



Kementerian Kesihatan Malaysia



9th Edition

# PATHOLOGY HANDBOOK

HOSPITAL PAKAR SULTANAH FATIMAH, MUAR



LIST OF TESTS

# 2025

**LIST OF TESTS**

**CHEMICAL**

**PATHOLOGY**

**LIST OF IN-HOUSE CHEMICAL PATHOLOGY TESTS**

<b>NO</b>	<b>TEST</b>	<b>SPECIMEN TYPE</b>	<b>TUBE/ CONTAINER</b>	<b>VOLUME</b>	<b>REQUEST FORM</b>	<b>LTAT</b>	<b>REMARKS</b>
1	Acetaminophen/ Paracetamol	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	
2	Alanine Transaminase (ALT)	Blood	Lithium heparin	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
3	Albumin	Blood	Lithium heparin	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
4	Alkaline Phosphotase (ALP)	Blood	Lithium heparin	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
5	Alpha-Fetoprotein (AFP)	Blood	Plain tube with gel	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Requesting specialist's signature is required.
6	Ammonia	Blood	EDTA	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	STAT/urgent: 90 minutes	Send immediately in ice.
7	Amylase	Blood	Lithium heparin	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
8	Aspartate Transaminase (AST)	Blood	Lithium heparin	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
9	Beta Human Chorionic Gonadotropin (BHCG)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	3 working days STAT/Urgent: within 24 hours	Please consult Pathologist Oncall on urgent request. Requesting specialist's signature is required.
10	Bilirubin, Direct	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 60 minutes	
11	Bilirubin, Total	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 60 minutes	
12	Blood Gases (pH, pO <sub>2</sub> , pCO <sub>2</sub> )	Blood	Pre - Heparinised syringe	1 ml	PER-PAT-301	STAT/urgent: 90 minutes	Send immediately in ice, mixed well using roller mixer or palm.
13	Body fluid for biochemistry (Protein, Glucose, LDH, Albumin) Other tests please specify eg. Amylase, pH, Cholesterol, Tg, Creatinine.	Ascitic, pleural, peritoneal, pericardial fluid & etc	Lithium heparin (Protein, LDH, Albumin) Fluoride oxalate (Glucose)	At least 5 ml	PER-PAT-301	1 working day, Urgent: 4 hours (Case by case basis, granted by Pathologist Oncall).	<b>Urgent Request:</b> Case by case basis, granted by Pathologist Oncall. Please inform Chemical Pathology Lab before sending the sample to the lab (ext 466). Please provide adequate clinical history with diagnosis and time/date of specimen collection.
14	Calcium, Corrected Calcium with albumin	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
15	Cancer Antigen 125 (CA 125)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Requesting specialist's signature is required.
16	Cannabis (Screening & Confirmation)	Urine	Urine container	30 ml	Borang Permintaan Ujian Pengesanan Dadah (UPD-1 pin 2020)/PERPAT 301	10 calendar days	Please use UPD-1 (pindaan 2020) for medicolegal case and PER-PAT 301 for clinical case.
17	Carbamazepine	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	
18	Carcinoembryonic antigen (CEA)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Requesting specialist's signature is required.
19	Chloride	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
20	Cholesterol, Total	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
21	Complement 3 (C3)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	3 working days	
22	Complement 4 (C4)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	3 working days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
23	Congenital Hypothyroidism Screening (cord TSH and FT4)	Cord Blood	Plain tube with gel	5 ml	Congenital hypothyroidism cord blood screening test form	3 working days	
24	Random Cortisol (Sample taken unspecified time)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Please state date and time of specimen collection – AM/PM/Dynamic Test. For urgent request please consult Chemical Pathologist. Request form to counter sign by Specialist.
	AM Cortisol (Sample taken between 6AM to 9AM)						
	PM Cortisol (Sample taken between 4PM to 6PM)						
	Cortisol for Overnight Dexamethasone Suppression Test (Cortisol-ODST)						
	Cortisol for Synacthen Test (Cortisol-Synacthen Test)						
	24 hours Urine Cortisol	Urine	24 hours urine container	Volume 24 hour urine $\geq$ 500ml, except for ESRF and paediatric case.			

