuk ahli keluarga atau individu selain doktor saya tanpa keizinan saya.**
4. **Sesetengah individu yang telah menjalani ujian DNA mungkin merasai diskriminasi (dari aspek insurans, pekerjaan dan masyarakat) apabila keputusan ujian DNA menunjukkan individu adalah pembawa gen yang menyebabkan penyakit tersebut.**

Untuk diisi oleh:	
PESAKIT/IBUBAPA/PENJAGA SAH	**DOKTOR/KAUNSELOR**
Saya telah membaca dan memahami maklumat borang kebenaran. Saya memahami isi kandungan di dalam dokumen ini dan mempunyai peluang untuk bertanyakan soalan tentang ujian, prosedur ujian dan risiko yang berkaitan, manfaat dan limitasi ujian. Saya setuju untuk menjalani ujian genetik ini dan menerima risiko & limitasinya. Tandatangan : Nama dan No IC: Tarikh:	Saya telah menerangkan sepenuhnya tentang ujian yang bakal dijalankan kepada pesakit/ibu bapa/penjaga yang sah. Tandatangan : Nama dan No IC: Tarikh:

CHROMOSOMAL MICROARRAY ANALYSIS FOR CLINICAL GENETIC SYNDROMES

Hematology Unit, Cancer Research Centre,
Institute for Medical Research,
Jalan Pahang,
50588 Kuala Lumpur, Malaysia.

Phone : 03-2616 2716/2719
Fax : 03-2616 2530
Website : www.imr.gov.my

FOR LAB USE ONLY

MR: ____________

Specimen Requirements:
- *10 mL peripheral blood in EDTA tube (lavender/purple cap)*
- *All paediatrics samples must be accompanied with parents' samples*
- *IMR Consultation is required before sending patient's specimen for testing. Please call Dr Zahiidah Zakaria (03-4041 2251 / 03-2616 2708)*

PATIENT INFORMATION

1. Patient Name	:	2. Date of Birth:	3. Age :
4. Patient ID/ IC No.	:	5. Ethnicity : ☐ Malay ☐ Chinese ☐ Indian ☐ Others; Please specify:	6. Gender ☐ Male ☐ Female
7. Hosp./ Ward:		8. Address to send report:	
9. Hosp. Lab No.:			
10. Date of Sampling:			
11. Date send:		12. Tel/ Fax No.:	

Clinical Diagnosis: ______________________________

Clinical Features:

Autism Spectrum	☐ Mild ☐ Moderate ☐ Severe	Multiple congenital anomalies (e.g. Microcephaly, macrocephaly, limb anomaly) Please specify:	
Developmental Delay	☐ Mild ☐ Moderate ☐ Severe	Dysmorphic features Please specify:	
Learning difficulties	☐ Mild ☐ Moderate ☐ Severe	Cleft palate	☐ Yes ☐ No
Seizure disorder	☐ Yes ☐ No	Cleft lip	☐ Yes ☐ No
Failure to thrive	☐ Yes ☐ No	Heart defects Please specify:	
Other anomaly(ies) Please specify:			

FAMILY HISTORY (INCLUDE FAMILY PEDIGREE/ TREE)

Parental consanguinity: ☐ YES ☐ NO

Other Related Result(s):

Karyotyping/ FISH analysis:

MRI brain finding(s):

Official stamp of Requesting Doctor:

Name, Signature & Date

PENYATAAN KEBENARAN UNTUK ANALISIS MIKROARRAY KROMOSOM

Pengenalan

Aberasi kromosom tidak seimbang yang boleh dilihat secara sitogenetik, dan juga aberasi kromosom submikroskopik yang kecil telah diketahui sebagai sebahagian daripada penyebab utama kecacatan genetik klinikal seperti kecacatan kongenital dan kerencatan akal. Namun begitu, masih lagi terdapat sejumlah besar sindrom genetik yang belum dapat dijelaskan seperti kelewatan perkembangan, cacat pendengaran, kecacatan tubuh, kecacatan kongenital, asidosis, kegagalan tumbesaran, masalah pemakanan, kekerdilan, kecacatan kelahiran dan sindrom-sindrom lain yang jarang atau tidak diketahui puncanya, yang perlu segera dikenal pasti bagi tujuan diagnosis dan terapi awal. Walaupun kebanyakan sindrom tidak boleh disembuhkan, namun adalah amat penting untuk mewujudkan indeks pendiagnosan untuk membolehkan diagnosis pranatal dilakukan bagi kehamilan yang seterusnya. Penggunaan analisis kromosom mikroarray (Array CGH) akan membolehkan pengesanan perubahan genomik dan/atau ketidaknormalan kromosom submikroskopik di pelbagai lokus pada kromosom yang boleh membantu menjelaskan bagaimana terjadinya sesuatu sindrom dan kesannya secara langsung. Kami berharap hasil daripada ujian Array CGH ini akan memberikan implikasi yang penting bagi kaunseling genetik dan juga kualiti penjagaan kesihatan pesakit di masa hadapan.

Apa yang perlu saya lakukan?

Untuk pesakit yang mempunyai ciri-ciri sindrom yang tidak dapat dijelaskan, pengendalian rutin bagi keadaan ini melibatkan pengambilan sampel darah untuk tujuan diagnosis. Oleh itu, kami akan mengambil sebanyak 10 ml sampel darah anda untuk analisis Array CGH. Jika anda adalah ibu/bapa kepada pesakit, kami juga memerlukan kebenaran anda untuk mengambil 10 ml sampel darah anda untuk tujuan pengesahan data Array CGH dan seterusnya menganalisa sama ada perubahan kromosom berkenaan adalah diwarisi di kalangan ahli keluarga anda.

Adakah sebarang kemungkinan risiko?

Pengambilan darah tambahan mungkin akan diminta oleh doktor anda sebagai sebahagian daripada prosedur diagnosis. Tiada sebarang risiko akibat daripada pengambilan sampel darah.

Kerahsiaan

Segala maklumat mengenai anda yang dikumpul semasa ujian Array CGH akan disimpan secara sulit. Segala maklumat mengenai anda, selepas anda meninggalkan hospital, akan dirahsiakan supaya anda tidak dikenali.

PENYATAAN KEBENARAN:

1. **Spesimen biologi saya [10 ml sampel darah] akan diambil untuk analisis Array CGH ini.**
2. **Selepas lengkapnya analisis Array CGH ini, lebihan sampel mungkin akan digunakan untuk menjalankan kajian tambahan. Saya memahami bahawa setiap sampel biologi yang diterima untuk tujuan ujian genetik ini menjadi hakmilik eksklusif makmal IMR.**
3. **Keputusan Array CGH adalah amat sulit dan tidak akan dikeluarkan kepada sesiapa termasuk saudara-mara saya, selain daripada doktor saya tanpa kebenaran saya. Saya memahami bahawa identiti saya akan dilindungi.**

Untuk dilengkapkan oleh:	
PESAKIT/ IBUBAPA/ PENJAGA RASMI	**DOKTOR/ KAUNSELOR**
Saya telah membaca dan menerima satu salinan borang kebenaran ini. Saya memahami segala maklumat yang disediakan di dalam borang ini dan telah berpeluang bertanya soalan mengenai ujian ini, prosedur dan risiko, kelebihan dan kekurangannya. Saya bersetuju untuk melakukan ujian genetik ini dan menerima segala risiko dan kekurangannya. TANDATANGAN : NAMA & NO. IC: TARIKH:	Saya telah memberi penerangan yang sepenuhnya mengenai ujian tersebut kepada pesakit/ ibu/ bapa/ penjaga rasmi. TANDATANGAN & COP RASMI: NAMA: TARIKH:

TRANSPLANTATION IMMUNOLOGY UNIT
ALLERGY AND IMMUNOLOGY RESEARCH CENTER
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR
DIRECT LINE: 03-2616 2581 TEL: 03-2616 2666 FAX: 03-2691 2019

HLA TYPING TEST REQUEST FORM
(DISEASE ASSOCIATION)

☐ B*27 ☐ B*15:02

☐ B*57:01 ☐ Others ( )

HOSPITAL : TEL. NO. :
WARD : FAX NO. :
☐ PAYING ☐ FREE

Patient's Details

Name :
I.C. No. / Passport No. :
Age / Gender / Ethnic :
Diagnosis :

1. This test is done ONLY by appointment.
2. Please collect 6 mL of EDTA blood and mix well.
3. Please seal the tube stopper to avoid leakage of blood during transportation.
4. Transport condition: Room Temperature (WITHOUT ICE).
5. Blood samples must reach the lab by 10.30 am.

Time blood collected:
Date blood collected:

Test requested by:

Signature :
Name :
Stamp :

Date :

For IMR Laboratory Use Only

Received Stamp:

	Patient
Lab. No.	
DNA No.	
Volume / Quantity	
Sample Condition	☐ Good ☐ Others:

Received By:

Note: The full name, stamp and signature of the Medical Officer requesting the test MUST be provided.
The date and test requested MUST be provided.

