

CORELAB

LIST OF REFERRED TESTS - CORE LAB

*Please refer contact number and website link for referral centre at the bottom of this list.

No	Test Name	Specimen Type	Container Type	Volume Required	Referral Centre	Remark (s)
1	Thiamine (Vitamin B1)	Whole Blood	EDTA Tube	4 ml	Makmal Kesihatan Awam Kebangsaan (MKAK)	Use Borang Permohonan Ujian (Umum) MKAK
2	Adenosine deaminase (ADA)	Pleural fluid	Plain container (Red/Gold cap)	3 ml		
3	Methanol	Serum	Fluoride tube	3 ml		
4	Beta-2 Microglobulin	Blood	Plain Gel Tube	3 mL	H. Ampang	
5	Free Light Chain, Kappa & Lambda	Blood	Plain Gel Tube	3 mL		
6	Protein Electrophoresis (CSF)/ Oligoclonal band	Blood	Plain Gel Tube	3 mL		MUST be send in pair (serum & CSF)
		CSF	Bijou bottle	2 ml		
7	Fructosamine	Blood	Plain Gel Tube	3 mL		
8	Myoglobin	Blood	Plain Gel Tube	3 mL		Please collect FRESH urine sample in container contains 200 mg of sodium bicarbonate (2% final concentration)
9		Urine	Universal container	10 mL		
10	Progesterone, 17 Hydroxy	Blood	Plain Gel Tube	3 mL	H. Putrajaya	
11	Insulin-like Growth Factor 1 (IGF-1)	Blood	Plain Gel Tube	3 mL		
12	Aldosterone/ Renin	Blood	EDTA tube	3 mL		
13	Sex Hormone Binding Globulins (SHBG)	Blood	Plain Gel Tube	3 ml		
14	Amino acid	CSF	Bijou bottle	1 mL	H. Tunku Azizah(HTA)	Use <i>Borang Permohonan Ujian IEM</i> / IEM Request form
		Urine	Universal container	5 mL		
15	Amino acid Plasma	Blood	Plain Gel Tube	3 mL		
16	Cystine Urine (Qualitative)	Urine	Universal container	5 mL		
17	Homocystine Urine (Quantitative)	Urine	Universal container	5 mL		
18	Methotrexate (MTX)	Blood	Plain tube without gel	3 mL		Use TDM form
19	Sirolimus	Blood	Plain tube without gel	3 mL		
20	IEM screening (Amino acids & acylcarnitines)	Blood Spot	S&S or Whatmann 903	3 circles of dried blood spot		Ensure blood completely dried before putting in plastic sheet. Wet blood spot will be rejected.
21	Anti Mullerian Hormone (AMH)	Blood	Plain Gel Tube	3 ml	National Institute of Health (NIH)	Refer to IMR test list https://imr.nih.gov.my/testlist
22	Methylmalonic Acidemia	Blood	EDTA tube	3 mL		
23	Panel diabetes Antibodies: Anti-Glutamic Acid Decarboxylase (GAD65),Anti-Insulinoma-Associated Antigen 2 (IA2) & Anti Islet Cells (ICA)	Blood	Plain Gel Tube	3 ml		
24	Homocysteine Total	Blood	EDTA tube	4 ml		
25	Pterins	Urine	Universal container	5 mL		
		CSF	Bijou bottle	0.5 mL		
26	Porphyrins Urine (Qualitative)	Urine	Universal container	5 mL		
27	5-hydroxy-Indol-Acetic Acid (5 HIAA) 24Hr Urine	Urine	Universal container	5 mL		

Last updated: October 2024

SPECIAL CHEMICAL PATHOLOGY

REFERRED TEST

No	Test	Location	Type of sample	Sample container
1	Cortisol	Hospital Putrajaya	Urine	24 hr urine container
		Hospital Pulau Pinang	Saliva	Salivette

OUTSOURCE REGISTRY (ACCREDITED PRIVATE LABORATORY)

No	Test	Location	Type of sample	Sample tubes
1	Alpha Subunit Pituitary Hormone	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
2	Angiotensin Converting Enzyme (ACE)	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
3	C1 Esterase Inhibitor	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
4	Calcitonin	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
5	Chromogranin A	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
6	Gastrin	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
7	Lipase	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
8	Metanephrine (Plasma)	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Plasma	EDTA
9	Sulphonylurea	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Plasma	Lithium Heparin
10	Vitamin A (Retinol)	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
11	Vitamin B6 (Pyridoxine)	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Plasma	Lithium Heparin (Light Protected)
12	Vitamin D (1,25-2-OH)	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain
13	Vitamin E (Tocopherol)	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Serum	Plain (Light Protected)
14	Stool fat globules	Innoquest Pathology Sdn Bhd / Premier Integrated Labs Sdn Bhd / Lablink (M) Sdn Bhd / Pathology & Clinically Laboratory (M) Sdn Bhd	Stool	Sterile container

HEMATOLOGY
REFERRED TEST (ACCORDING TO REFERRAL CENTRE)

A. HOSPITAL TUNKU AZIZAH

Bleeding Disorder

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
1	Anti Xa Assay (for Low Molecular Weight Heparin, LMWH)	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	One (1) Trisodium Citrate 3.2% tube	Collect until indicated mark. 1 tube x 2.7 ml	URGENT : 36 HOURS (Either formal or verbal report) ROUTINE : 7 DAYS	PER-PAT 301 Strictly by appointment. -Deliver tubes immediately to the laboratory at room temperature within 1 hour from the time of collection OR - Separate plasma from cells as soon as possible (double spin). Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with HTA Pathologist prior to sample collection. Please call Dr Suzana (Ext : 1145) / Dr Nurima (Ext : 2169). Strictly to indicate the indication, treatment dose & collection date and time.
2	Factor VIII Assay / Inhibitor	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Trisodium Citrate 3.2% tube *Factor assay : 1 tube *Inhibitor assay : 2 tubes	Collect until indicated mark (each tube : 2.7 ml)	URGENT : 3 DAYS ROUTINE : 14 DAYS	PER-PAT 301 - Deliver tubes immediately to the laboratory at room temperature OR - Separate plasma from cells as soon as possible (single spin) within 4 hours from time of collection. - Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with Pathologist prior to sample collection.
3	Factor IX Assay / Inhibitor	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Trisodium Citrate 3.2% tube *Factor assay: 1 tube *Inhibitor assay: 2 tubes	Collect until indicated mark (each tube : 2.7 ml)	URGENT : 3 DAYS ROUTINE : 14 DAYS	PER-PAT 301 - Deliver tubes immediately to the laboratory at room temperature OR - Separate plasma from cells as soon as possible (single spin) within 4 hours from time of collection. - Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with Pathologist prior to sample collection.
4	Lupus Anticoagulant Antibody	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Three (3) Trisodium Citrate 3.2% tubes	Collect until indicated mark. 3 tubes x 2.7 ml	30 DAYS	PER-PAT 301 - Deliver tubes immediately to the laboratory at room temperature within 4 hours from the time of collection OR - Separate plasma from cells as soon as possible (double spin). Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with Pathologist prior to sample collection.
5	Rare Coagulation Factor Activity Assays (FII, FV, FVII, FX, FXI, FXII, FXIII)	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Trisodium Citrate 3.2% tubes 1 tube for each factor	Collect until indicated mark (each tube : 2.7 ml)	30 DAYS	PER-PAT 301 - Deliver tubes immediately to the laboratory at room temperature OR - Separate plasma from cells as soon as possible (single spin) within 4 hours from time of collection. - Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with Pathologist prior to sample collection.
6	Rare Coagulation Factor Inhibitor Assays (FII, FV, FVII, FX, FXI, FXII, FXIII)	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Two (2) Trisodium Citrate 3.2% tubes (for each inhibitor assay)	Collect until indicated mark (each tube : 2.7 ml)	21 DAYS	PER-PAT 301 - Deliver tubes immediately to the laboratory at room temperature OR - Separate plasma from cells as soon as possible (single spin) within 4 hours from time of collection. - Store frozen at -20°C and transport frozen plasma on dried ice.	BY CONSULTATION WITH PATHOLOGIST ONLY. Requesting clinician must call HTA Pathologist before collection of sample/s.
7	Von Willebrand Factor Profile	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Three (3) Trisodium Citrate 3.2% tubes	Collect until indicated mark. 3 tubes x 2.7 ml	30 DAYS	PER-PAT 301 -Deliver tubes immediately to the laboratory at room temperature within 4 hours from the time of collection OR -Separate plasma from cells as soon as possible (single spin). Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with Pathologist prior to sample collection.