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
25	C-Reactive Protein (CRP)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	1 working day	Urgent Request (5 hours): Case by case basis, granted by Pathologist/MO Oncall. Please inform Chemical Pathology Lab before sending the sample to the lab (ext 466). Please provide adequate clinical history with diagnosis and time/date of specimen collection.
26	Creatine Kinase (CK)	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
27	Creatinine	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	Patients shall be advised to abstain from consuming any meat in the 12 hours before a blood test for serum creatinine as a protein meal can raise serum creatinine levels substantially and lead to low eGFR values.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
28	Creatinine Clearance Test (serum creatinine and urine 24 hours)	Blood and urine	24 hours urine container with thymol & blood (lithium heparin)	24 hours urine and 3 ml blood	PER-PAT-301	1 working day	Blood and 24 hours urinary collection are sent to the Laboratory. Volume 24 hour urine must be $\geq 500$ ml, except for ESRF and pediatric case.
29	CSF for biochemistry (protein & glucose)	CSF	Sterile Bijou container / fluoride oxalate for glucose	3 ml	PER-PAT-301	STAT/urgent: 90 minutes	A blood sample (plasma glucose) should be send at the same time.
30	CSF for Lactate	CSF	Sterile Bijou container / fluoride oxalate	2 ml	PER-PAT-301	STAT/urgent: 90 minutes	Send immediately in ice / fresh sample.
31	Digoxin	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	
32	Fecal Occult Blood	Feces	Stool container	Minimum 1 gram	PER-PAT-301	1 working day	
33	Ferritin	Blood	Plain tube with gel	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	3 working days STAT/Urgent: Within 24 hour	Please consult Pathologist Oncall on urgent request.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
34	Folate	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	
35	Follicle-Stimulating Hormone (FSH)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Sample taken at day 2-5 of menses is preferable for fertility testing.
36	Free T3 (Tri-iodothyronine)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	
37	Free T4 (Free Thyroxine)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	3 working days STAT/Urgent: within 24 hours	Please consult Pathologist Oncall on urgent request.
38	Gentamicin	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	
39	Glucose	Blood	Fluoride oxalate	2 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
40	Glucose 2 hours Post Prandial (2HPP)	Blood	Fluoride oxalate	2 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
41	Glucose Tolerance Test (GTT)	Blood	Fluoride oxalate	2 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
42	HbA1c	Blood	EDTA	2 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
43	High Density Lipoprotein Cholesterol (HDL)	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
44	Iron, Total	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
45	Lactate	Blood	Fluoride oxalate	2 ml	PER-PAT-301	STAT/urgent: 90 minutes	Send immediately in ice / fresh sample.
46	Lactate Dehydrogenase (LDH)	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
47	Luteinizing Hormone (LH)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Sample taken at day 2-5 of menses is preferable for fertility testing.
48	Magnesium	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
49	Morphine (Screening & Confirmation)	Urine	Urine container	30 ml	Borang Permintaan Ujian Pengesanan Dadah (UPD-1 pin 2020)/PERPAT 301	10 calendar days	Please use UPD-1 (pindaan 2020) form for medicolegal case and PER-PAT 301 for clinical case.