MOLECULAR ANALYSIS FOR LEUKAEMIA

Hematology Unit, Cancer Research Centre
Institute for Medical Research
Jalan Pahang
50588 Kuala Lumpur
Malaysia

Phone : 03-2616 2715
Fax : 03-2616 2566
Website : www.imr.gov.my

PATIENT INFORMATIONS:

Patient Name: **Patient IC No.:**	**Ethnicity:** ☐ Malay ☐ Chinese ☐ Indian ☐ Others; Please specify:	**Gender:** ☐ Male ☐ Female
Date of Birth:	**Hosp/ Ward:**	**Hosp. Lab No.:**
Age :	**Type of Specimen:**	
Address to send report:		
Tel/ Fax:	**Date of Sampling:**	**Date Sent:**

TEST REQUESTED:

☐ 28 Common Translocations for Leukaemia (28-hemavision)

☐ Acute Myeloid Leukaemia Mutation Studies
- ☐ FLT3
- ☐ c-KIT
- ☐ NPM1
- ☐ CEBPA

☐ Chronic Myeloid Leukaemia (CML) Molecular Studies
- ☐ CML Translocation Studies
- ☐ CML Mutation Study (BCR-ABL T315I)

☐ Chromosomal Microarray

CLINICAL DIAGNOSIS

☐ Acute lymphoblastic leukaemia

☐ Acute myeloid leukaemia

FAB type:_____

☐ Chronic myeloid leukaemia
- ☐ Chronic phase
- ☐ Accelerated phase
- ☐ Blast phase

☐ Other diagnosis:
Please specify:_____

DISEASE STATUS

☐ New case

☐ Marrow assessment

☐ Remission

☐ Relapse

☐ Post-transplant

CLINICAL FEATURES:

Lymphadenopathy	☐ YES	☐ NO	Extramedullary infiltration Please specify	☐ YES	☐ NO
Hepatomegaly	☐ YES	☐ NO			
Splenomegaly	☐ YES	☐ NO	SVC syndrome	☐ YES	☐ NO
Mediastinal mass	☐ YES	☐ NO	Gum swelling	☐ YES	☐ NO
			Hyperviscosity syndrome Please specify: _____	☐ YES	☐ NO

Blood count at presentation:

- Blast count _____
- Hb _____
- WBC _____
- Platelet _____

IMPORTANT CHECKLIST; Please include with this form:
☐ A copy of FBC result of this patient
☐ A copy of BMA report of this patient
☐ A copy of Immunophenotyping report of this patient

Official stamp of Requesting Doctor:

Name, Signature & Date

TRANSPLANTATION IMMUNOLOGY UNIT
ALLERGY AND IMMUNOLOGY RESEARCH CENTRE
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR
DIRECT LINE: 03-2616 2581 TEL: 03-2616 2666 FAX: 03-2691 2019

HLA ANTIBODY TEST REQUEST FORM

HOSPITAL : **TEL. NO. :**
WARD : **FAX NO. :**
☐ **PAYING** ☐ **FREE**

Patient's Details

Name :
I.C. No. / Passport No. :
Age / Gender / Ethnic :

For Solid Organ Transplant Only (MUST BE FILLED IN)

1. CLINICAL HISTORY
Primary cause of ESRD / CKD ☐ **Diabetes** ☐ **Hypertension** ☐ **SLE** ☐ **IgAN** ☐ **FSGS**
☐ **Kidney stone** ☐ **Others (*Please specify*):**

2. STATUS OF TRANSPLANT

☐ **PRE-TRANSPLANT**	☐ **POST-TRANSPLANT**
☐ **Deceased Donor Waiting List**	**Donor's Name :**
☐ **Living-related**	**Donor's Family No. :**
Planned Date of Transplant : ***(If available)***	**Date of Transplant :**

For Solid Organ Transplant and HSCT (Where Applicable)

3. SENSITIZING EVENTS

☐ **Last Blood Transfusion**	**Date**	:	**(dd/mm/yyyy)**
☐ **Pregnancy / Miscarriage**	**No. of Pregnancy**	:	
	Last Delivery Date	:	**(mm/yyyy)**
☐ **Previous Transplant**	**Date of Transplant**	:	**(mm/yyyy)**
	Donor's Name	:	
	Donor's Family No.	:	

4. TREATMENT GIVEN

	Last Treatment Date		Last Treatment Date
☐ **ATG**	:	☐ **DFPP**	:
☐ **Rituximab**	:	☐ **IvIg**	:

1. **Please collect 6 mL of whole blood in plain tube.**
2. **Please seal the tube stopper to avoid leakage of blood during transportation.**
3. **Transport condition: Room Temperature (WITHOUT ICE).**
4. **Blood samples must reach the lab by 10.30 am.**

Time blood collected:
Date blood collected:

For IMR Laboratory Use Only

Received Stamp:

	Patient
Lab. No.	
DNA No.	
Volume / Quantity	
Sample Condition	☐ **Good** ☐ **Others:**

Received By:

Test requested by:

Signature :
Name :
Stamp :

Date :

Note: The full name, stamp and signature of the Medical Officer requesting the test MUST be provided. The date and test requested MUST be provided.

IMR/ARC/TIAF-4 Version 1.0 Issue Date: 01/03/2016 Approved by Head of Unit

IMR/IDRC/BACT/BRUCE/01

Bacteriology Unit
Institute for Medical Research
Jalan Pahang, 50588 Kuala Lumpur
Tel: 03-26162663 Fax: 03-26919716

BRUCELLOSIS LABORATORY REQUEST FORM

A. SENDER'S INFORMATION

Hospital: _____

Ward: _____

Date of Admission: ___/___/___

Name of Requesting Doctor: _____

Signature: _____

Tel No: _____

Fax No: _____

B. PATIENT INFORMATION

Name: _____

Address: _____

_____

_____

IC No: _____

R/N No: _____

Age: _____ Date of Birth: ___/___/___

Race: ☐ Malay ☐ Chinese ☐ Indian

☐ Others: _____

Sex: ☐ Male ☐ Female

Nationality: ☐ Malaysian

☐ Non Malaysian: _____

Occupation: _____

C. CLINICAL FEATURES / COMPLICATIONS

Diagnosis date: ___/___/___

Illness duration: _____days

Sign & Symptoms:

- ☐ Fever, duration: _____
- ☐ Recurring fever: present/absent
  Days between attacks_____
- ☐ Night sweats
- ☐ Headache
- ☐ Weakness
- ☐ Generalized aching
- ☐ Arthralgia
- ☐ Loss of appetite
- ☐ Endocarditis
- ☐ Osteomyelitis
- ☐ Arthritis or Spondylitis
- ☐ Epididymo-orchitis
- ☐ Meningitis
- ☐ Hepatomegaly/ splenomegaly
- ☐ Others: _____

Exposure

- ☐ Drink unpasteurized milk
- ☐ Unpasteurized dairy products (soft cheese from raw milk, etc)
- ☐ Work with animals or animal products (veterinarian, abattoir, farmer, researcher, animal birthing, placenta (please circle)
- ☐ case or household member works or lives on farm or dairy
- ☐ Laboratory worker
- ☐ Travelled abroad over past 6 months
- ☐ Others _____

D. SPECIMEN INFORMATION

Type of specimen:

- ☐ Blood in EDTA for PCR
- ☐ Serum for ELISA
- ☐ Culture isolate for identification

Date Specimen Collection: ___/___/___

E. LABORATORY INFORMATION (For IMR only)

Date specimen received: ___/___/____

Date test performed: ___/___/____

Result of test:

Verified by: _____

TBIS 24C
Salinan Makmal TB/PKP

Kementerian Kesihatan Malaysia
Program Kawalan Penyakit TB
Permohonan ujian TB

A. Pusat Pungutan spesimen (Klinik/KK/Hospital) : **Tarikh Permohonan:**

B. Maklumat Pesakit

Nama :	**No Pengenalan Diri (IC/Paspot) :**
Umur : / **No Telefon :**	**Jantina:** ☐ **M** ☐ F
Alamat:	**Warganegara :** ☐ **Malaysia** ☐ **Bukan Malaysia, Nyatakan** ....
Status *RVD* : ☐Positif ☐Negatif	☐**Diabetik? :** ☐Ya ☐Tidak

C. Sebab memohon (Tandakan satu)

☐*Presumptive TB* →
☐*Follow-up TB case (Month of treatment: ....months)*
☐*Contact of TB case*
☐*Contact of DRTB case (RR, MDR, XDR, TDR)*
☐*Suspected MDR-TB*
☐ **Surveillance of** ....

Adakah pesakit telah menerima rawatan ≥ 1 bulan?

☐ Ya ☐ Tidak (New Case)

Sekiranya YA,
No Pendaftaran TB bagi kes adalah: ☐☐-☐☐-☐☐☐☐
Klasifikasi *Previously Treated TB* adalah :
☐After Failure of 1st treatment ☐After Failure of retreatment
☐After loss to follow-up ☐Relapse ☐Others

D. Jenis Spesimen : ☐ **Kahak** (x1 / x2 / x3) ☐ **Spot** ☐ Pagi ☐ **lain-lain (nyatakan) :** ....
Tarikh pengambilan spesimen : ☐☐-☐☐-☐☐☐☐ ....

E. Ujian Di pohon ☐**Microskopik** ☐**Kultur** ☐**ID & Kerentanan Ubatan (Drug susceptibility)**
☐PCR MTB ☐Xpert MTB/RIF ☐LPA ☐**Interferon Gamma Release Assay (IGRA)**

F. Maklumat Pemohon

Tandatangan :
Nama :
Jawatan & Cop Rasmi :
No.Telefon :

KEPUTUSAN UJIAN MAKMAL (Di isi oleh pihak makmal yang menjalankan ujian)

(Sila gunakan bahagian belakang sekiranya ruangan tidak mencukupi)

Diuji oleh:	**Disahkan oleh**
Tandatangan:	Tandatangan:
Nama:	Nama:
Jawatan & Cop Rasmi:	Jawatan & Cop Rasmi:
No.Telefon:	No.Telefon:

REQUEST FORM FOR MOLECULAR DIAGNOSTICS SERVICES

Unit of Molecular Diagnostics (UMD)
Specialised Diagnostics Centre
Institute for Medical Research, Kuala Lumpur
Tel: 03-2616 2540/2590 Fax: 03-26162533

To The Requesting Lab / Person, Please STAMP HERE

Patient Name :	
Patient IC/ID :	**Hospital :**
Date of Birth : **Age :**	**Ward/Clinic :**
Gender : Male / Female / Unknown	**Name of Attending Doctor (Specialist) :**
Ethnicity/Nationality :	**Tel :** **Fax :**
If this is a parental or family member sample, please state Proband/Child's Full Name ..... **IC/ID** ..... **DOB**	**Email :**

Reason for Referral:
Diagnostic test : ☐ Affected patient ☐ Possibly affected patient
Carrier testing : ☐ Father of affected patient ☐ Mother of affected patient
☐ Sibling of affected patient ☐ Other family member of affected patient (please specify) : .....
Predictive testing ☐ **DNA storage** ☐

Type of Specimen Sent :
☐ Whole blood ☐ Blood Spot ☐ Tissue (please specify) : ..... ☐ Urine ☐ Extracted DNA
☐ Others (please specify) : ..... **Date of sample taken:** .....