**HEMATOLOGY
REFERRED TEST (ACCORDING TO REFERRAL CENTRE)**

Cytogenetic

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
8	Haemato-Oncology Conventional Cytogenetics	MAKMAL GENETIK, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000 EXT : 1136 (Cytogenetic)	Whole Blood / Bone Marrow Aspirate (Preferred sample)	Two (2) Sodium Heparin tubes	Whole Blood : 2 tubes x 2.0 ml Bone marrow aspirate : 2 tubes x 2.0 ml	Urgent : 20 days Routine : 90 days FISH : Additional 30 days from reflex testing	CYTOGENETICS REQUEST FORM -Sample must reach the laboratory within 24 hours after sample collection in an ice-packed container. -Reflex testing: Haemato-Oncology Molecular Cytogenetic Fluorescence In Situ Hybridisation (FISH) is done if indicated.	Test should be requested by specialist only. Sample to reach Hematology Lab during office hour.
9	Haemato-Oncology Conventional Cytogenetics (CLL Only)	MAKMAL GENETIK, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000 EXT : 1136 (Cytogenetic)	Peripheral blood	Two (2) Lithium heparin tubes	2 tubes x 2.0 ml	Routine : 90 days FISH : Additional 30 days from reflex testing	CYTOGENETICS REQUEST FORM -Sample must reach the laboratory within 24 hours after sample collection in an ice-packed container. -Reflex testing: Haemato-Oncology Molecular Cytogenetic Fluorescence In Situ Hybridisation (FISH) is done if indicated.	Test should be requested by specialist only. Sample to reach Hematology Lab during office hour.

G6PD Testing

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
10	G6PD screening (Fluorescent spot test)	MAKMAL TERAS, UNIT ENDOCRINE, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Dried blood / Whole blood	Filter paper OR One (1) EDTA tube	1 tube x 2.0 ml	24 HOURS	PER-PAT 301 - Send immediately in room temperature (20-24° C). - Avoid direct contact with ice.	
11	G6PD Assay (Quantitative)	MAKMAL TERAS, UNIT ENDOCRINE, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole blood	One (1) EDTA tube	1 tube x 2.0 ml	14 DAYS	PER-PAT 301 - Service offered by appointment only. - Sample to reach Hematology Lab HKL on Monday – Wednesday (On Wednesday latest by 3:30 pm) - Immediate transport to laboratory after sample collection. - Sample kept more than 3 days not suitable for analysis. - Sample must be accompanied by recent FBC result and reticulocytes count.	Requesting clinicians must call HTA Haematology Lab (Ext : 2133) to get an appointment and to inform to HKL Haematology Lab (Ext : 6549) before collection of sample.

Immunophenotyping

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
12	CD4/CD8 Enumeration	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole blood	One (1) EDTA tube	1 tube x 2.0 ml	7 DAYS	PER-PAT 301 - Send immediately in room temperature (20-24 °C). - Avoid direct contact with ice. - Specimens kept more than 48 hours are not suitable for analysis. - Service offered only on Monday -Thursday. - Sample to reach Hematology Lab HKL on Monday -Thursday (On Thursday, latest by 3:30 pm).	Sample to reach Hematology Lab during office hour.
13	CD20 Enumeration	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole blood	One (1) EDTA tube	1 tube x 2.0ml	21 DAYS	PER-PAT 301 - Send immediately in room temperature (20-24°C). - Avoid direct contact with ice. - Specimens kept more than 48 hours are not suitable for analysis. - Service offered only on Monday -Thursday. - Sample to reach Hematology Lab HKL on Monday -Thursday (On Thursday, latest by 3:30 pm).	Sample to reach Hematology Lab during office hour.
14	Flowcytometry for Platelet Receptors	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood	One (1) EDTA tube AND One (1) 3.2% Sodium Citrate	1 tube EDTA x 2.0 ml 1 tube 3.2% Sodium Citrate x 2.7 ml	21 DAYS	PER-PAT 301 Strictly by appointment.	Require discussion with Pathologist (HTA) to set the appointment date. Sample to reach Hematology Lab during office hour.

**HEMATOLOGY
REFERRED TEST (ACCORDING TO REFERRAL CENTRE)**

15	Immunophenotyping for Leukaemia & Lymphoma	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	Whole Blood : 2 tubes × 2.0 ml Bone Marrow Aspirate : 2 tubes × 2.0 ml	36 hours (for verbal report for acute leukemia cases), Formal report : 21 days	PER-PAT 301 -Transport samples immediately to lab, without delay at room temperature (20-24°C). Avoid direct contact with ice. -Specimens kept more than 48 hours are not suitable for analysis. - Service offered only on Monday -Thursday. - Sample to reach Hematology Lab HKL on Monday -Thursday (On Thursday, latest by 3:30 pm). - The BMA sample must be accompanied with unstained bone marrow slide.	Sample to reach Hematology Lab during office hour.
16	Immunophenotyping for Leukaemia & Lymphoma.	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Body Fluid	Sterile container	1 container × 2.0 ml	36 hours (for verbal report for acute leukemia cases), Formal report : 21 days	PER-PAT 301 - Fresh sample required (within 4 hours of collection). - Transport at room temperature (20-24°C). Avoid direct contact with ice. - Service offered only on Monday -Thursday. - Sample to reach Hematology Lab HKL on Monday -Thursday (On Thursday, latest by 3:30 pm).	Sample to reach Hematology Lab during office hour.
17	Immunophenotyping Paroxysmal Nocturnal Haemoglobinuria (PNH)	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole blood	One (1) EDTA tube	1 tube × 2.0 ml	21 DAYS	PER-PAT 301 - Transport samples without delay preferably within 24 hours at room temperature (20-24°C). - Specimens kept more than 48 hours are not suitable for analysis. - Service offered only on Monday -Thursday. - Sample to reach Hematology Lab HKL on Monday -Thursday (On Thursday, latest by 3:30 pm).	Sample to reach Hematology Lab during office hour.
18	Immunophenotyping-Double Negative T Enumeration	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole blood	One (1) EDTA tube	1 tube × 2.0 ml	21 DAYS	PER-PAT 301 - Send immediately at room temperature (20-24°C). Avoid direct contact with ice. - Specimens kept more than 48 hours are not suitable for analysis. - Service offered only on Monday -Thursday. - Sample to reach Hematology Lab HKL on Monday -Thursday (On Thursday, latest by 3:30 pm).	Sample to reach Hematology Lab during office hour.

Molecular Haematology

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
19	Leukaemia Translocation Study	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	2 tubes × 2.0 ml	21 DAYS	PER-PAT 301 - Fresh sample collected under sterile condition. - Packed in ice and transport immediately at (2-8°C). Avoid direct contact with ice. - Sample needs to be processed within 24 hours after sample collection. -NEVER freeze specimens and protect from extreme heat.	Sample to reach Hematology Lab during office hour.
20	Molecular BCR-ABL1 (Qualitative)	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	2 tubes × 2.0 ml	21 DAYS	PER-PAT 301 - Fresh sample collected under sterile condition. - Packed in ice and transport immediately at (2-8°C). Avoid direct contact with ice. - Sample needs to be processed within 24 hours after sample collection. -NEVER freeze specimens and protect from extreme heat.	Requesting clinician must get an appointment from Hematology Lab HKL before sending sample/s to the lab.
21	Molecular BCR-ABL1 (Quantitative)	MAKMAL HEMATOLOGI KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Whole blood	Three (3) EDTA tubes	3 tubes × 2.0 ml	9 DAYS	PER-PAT 301 - Fresh sample collected under sterile conditions. - Packed in ice and transport immediately at (2-8°C). Avoid direct contact with ice. -Sample needs to be processed within 48 hours after sample collection. - Ensure the date and time of sampling is clearly written in the request form. - Ensure that the last test is not less than 6 months from the current request - Samples should reach HTA within 48 hours. - NEVER freeze specimens and protect from extreme heat.	

**HEMATOLOGY
REFERRED TEST (ACCORDING TO REFERRAL CENTRE)**

Thrombophilia

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
22	Inherited Thrombophilia Tests (Protein C, Protein S, Antithrombin, APCR)	MAKMAL HEMOSTASIS KHAS, JABATAN PATOLOGI, HOSPITAL TUNKU AZIZAH, JALAN RAJA MUDA AZIZ, 50300 KUALA LUMPUR, MALAYSIA. TEL : 03-26003000	Blood (plasma)	Four (4) Trisodium Citrate 3.2% tubes	Collect until indicated mark. 4 tubes x 2.7 ml	6 WEEKS	PER-PAT 301 -Deliver tubes immediately to the laboratory at room temperature (20-24°C) OR -Separate plasma from cells as soon as possible (double spin). -Store frozen at -20°C and transport frozen plasma on dried ice.	REQUIRE discussion with Pathologist prior to sample collection.