50	Peritoneal Dialysate (Urea, Creatinine, Glucose)	Peritoneal Dialysate	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	1 working day	
51	Phenytoin	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
52	Phosphate, Inorganic	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
53	Potassium	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
54	Progesterone	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Sample taken at day 21 of menses is preferable for fertility testing.
55	Prolactin	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	
56	Prostate Specific Antigen, Total (PSA)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	Requesting specialist's signature is required.
57	Protein, Total	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
58	Rheumatoid Factor	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
59	Sodium	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
60	Theophylline	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
61	Thyroid Stimulating Hormone (TSH)	Blood	Plain tube with gel	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	3 working days STAT/Urgent: within 24 hours	Please consult Pathologist Oncall on urgent request.
62	Triglyceride	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	Calculated low density lipoprotein cholesterol (LDL) is not valid if Triglyceride >4.5 mmol/L
63	Troponin I, high sensitivity	Blood	Lithium heparin	Adult: 3 ml	PER-PAT 301	STAT/Urgent: 90 minutes	Shall be request by Medical officer and Physician.
64	Unsaturated Iron Binding Capacity (UIBC)	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
65	Urea	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours, STAT/urgent: 90 minutes	
66	Uric Acid	Blood	Lithium heparin	3 ml, mix gently Pediatric: 0.5 - 1 ml	PER-PAT-301	4 hours	
67	Urine Albumin	Urine	Urine container	10 ml	PER-PAT-301	1 working day	
68	Urine Albumin Creatinine Ratio (UACR)	Urine	Urine container	random urine, 10 ml	PER-PAT-301	1 working day	The first void urine in the morning shall be used for the measurement of ACR.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
69	Urine Analysis (UFEME)	Urine	Urine container	10 ml	PER-PAT-301	4 hours	
70	Urine Calcium Random / 24 hours	Urine	Urine container or 24 hours urine container with thymol/boric acid	Random: At least 10 ml, 24 hour: At least 500 ml	PER-PAT-301	1 working day	Volume 24 hour urine ≥500ml, except for ESRF and paediatric case. No reference range available for random urine.
71	Urine Creatinine Random / 24 hours	Urine	Urine container or 24 hours urine container with thymol/ boric acid	Random: At least 10 ml, 24 hour: At least 500 ml	PER-PAT-301	1 working day	Volume 24 hour urine ≥500ml, except for ESRF and paediatric case.
72	Urine Diastase	Urine	Urine container	10 ml	PER-PAT-301	4 hours	
73	Urine Electrolytes (Na,K, Cl)	Urine	Urine container	random urine, 10 ml	PER-PAT-301	4 hours	
74	Urine Magnesium Random / 24 hours	Urine	Urine container or 24 hours urine container with thymol/boric acid	Random: At least 10 ml, 24 hour: At least 500 ml	PER-PAT-301	1 working day	Volume 24 hour urine ≥500ml, except for ESRF and paediatric case. No reference range available for random urine.
75	Urine Paraquat	Urine	Urine container	At least 10 ml	PER-PAT-301	STAT/urgent: 90 minutes	
76	Urine Phosphate Random / 24 hours	Urine	Urine container or 24 hours urine	Random: At least 10 ml, 24 hour: At least 500 ml	PER-PAT-301	1 working day	Volume 24 hour urine ≥500ml, except for ESRF and paediatric case. No