Please Read This Section before You Proceed

Requirements for clients requesting molecular diagnostics services from UMD, IMR :

1. ***All cases requiring molecular diagnostics testing must be referred to any Clinical Geneticist/Neurologist and they must endorse the test before any sample submission be made. Samples received without referral by Clinical Geneticist/Neurologist will be rejected.***
2. *Please ensure that the patient or their parent/guardian both understand the implications of genetic testing and provide their consent to undertake the test.*
3. *Please send the samples according to the criteria for sample collection as outlined below.*
4. *Kindly ensure samples are sent together with both the request form and informed consent form.*

Criteria for sample collection :

1. *2.5 ml Blood in EDTA (purple/lavender cap) Tube, **DO NOT** use Heparin (green cap) Tube. Send about 1-2 tubes in appropriate packaging under AMBIENT condition as soon as possible after collection. If more than 3 hours, keep sample cooled. Please protect from freezing.*
2. *10 – 20 ml Urine in appropriate container. Urine must be refrigerated after collection.*
3. *Tissue samples must be placed inside sterile container. Please contact us for a detailed guideline on tissue sample collection, preservation and storage.*
4. *DNA, urine and tissue samples must be kept chilled at all times until the sample/s arrive at the laboratory.*

Clinical Signs and Symptoms, Age of Onset, Relevant Laboratory and Imaging Findings :

Clinical Diagnosis : .....
Parental Consanguinity : Yes ☐ No ☐

Pedigree (Family Tree)
(Can also be attached on a separate sheet) :

I certify that the patient specified above and/or their legal guardian has been informed of the benefits, risks, and limitations of the laboratory test(s) requested. I have answered this person's questions. I have obtained informed consent from the patient or their legal guardian for this testing.

Consultant's Name : Signature and/or Stamp : Date :

LIST OF DISORDERS/GENES TESTED IN UNIT OF MOLECULAR DIAGNOSTICS (UMD), IMR

Please mark √ to order

INHERITED METABOLIC DISORDERS / IEM

(a) Disorders of Amino Acids & Organic Acids Metabolism

- ☐ 1. Non Ketotic Hyperglycinemia (NKH): *(AMT, GCSH, GLDC Sequencing, GLDC Del/Dup Analysis)*
- ☐ 2. N-Acetylglutamate Synthase (NAGS) Deficiency: *(NAGS)*
- ☐ 3. Carbamoyl Phosphate Synthetase 1 (CPS1) Deficiency: *(CPS1)*
- ☐ 4. Ornithine Transcarbamylase (OTC) Deficiency: *(OTC)*
- ☐ 5. Argininosuccinate Synthase Deficiency: *(ASS1)*
- ☐ 6. Argininosuccinate Lyase Deficiency: *(ASL)*
- ☐ 7. Lysinuric Protein Intolerance (LPI): *(SLC7A7)*
- ☐ 8. Classical Homocystinuria: *(CBS)*
- ☐ 9. Methylenetetrahydrofolate Reductase Deficiency: *(MTHFR)*
- ☐10. Glutaric Aciduria Type 1: *(GCDH)*
- ☐11. Methylmalonic Aciduria and Homocystinuria Type D: *(MMADHC)*
- ☐12. Methylmalonyl-CoA Epimerase Deficiency: *(MCEE)*
- ☐13. Citrin Deficiency (Type II Citrullinemia): *(SLC25A13)*
- ☐14. Biotinidase Deficiency: *(BTD)*
- ☐15. Tyrosine Hydroxylase Deficiency: *(TH)*
- ☐16. Aromatic Amino Acid Decarboxylase Deficiency: *(DDC)*
- ☐17. Ethylmalonic Encephalopathy: *(ETHE1)*
- ☐18. Hypophosphatasia: *(ALPL)*
- ☐19. Primary Hyperoxaluria Type 1: *(AGXT)*
- ☐20. Pyruvate Dehydrogenase Deficiency: *(PDHA1)*
- ☐21. Cystinuria: *(SLC3A1)*

(b) Fatty Acids Oxidation Defects

- ☐22. Carnitine Palmitoyltransferase 1 (CPT1) Deficiency: *(CPT1A)*
- ☐23. Carnitine Palmitoyltransferase 2 (CPT2) Deficiency: *(CPT2)*
- ☐24. Carnitine-Acylcarnitine Translocase Deficiency: *(SLC25A20)*
- ☐25. Long-Chain 3-Hydroxyacyl-CoA Dehydrogenase (LCHAD) Deficiency: *(HADHA)*
- ☐26. Short-Chain 3-Hydroxyacyl-CoA Dehydrogenase (SCHAD) Deficiency: *(HADH)*
- ☐27. Carnitine Uptake Deficiency: *(OCTN2)*
- ☐28. Very Long Chain Acyl-CoA Dehydrogenase (VLCAD) Deficiency: *(ACADVL)*
- ☐29. Medium Chain Acyl-CoA Dehydrogenase (MCAD) Deficiency: *(ACADM)*
- ☐30. Short Chain Acyl-CoA Dehydrogenase (SCAD) Deficiency: *(ACADS)*
- ☐31. Mitochondrial Trifunctional Protein Deficiency: *(HADHB)*

(c) Disorders of Carbohydrate Metabolism

- ☐32. Classical Galactosemia: *(GALT)*
- ☐33. Galactokinase Deficiency: *(GALK1)*
- ☐34. Galactose Epimerase Deficiency: *(GALE)*
- ☐35. Fructose-1,6-Bisphosphatase Deficiency: *(FBP1)*
- ☐36. Glycogen Storage Disease Type Ia: *(G6PC)*
- ☐37. Glycogen Storage Disease Type Ib: *(SLC37A4)*
- ☐38. Glycogen Storage Disease Type III: *(AGL)*
- ☐39. Phosphomannomutase 2 Deficiency (PMM2-CDG): *(PMM2)*

(d) Lysosomal Storage Diseases

- ☐40. Gaucher Disease: *(GBA)*
- ☐41. Pompe Disease (GSD II): *(GAA)*
- ☐42. Maroteaux-Lamy Syndrome (MPS VI): *(ARSB)*
- ☐43. Morquio A Disease (MPS IVA): *(GALNS)*

(e) Disorders of Purine & Pyrimidine Metabolism

- ☐44. Hereditary Orotic Aciduria: *(UMPS)*
- ☐45. Purine Nucleoside Phosphorylase Deficiency: *(PNP)*
- ☐46. Lesch-Nyhan Syndrome: *(HPRT1)*

(f) Other Metabolic Disorders

- ☐47. X-linked Adrenoleukodystrophy: *(ABCD1)*
- ☐48. Canavan Disease: *(ASPA)*
- ☐49. Alpha 1-Antitrypsin Deficiency: *(SERPINA1)*
- ☐50. Acute Intermittent Porphyria: *(HMBS)*

MITOCHONDRIAL DISORDERS

- ☐51. Leigh Syndrome Panel: *(MT-ATP6, MT-TL1, MT-TK, MT-TW, MT-TV, MT-ND1, MT-ND2, MT-ND3, MT-ND4, MT-ND5, MT-ND6, MT-CO3 and SURF1)*
- ☐52. mtDNA Deletion Syndromes [Pearson Syndrome, Kearns-Sayre Syndrome (KSS), Chronic Progressive External Ophthalmoplegia (CPEO)]: *(mtDNA Del/Dup Analysis)*
- ☐53. Leber Hereditary Optic Neuropathy (LHON) Panel: *(m.3460G>A, m.11778G>A, m.14459G>A and m.14484T>C)*
- ☐54. Mitochondrial Encephalomyopathy, Lactic Acidosis, and Stroke-Like Episodes (MELAS) Syndrome: *(m.3243A>G, m.3252A>G, m.3256C>T, m.3271T>C, m.3291T>C, m.3697G>A, m.4332G>A, m.12147G>A, and m.13514A>G)*
- ☐55. Myoclonic Epilepsy with Ragged-Red Fibers (MERRF) Syndrome: *(m.8344A>G)*
- ☐56. Neuropathy, Ataxia and Retinitis Pigmentosa (NARP) Syndrome: *(m.8993T>G/C)*
- ☐57. POLG-Related Disorders: *(POLG)*
- ☐58. mtDNA Depletion Syndrome (MDS) Panel: *(POLG, DGUOK, MPV17, ANT1, TWINKLE, RRM2B, SUCLA2, SUCLG1, TK2, TYMP)*
- ☐59. Mitochondrial Neurogastrointestinal Encephalopathy (MNGIE): *(TYMP)*
- ☐60. Multiple Respiratory Chain Deficiencies (Mitochondrial Translation Defect/ OXPHOS Deficiency): *(QIPM1)*
- ☐61. Mitochondrial Short-Chain Enoyl-CoA Hydratase 1 Deficiency: *(ECHS1)*
- ☐62. Mitochondrial HMG-CoA Synthase Deficiency: *(HMGCS2)*