B. INSTITUTE FOR MEDICAL RESEARCH CENTRE, NATIONAL INSTITUTE OF HEALTH

Molecular Oncology

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
1	AML Mutation Panel Acute Myeloid Leukaemia Study (FLT3-ITD mutation) Analysis	Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-3362 8653 / 03-3362 8657	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	2.5 - 5.0 ml 2 tubes x 2.0 ml	14 WORKING DAYS	MOLECULAR ANALYSIS FOR HAEMATO-ONCOLOGY REQUEST FORM (VERSION 3.0) -Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	Sample to reach Hematology Lab during office hour.
2	AML Mutation Panel Acute Myeloid Leukaemia Mutation Studies (by NGS)	Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-3362 8653 / 03-3362 8657	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	2.5 - 5.0 ml 2 tubes x 2.0 ml	45 WORKING DAYS	MOLECULAR ANALYSIS FOR HAEMATO-ONCOLOGY REQUEST FORM (VERSION 3.0) -Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	Sample to reach Hematology Lab during office hour.
3	cKIT D816V Mutation Analysis for Systemic Mastocytosis	Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-3362 8653 / 03-3362 8657	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	2.5 - 5.0 ml 2 tubes x 2.0 ml	14 WORKING DAYS	MOLECULAR ANALYSIS FOR HAEMATO-ONCOLOGY REQUEST FORM (VERSION 3.0) -Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	Sample to reach Hematology Lab during office hour.
4	BCR::ABL1 Kinase Domain Mutation Analysis for CML or Philadelphia positive ALL suspected resistance to TKI	Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-3362 8653 / 03-3362 8657	Whole Blood / Bone Marrow Aspirate	Two (2) EDTA tubes	2.5 - 5.0 ml 2 tubes x 2.0 ml	30 WORKING DAYS	MOLECULAR ANALYSIS FOR HAEMATO-ONCOLOGY REQUEST FORM (VERSION 3.0) -The sample must be accompanied with a copy of the qualitative BCR-ABL1 report at diagnosis and BCR-ABL1 quantitative reports. -Keep the sample cooled. Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	Sample to reach Hematology Lab during office hour.

Molecular Non-Oncology

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
5	Confirmation For Haemoglobinopathy/ Variant	Molecular Genetics Laboratory, Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-33628644	Whole blood	Two (2) EDTA tubes	Adult (~2.5 ml) Peads (~0.5 ml) 2 tubes x 2.0 ml	120 WORKING DAYS	DNA ANALYSIS FOR THALASSAEMIA SYNDROME AND HAEMOGLOBINOPATHIES (VERSION 4.1) REQUEST FORM WITH CONSENT FORM - A copy of recent FBC (<3 months) result of the patient. - A copy of Hb analysis results of the patient. - All paediatrics (≤ 12 y.o.) sample to be referred to IMR, MUST be accompanied by both parents' FBC and Hb analysis results. - Keep the sample cooled. Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	

**HEMATOLOGY
REFERRED TEST (ACCORDING TO REFERRAL CENTRE)**

6	Further Testing For Alpha Globin/ Beta Globin Gene	Molecular Genetics Laboratory, Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-33628644	Whole blood	Two (2) EDTA tubes	Adult (~2.5 ml) Peads (~0.5 ml) 2 tubes x 2.0 ml	120 WORKING DAYS	DNA ANALYSIS FOR THALASSAEMIA SYNDROME AND HAEMOGLOBINOPATHIES (VERSION 4.1) REQUEST FORM WITH CONSENT FORM - A copy of recent FBC (<3 months) result of the patient. - A copy of Hb analysis results of the patient. - All paediatrics (≤ 12 y.o.) sample to be referred to IMR, MUST be accompanied by both parents' FBC and Hb analysis results. - Keep the sample cooled. Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	
7	Haemophilia Genetic Testing A (Molecular test)	Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-33628654 / 03-33628657	Whole blood	Two (2) EDTA tubes	Adult (~2.5 ml) Peads (~0.5 ml) 2 tubes x 2.0 ml	60 WORKING DAYS	HAEMOPHILIA GENETIC TESTING REQUEST FORM. (HAEMOPHILIA REQUEST FORM VERSION 5.0) -Patient's blood sample must be accompanied with a complete request form and factor assay report. -Family member's blood sample must be accompanied with index specimen and complete clinical data. Keep the sample cooled. Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	
8	Haemophilia Genetic Testing B (Molecular test)	Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institutes of Health, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor. TEL : 03-33628654 / 03-33628657	Whole blood	Two (2) EDTA tubes	Adult (~2.5 ml) Peads (~0.5 ml) 2 tubes x 2.0 ml	30 WORKING DAYS	HAEMOPHILIA GENETIC TESTING REQUEST FORM. (HAEMOPHILIA REQUEST FORM VERSION 5.0) -Patient's blood sample must be accompanied with a complete request form and factor assay report. -Family member's blood sample must be accompanied with index specimen and complete clinical data. Keep the sample cooled. Sample must be refrigerated (2-8°C) after collection and kept chilled during transportation. DO NOT FREEZE.	

C. CLINICAL HAEMATOLOGY REFERRAL LABORATORY, HOSPITAL AMPANG

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
1	ADAM TS-13 Activity/ Inhibitor	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896461 (Hemostasis)	Blood (plasma)	One (1) Trisodium Citrate 3.2% tube	Collect until indicated mark. 1 tube x 2.7 ml	6 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Deliver tubes immediately to the laboratory at room temperature. OR -Separate plasma from cells as soon as possible (double spin) within 4 hours from time of collection. -Platelet count must be <10x10 ⁹ /L in plasma prior to freezing. -Store frozen at -40°C and transport frozen plasma on dried ice.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab
2	Anti PF4 Antibody Testing	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896461 (Hemostasis)	Blood (plasma)	Two (2) Plain tubes	Collect until indicated mark. 2 tubes x 2.0 ml	12-16 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Deliver tubes immediately to the laboratory at room temperature.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab
3	Serum EPO (Erythropoietin) ELISA	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896217 (Red Cell)	Blood (serum)	Four (4) Plain tubes	Collect until indicated mark. 4 tubes x 2.0 ml	MDS : 8 WEEKS MPN & PRV : 12 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -All request must be accompanied with recent FBC result. -Deliver tubes immediately to the laboratory at room temperature. OR - Separate serum from cells as soon as possible (Separated serum minimum 1.5 ml). - Store frozen at -40°C and transport frozen serum on dried ice.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab

**HEMATOLOGY
REFERRED TEST (ACCORDING TO REFERRAL CENTRE)**

Molecular Oncology

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
4	BCR-ABL1 (Qualitative) (*for suspected CML case only)	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896056 (Molecular)	Whole blood, before starting therapy BM, acceptable	Three (5) EDTA tubes	Whole Blood : 5 tubes x 2.0 ml (Minimum volume : 10 ml) Bone Marrow Aspirate : 1 tube x 2.0 ml (Minimum volume : 1.0 - 2.0 ml)	4 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Transport samples without delay preferably within 24 hours at room temperature (20-24°C). -DO NOT FREEZE specimens.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab Requesting clinician must get appointment from Haematology Lab HKL before sending sample/ s to the lab
5	BCR-ABL1 (Quantitative) (CML and Ph+ve ALL/ AML case) (Follow-up)	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896056 (Molecular)	Whole Blood / Bone Marrow Aspirate	Three (5) EDTA tubes	Whole Blood : 5 tubes x 2.0 ml (Minimum volume : 10 ml) Bone Marrow Aspirate : 1 tube x 2.0 ml (Minimum volume : 1.0 - 2.0 ml)	12 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Transport samples without delay preferably within 24 hours at room temperature (20-24°C). -DO NOT FREEZE specimens.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab Requesting clinician must get appointment from Haematology Lab HKL before sending sample/ s to the lab
6	Minor BCR::ABL1 (Quantitative) (Follow-up)	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896056 (Molecular)	Bone Marrow Aspirate	One (1) EDTA tube	Bone Marrow Aspirate : 1 tube x 2.0 ml (Minimum volume : 1.0 - 2.0 ml)	6 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Transport samples without delay preferably within 24 hours at room temperature (20-24°C). -DO NOT FREEZE specimens.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab Requesting clinician must get appointment from Haematology Lab HKL before sending sample/ s to the lab
7	JAK2/ CALR Calreticulin.	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896056 (Molecular)	Whole Blood / Bone Marrow Aspirate	Three (5) EDTA tubes	Whole Blood : 5 tubes x 2.0 ml (Minimum volume : 10 ml) Bone Marrow Aspirate: 1 tube x 2.0 ml (Minimum volume : 1.0 - 2.0 ml)	8 WEEKS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Transport samples without delay preferably within 24 hours at room temperature (20-24°C). -DO NOT FREEZE specimens.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab Requesting clinician must get appointment from Haematology Lab HKL before sending sample/ s to the lab