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
			container with thymol/boric acid				reference range available for random urine.
77	Urine Protein 24 hours	Urine	24 hours urine container with thymol/boric acid	24 hours urine at least 500 ml	PER-PAT-301	1 working day	Volume 24 hour urine $\geq$ 500ml, except for ESRF and paediatric case.
78	Urine Protein Creatinine Ratio (UPCR)	Urine	Urine container	Random urine, 10 ml	PER-PAT-301	1 working day	
79	Urine Urea	Urine	Urine container	10 ml	PER-PAT-301	4 hours	
80	Urine Uric Acid	Urine	Urine container	10 ml	PER-PAT-301	4 hours	
81	Valproic Acid	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	
82	Vancomycin	Blood	Plain tube without gel	Adult: 3 ml, Paediatric: 0.5 - 1 ml	BORANG PHIS HPSF/PER-PAT-301	Monitoring: 4 hours Toxic: 2 hours	
83	Vitamin B12	Blood	Plain tube with gel	3 ml, mix gently Paediatric: 0.5 - 1 ml	PER-PAT-301	5 working days	

**LIST OF CHEMICAL PATHOLOGY SEND-AWAY TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
1	α1-Acid Glycoprotein	Blood	Plain gel tube	5 ml	PERPAT 301	Hospital Ampang	7 days	
2	α2-Macroglobulin	Blood	Plain gel tube	6 ml	PERPAT 301	Hospital Ampang	7 days	
3	5-Hydroxy-Indole-Acetic Acid (5-HIAA) for Carcinoid Tumor	24 Hour Urine	24 Hour Urine Container with 10 ml of 25% HCL	Minimum Volume : 750 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	<ul style="list-style-type: none"> <li>•Protect sample from light</li> <li>• Transport FROZEN (Easily destroyed by heat &amp; light)</li> </ul>
4	17-Hydrxyprogesterone (17OHP)	Blood	Plain tube with gel	5 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	21 days	Please follow protocol
5	24 Hr Urine Copper	Urine	24 Hour Urine Container without preservative	5 ml	PERPAT 301	Hospital Selayang	21 days	Physician / Specialist counter sign required
6	Acid Alpha-Glucosidase (POMPE)	Dried Blood Spot	Special filter paper.eg: PerkinElmer 226	4 circles of dried blood spot	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	30 days	
7	Acid or Chlorosive	Blood	Sodium Flouride tube	5 ml	Borang Permohonan bagi Pemeriksaan Forensik/ Toksikologi Jabatan	Jabatan Kimia, Melaka	30 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
					Kimia (Kimia 15-Pin.2/2016)			
8	Acylcarnitine & Amino Acids for IEM Screening (inclusive of Succinylacetone if required)	Dried Blood Spot	Blood Spot Filter Paper	4 circles of dried blood spot	Borang Permohonan Ujian IEM HTA (HTA/PAT/GEN/PK-01-03)	HTA	30 days	
9	Adenocorticoid Hormone (ACTH)	Blood	K2 EDTA	5 ml	PERPAT 301	HKL	5 days	Send in cold box with ice
10	Adenosine Deaminase (ADA)	Pleural Fluid	Sterile container	3 ml	Borang Permohonan Ujian Makmal (Spesimen Klinikal) Makmal Kesihatan Awam (MKAK-BPU-U01/Rev2018)	MKAK Johor Bahru	7 days	Spesimen Stability within 48 hours
11	Alcohol	Blood	Sodium Flouride tube	5 ml	Borang Permohonan bagi Pemeriksaan Forensik/ Toksikologi Jabatan Kimia (Kimia 15-Pin.2/2016)	Jabatan Kimia, Melaka	30 days	
12	Aldosterone	Blood	K2 EDTA	5 ml	PERPAT 301	Institut Endocrin Hospital Putrajaya	30 days	Please follow protocol
13	Alpha 1 Antitrypsin Phenotyping	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Ampang	20 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
14	Amikacin	Blood	Plain tube without gel	5 ml	TDM FORM	HSAJB	5 dyas	
15	Amino Acids	Blood	Plain tube with gel	5 ml	IEM Request Form Unit Protein Khas (IMR.SDC.UPK.REQUEST FORM Version 3.0)	IMR	15 days	
16	Amino Acids	CSF	Bijou Bottle	1 ml	IEM Request Form Unit Protein Khas (IMR.SDC.UPK.REQUEST FORM Version 3.0)	IMR	15 days	Must send paired with plasma
17	Amino Acids	Urine	Sterile Container	20 ml	IEM Request Form Unit Protein Khas (IMR.SDC.UPK.REQUEST FORM Version 3.0)	IMR	15 days	By Consultation only
18	Amphetamine Type Stimulants (ATS), screening & confirmation	Urine	Sterile Container	30 ml	Borang Permintaan Ujian Dadah Dalam Air Kencing (UPD-1(PINDAAN 2020))	HSAJB	10 calendar days	
19	Anti Mullerian Hormone (AMH)	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	14 days	Request only by Gynae specialist
20	Anti Thyroglobulin (Anti Tg)	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	Counter Sign Specialist required
21	Anti Thyroid Peroxidase (Anti TPO)	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	Counter Sign Specialist required