GENETIC SYNDROMES

- ☐63. Fragile X Syndrome (FRAXA): *(CGG Repeat Analysis – FMR1)*
- ☐64. Prader-Willi Syndrome: *(SNRPN Methylation & Gene Dosage Analysis)*
- ☐65. Angelman Syndrome: *(SNRPN Methylation & Gene Dosage Analysis, UBE3A Sequencing)*
- ☐66. Alagille Syndrome: *(JAG1 Sequencing, JAG1 Del/Dup Analysis)*
- ☐67. Noonan Syndrome: *(PTPN11)*
- ☐68. Schinzel Giedion Syndrome: *(SETBP1)*
- ☐69. Leopard Syndrome: *(PTPN11)*
- ☐70. Floating-Harbor Syndrome (FHS): *(SRCAP - Hotspots)*
- ☐71. Short Syndrome: *(PIK3R1)*

NEUROGENETIC DISORDERS

- ☐72. SCN1A-Related Seizure Disorders: *(SCN1A)*
- ☐73. Spinal Muscular Atrophy (SMA): *(SMN1 Gene Dosage Analysis, SMN Sequencing)*
- ☐74. Primary Dystonia: DYT1 *(TOR1A)*, DYT6 *(THAP1)*
- ☐75. MCT8-Specific Thyroid Hormone Cell Transporter Deficiency: *(SLC16A2)*
- ☐76. Lissencephaly: *(LIS1, DCX)*
- ☐77. Alexander Disease: *(GFAP)*
- ☐78. Spinocerebellar Ataxia (SCA): *(CAG Repeat Analysis - SCA1, SCA2, SCA3, SCA6, SCA7)*
- ☐79. Kennedy Disease: *(CAG Repeat Analysis – AR)*
- ☐80. Friedreich Ataxia (FRDA): *(GAA Repeat Analysis – FXN)*

OTHER GENETIC DISORDERS

- ☐81. Pseudorheumatoid Dysplasia: *(WISP3)*
- ☐82. Berardinelli Congenital Lipodystrophy: *(BSCL2, AGPAT2)*
- ☐83. Retinoblastoma: *(RB1 Sequencing, RB1 Del/Dup Analysis)*
- ☐84. PTEN-Related Disorders: *(PTEN)*
- ☐85. X-Chromosome Inactivation: *(AR Fragment Analysis)*
- ☐86. Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL): *(NOTCH3 - Hotspots)*
- ☐87. Severe Congenital Neutropenia: *(ELANE)*
- ☐88. FGFR2-Related Disorders: *(FGFR2)*
- ☐89. FGFR3-Related Disorders: *(FGFR3)*
- ☐90. Cartilage Hair Hypoplasia (CHH): *(RMRP)*
- ☐91. Others (Please discuss with Head of Unit first)

_____

OTHER SERVICES

- ☐92. DNA Extraction & Storage
- ☐93. Testing of Familial Mutations/Carrier Testing
- ☐94. Specific Mutation Screening

Unit of Molecular Diagnostics (UMD)
Specialised Diagnostics Centre
Institute for Medical Research, Kuala Lumpur
Tel: 03-2616 2540/2590 Fax: 03-26162533

CONSENT FOR MOLECULAR DIAGNOSTICS SERVICES

Patient Name: _____ Patient ID:_____

The samples that I provide together with the request form are to be used for molecular genetic testing of:

_____

(Specify the disorder or disease to be tested)

- The molecular genetic testing may provide a diagnosis of or indication of risk for me or my offspring for the disorder or disease specified above.
- I understand the molecular genetic testing may not yield results for any combination of the following reasons: 1) unavailable blood or tissue samples from critical family members; 2) uninformativeness of the available genetic markers; 3) maternal contamination of prenatal samples; 4) technical reasons.
- I understand that DNA analysis may yield information on biological paternity, the results of which will not be disclosed to me unless biological paternity is relevant in counseling for the reason for which I have submitted this DNA sample. I agree to provide a family history to the best of my knowledge.
- I **AGREE/DO NOT AGREE** to have my samples or DNA extracted from my samples be used for the purpose of research and development or as quality control in diagnostics laboratory.
- Additional samples may need to be collected from me in the absence of results, or if the results are inconclusive.
- The DNA extracted from my (my child's) samples will be stored in the DNA bank at the Institute for Medical Research or its responsible delegate.
- I understand that any information identifying me (my child) will be kept confidential and that any exchange of samples or information will be coded.
- No compensation will be given to me (my child) nor will funds be forthcoming to me (my child) due to invention resulting from research and development using my (my child's) DNA.

Your signature on this form indicates that you have understood to your satisfaction the information regarding molecular genetic testing and agree to participate. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. If you have further questions concerning matters related to this consent, please discuss them with your medical geneticist, genetic counselor, or referring physician.

_____

(Signature of patient or legal guardian and date)

_____

(Signature of witness and date)

MKAK-BPU-D02(rev_Nov_2015)

MAKMAL KESIHATAN AWAM KEBANGSAAN, KEMENTERIAN KESIHATAN MALAYSIA
Lot 1853, Kg Melayu Sungai Buloh, 47000 Sungai Buloh, Selangor Darul Ehsan
Tel: 03-61565109 Fax: 03-61402249/61569654

LABORATORY REQUEST FORM FOR DENGUE AND FLAVIVIRUS

Lab No. *(for lab use)* :

REQUESTOR INFORMATION

Name :
Post :
Address :
District : State :
Tel. No. : Fax No. : Email :

Purpose of Sampling

a. Dengue (please tick purpose of sampling as below)
- ☐ Outbreak
- ☐ Surveillance
- ☐ Diagnostic

b. Flavivirus (please tick purpose of sampling as below)
- ☐ Outbreak
- ☐ Surveillance
- ☐ Diagnostic

Specimen Category : ☐ case Contact ☐

A. PATIENT'S INFORMATION

Name :

IC No.
Reference No. :
Address

Postcode :
District : State :

Age : Date of birth
Sex : ☐ Male ☐ Female

Nationality : ☐ Malaysian ☐ Non Malaysian
(Please state country of origin)_____
Occupation :
Tel. No. :

B. CLINICAL SUMMARY

- ☐ Fever : T ..... °C
- ☐ Retro-orbital pain
- ☐ Maculopapular rash
- ☐ Vomitting
- ☐ Myalgia/arthralgia
- ☐ Diarrhea
- ☐ Bleeding tendencies
- ☐ Hepatomegaly
- ☐ Shock
- ☐ CNS Complications

Date of fever onset : _____(dd/mm/yyyy)

Laboratory findings at admission

Hb : TWBC : (PN : %; L: %; M : %; E: %)
Platelets : /mm³ HCT :

Dengue NS1 : Date of test :
Method :

Dengue IgG : Date of test :
Method :

Dengue IgM : Date of test :
Method :

Clinical/Provisional Diagnosis :
- ☐ Dengue Fever
- ☐ Dengue Shock Syndrome
- ☐ Compensated Shock
- ☐ Dengue Hemorrhagic
- ☐ Death : _____(dd/mm/yyyy)
- ☐ Other (flavivirus).

C. PATIENT'S LOCATION

☐ Clinic ☐ Ward ☐ ICU

D. SPECIMEN INFORMATION

Type of specimen :	Name of Collector :
Date of Collection: (dd/mm/yyyy)	Date specimen Received (for lab use) : (dd/mm/yyyy)

E. RESULTS *(for lab use only)*

Verified by : Date:

IMR/Viro/HIV/24

HIV Genotyping Resistance Testing

Virology Unit, Institute for Medical Research, Jln Pahang, 50588 Kuala Lumpur.
Tel: 03-2616 2671 Fax: 03-2693 8094

LAB NO:
Please write clearly in black ink

SENDER'S INFORMATION

Sender's name and address:

Phone: Ext:

PATIENT/SOURCE INFORMATION

RN: Hospital name (if different from sender's name):

Name: Ward/Clinic name:

Sex ☐ Male ☐ Female

Date of birth: Age:

SAMPLE INFORMATION

Sample type ☐ Plasma

Consent for leftover sample to be used in other assays?
☐ Yes ☐ No

Date and time of collection:

Date sent to IMR:

TEST REQUESTED

HIV Genotyping Resistance Testing

☐ RT and Protease

CLINICAL /EPIDEMIOLOGICAL INFORMATION

Reason for test
- ☐ New diagnosis
- ☐ Treatment failure
- ☐ Poor response to new regime
- ☐ Starting ART 1st time
- ☐ Re-starting ART after drug interruption
- ☐ Acute primary infection seroconverter
- ☐ Pregnancy
- ☐ Other (Please specify)

Adherence
- ☐ Poor
- ☐ Excellent
- ☐ Reasonable
- ☐ No opinion

Most recent viral load at time of sample .....copies

Date of most recent viral load

Patient on therapy when sample was taken? ☐ Yes* ☐ No
Has patient ever on therapy? ☐ Yes* ☐ No

***Details of Current/Previous Therapies:**

NRTIs	current/ most recent	Previous	PIs	current/ most recent	Previous
ZDV	☐	☐	APV	☐	☐
D4T	☐	☐	fosAPV	☐	☐
ddI	☐	☐	ATV	☐	☐
3TC	☐	☐	IDV	☐	☐
FTC	☐	☐	NFV	☐	☐
ABC	☐	☐	LPV/r	☐	☐
DdC	☐	☐	RTV (any dose)	☐	☐
TDF	☐	☐			
NNRTIs					
NVP	☐	☐	SQV	☐	☐
EFV	☐	☐	DRV	☐	☐
ETV	☐	☐	TPV	☐	☐

OTHER COMMENTS

REFERRED BY

Doctor's name Signature Date

UJIAN POLYMERASE CHAIN REACTION (PCR) UNTUK HUMAN IMMUNODEFICIENCY VIRUS (HIV) DI KALANGAN BAYI

Spesimen yang diperlukan: 2.5ml darah EDTA dari bayi dan 2.5ml darah EDTA dari ibu
Darah hendaklah dihantar serta-merta kepada Makmal Rujukan Kebangsaan AIDS (NARL), Institut Penyelidikan Perubatan, Jalan Pahang, Kuala Lumpur. Tel: 03-26162678