Cytogenetic

NO.	TEST	PERFORM SITE/ REFERRAL LAB	SAMPLE TYPE	SAMPLE/ CONTAINER	VOLUME	TAT	FORMS/ SPECIAL REQUIREMENTS	REMARK
8	Leukemia FISH Analysis (For MPN case)	Clinical Haematology Referral Laboratory, Level 2, Hospital Ampang, 68000 Ampang, Selangor. Tel : 03-42896055 (Cytogenetics)	Whole Blood / Bone Marrow Aspirate	Three (3) Sodium Heparin	Whole Blood : 5 tubes x 2.0 ml (Minimum volume : 10 ml) Bone Marrow Aspirate : 1 tube x 2.0 ml (Minimum volume : 2.0 ml)	18 DAYS	HOSPITAL AMPANG SPECIAL HAEMATOLOGY REQUISITION FORM -Transport samples without delay preferably within 24 hours at room temperature (20-24°C). -DO NOT FREEZE specimens.	Requesting clinician must call Haematologist Hospital Ampang before sending the sample/ s to HKL Lab

Referral Centres Contact Information		Phone	Related document
1	Hospital Tunku Azizah	03-26003000	Borang Permohonan Ujian Molekular / Molecular Tests Request Form - https://drive.google.com/file/d/1ev8L3YO5Gkzqf-9Wv7SiKJK9kdWv-ad/view HTA Pathology Handbook - https://drive.google.com/file/d/1beX08dUd2tf_2qeyx4NuBv8VqlxopAcx/view?usp=sharing
2	Institute for Medical Research Centre, National Institute of Health	03-33628653/ 03-33628657	Borang permintaan ujian ke IMR/ NIH - https://drive.google.com/drive/folders/1BeKyGXTiObTP4GozyoMLuIRRI5aghr
3	Clinical haematology Referral Laboratory, Hospital Ampang	03-42896219	Hospital Ampang Special Haematology Requisition Form - https://jkn.selangor.moh.gov.my/hampg/images/2024/SPECIAL_HAEMATOLOGY_REQUISITION_FORM_HOSP_AMPANG_VER5_2024.pdf

*Updated February 2025

LIST OF TESTS (OUTSOURCED)

HISTOPATHOLOGY

No	Test	Performed site/Referral Laboratory	Sample / Container	TAT	Special requirement / Remark (s)
1	EGFR Testing	Makmal Molekular Genetik, Hospital Tunku Azizah	Unstained slides	10 days	Request by Pathologist
2	Fungal PCR	Molecular Mycology, National Institute of Health (NIH)	Unstained slides	10 days	Request by Pathologist
3	Second opinion: Gastrointestinal & Hepatobiliary Pathology	1. Department of Pathology, Hospital Selayang 2. Department of Pathology, Hospital Sultan Idris Shah, Serdang	Paraffin block and slides	Within 30 days	Request by Pathologist
4	Second opinion: Head and Neck Pathology	Department of Pathology, Hospital Sultanah Aminah, Johor Bahru	Paraffin block and slides	Within 30 days	Request by Pathologist
5	Second opinion: Neuropathology and Neuromuscular Pathology	1. Department of Neuromuscular Research, National Institute of Neuroscience National Center of Neurology and Psychiatry, Tokyo, Japan 2. Department of Neuropathology, Research Institute for Brain and Blood Vessels, Akita, Japan	Paraffin block and slides	Within 30 days	Request by Pathologist
6	Second opinion: Paediatric Pathology	Molecular Histopathology, Department of Pathology & Laboratory Medicine, KK Women's and Children's Hospital, Singapore	Paraffin block	Within 30 days	Request by Pathologist.
7	Second opinion: Respiratory and Thoracic Pathology	Department of Pathology, Hospital Sultan Idris Shah, Serdang	Paraffin block and slides	Within 30 days	Request by Pathologist
8	Second opinion: Soft Tissue and Bone Pathology	Department of Pathology, Brigham and Women's Hospital Boston, USA	Paraffin block	Within 30 days	Request by Pathologist
9	Histochemical stains	Department of Pathology, Hospital Selayang	Unstained slides	Within 10 days	Request by Pathologist. Perform stain without report/result.
10	Immunohistochemistry of Lymphoma markers	Unit Hematopatologi, Makmal Rujukan Klinikal Hematologi, Jabatan Hematologi, Hospital Ampang	Unstained slides	Within 10 days	Request by Pathologist. Perform stain without report/result.
11	Immunohistochemistry of Neuropathology markers	Department of Pathology, Hospital Tengku Ampuan Afzan, Kuantan.	Unstained slides	Within 14 days	Request by Pathologist. Perform stain without report/result.
12	EM (Electron Microscopic Examination)	Unit Mikroskopi Elektron, National Institute of Health (NIH)	Tissue in glutaraldehyde	Within 30 days	Prior consultation to Renal Pathologist, HKL
13	Advance Molecular Test	Pantai Premier Pathology Sdn. Bhd.	Unstained slides	10 days	Request by Pathologist

MICROBIOLOGY

LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

A. BACTERIOLOGY

A1. Bacteriology & Mycology

No	Test	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule (before 9.30 am)	Remark (s)
1	Anti-fungal susceptibility testing	IMR	Fungal culture media	Identify the fungus first and results send together with pure isolate and clinical history. Transport conditions : ambient temperature. please refer to : https://imr.nih.gov.my/images/handbook/imr_handbook_2017.pdf		10	Every working day (Mon-Fri)	Sample send from Microbiology Unit. Request through Sample Management Information System (SMIS IMR) and send sample to Kaunter Utama Jabatan Patologi
2	Bordetella pertussis PCR	IMR	Sterile container	Nasopharyngeal aspirates, nasopharyngeal swabs	1-2 ml of nasopharyngeal isolate	5	Every working day (Mon-Fri)	
3	Brucella PCR	IMR	EDTA tube	Blood	5 ml	5	Every working day (Mon-Fri)	
4	CA-MRSA PCR	IMR	Bacterial culture	Pure isolate	Pure isolate	7	Every working day (Mon-Fri)	
5	Fungal identification including yeasts and moulds	IMR	Fungal culture media	Pure culture Pure culture on solid media such as Sabouraud dextrose agar and Potato dextrose agar containingg antibiotic such as chloramphenicol and gentamicin. Send together with a brief clinical history. Transport fungalculture at ambient temperature. Please refer to : https://imr.nih.gov.my/images/handbook/imr_handbook_2017.pdf		40	Every working day (Mon-Fri)	
6	Fungal PCR	IMR	EDTA tubes	For better sensitivity, blood samplings should be repeated 2 or 3 times, at 3-4 hours interval. For all other samples, please take as much samples as possible Transportation condition: ambient temperature. For delayed specimen, keep at 2-8°C. https://imr.nih.gov.my/images/handbook/imr_handbook_2017.pdf		5	Every working day (Mon-Fri)	
			Sterile Container	Sterile body fluid, CSF, bronchial lavage, Tissue biopsies, sinus aspirates Transportation condition: ambient temperature. For delayed specimen, keep at 2-8°C. Please refer to : https://imr.nih.gov.my/images/handbook/imr_handbook_2017.pdf			Every working day (Mon-Fri)	
7	Leptospiral PCR	IMR	Blood in EDTA; other samples in sterile container	Blood in EDTA, 2 mls Sterile body fluids, CSF, bronchial lavage, Tissue biopsies/post mortem samples. Before antibiotics.	Blood in EDTA, 2 mls Sterile body fluids, CSF, bronchial lavage, Tissue biopsies/post mortem samples. Before antibiotics.	5	Every working day (Mon-Fri)	For ICU cases & after consultation only
8	Mycobacterium tuberculosis (MTB) PCR	IMR	Sterile container	Sputum, pus, tissue, stool, FFPE block, CSF & other body fluids	For CSF 1-2 mls	5	Every working day (Mon-Fri)	Sample send from Microbiology Unit. Request through Sample Management Information System (SMIS IMR) and send sample to Kaunter Utama Jabatan Patologi
9	Atypical Mycobacterium infection or Mycobacteria other than Tuberculosis (MOTT) PCR	IMR	Sterile container	Sputum, pus, tissue, stool, FFPE block, CSF & other body fluids	For CSF 1-3 mls	10	Every working day (Mon-Fri)	
10	Carbapenemase genes detection (CRE)	IMR	Blood agar or nutrient slant	Bacterial culture	Pure isolate	14	Every working day (Mon-Fri)	
11	S.pneumoniae Isolate Confirmation; AST Verification	IMR	Petri dish / Bijou bottle	Bacterial culture	Pure isolate	6	Every working day (Mon-Fri)	
12	Vancomycin resistant Enterococci (VRE) Isolate Confirmation & AST Verification	IMR	Pure isolate	Bacterial culture	Pure isolate	7	Every working day (Mon-Fri)	
13	Verification of Antibiotic resistance other than Carbapenem Resistance Enterobacteriaceae	IMR	Culture media which support the growth	Bacterial culture	Pure isolate	7	Every working day (Mon-Fri)	
14	Identification of Aerobic Bacteria - Including EHEC identification, ELEK test PCR for 16S RNA and PCR for B. pseudomallei	IMR	Agar or media which support the growth	Pure Bacterial isolate	Not applicable	20	Every working day (Mon-Fri)	
15	Streptococcus Pneumoniae Serotyping (Diagnostic)	IMR	Nutrient agar/ Choc slant	Bacterial culture	Pure isolate	2 weeks	Every working day (Mon-Fri)	