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
22	Anti Thyroid Receptor Antibody ( Trab)	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	10 days	Counter Sign Specialist required
23	Argininosuccinic Acid, (ASA)	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	10 working days	Transport FROZEN
24	<b>Benzodiazepines</b> Alprazolam Alpha-Hydroxyalprazolam Alpha-Hydroxytriazolam 7-Aminoclonazepam 7-Aminoflunitrazepam 7-Aminonitrazepam 7-Aminonimetazepam Clonazepam Diazepam Flurazepam Flunitrazepam Lorazepam Midazolam Nimetazepam (Erimin 5) Nitrazepam Nordiazepam Oxazepam Temazepam)	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case
25	Beta 2 Microglobulin	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Ampang	7 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
26	Biogenic Amines, CSF - Neurotransmitter	CSF	Bijou Bottle	1 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	<ul style="list-style-type: none"> <li>• Protect sample from light</li> <li>• Transport FROZEN (Easily destroyed by heat &amp; light)</li> </ul>
27	Biogenic Amines	Urine	Sterile Container	30 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	<ul style="list-style-type: none"> <li>• Protect sample from light</li> <li>• Transport FROZEN (Easily destroyed by heat &amp; light)</li> </ul>
28	Biotinidase Enzyme Activity	Dried Blood Spot	Special filter paper.eg: PerkinElmer 226	4 circles of dried blood spot	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	30 days	
29	C- Peptide	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	5 days	
30	Cancer Antigen 15.3 (Ca 15.3)	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	5 days	Counter Sign Specialist required
31	Cancer Antigen 19.9 (Ca 19.9 )	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	Counter Sign Specialist required
32	Carbon Monocside	Blood	Sodium Flouride tube	5 ml	Borang Permohonan bagi Pemeriksaan Forensik/Toksikologi Jabatan Kimia (Kimia 15-Pin.2/2016)	Jabatan Kimia, Melaka	30 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
33	Carnitine Total & Free	Blood	Plain tube with gel	2 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	7 working days	Transport FROZEN
34	Carnitine, 24 Hour Urine	24 Hour Urine	24 Hour Urine Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	7 working days	By Consultation only
35	Cathinones	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case
36	Ceruloplasmin	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	5 days	
37	Cholinesterase	Blood	Plain tube	5 ml	PERPAT 301	HSAJB	5 days	
38	Copper	Blood	Plain tube without gel	5 ml	PERPAT 301	Hospital Selayang	21 days	Physician / Specialist counter sign required
39	Creatine & Guanidinoacetic Acid	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN
40	Creatine & Guanidinoacetic Acid	Dried Blood Spot	Special filter paper.eg: PerkinElmer 226	4 circles of dried blood spot	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	
41	Creatine & Guanidinoacetic Acid	Blood	Plain tube with gel	1 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
42	Cryoglobulin	Blood	Prepared by Hospital Ampang's laboratory	3 ml	PERPAT 301	Hospital Ampang	21 days	By appointment. Blood samples will be taken at Hospital Ampang only. Call Protein lab at ext 6216
43	Cyclosporin	Blood	K2 EDTA	5 ml	TDM FORM	HSAJB	5 days	
44	Cystine & Homocystine (Quantitative)	Random Urine	Sterile Container	2-5 ml	Borang Permohonan Ujian IEM HTA (HTA/PAT/GEN/PK-01-03)	HTA	14 days	By Appoiment only, Protect from light
45	Cystine & Homocystine, Urine	Urine	Sterile Container	2 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM-RQ_Version 7.0)	IMR	15 working days	Transport FROZEN
46	Cystine (Qualitative)	Random Urine	Sterile Container	2-5 ml	Borang Permohonan Ujian IEM HTA (HTA/PAT/GEN/PK-01-03)	HTA	14 days	By Appoiment only, Protect from light
47	Dehydroepiandrosterone (DHEAS)	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	5 days	
48	Delta-Amino Levulinic Acids (Delta-ALA)	Urine	Sterile Container	20 ml	IEM Request Form Unit Protein Khas (IMR.SDC.UPK.REQUEST FORM Version 3.0)	IMR	20 days	Protect from light