Hospital:			Ward/Clinic:	
No NARL:	Nama Pesakit:		No Pendaftaran:	
			No K/P:	
	Tarikh Lahir:	Umur:	Jantina:	Keturunan:
	AZT diberikan: ☐ Tidak ☐ Ya, tarikh diberi dari:			hingga
Untuk Kegunaan NARL Sahaja	Kesan-kesan klinikal: ☐ Asimptomatik ☐ Simptom: (nyatakan)			

No NARL:	Nama Ibu:		No Kad Pengenalan/Pasaport:	
	Umur:	Keturunan:	Aktiviti risiko (jika ada):	
	AZT diberikan masa antenatal: ☐Tidak ☐Ya, tarikh diberi dari:			hingga
Untuk Kegunaan NARL Sahaja	Keputusan ujian anti-HIV: ☐ Positif ☐ Negatif		Makmal yang menjalankan ujian:	

	Nama Bapa:		No Kad Pengenalan/Pasaport:	
	Umur:	Keturunan:	Aktiviti risiko (jika ada):	
	Keputusan ujian anti-HIV: ☐ Positif ☐ Negatif		Makmal yang menjalankan ujian:	

Tarikh darah di ambil:	Darah ibu dilampirkan: ☐ Tidak ☐ Ya

Name doktor yang minta ujian:

_____

_____

Tandatangan

Chop:

Tel No:

Tarikh: _____

Untuk Kegunaan NARL:	
Blood Received:	
Baby: Received: _____ml ☐ Clotted ☐ EDTA ☐ Serum	☐ Plasma (____ml) ☐ Clear ☐ Lysed ☐ Turbid ☐ Serum (____ml)
Mother: Received: _____ml ☐ Clotted ☐ EDTA ☐ Serum	☐ Plasma (____ml) ☐ Clear ☐ Lysed ☐ Turbid ☐ Serum (____ml)

IMR/IDRC/BACT/LEPTO/01

Leptospirosis Laboratory Request Form
Bacteriology Unit,
Institute for Medical Research
Jalan Pahang, 50588 Kuala Lumpur
Tel: 03-26162582

A. SENDER'S INFORMATION

Hospital: _____

Ward: _____

Date of Admission: ___/___/___

Name of Requesting Doctor: _____

Signature: _____

Tel No: _____

Fax No: _____

B. PATIENT INFORMATION

Name: _____

Address: _____

_____

IC No: _____

R/N No: _____

Age: _____ Date of Birth: ___/___/___

Race: ☐ Malay ☐ Chinese ☐ Indian

☐ Others: _____

Sex: ☐ Male ☐ Female

Occupation: _____

C. CLINICAL FEATURES / COMPLICATIONS

Diagnosis date: ___/___/___

Illness duration: _____days

Sign & Symptoms:

- ☐ Fever, duration: _____
- ☐ Chills & rigors
- ☐ Anorexia
- ☐ Headache
- ☐ Retroorbital pain
- ☐ Calf pain
- ☐ Arthralgia
- ☐ Myalgia
- ☐ Conjunctival redness
- ☐ Abdominal pain
- ☐ Cough
- ☐ Hemoptysis
- ☐ Nausea/vomitting
- ☐ Jaundice
- ☐ Diarrhoea
- ☐ Rash
- ☐ Convulsion
- ☐ Hepatomegaly
- ☐ Lymphadenopathy
- ☐ Others: _____

Antibiotic therapy: _____
Date started : _____

D. EXPOSURE

- ☐ Bathing/swimming(where)_____
- ☐ Hunting(where)_____
- ☐ Fishing(where)_____
- ☐ Camping(where)_____
- ☐ Contact with animals (cattle,cow,rodents)

E. SPECIMEN INFORMATION

Date of collection: ___/___/____

Type of specimen:

- ☐ Blood for PCR (2-3 mls in EDTA tube, only for cases with fever lesser than 10 days, prior to antibiotics)
- ☐ Serum for MAT (send only if Leptospirosis rapid test is positive or equivocal)
- ☐ Culture(2-3 mls blood in Heparin tubes; for cases prior to antibiotics only)

(For MAT please send second serum samples 2 weeks after first sample)

F. LABORATORY INFORMATION

Date specimen received: ___/___/____

Date test performed: ___/___/____

Result of test:

Verified by: _____

MSLF:01/2004

No. Rujukan Makmal	

MEASLES – BORANG PERMOHONAN DAN KEPUTUSAN UJIAN MAKMAL

A. MAKLUMAT PESAKIT

Negeri:	Daerah:	
Hospital / Klinik Kesihatan:		
Nama Pesakit:		
No. K/P:	Umur:	Jantina: L / P

B. MAKLUMAT IMUNISASI MEASLES

Imunisasi measles: ☐ Ada ☐ Tiada ☐ Tidak diketahui	Tarikh dos terakhir diberi:

C. MAKLUMAT KLINIKAL

Gejala (Simptom)	*Ada / Tiada (Tandakan √ diruang berkenaan)*	*Tarikh mula*
Demam		
Ruam (maculopapular rash)		
Konjunktivitis		
Batuk		
"Coryza"		

D. SPESIMEN KLINIKAL

Spesimen: ☐ Pertama ☐ Kedua

Spesimen (tandakan √ diruang berkenaan)		*Tarikh diambil*	*Tarikh penghantaran*
Darah / Serum		/ /	/ /
Sekresi pernafasan (Respiratory secretion)		/ /	/ /
Air kencing (Urine)		/ /	/ /

E. MAKLUMAT PEMOHON

Nama dan Cop Pegawai: Tandatangan:	No telefon: No. fax: e-mail:

F. MAKMAL (Untuk Kegunaan Makmal)

Keadaan spesimen:	Tarikh terima spesimen:

Spesimen	*Jenis ujian*	*Keputusan ujian*	*Komen*
Darah / Serum			
Sekresi pernafasan (Respiratory secretion)			
Air kencing (Urine)			

Nama dan tandatangan Pegawai Makmal:	
Jawatan Pegawai Makmal dan Cop Makmal:	Tarikh:

* Nota: Jika spesimen ini adalah spesimen kedua, maklumat mengenai Imunisasi Measles dan Klinikal tidak perlu diisi jika telah diisi pada borang spesimen pertama.

Spesimen klinikal (darah / sekresi pernafasan / air kencing) hendaklah diambil jika pesakit disyakki sebagai kes measles. Defini kes (case definition) adalah seperti dinyatakan di belakang.

Measles Elimination In Malaysia – Measles Surveillance Manual (1st edition)

MKAK-BPU-K03

Lab No. *(for lab use)* :	

REQUESTOR INFORMATION	
Name :	
Post :	
Address :	
District :	State :
Tel. No. :	Fax No. :
Email :	

MAKMAL KESIHATAN AWAM KEBANGSAAN
KEMENTERIAN KESIHATAN MALAYSIA
Lot 1853, Kg Melayu Sungai Buloh,
47000 Sungai Buloh, Selangor Darul Ehsan
Tel: 03-61565109 Fax: 03-61402249/61569654

Mycobacterium leprae VIABILITY & DRUG SENSITIVITY TEST REQUEST FORM

A. PATIENT INFORMATION

Name :	Age :	Date of Birth :
IC No :	Sex : ☐Male ☐Female	
Your Reference No :	Marital Status : ☐Single ☐Married	
Address : Postcode : District : State :	Nationality : ☐Malaysian : ☐Non Malaysian : *(Please state country of origin)*	
Tel. No :	Occupation :	

B. CLINICAL SUMMARY

Clinical Diagnosis* : ☐ IDT ☐ TT ☐ BT ☐ BB ☐ BL ☐ LL

Type of Case : ☐ New case ☐ Reactivation ☐ Relapse ☐ Problems in treatment

History : (including complaints, any exposure to anti-leprosy drug or family history of leprosy)

Previous Slit Skin Smear Report :

No.	Date	BI	MI

Site of Biopsy :	Time & Date of Biopsy Procedure :

C. RESULTS *(for laboratory use only)* :

Verified By : Date :

*IDT = Indeterminate leprosy, TT = Tuberculoid leprosy, BT = Borderline tuberculoid leprosy
BB = Borderline borderline leprosy, BL = Borderline lepromatous leprosy, LL = Lepromatous leprosy

NB : Please send request form in duplicate

TRANSPLANTATION IMMUNOLOGY UNIT
ALLERGY AND IMMUNOLOGY RESEARCH CENTRE
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR
DIRECT LINE: 03-2616 2581 TEL: 03-2616 2666 FAX: 03-2691 2819

HLA CROSSMATCH TEST REQUEST FORM (LIVING DONOR)

HOSPITAL : TEL. NO. :
WARD : FAX NO. :
☐ PAYING ☐ FREE

	RECIPIENT	DONOR
Name:		
I.C. No. / Passport No.:		
Age / Gender / Ethnic:		
Relationship to Recipient:	- N/A -	
Planned Date of Transplant (*If available*):		

Clinical History

Primary cause of ESRD / CKD	☐ Diabetes	☐ Hypertension	☐ SLE	☐ IgAN	☐ FSGS
	☐ Kidney stone	☐ Others (*Please specify*):			
		Last Treatment Date		Last Treatment Date	
Treatment Given	☐ ATG	:	☐ DFPP	:	
	☐ Rituximab	:	☐ IvIG	:	

Test Method (*Please select*)	RECIPIENT	DONOR
☐ Complement-Dependent Cytotoxicity (CDC-XM)	6 mL blood (Plain tube)	18 mL blood (Sodium Heparin tube)
☐ Flow Cytometry (FC-XM)	6 mL blood (Plain tube)	18 mL blood (Sodium Heparin tube)

Time blood collected:
Date blood collected:

Test requested by:
Signature :
Name :
Stamp :

Date :

1. This test is done ONLY by appointment from Monday to Thursday.
2. Please seal the tube stopper to avoid leakage of blood during transportation.
3. Transport condition: Room Temperature (WITHOUT ICE).
4. Blood samples must reach the lab by 10.30 am.