MICROBIOLOGY

LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

16	Pneumocystis jirovecii genome detection (PCR)	Hosp Sg. Buloh	Sterile container	Bronchoalveolar lavage / Induced sputum	5 ml	2 – 5 days	Tue & Thu	Specimen:Bronchoalveolar lavage / induced sputum
17	Rickettsial PCR (Aerobic Bacteria)	IMR	Blood in EDTA; tissue samples in sterile container	Blood in EDTA, tissue biopsies. Before antibiotics.	5ml blood in EDTA	5	Every working day (Mon-Fri)	To contact Rickettsia Lab ext 8358. Request through SMIS will be available soon
18	Vaginal / Cervical swab	HTA	Amies with charcoal	Swab	Not applicable	3 – 5	Every working day (Mon-Fri)	
19	Dimethyl Sulfoxide (DMSO) stain for <i>Cryptosporidium spp.</i> , <i>Cyclospora spp.</i> , <i>Isospora spp.</i>	IKN	Screw lid, air-tight container	Fresh stool sample	Not applicable	3	Monday	Considered for patients with prolong gastroenteritis and diarrhoea. Contact 03-88925555 ext 5458 for further info.
20	Gram chromotrope (GC) stain <i>Microsporidium spp.</i>	IKN	Screw lid, air-tight container	Fresh stool sample	Not applicable	3	Monday	
21	MTB/Rif GeneXpert	IPR	Sterile container	Non Respiratory samples	Not applicable	24 hours	Not applicable	All tests requested should be consulted with the IPR physician prior submission.

A2. Mycobacterium tuberculosis

No.	Tests	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule (before 9.30 am)	Remark (s)
1	MTB culture and sensitivity	MKAK	Please refer NATIONAL PUBLIC HEALTH LABORATORY TEST HANDBOOK from MKAK website				Tue & Thu	Sample send from Microbiology Unit. Fill form TBIS 20C. Refer MKAK website and send sample to Kaunter Utama Jabatan Patologi
2	MTB identification	MKAK					Tue & Thu	
3	MTB PCR	MKAK					Tue & Thu	
4	PCR Multiplex for TB resistant gene	MKAK					Tue & Thu	
5	Quantiferon MTB	MKAK					Tue & Thu	
6	LPA	MKAK					Tue & Thu	
7	GeneXpert	MKAK					Tue & Thu	
8	MTB & NTM culture and sensitivity	IPR	Sterile container	Sputum Bronchial aspirate Gastric lavage Urine Tissue Others (CSF, PF, Pus swab)	5-10 ml ≥ 2 ml ≥ 2 ml ≥ 2 ml ~ 0.5 cm ≥ 1 ml	9 weeks	Every working day (Mon-Fri)	Sample send directly from ward. Only 1 sample needed for 2 tests. Fill form TBIS 20C.
9	AFB smear	IPR	Sterile container	Extra-pulmonary sample only	≥ 2 ml	24 hours	Every working day (Mon-Fri)	

A3. Mycobacterium leprae

No.	Tests	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule	Remark (s)
1	Culture & Sensitivity	MKAK	Sterile plain container without preservative	Skin Incision / Punch Biopsy	Minimum size of 4 mm x 12 mm (skin incision) or Minimum of 5 mm (punch biopsy)	12 - 18 months	Tue & Thu	FORM: Mycobacterium leprae Viability & Drug Sensitivity Test Request Form
2	PCR	MKAK	a) Preferably in sterile plain container without preservative or b) In container with 70% ethanol	Skin Incision / Punch Biopsy	Minimum size of 4 mm x 12 mm (skin incision) or Minimum of 5 mm (punch biopsy)	7 days	Tue & Thu	FORM: PER-PAT 301

A4. Serotyping (Molecular)

No.	Tests	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule	Remark (s)
1	<i>Haemophilus influenzae</i> serotyping	MKAK	Chocolate agar	Bacterial culture	Pure isolate	7	Tue & Thu	Fill form <i>Labsurv/1.2005 Pind.</i> 1 by lab.
2	<i>Salmonella</i> serotyping	MKAK	Nutrient agar slant	Bacterial culture	Pure isolate	21	Tue & Thu	Fill form <i>Labsurv/1.2005 Pind.</i> 1 by lab.
3	<i>Vibrio cholerae</i> serotyping	MKAK	Nutrient agar slant	Bacterial culture	Pure isolate	5	Tue & Thu	Fill form <i>Labsurv/1.2005 Pind.</i> 1 by lab.
4	<i>Neisseria meningitidis</i> serotyping	MKAK	Blood agar	Bacterial culture	Pure isolate	5	Tue & Thu	Fill form <i>Labsurv/1.2005 Pind.</i> 1 by lab.

MICROBIOLOGY

LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

A5. Bacteria Serology/Molecular

No.	Type of Test	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule	Remark (s)
1	Borrelia burgdorferi IgM	Hosp Sg Buloh	Plain tube	Serum	3-5ml	2 to 3	Tue & Thu	
2	Borrelia burgdorferi IgG	Hosp Sg Buloh	Plain tube	Serum	3-5ml	2 to 3	Tue & Thu	
3	Coxiella burnetti IgM	Hosp Sg Buloh	Plain tube	Serum	3-5ml	2 to 3	Tue & Thu	
4	Coxiella burnetti IgG	Hosp Sg Buloh	Plain tube	Serum	3-5ml	2 to 3	Tue & Thu	
5	Bartonella serology	Hosp Sg Buloh	Plain tube	Serum	3-5ml	2 to 3	Tue & Thu	
6	Indirect Immunoperoxidase for Rickettsia (IIP)	Hosp Sg Buloh	Plain tube	Serum	5ml	1 to 2	Tue & Thu	
7	Pneumocystis jirovecii Genome Detection	Hosp Sg Buloh	sterile container	bronchoalveolar lavage (BAL) or induce sputum	5ml	2 to 5	Tue & Thu	
8	Leptospiral PCR	MKAK Sg Buloh	Blood in EDTA; other samples in sterile container	Blood in EDTA 2 mls Sterile body fluids, CSF, bronchial lavage, Tissue biopsies/post mortem samples.	2ml	5	Tue & Thu	
9	Leptospiral MAT	MKAK Sg Buloh	Plain tube	Serum	3ml	7	Tue & Thu	
10	Leptospiral Culture	IMR	EMJH Media / HAN Media (Obtained from the IMR microbiology lab) Or heparin tube. sterile container EMJH media	Blood CSF/body fluid/tissue mid-stream urine	1-2 drop of blood in EMJH medium or 4-5ml in heparin tube 1-2ml 1-2 drop	21	Every working day (Mon-Fri)	Send immediately at room temperature and wrapped in aluminium foil
11	Burkholderia pseudomallei IgM (Meliodosis)	IMR	plain tube	serum	2-3 mls	5	Every working day (Mon-Fri)	
12	Brucella Serology (ELISA)- Screening	IMR	plain tube	serum (Transport at 2-8°C)	2ml	10	Every working day (Mon-Fri)	
13	Brucella Serology (Brucellacapt) -Confirmation	IMR	plain tube	serum (Transport at 2-8°C)	2ml	5	Every working day (Mon-Fri)	By Consultation Only
14	Rickettsia PCR	IMR	Blood in EDTA; tissue samples in sterile container	Blood in EDTA, tissue biopsies. Before antibiotics.		5	Every working day (Mon-Fri)	For better sensitivity, blood samplings should be repeated 2 or 3 times, at 3-4 hours interval. Transportation at ambient temperature. If delayed keep at 2-8°C