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
49	Drug Of Abuse	Blood	Sodium Flouride tube	5 ml	Borang Permohonan bagi Pemeriksaan Forensik/Toksikologi Jabatan Kimia (Kimia 15-Pin.2/2016)	Jabatan Kimia, Melaka	30 days	
50	Estradiol	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	
51	Everolimus	Blood	K2 EDTA	5 ml	PERPAT 301	Institut Urology & Nephrology HKL	Release on the same day of analysis	
52	Free Androgen Index : (1) Sex Hormone Binding Globulins (SHBG) (2) Testosterone	Blood	Plain tube with gel	5 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	30 days	Testosterone result needs to be provided if Free Androgen Index (FAI) report is required
53	Free Light Chain Quantitation	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Ampang	7 days	
54	Fructosamine	Blood	Plain tube with gel	5 ml	PERPAT 301	HOSPITAL AMPANG	7 days	
55	Galactosemia Screening (TG & GALT)	Dried Blood Spot	Special filter paper.eg: PerkinElmer 226	4 circles of dried blood spot	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	30 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
56	Gamma Gt	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	
57	Growth Hormone (Somatotrophin)	Blood	Plain tube with gel	5 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	15 days	
58	Haptoglobin	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Ampang	7 days	
59	Homocysteine Total	Blood	Plain tube with gel	2 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN
60	Immunoglobulin (IgG, IgA, IgM)	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	Physician / Specialist counter sign required
61	Insulin	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	5 days	
62	Insulin Autoantibodies (IAA)	Blood	Plain tube with gel	5 ml	PERPAT 301	Unit Patologi Kimia Khas, Jabatan Patologi, HKL	14 working days	REQUEST ONLY BY SPECIALIST. Advised for IAA blood testing to be drawn BEFORE insulin therapy is initiated for the first time.
63	Insulin Like Growth Factor (IGF-1)	Blood	Plain tube with gel	5 ml	PERPAT 301	Institut Endocrine,	15 days	Please follow protocol

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
						Hospital Putrajaya		
64	IPTH (Intact Parathyroid Hormone)	Blood	K2 EDTA	5 ml	PERPAT 301	HKL	7 days	Send in cold box with ice
65	<b>Ketamine Drugs</b> Ketamine Norketamine Dehydronorketamine	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case
66	Lead/Plumbum	Blood	K2 EDTA	5 ml	PERPAT 301	Hospital Selayang	21 days	Physician / Specialist counter sign required.
67	Lithium	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Permai	2 days	
68	Lysine Metabolism Profile, Urine (P6C, Pipecolic Acid, AASA)	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN
69	Lysosomal Storage Disorders (LSD) Screening,	Dried Blood Spot	Special filter paper.eg: PerkinElmer 226	4 circles of dried blood spot	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	30 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
70	Lysosomal Storage Disorder Enzyme Assays	Blood	EDTA tube	6 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	25 working days	<ul style="list-style-type: none"> <li>• Required consultation by geneticist.</li> <li>• Option maximum up to 2 diseases of enzyme.</li> <li>• Sample shall arrived IMR within 72 HOURS after collection.</li> <li>• DO NOT SPIN</li> <li>• DO NOT FREEZE</li> <li>• Keep and send chilled.</li> </ul>
71	Metanephrines, 24 Hour	24 Hour Urine	24 Hour Urine Container with 10 mls of 25% HCL	Minimum Volume : 750 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	30 days	Physician / Specialist counter sign required / Please follow protocol
72	Methanol	Blood	Sodium Fluoride	3 ml	PERPAT 301	MKAK Sg Buloh	7 working days	Physician / Specialist counter sign required
73	Methanol	Urine	Sodium Fluoride	3 ml	PERPAT 301	MKAK Sg Buloh	7 working days	Physician / Specialist counter sign required
74	Methaqualone	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
75	Methotrexate	Blood	Plain tube without gel	5 ml	PERPAT 301	Hospital Melaka	Release on the same day of analysis	
76	<b>Mitragynine</b> Mitraginine 7-Hydroxymitragynine	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case
77	Mucopolysaccharides (GAGs / HRE)	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	10 working days	Transport FROZEN
78	Mucopolysaccharidoses Enzyme Assays (MPS Type I, II, IIIa, IIIb, IVa, IVb, VI, VII, Multiple Sulfatase)	Blood	EDTA tube	6 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	25 working days	By Consultation only
79	Myoglobin	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Ampang	7 days	
80	Myoglobin	Random Urine	Sterile Container	20 ml	PERPAT 301	Hospital Ampang	7 days	
81	Oligoclonal Band	Blood & CSF	Plain tube with gel & Bijou Bottle	5 ml	PERPAT 301	Hospital Ampang	21 days	CSF must paired with blood sample.
82	Oligosaccharide	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
83	<b>Opioids</b> Methadone Fentanyl 6-Acetylmorphine (6am) Buprenorphine Dextromethorphan Hydrocodone Hydromorphone Meperidine (Pethidine) Oxycodone Oxymorphone Tramadol	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case
84	Organic Acids	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	7 working days	Transport FROZEN (Organic acids easily destroyed by heat)
85	Organic Acids ( <b>FORENSIC ONLY</b> )	Blood	Plain tube with gel	1 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	10 working days	By Consultation only. Transport FROZEN. Organic acids easily destroyed by heat.
86	Organic Acids, Vitreous Humour ( <b>FORENSIC ONLY</b> )	Vitreous Humour	Plain tube	2 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	10 working days	By Consultation only. Transport FROZEN. Organic acids easily destroyed by heat.
87	Organic Acids; Urine (inclusive of	Random Urine	Sterile container	2-5 ml	Borang Permohonan Ujian IEM HTA	HTA	14 days	Physician / Specialist counter sign required