For IMR Laboratory Use Only

Received Stamp:

	Recipient	Donor
Lab. No.		
Volume / Quantity		
Sample Condition	☐ Good ☐ Other:	☐ Good ☐ Other:

Received By:

Note: *The full name, stamp and signature of the Medical Officer requesting the test MUST be provided. The date and test requested MUST be provided.*

TRANSPLANTATION IMMUNOLOGY UNIT
ALLERGY AND IMMUNOLOGY RESEARCH CENTER
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR
DIRECT LINE: 03-2616 2581 TEL: 03-2616 2666 FAX: 03-2691 2019

HLA CROSSMATCH TEST REQUEST FORM (DECEASED DONOR)

HOSPITAL : WARD :

	DONOR	RECIPIENT 1	RECIPIENT 2	RECIPIENT 3	RECIPIENT 4
Name:					
I.C. No. / Passport No.:					
Age / Gender / Ethnic:					
Referred Hospital:					

Time blood collected:
Date blood collected:

Test requested by:

Signature :
Name :
Stamp :

Date :

1. Please collect 9 mL x 16 tubes of blood in Sodium Heparin tube from donor and mix well.
2. Please collect a minimum of 6 mL of blood in plain tube from potential recipient.
3. Please seal the tube stopper to avoid leakage of blood during transportation.
4. Transport condition: Room Temperature (WITHOUT ICE).

For IMR Laboratory Use Only

Received Stamp:

Received By:

	DONOR	RECIPIENT 1	RECIPIENT 2	RECIPIENT 3	RECIPIENT 4
Lab. No.					
DNA No.					
Volume / Quantity					
Sample Condition	☐ Good ☐ Others:	☐ Good ☐ Others:	☐ Good ☐ Others:	☐ Good ☐ Others:	☐ Good ☐ Others:
PRA Status (*First 3 months only*)	- N/A -	☐ Done ☐ Not done Date: Class I : % Class II : %	☐ Done ☐ Not done Date: Class I : % Class II : %	☐ Done ☐ Not done Date: Class I : % Class II : %	☐ Done ☐ Not done Date: Class I : % Class II : %

Note: The full name, stamp and signature of the Medical Officer requesting the test MUST be provided.
The date and test requested MUST be provided.

TRANSPLANTATION IMMUNOLOGY UNIT
ALLERGY AND IMMUNOLOGY RESEARCH CENTRE
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR
DIRECT LINE: 03-2616 2581 TEL: 03-2616 2666 FAX: 03-2691 3019

HLA TYPING TEST REQUEST FORM

HOSPITAL :
WARD :
TEL. NO :
FAX NO. :
☐ PAYING ☐ FREE

Nephrology	HSCT
☐ New Case	☐ New Case Diagnosis: _____
☐ Add donor for existing case (NN:)	☐ Add donor for existing case (FN:)
	☐ Confirmatory Typing (CT) (FN:)
	☐ Cord blood / MSCR search

	RECIPIENT	DONOR 1	DONOR 2	DONOR 3	DONOR 4
Name:					
I.C. No. / Passport No.:					
Age / Gender / Ethnic:					
Last Transfusion Date:		- N/A -	- N/A -	- N/A -	- N/A -
Relationship to Recipient:	- N/A -				

1. This test is done **ONLY** by appointment.
2. Please collect 6 ml of EDTA blood from each patient and donor(s).
   IMPORTANT NOTE:
   - *If TWBC less than 1.5 x 10^3/ml, please collect 15 ml of EDTA blood.*
   - *If patient has received blood transfusion in the past 3 weeks, please collect samples using saline kit.*
3. Please seal the tube stopper to avoid leakage of blood during transportation.
4. Transport condition: Room Temperature (WITHOUT ICE).
5. The blood samples must reach the lab by 10.30 am.

Time blood collected:
Date blood collected:

Test requested by:
Signature :
Name :
Stamp :

Date :

For IMR Laboratory Use Only

Received Stamp:		RECIPIENT	DONOR 1	DONOR 2	DONOR 3	DONOR 4
	Lab. No.					
	DNA No.					
	Volume / Quantity					
Received By:	Sample Condition	☐ Good ☐ Other:	☐ Good ☐ Other:	☐ Good ☐ Other:	☐ Good ☐ Other:	☐ Good ☐ Other:

Note: The full name, stamp and signature of the Medical Officer requesting the test MUST be provided.
The date and test requested MUST be provided.

IMR/ARC/THRF-3 Version 1.0 Issue Date: 01/03/2016 Approved by Head of Unit

REQUEST FORM FOR MULTIPLE MYELOMA AND SPECIFIC PROTEINS

Unit of Molecular Diagnostics and Protein (UMDP)
Specialized Diagnostics Centre
Institute for Medical Research, Kuala Lumpur
Tel: 03-2616 2568/2569/2540/2590 Fax: 03-26162533

To The Requesting Lab / Person, Please STAMP HERE

Patient name :

IC number :

Age : **Ethnicity/ Nationality :**

Gender : ☐ **Male** ☐ **Female**

Hospital : **Ward :**

Hosp. Registration No. (RN) :

Hospital contact:-
Tel. no :
Fax no :
Email :

Clinical Diagnosis:
i. New Case ☐
ii. Follow-up Case ☐
(for Multiple Myeloma)

iii. Others *(please specify)* .....

Clinical Symptoms & Signs:

☐ Bone pain
☐ Bone fracture
☐ Infections
☐ Anaemic
☐ Constitutional symptoms
☐ Lymphadenopathy
☐ Vision problem
☐ Muscle weakness
☐ Peripheral neuropathy
☐ Respiratory symptoms
☐ Prolonged Jaundice
☐ Nephrotic syndrome
☐ Hepato/Splenomegaly
☐ No symptoms related to M protein
☐ Others *(please specify)*
.....
.....

Laboratory findings *(for Multiple Myeloma)* :

Hemoglobin (Hb)	:	g/dL
White Cell Count (WCC)	:	$x10^9$/L
Urea	:	mmol/L
Creatinine	:	µmol/L
Calcium *(corrected)*	:	mmol/L
ESR	:	mm/H

X-ray :

Peripheral blood Film/ FBP :

BM aspirate :

Treatments:

Stem cell transplant:

Test requested :

A) Multiple Myeloma:-

i. Serum Protein Electrophoresis (SPE) ☐
ii. Serum and Urine Protein Electrophoresis (SPE&UPE) ☐
iii. Serum Free Light Chain Quantitation (sFLC) ☐

B) Specific Protein Quantitation :-

i. Transferrin ☐
ii. Alpha 1 Antitrypsin ☐
iii. Beta 2 Microglobulin ☐

Type of Specimen sent : ☐ Serum ☐ Urine ☐ CSF

Date of sample collection :

C) Protein Profilling :-

i. Transferrin Isoform ☐
ii. Alpha 1 Antitrypsin Phenotyping ☐
iii. Serum and CSF Oligoclonal Banding ☐

Doctor in-charge :

Sign and Stamp :
Date:

Guidelines for sample collection, storage and transportation :

(I) SERUM :
a) At least 3mL of non hemolysed serum in plain tube.
b) Serum must be refrigerated immediately after collection.

(II) URINE :
a) At least 25mL of 24hr urine in a sterile container Or
b) At least 25mL of random urine in a sterile container .
c) Urine must be refrigerated immediately after collection.
d) **URINE SAMPLE MUST BE ACCOMPANIED WITH SERUM SAMPLE**

(III) SERUM&CSF (for Oligoclonal banding) :
a) 1-3mL of non hemolysed serum in plain tube and at least 0.5mL of CSF in bijou bottle or sterile container.
b) It is recommended to collect serum and CSF at the same time.
c) Serum must be refrigerated immediately after collection.
d) CSF must be frozen immediately after collection.
e) **CSF SAMPLE MUST BE ACCOMPANIED WITH SERUM SAMPLE**

(iv) Transport all samples in box/ container with ice pack inside.

Jalan Pahang, 50586 Kuala Lumpur
Telephone: 03-26162587/ Fax: 03-26912019

Primary Immunodeficiency (PID)

Request Form

(Please read the instructions on page 2 before filling in request form)

Appointment date given : _____(please fill in)

1. Personal Details

Name :		
Date of Birth :	**Age :**	**Gender :**
NRIC :	**RN:**	
Clinic/Ward :	**Hospital :**	
Requesting Specialist :		
Requesting Specialist's Contact Number :		

2. Clinical History ***(Summary of events that suggest PID etiology. Please attach a detailed patient's clinical summary if the space below is insufficient)***

3. Family Pedigree ***(3 generations or more)***

4. Investigation required (please tick):

A. Preliminary assessment of immune parameters	
T and B cells enumeration	
Immunoglobulin and complement levels	
B. Functional assay for chronic granulomatous disease *do not tick if not indicated	
Dihydrorhodamine test	
C. Other test(please specify)	

Requesting doctor's full name and signature: _____

Specialist in charge's signature: _____

Blood taken at **Time:** _____ **Date:** _____ **Ext No:** _____ } **MANDATORY**

Allergy and Immunology Research Centre (AIRC)
Institute for Medical Research
Jalan Pahang, 50588 Kuala Lumpur
Telephone: 03-26162587/ Fax: 03-26912019