B. IMMUNOLOGY

No.	Type of Test	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule	Remark (s)
1	Anti-Acetylcholine - receptor Antibody (ACHR)	IMR	Plain gel tube.	Blood/ Serum	5ml	21	Every working day (Mon-Fri)	
2	Anti - Aquaporin 4 (Anti-Aq4)	IMR	Bijou bottle/Plain gel tube	CSF/Serum/Blood	5ml	10	Every working day (Mon-Fri)	
3	Coeliac Antibodies (Anti-Endomysium, Anti-Gliadin, anti-Tissue Transglutaminase (ITG))	IMR	Plain gel tube.	Blood/ Serum	5ml	21	Every working day (Mon-Fri)	
4	Panel Skin Antibodies (inclusive of Anti-BP180, Anti-BP230, Anti-Desmoglein 1, Anti-Desmoglein 3)	IMR	Plain gel tube.	Blood/ Serum	5ml	14	Every working day (Mon-Fri)	
5	Anti-N-Methyl-D-Aspartate Receptor (NMDAR)	IMR	Bijou bottle/Plain gel tube	CSF/Serum/Blood	5ml	7	Every working day (Mon-Fri)	
6	Anti- Ganglioside Antibodies (GA) Panel - Anti GM1, Anti GM2, Anti GM3,Anti GM4, Anti GD1a, Anti GD1 b,Anti GD2,Anti GD3, Anti GT 1a, Anti GT 1b, Anti GQ1b	IMR	Bijou bottle/Plain gel tube	CSF/Serum	5ml	14	Every working day (Mon-Fri)	
7	Anti-Gastric Parietal Cell Antibody (APC)	H.Selayang	Plain gel tube	Serum	5ml	30	Tue & Thu	
8	Anti-Glomerular Basement Membrane (GBM)	H.Selayang	Plain gel tube	Serum	5ml	30	Tue & Thu	
9	Anti-liver-Kidney Microsome (LKM)-tissue antibody	H.Selayang	Plain gel tube	Serum	5ml	30	Tue & Thu	
10	Anti-Mitochondrial Antibody (AMA)-tissue antibody	H.Selayang	Plain gel tube	Serum	5ml	30	Tue & Thu	
11	Anti-Smooth Muscle Antibody (ASMA)-tissue antibody	H.Selayang	Plain gel tube	Serum	5ml	30	Tue & Thu	

MICROBIOLOGY

LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

12	Cytokine Test Panel: IL-1b, IL-6, IL-8 & TNF-a	IMR	Plain gel tube	Blood- 5 mls in plain tube Serum- 2 mls in cryovial tube	5ml	21	Every working day (Mon-Fri)	By appointment only
13	Paraneoplastic Neurological Syndrome (PNS) Antibodies Panel: Anti Amphiphysin, Anti-Ma, Anti-Yo, Anti-Ri, Anti- Hu, Anti-CV2	IMR	Plain gel tube.	Blood/ Serum	5ml	14	Every working day (Mon-Fri)	
14	Tryptase	IMR	Plain gel tube.	Blood/ Serum	3ml		Every working day (Mon-Fri)	
15	Intrinsic factor antibody	H.Selayang	Plain gel tube	Serum	5ml	30	Tue & Thu	
16	Phospholipase A2 Receptor Antibody (anti-PLA2R)	IMR	Plain gel tube.	Blood/ Serum	5ml	21	Every working day (Mon-Fri)	
17	HLA Antibody Test (PRA/DSA)	IMR	Plain gel tube.	Blood	10ml	20	Every working day (Mon-Fri)	
18	HLA Typing Class I (Loci A, B and C) - Low/medium resolution (SSO/SSP-PCR)	IMR	EDTA tube	Blood	6ml	10	Every working day (Mon-Fri)	by appointment only
19	HLA Typing Class I and II (Loci A, B and DR) - HSCT: New case/Add donor for existing case	IMR	EDTA tube	Blood	6ml	10	Every working day (Mon-Fri)	by appointment only
20	HLA Typing Class I and II (Loci A, B, C, DR and DQ): Solid Organ :New Case/Add donor for existing case:HSCT- Confirmation (Low Resolution)	IMR	EDTA tube	Blood	6ml	10	Every working day (Mon-Fri)	by appointment only
21	HLA Typing Class II(Loci DR,DQ) - Low/medium resolution (SSO/SSP-PCR)	IMR	EDTA tube	Blood	6ml	10	Every working day (Mon-Fri)	by appointment only
22	Dihydrorhodamine assay (DHR)	IMR	Lithium Heparin	blood	2ml	10	Every working day (Mon-Fri)	By appointment and consultation only
23	Lymphocyte Subset Enumeration Test (TBNK)	IMR	EDTA tube	blood	2ml	5	Every working day (Mon-Fri)	by appointment only

C. VIROLOGY

C1. SEROLOGY

No.	Type of Test	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule	Remark (s)
1	Chikungunya	MKAK	Plain tube with serum separator	Serum (kept in 2-8°C)	1-3 ml	3 days	Tue & Thu	Refer MKAK website for test request form
2	Japanese encephalitis	MKAK	i)Plain tube with serum separator (ii) Sterile screw capped container	i)Serum / ii)CSF	i)2-4 ml /ii) 1 ml	Outbreak - 3 days Surveillance – 7 days	Tue & Thu	
3	Measles	MKAK	Plain tube with serum separator	Serum	2-4 ml	Outbreak 3 days, Surveillance 4 days	Tue & Thu	
4	Mumps	Hosp Sg. Buloh	Plain tube	Serum	3-4 ml	2-3 days	Tue & Thu	
5	Nipah Virus Antibody	IMR	i) Serum:plain tubeii) CSF: sterile container iii) Plasma:EDTA	Serum, CSF,Plasma	i) Serum: 1-3mls,ii) CSF: 1-3mls ,iii)Plasma:1-3mls	5 - 14 days	Every working day (Mon-Fri)	

MICROBIOLOGY
LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

C2. MOLECULAR

No.	Type of Test	Referral Centre	Container	Sample	Volume	TAT	Schedule	Remark
1	Adenovirus qRT-PCR	IMR	i) NPA: Sterile plastic vial contain 2-3ml of VTM , (ii) NPS: Sterile plastic vial contain 2-3ml of VTM , (iii) TS: Sterile plastic vial contain 2-3ml of VTM , (iv) Throat gargle: sterile plastic container , (v) BAL: sterile plastic tube container (vi) Sputum: sterile plastic container (vii) Nasal swab : Sterile plastic vial contain 2-3ml VTM (viii) Biopsy: Sterile containers containing VTM to keep tissue moist	i) Nasopharyngeal aspiration, ii) Nasopharyngeal swab, iii) Throat swab, iv) Throat gargle, v) BAL , vi) Sputum, vii) Nasal swab, viii) Organ biopsies	NPA: Mucous secretion in VTM ii) NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils iii) TS: Sterile swab iv) Throat gargle v) BAL , vi) Sputum vii) Nasal swab: Sterile swab. Use different swabs for each nostrils viii) Biopsy: remove portions, about 1.5cm cube of various parts of affected organs	14 - 28 days	Every working day (Mon-Fri)	
2	Avian influenza Viruses (H5,H7, H9) qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
3	Chikugunya virus qRT-PCR	IMR	plain tube	Blood, Serum	i) Blood: 5-10ml ii) Serum: 1-3ml	1 - 10 days	Every working day (Mon-Fri)	
4	CMV (Other than CSF & plasma) qRT-PCR	Hosp Sg. Buloh					Tue & Thu	Discontinued
5	Coxsackie virus A16 qRT-PCR	MKAK	(i) Sterile container with 2.0-2.5 ml VTM (ii) Sterile container with 2.0-2.5 ml VTM (iii) Sterile Screw capped container (iv) Sterile container with 2.0-2.5 ml VTM (v) Sterile container with 2.0-2.5 ml VTM (vi) Sterile screw capped container (vii) Sterile Screw capped container (viii) Plain tube with serum separator Sterile screw capped container	(i) Mouth Ulcer Swab (ii) Vesicle Swab (iii) Stool (iv) Rectal Swab Throat Swab (v) Pleural fluid (vi) Cerebrospinal fluid (CSF) (vii) Serum (viii) Tissue biopsy / autopsy (post-mortem case)	(i)- (ii)- (iii) 5ml (iv)- (v) 1-3ml (vi) 1-3ml (vii) 1-3ml (viii) 1.5cm ³ in a few drops of VTM	Outbreak - 3 days Surveillance - 14 days	Tue & Thu	
6	Crimerian Congo haemorrhagic fever (CCHFV) qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
7	Dengue virus serotyping qRT-PCR	MKAK	i) serum: serum separator tube ii) Plasma: EDTA tube iii) CSF: sterile container iv) Organ biopsy: Sterile containers containing VTM to keep tissue moist	i) Serum ii) Plasma iii) CSF iv) Organ biopsies	i) Serum: 1-3 ml ii) Plasma : 1-3 ml iii) CSF: 1-3ml iv) organ biopsy: remove portions, about 1.5cm cube of various parts of affected organs	1 - 10 days	Tue & Thu	
8	Ebola virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
9	Enterovirus qRT-PCR (Inclusive of Pan Entero, EV71 and CA16)	IMR	i) NPA: Sterile plastic vial contain 2-3ml of VTM ii) NPS: Sterile plastic vial contain 2-3ml of VTM iii) TS: Sterile plastic vial contain 2-3ml of VTM iv) Throat gargle: sterile plastic container v) BAL: sterile plastic tube container vi) Sputum : sterile plastic container vii) Nasal swab : Sterile plastic vial contain 2-3ml VTM viii) Biopsy: Sterile containers containing VTM to keep tissue moist ix) Pericardial aspirate: sterile plastic vial contain 2-3ml VTM x) Rectal swab: Sterile plastic vial contain 2-3ml of VTM xi) Stool: Sterile bottle	i) Nasopharyngeal aspiration ii) Nasopharyngeal swab iii) Throat swab iv) Throat gargle v) BAL vi) Sputum vii) Nasal swab viii) Organ biopsies ix) Pericardial aspirate x) Rectal swab xi) Stool	i) NPA: Mucous secretion in VTM ii) NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils iii) TS: Sterile swab iv) Nasal swab: Sterile swab. Use different swabs for each nostrils v) Biopsy: remove portions, about 1.5cm cube of various parts of affected organs x) Rectal swab: Stool on sterile swab moistened with distilled water xi) Stool: >5gm (thumb size)	1 - 10 days	Every working day (Mon-Fri)	
10	Flavivirus qRT-PCR	MKAK	(i) Plain tube with serum separator (ii) Sterile screw capped container	(i) Serum (ii) CSF	(i) 2-4 ml (ii) 1 ml	Outbreak - 3 days Surveillance - 14 days	Tue & Thu	