Instruction

1. All laboratory tests are performed on appointment basis on every working Mondays-Thursdays. Please call our unit at 03-26162587 for appointment.
2. Samples must reach *Primary Immunodeficiency (PID) Unit, Allergy and Immunology Research Centre* before 1 pm on appointment date. Please call to inform if there is any delay/cancellation. Please liaise with your local laboratory to ensure proper arrangement for sample delivery.
3. Please fill in all sections in the request form.
4. Samples must not be transported in ice.
5. Please follow the requirement below for each test requested. Take note of the more stringent requirement for test B below:

A. Preliminary assessment of immune function

Investigation (Method used)	Specimen container	Sample volume	Details
T and B cells enumeration/ Lymphocyte immunophenotyping (Flow cytometry)	EDTA	2 ml fresh blood	*Measurement of :* 1. *Total T cells (CD3)* 2. *T helper cells (CD4)* 3. *Cytotoxic T cells (CD8)* 4. *B cells (CD19)* 5. *Natural Killer cells*
Immunoglobulin and complement (Turbitimetry)	Plain	5 ml blood	*Measurement of IgA, IgM, IgG, IgE*, C3 and C4.* **IgE is performed by the allergy unit (fluorescyne immunoassay method)*

B. Functional assay for chronic granulomatous disease
(This test is for cases highly suspicious of chronic granulomatous disease. Please discuss with PID officers)

Investigation (Method used)	Specimen container	Sample volume	Details
Dihydrorhodamine test [DHR] (flow cytometry)	Lithium Heparin	2ml fresh blood from patient and 2 ml from unrelated healthy person (regardless of age and gender) #please also send 1 ml of patient's blood in EDTA if this test is requested separately from T and B cells enumeration.	Assessment of neutrophils respiratory burst

Acute Flaccid Paralysis Case Investigation Form

Ministry of Health, Malaysia

1 CHILD I.D. + PLACE

Name:	Gender:	DOB:	Age:	Hospital Registration No.:
Mother's IC:	District:	State:		

Residential Address:

2 REFERRAL + REPORTING

Child initially seen at:	Date first seen:
Date of report to EPIMOR:	Person reporting:
Report from where? (institution):	Attending physician:

Remarks:

3 HISTORY + PHYSICAL EXAMINATION

Onset of paralysis (date) : | No. of days to maximum paralysis:

Main history source: 1.Parents 2.Chart 3.Doctor/Nurse

At onset (paral.): Fever: Y/N | Diarrhoea: Y/N | Cough: Y/N

PAST HISTORY (last 30 days):		ON EXAMINATION (date) :		SITE OF PARALYSIS:	
Injections?	Yes / No	FLACCID Paralysis?	Yes / No	(grade musc. strength: 0=abs. to 5=full)	
Recent trauma or animal bite?	Yes / No	Meningeal signs (stiff neck):	Yes / No	left arm :	right arm :
Any existing neurologic disease?	Yes / No	Paralysis asymmetric/symm.?	Symmetric / Asymm.	left leg:	right leg:
Any recent travel? (specify below)	Yes / No	Deep tendon reflexes:	Norm. / Red. / Abs.	respiration: yes / no	Face: yes / no
Similar case among contacts?	Yes / No	Any sensory loss?	Yes / No	others (specify): ______	

Remarks: ____

4 PRELIMINARY DIAGNOSIS — A F P: Yes

If NO: 1. Poliomyelitis | 2.Guillain-Barre | 3. Transverse Myelitis | 4.Traum. Neuritis | 5.Myasthenia Gravis | 6.Viral Myositis

7. Periodic Paralysis | 8. Demyelinating Disease | 9. Cord Compression Disease | 10. Others

Name of investigator:	Date:	Signature:

Address of investigator:

Remarks:

5 IMMUNIZATION HISTORY

Immunization card available? | Total No. of OPV doses received:

Main reason for not fully immunized: 1.not informed 2.illness 3.refusal 4.unknown 5.other:

Dates: OPV1: Y/N	OPV2:	OPV3:	OPV4:	OPV5:	OPV6:	OPV7:	IPV/OPV0:

Recent OPV to contacts? Y/N (Date ___ \| ___ \| ___ | Date last polio/measles immuniz. ___ \| ___ \| ___ | Number immunized ______ | Total eligible ____

Remarks:

6 LAB. INFO

	Date collected:	Date sent:	Date rec. IMR:	Pos. CPE (IMR):	IMR PV-type:	Date sent to Ref.:	Ref.-lab. Result:
Stool 1: Yes / No	___ | ___ | ___	___ | ___ | ___	___ | ___ | ___	Yes / No	1 | 2 | 3	Negative	wild/vacc. | T:1 | 2/3
Stool 2: Yes / No	___ | ___ | ___	___ | ___ | ___	___ | ___ | ___	Yes / No	1 | 2 | 3	___ | ___ | ___	wild/vacc. | T:1 | 2/3

Remarks:

7 FOLLOW-UP Date:

Case examined 60 days after onset paralysis? Yes / No | Date of examination:

If not seen, why not? ______________________ | Paralysis/Weakness still present? Yes / No

Site of residual paralysis: Right leg: Y / N | Left leg: Y / N | Right arm: Y / N | Left arm: Y / N | Face: Y / N | Other:

Ability to walk: 1. Cannot walk 2. Walks with assistance 3. Limps 4. Walks normally | Exam. physician:

Remarks:

8 FINAL DIAGNOSIS - DATE: (CONFIRMED POLIO or discarded as polio: Expert Review Committee)

1. CONFIRMED — Virus isolation: Yes / No | Residual paralysis: Yes / No | Death: Yes / No | Lost to follow-up: Yes / No

2. DISCARDED — 1. Guillain-Barre | 2. Transverse Myelitis | 3. Traumatic Neuritis | 4. Unknown | 5. Other______

Remarks:

NOTE: Please Fax AFP case investigation form to:
1. Disease Control Division, MOH (Fax No. 03 - 88886270)
2. Virology Department, Institute for Medical Research (IMR), KL (Fax No:03 - 26936323) with adequate stool samples.
3. Nearest District Health Office
Second AFP Case Investigation form should be sent after 60 days with followup result to the above fax.

'Annex 6'

MALAYSIA INFLUENZA

SISTEM SURVELAN INFLUENZA KEBANGSAAN
BORANG PERMOHONAN UJIAN MAKMAL
(Sampel ILI Dihantar Ke MKAK Sungai Buloh & Sampel SARI Dihantar Ke Unit Virologi, IMR)

No. Rujukan Makmal: **(IMR / RES / 20 /)** **(MKAK / RES / 20 /)**

A. MAKLUMAT PESAKIT			
Negeri:			
Hospital / Klinik Kesihatan:		Wad:	
Nama Pesakit:		No. Kad Pengenalan / Passport:	
R/N:	Warganegara:	Umur:	Jantina: L / P

B. MAKLUMAT KLINIKAL		
Gejala	Tandakan (√) di ruangan berkenaan	Tarikh mula
Demam ≥ 38ºC / sejarah demam beberapa hari sebelumnya		
Batuk		

Dapatan X-Ray (sekiranya berkenaan): .....

C. MAKLUMAT SPESIMEN KLINIKAL				
Jenis Spesimen	Tandakan (√) di ruangan berkenaan	Tarikh diambil	Tarikh dihantar	Pengambil Sampel
Nasopharyngeal (NP) swab				*(Tandatangan & Cop)*
Throat swab				
Nasopharyngeal aspirates				
Bronchoalveolar lavage (BAL)				
Tracheal aspirate				
Endotracheal tube aspiration				
Lain-lain (sila nyatakan:)				

NOTA: Sampel paliken (swab) mesti dimasukkan ke dalam bahan yang mengandungi Viral Transport Media (VTM) dan sampel hair dimasukkan ke dalam bekas steril kering. Kesemua jenis sampel mesti disimpan pada suhu 2-8ºC sejurus diambil dan dihantar di makmal yang dikenalpasti dalam tempoh sebanyak-banyaknya 48 jam selepas pengambilan.

CATATAN: .....

D. MAKLUMAT PEMOHON	E. MAKLUMAT MAKMAL TRANSIT* (sekiranya berkenaan)
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:
No. Telefon:	No. Telefon:

** Makmal Transit: Makmal dimana spesimen dihantar untuk tujuan penyampaian sebelum ia sebenarnya dihantar ke MKAK Sungai Buloh / Unit Virologi, IMR*

F. UNTUK KEGUNAAN MAKMAL	
Kaunter Penerimaan Sampel	Makmal
Tarikh spesimen diterima:	Tarikh spesimen diterima:
Suhu: ºC	Suhu: ºC
Jenis spesimen:	Jenis spesimen:
Status: Sampel Diterima / Sampel Ditolak*	Status: Sampel Diterima / Sampel Ditolak*
* Sekiranya spesimen ditolak, sila nyatakan sebab:	
CATATAN:	
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:

Sebarang kemusykilan, sila hubungi:

- *Makmal Kesihatan Awam Kebangsaan (MKAK) Sungai Buloh, Selangor (u.p. Makmal Influenza) Emel: 03-6258 1200 / 7305*
- *Unit Virologi, Institut Penyelidikan Perubatan (IMR): 03-2616 2677*

1

IMR
INSTITUTE FOR MEDICAL RESEARCH MALAYSIA

IEM REQUEST FORM

BIOCHEMISTRY UNIT, SPECIALISED DIAGNOSTIC CENTRE
INSTITUTE FOR MEDICAL RESEARCH (IMR)
Jalan Pahang, 50588 Kuala Lumpur, Malaysia
Contact No. : 03-26162640 / 2649 / 2795
www.imr.gov.my

IMR Lab. Number

<u>IMPORTANT NOTICE</u> : To ensure correct, reliable result and interpretation given, the following must be followed :

1. *Please fill up the <u>entire form.</u>*
2. *At least <u>2ml plasma</u> and <u>5ml urine</u> are required.*
3. *<u>Separate plasma / serum from RBC immediately</u>. Grossly hemolysed samples will be rejected.*
4. *All samples (plasma / urine / CSF) must be <u>frozen immediately</u> and <u>transport in DRY ICE to IMR.</u>*
5. *For <u>enzyme assays,</u> please send <u>chilled whole blood in EDTA tube (DO NOT SPIN, DO NOT FREEZE).</u>*

Name : ______________________________ **Age** : __________ **Sex** : **M / F / U** **Race** : **M / C / I / O**

RN : __________ **ID** : *(preferably patient's IC)* ______________ **Hospital** : __________ **Ward** : __________

Address : ____ **Tel** : __________

1. Symptoms / Signs of Current Illness :

Fever		Poor sucking / feeding	
Pallor		Respiratory problem	
Jaundice		Difficulty in breathing	
Hypothermia		Mental retardation	
Hypotonia / floppy		Developmental delay	
Cyanosed		Failure to thrive	
Lethargy		Feeding intolerance	
Easily irritable		Septicaemic-like illness	
Seizures or h/o seizures		Headache	
Drowsy		Smelly urine	
Coma		Colored urine	
Abnormal behaviour		Skin lesions	
Frequent vomiting		Eye lesions	

Other symptoms / signs :
____
____
____

2. Feeding History :

Type of milk : Breast / Formula / Mixed / Solid diet : __________

3. Family History : Consanguinity : Yes / No. If Yes please specify : ______________________

Occurrence of / in	Stillbirth	Neonatal death	Neonatal seizures	Metabolic disease
Siblings				
Maternal side				
Paternal side				

4. Physical Examination :

Respiratory distress		Hyperreflexia	
Dysmorphic features		Nystagmus	
Hypothermia		Optical atrophy	
Cardiomyopathy		Ptosis	
Drowsy		Abnormal odour	
Coma		Abnormal hair	
Opisthotonus		Hepatomegaly	
Dystonia		Splenomegaly	
Choreoathetoid movement		Eczema / Other rashes	
Hypotonia		Others (specify)	

5. Treatment Given : (specimen should be taken before any form of treatment given or stop for 2-3 days)

Drug therapy :
Antibiotic : No / Yes __________
Steroid : No / Yes __________
Anticonvulsant : No / Yes __________
Other drug : (please state) __________
Fluid infusion : Saline / Dextrose / Mannitol / Parenteral feeding / Others : __________

6. Lab Result : (before treatment is given)

LFT
ALT : ________ **U/L**
AST : ________ **U/L**
ALP : ________ **U/L**

Blood Glucose : ______ **mmol/L**
Blood Ammonia : ______ **umol/L**
Blood Lactate : ______ **mmol/L**
Pyruvate : ______ **mmol/L**

Urine Analysis
pH : __________
Ketones : **Pos / Neg**
Reducing Sugar : **Pos / Neg**

Blood Gases : Normal / Met acidosis / Met alkalosis / Resp acidosis / Resp alkalosis

Anion Gap : __________

CT Scan / MRI : ____

Other relevant test (specify) : ____

Provisional Diagnosis :

7. Test Required : (Please tick ONLY appropriate test / s required)

1		Inborn Error Metabolism (IEM) Screening, Blood Spot
2		Biotinidase Enzyme Activity, Blood Spot
3		Galactosemia Screening, Blood Spot
4		Acid Alpha-Glucosidase (POMPE), Blood Spot
5		Lysosomal Storage Disorders (LSD) Screening, Blood Spot
6		Amino Acids, Plasma
7		Amino Acids, CSF
8		Carnitine Total & Free, Plasma
9		Homocysteine Total, Plasma
10		Pipecolic Acid, Plasma
11		Peroxisomal Disorder Profile, Plasma / Serum *(MLC)*
12		Organic Acids, Urine
13		Orotic Acid, Urine
14		Succinylacetone, Urine
15		Myoglobin & Hemoglobin, Urine
16		Cystine & Homocystine, Urine
17		Argininosuccinic Acid, Urine *(ASA)*
18		Lysine Metabolism Profile, Urine *(PSC)*
19		Sugar & Polyols, Urine
20		Mucopolysaccharides (GAGs / HRE), Urine
21		Oligosaccharide, Urine
22		S-Sulphocysteine, Urine
23		Sialic Acid, Total & Free, Urine
24		Delta-Amino Levulinic Acids (Delta-ALA), Urine *(protect from light)*
25		Porphyria Profile, Urine *(protect from light)*
26		Creatine & Guanidinoacetic Acid, Urine
27		Creatine & Guanidinoacetic Acid, Blood Spot
28		Creatine & Guanidinoacetic Acid, Plasma
29		5-Hydroxy-Indole-Acetic Acid (5-HIAA) for Carcinoid Tumour, 24 H Urine
30		Biogenic Amines, CSF - Neurotransmitter *(protect from light)*
31		Biogenic Amines, Urine - Neurotransmitter *(protect from light)*
32		Pterins, Urine – Neurotransmitter *(protect from light)*
33		Pterins, CSF – Neurotransmitter *(protect from light, specia l microtube with preservative EDTA and DTE provided by the Biochemistry Unit, IMR)*

BY CONSULTATION ONLY *(Please state the person's name whom spoken to upon requesting the following test / s)*		
SPOKEN TO :		
34		Amino Acids, Urine
35		Carnitine, 24 H Urine
36		Organic Acids, Plasma (FORENSIC ONLY)
37		Organic Acids, Vitreous Humour (FORENSIC ONLY)
38	PANEL TEST : Mucopolysaccharidoses Enzyme Assays *(Choose NOT more than TWO diseases of enzyme)*	
		i. MPS Type I (IDA)
		ii. MPS Type II (IDS)
		iii. MPS Type IIIa (SULP)
		iv. MPS Type IIIb (AHEX)
		v. MPS Type IVa (GALSO)
		vi. MPS Type IVb (BGAL)
		vii. MPS Type VI (ASB)
		viii. MPS Type VII (BGLUCU)
		ix. Multiple Sulphatase (ASA)
39	PANEL TEST : Lysosomal Storage Disease Enzyme Assays *(Choose NOT more than TWO diseases of enzyme)*	
		i. Aspartylglucosaminuria (GASP)
		ii. Sandhoff Disease (BHEX)
		iii. B-Mannosidosis (BMAN)
		iv. Tay-Sachs Disease (MUGS)
		v. Fabry Disease (AGAL)
		vi. Mucolipidosis (AMANP)
		vii. Leukodystrophy (ASA)
		viii. GM1-Gangliosidosis (BGAL)
		ix. a-Mannosidosis (AMAN)
		x. Fucosidosis (AFUC)
		xi. Ceroid Lipofuscinosis (PPT)
		xii. Gaucher Disease (BGLU)
		xiii. Krabbe Disease (GALC)
		xiv. General LSD Marker (GHITO)
		xv. Schindler Disease (ANAG)
		xvi. Niemann Pick A/B (ASM)
40		Others (please specify) :

*For details information of **sample requirements**, please **refer to IMR Test List and IMR Handbook** available at **IMR Website** (www.imr.gov.my)*

Collected by :

Date specimen collected :

Date specimen sent :

Specialist In-Charge (Sign & Stamp) :

JABATAN PATOLOGI
HOSPITAL TENGKU AMPUAN RAHIMAH, KLANG
UJIAN SARINGAN KEKURANGAN G6PD

Nama Ibu :

No. Kad pengenalan : ☐☐☐☐☐☐ - ☐☐ - ☐☐☐☐

Nama Bayi :

No Pendaftaran :

Wad / Klinik : ☐☐☐☐☐☐☐☐

Jantina : ☐ Lelaki ☐ Perempuan

Bangsa : ☐ Melayu ☐ India ☐ Cina ☐ Lain-lain

Tarikh Lahir : ☐☐ - ☐☐ - ☐☐☐☐

Contoh Darah Diambil Pada : ☐☐ - ☐☐ - ☐☐☐☐

.....
Nama dan Cop Pegawai Perubatan

Keputusan : ☐ Normal

☐ Tidak Pasti (Intermediate)

☐ Kekurangan (Deficient)

Ujian dijalankan di oleh :.....

Tandatangan :.....

Tarikh / Cop :

NATIONAL TISSUE TYPING CENTRE
ALLERGY AND IMMUNOLOGY RESEARCH CENTRE
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR
TEL: 03- 2698 6033, EXT: 2776, DIRECT LINE: 03- 26162776, Fax : 03- 2691 2019

REQUEST FOR BMT HLA-MOLECULAR TYPING (PCR)

HOSPITAL :
WARD :
FAX NO :

PAYING/ FREE :

- ☐ New Case for HLA Typing
- ☐ Follow-up Case for HLA Class I / II
- ☐ BMT Confirmation
- ☐ Cord Blood
- ☐ MMDR Search (unrelated donor search)

*If HLA Typing done before
HLA Report No : ( )

Diagnosis

	RECIPIENT	DONOR 1	DONOR 2	DONOR 3	DONOR 4
Name :					
Age/ Sex/ Race :					
I/C. No :					
Reg. No. :					
TWBC:					
Hbs Ag :					
Relationship to recipient:					
Next TCA:					

1. This test is done only by appointment.
2. Please collect 6 mls of EDTA blood from patient and donor(s).
   Note : **Please follow the tubes volume** and **15 mls of EDTA blood if TWBC less than 1.5 x 10^3 / ml.**
3. Please cap the tubes properly to avoid blood leakage and send at room temperature (without ice).
4. The blood sample must be reach the HLA Typing Lab, IMR by - 9.30 am
5. *Time blood collected :*
   Date blood collected :

Test requested by

Signature : .....
(Medical officer)
Chop : .....
Date : .....

NOTE : The full name, chop and signature of the Medical Officer requesting the test **MUST** be given.
The date and the test requested must be provided.

Version 1.0 / 2009

HOSPITAL TENGKU AMPUAN RAHIMAH KLANG