MICROBIOLOGY
LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

11	Hanta Pulmonary Syndrome (Sin Nombre Orthohantavirus) qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
12	Hanta Renal Syndrome (Seoul & Hantaan Virus) qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
13	HIV - Drug Resistance Test	IMR	EDTA	Blood, Plasma	5-10ml blood	40 working days	Every working day (Mon-Fri)	Please fill in IMR/Viro/HIV/24 form in IMR Handbook, Treatment failure patient, patient's viral load must be >1000, transport in DRY ICE
14	HIV-1 RNA RT-PCR for babies (0-18 months)	IMR	EDTA	Blood, Plasma	2.5ml blood	1 - 5 days	Every working day (Mon-Fri)	Please fill IMR/Viro/HIV/2 form in IMR handbook, Mother must be HIV positive, Transport in ice
15	HIV-2 RT-PCR	IMR	EDTA	Blood, Plasma	2.5ml blood	1 - 5 days	Every working day (Mon-Fri)	Please fill IMR/Viro/HIV/2 form in IMR handbook, Transport in ice
16	Herpes Simplex Virus RT-PCR (swab lesion)	MKAK	(i) Sterile container with 2.0-2.5 ml of VTM (ii) Sterile container with 2.0-2.5 ml of VTM (iii) Sterile screw capped container (iv) Sterile screw capped container (v) Sterile screw capped container (vi) Sterile container with 2.0-2.5 ml of VTM (vii) Sterile container with 2.0-2.5 ml of VTM (viii) Sterile container with 2.0- 2.5 ml of VTM (ix) Sterile container with 2.0- 2.5 ml of VTM (x) Sterile Screw capped container	(i) Mouth ulcer swab (ii) Skin lesion swab (iii) Bronchoalveolar lavage (iv) Nasopharyngeal aspirate (v) Tracheal aspirate (vi) Nasopharyngeal swab (vii) Rectal swab (viii) Eye swab (ix) Genital swab (x) Cerebrospinal fluid (CSF)	(i) - (ii) - (iii) 1-3 ml (iv) 1-3 ml (v) 1-3 ml (vi) - (vii) - (viii) - (x) - (xi) 1-3 ml	3 days	Every working day (Mon-Fri)	
17	HHV6	Hosp Sg. Buloh					Tue & Thu	
18	Japanese Encephalitis virus qRT-PCR	IMR	i) serum: serum separator tube ii) Plasma: EDTA tube iii) CSF: sterile container iv) Organ biopsy: Sterile containers containing VTM to keep tissue moist	i) Serum ii) Plasma, iii) CSF, iv) Organ biopsies	i) Serum: 1-3mls ii) Plasma :1-3mls iii) CSF: 1-3mls iv) organ biopsy: remove portions, about 1.5cm cube of various parts of affected organs	1 - 10 days	Every working day (Mon-Fri)	
19	JC Virus	Hosp Sg. Buloh					Tue & Thu	
20	Lassa Virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
21	Marburg virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
22	Measles virus qRT-PCR	MKAK	Sterile container with 2.0-2.5 ml of VTM Sterile screw capped container Sterile screw capped container Sterile screw capped container Plain tube with serum separator	(i) Throat swab (ii) Urine (iii) Nasopharyngeal secretion (iv) Tracheal aspirate (v) Serum	(i) - (ii) 10 ml of urine (Early morning first void) (iii) 1-3 ml (iv) 1-3 ml (v) 2-4 ml	Outbreak 3 days Surveillance – 14 days	Tue & Thu	Refer MKAK website for test request form
23	Mumps qRT-PCR	MKAK	(i) Sterile container with 2.0-2.5 ml of VTM (ii) Saliva container	(i) Oral or buccal swab (ii) Saliva	(i) - (ii) 3.0 – 5.0 ml	3 days	Tue & Thu	
24	Nipah virus qRT-PCR	MKAK	(i) Sterile screw capped container (ii) Plain tube with serum separator (iii) Sterile screw capped container (iv) Sterile container with 2.0-2.5 ml of VTM (v) Sterile Screw capped container	(i) CSF (ii) Serum (iii) Urine (iv) Throat swab (v) Tissue biopsy / autopsy	(i) 1-3 ml (ii) 2-4 ml (iii) 10 ml of urine (Early morning first void) (iv) - (v) 1.5 cm3 in a few drops of VTM	3 days	Tue & Thu	

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LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

25	Norovirus virus RT-PCR	MKAK	(i)Sterile Screw capped container (ii)Sterile container with 2.0-2.5 ml of VTM	(i) Fresh stool (ii)Rectal Swab	(i) 5 ml / 1.5 cm cube (ii) -	5 days	Tue & Thu	
26	Parvovirus RT-PCR	MKAK	(i)Plain tube with serum separator (ii)Sterile screw capped container (iii)Sterile screw capped container	(i)Serum (ii)Bone marrow aspirate (iii)CSF	(i)1-3 ml (ii)1-3ml (iii)1 ml	3 days	Tue & Thu	
27	Rabies qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
28	Rift Valley Fever Virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
29	Rotavirus RT-PCR	MKAK	(i)Sterile screw capped container (ii)Sterile container with 2.0-2.5 ml of VTM	(i)Fresh stool (ii)Rectal Swab	(i)5 ml / 1.5 cm cube (ii) -	5 days	Tue & Thu	
30	Rubella virus qRT-PCR	MKAK	(i)Plain tube with serum separator (ii)Sterile screw capped container (iii)Sterile container with 2.0-2.5 ml of VTM (iv) Sterile screw capped container (v)Sterile screw capped container	(i)Serum (ii) Urine (iii) Throat swab (iv)Nasopharyngeal secretion (v)Tracheal aspirate	(i)1-3 ml (ii)10 ml of urine (Early morning first void) (iii) - (iv)1-3 ml (v)1-3 ml	Outbreak 3 days Surveillance 14 days	Tue & Thu	
31	Severe Fever with Thrombocytopenia Syndrome (SFTS) qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
32	Sapovirus RT-PCR	MKAK	(i)Sterile screw capped container (ii) Sterile container with 2.0-2.5 ml of VTM	(i)Fresh stool (ii)Rectal Swab	(i)5 ml / 1.5 cm cube (ii) -	3 days	Tue & Thu	
33	St Louis Encephalitis Virus (SLEV) qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	
34	West Nile virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
35	Yellow fever virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
36	Zika virus qRT-PCR	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	
37	SARS-CoV-2 RT-PCR (Other than respiratory sample)	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
38	SARS-CoV-2 Whole Genome Sequencing	IMR	After consultation only	After consultation only	After consultation only	1 - 5 days	Every working day (Mon-Fri)	Requires consultation
39	Gastrointestinal - Protozoa PCR	IKN					Monday	

C5. VIRAL ISOLATION

No.	Type of Test	Referral Centre	Container	Sample	Volume	TAT	Schedule	Remark (s)
1	CMV	IMR	i) NPA: Sterile plastic vial contain 2-3ml of VTM (ii) NPS: Sterile plastic vial contain 2-3ml of VTM (iii) TS: Sterile plastic vial contain 2-3ml of VTM iv) Throat gargle: sterile plastic container v) BAL: sterile plastic tube container vi) Sputum: sterile plastic container vii) Nasal swab : Sterile plastic vial contain 2-3ml VTM viii) Biopsy: Sterile containers containing VTM to keep tissue moist	i) Nasopharyngeal aspiration, ii) Nasopharyngeal swab, iii) Throat swab, iv) Throat gargle, v) BAL vi) Sputum, vii) Nasal swab, viii) Organ biopsies ix) Urine	i) NPA: Mucous secretion in VTM ii) NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils iii) TS: Sterile swab iv) Nasal swab: Sterile swab. Use different swabs for each nostrils v) BAL: sterile plastic tube container , vi) Sputum: sterile plastic container vii) Biopsy: remove portions, about 1.5cm cube of various parts of affected organs ix) Urine :1-3mls in sterile plastic container	14 - 35 days	Every working day (Mon-Fri)	
2	Enterovirus Isolation (Enterovirus 71, Cocksackie A and Cocksackie B, Echovirus, Other non enteroviruses)	IMR	i) NPA: Sterile plastic vial contain 2-3ml of VTM ii) NPS: Sterile plastic vial contain 2-3ml of VTM iii) TS: Sterile plastic vial contain 2-3ml of VTM iv) Throat gargle: sterile plastic container v) BAL: sterile plastic tube container vi) Sputum :sterile plastic container vii) Nasal swab : Sterile plastic vial contain 2-3ml VTM viii) organ biopsy: Sterile containers containing VTM to keep tissue moist ix) Pericardial aspirate: sterile plastic vial contain 2-3ml VTM x) Rectal swab: Sterile plastic vial contain 2-3ml	i) Nasopharyngeal aspiration, ii) Nasopharyngeal swab, iii) Throat swab, iv) Throat gargle, v) BAL , vi) Sputum, vii) Nasal swab, viii) Organ biopsies ix) Pericardial aspiratel x) Rectal swab, xi) Stool xii) Vesicular Swab/Scraping,	i) NPA: Mucous secretion in VTM ii) NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils iii) TS: Sterile swab iv) Nasal swab: Sterile swab. Use different swabs for each nostrils v) Biopsy: remove portions, about 1.5cm cube of various parts of affected organs x) Rectal swab: Stool on sterile swab moistened with distilled water xi) Stool: >5gm (thumb size) xii) Vesicular swab/scrapings: Swabs to be put into 2-3mls of VTM	14 - 28 days	Every working day (Mon-Fri)	

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LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

3	Herpes Virus Isolation (Herpes Simplex 1&2)	IMR	i) NPS: Sterile plastic vial contain 2-3ml of VTM ii) TS: Sterile plastic vial contain 2-3ml of VTM iii) organ biopsy: Sterile containers containing VTM to keep tissue moist iv) Rectal swab: Sterile plastic vial contain 2-3ml of VTM v) Stool: Sterile bottle vi) Pericardial aspirate: sterile plastic vial contain 2-3ml VTM vii) Vesicular swab/scrapping: Sterile plastic vial .viii) Eye swab: Sterile plastic vial contain 2-3ml of VTM , Lacrimal tears: In capillary tube	i) Nasopharyngeal swab, ii) Throat swab, iii) Cardiac biopsy, iv) Rectal swab, v) Stool, vi) Pericardial aspirate vii) Vesicular swab/scrapping viii) Eye swab, lacrimal tears	i) NPS: A flexible, fine shafter polyester swab. Use different swab for each nostrils , ii) TS: Sterile swab iii) biopsy: remove portions, about 1.5cm cube of various parts of affected organs iv) Rectal swab: Stool on sterile swab moistened with distilled water v) Stool: >5gm (thumb size) vii) Vesicular Swab/Scrapping: Swabs to be put into 2-3mls of VTM, viii) Eye swab: Sterile swab moistened with distilled water , Lacrimal tears: 10-20 ul tears	14 - 28 days	Every working day (Mon-Fri)	
4	Mumps	MKAK	(i) Sterile container with 2.0-2.5 ml of VTM (ii) Saliva container	(i) Oral or buccal swab (ii) Saliva	(i) - (ii) 3.0 – 5.0 ml	21 days	Tue & Thu	
5	Poliovirus Viral isolation	IMR	i) Stool: Sterile bottle ii) Rectal swab: Sterile plastic vial contain 2-3ml of VTM, iii) Throat Swab :Sterile plastic vial contain 2-3ml of VTM iv) CSF: sterile container	i) Stool(prefered)*(to collect within 14 days of onset, 2 adequate sample to collect in 24-48hrs apart) ii) Rectal swab, iii) Throat swab, iv) CSF (All specimens for age < 15 years old only. N.B. Test requests for age > 15 years old require consultation.)	i) Stool: >5gm (thumb size) , ii) Rectal swab: Stool on sterile swab moistened with distilled water , iii) TS: Sterile swab iv) CSF: 0.5mls in sterile container	14 days	Every working day (Mon-Fri)	
6	Poliovirus Environmental Surveillance	IMR	1L sterile bottle	Sewage sample (to collect via grab method, during early morning. Sample to be send to IMR on the same day)	1 Litre	30 days	Every working day (Mon-Fri)	
7	Rhinovirus	MKAK	(i) Sterile screw capped (ii) Sterile screw capped (iii) Sterile container with 2.0-2.5ml of VTM (iv) Sterile container with 2.0-2.5 ml of VTM (v) Sterile container with 2.0-2.5 ml of VTM (vi) Sterile screw capped (vii) Sterile screw capped (viii) Sterile screw capped	(i) Sputum (ii) Nasopharyngeal Aspirate (iii) Throat swab (iv) Nasal Pharyngeal Swab (v) Nasal Swab (vi) Tracheal / endotracheal tube (vii) Aspirate Bronchoalveolar lavage (viii) Lungs tissue biopsy / autopsy	(i) 1-3 ml (ii) 1-3 ml (iii) - (iv) - (v) - (vi) 1-3 ml (vii) 1-3 ml (viii) 1.5cm cube in a few drops of VTM	21 days	Tue & Thu	

This list information was updated on 10.1.2024. Please refer to referral center below for more info and latest update.

Referral Centres contact information		Tel.	Website
1	IMR	0333627900	https://www.imr.gov.my/en/
2	MKAK	0361261200	https://mkak.moh.gov.my/ms/
3	MKAJ	055287829	http://ios.moh.gov.my/mkaiv1
4	Hospital Sungai Buloh	0361454333	https://knselangor.moh.gov.my/hsgbuloh/index.php/ms/
5	Hospital Tuanku Azizah	0326003000	https://hkl.moh.gov.my/hta/en-us/
6	Hospital Selayang	0361263333	https://knselangor.moh.gov.my/hselayang/
7	Institut Kanser Negara (IKN)	0388925555	https://nci.moh.gov.my/index.php/ms/
8	Institut Perubatan Respiratory	0340232966	tblaipr@moh.gov.my

DRUG & TOXICOLOGY LABORATORY

LIST OF REFERRED TESTS

Please refer contact number and website link for referral centre at the bottom of this list.

No	Test	Referral Centre	Container	Sample	Volume	TAT (working day)	Schedule (before 9.30 am)	Remark (s)
1	Blood Lead	H. Selayang	EDTA Tube	Blood	2 mL	21	Tuesday	FORM: PER-PAT 301
2	Serum Copper	H. Selayang	Plain tube without gel or EDTA Tube	Serum	2 mL	21	Tuesday	FORM: PER-PAT 301
3	24hr Urine Copper	H. Selayang	24hr Urine Container (Without Preservative)	24hr Urine	5 mL	21	Thursday	FORM: PER-PAT 301 24hr urine volume MUST be stated on the request form (calculation will be done for urine volume more than 500mL ONLY)

This list information was updated on 14.6.2024. Please refer to referral center below for more info and latest update.

	Referral Centres contact information	Tel.	Website
1	Hospital Selayang	0361263333	https://jknselangor.moh.gov.my/hselayang/