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
	Succinylacetone if required)				(HTA/PAT/GEN/PK-01-03)			
88	Orotic Acid	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM-RQ_Version 7.0)	IMR	7 working days	Transport FROZEN
89	Osmolality	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	
90	Osmolality	Urine	Sterile Container	20 ml	PERPAT 301	HSAJB	5 days	
91	<b>PANEL DIABETES ANTIBODIES</b> : Glutamic Acid Decarboxylase Antibody (Anti-GAD), Anti-Islet Antibody (ICA), Tyrosine Like Proteine Antibody (Anti-IA2)	Blood	Plain tube with gel	5 ml	PERPAT 301	Unit Patologi Kimia Khas, Jabatan Patologi, HKL	14 working days	Request only by Endocrinologist & Medical specialist
92	Peroxisomal Disorder Profile (VLCFA, Phytanic & Pristanic Acid)	Blood	Plain tube with gel	1 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM-RQ_Version 7.0)	IMR	10 working days	
93	Pesticide	Blood	Sodium Flouride tube	5 ml	Borang Permohonan bagi Pemeriksaan Forensik/Toksikologi Jabatan Kimia (Kimia 15-Pin.2/2016)	Jabatan Kimia, Melaka	30 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
94	Phenobarbital	Blood	Plain tube without gel	5 ml	TDM FORM	HSAJB	5 days	
95	Pipecolic Acid	Blood	Plain tube with gel	5 ml	IEM Request Form IMR/SDC/BC/FORM-RQ Version 7.0	IMR	15 days	
96	Plasma Amino Acid (Full profile, Maple Syrup Urine Disease (MSUD), Phenylketonuria (PKU))	Blood	Lithium Heparin tube	5 ml	Borang Permohonan Ujian IEM HTA (HTA/PAT/GEN/PK-01-03)	HTA	32 days	
97	Porphyria Profile	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM-RQ_Version 7.0)	IMR	15 working days	Protect from light
98	Procalcitonin (PCT)	Blood	Plain tube with gel	5 ml	PERPAT 301	Institut Kanser Negara	3 days	Compulsory to liaise with the person in charge from Pathology Department. IKN/Physician / Specialist counter sign required
99	Pterins, CSF - Neurotransmitter	CSF	Bijou Bottle	1 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM-RQ_Version 7.0)	IMR	15 working days	Special tube (with preservative DTE & EDTA) provided by Biochemistry Unit, IMR • Protect sample

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
								from light • Transport FROZEN (Easily destroyed by heat & light)
100	Pterins, Urine - Neurotransmitter	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	• Protect sample from light • Transport FROZEN (Easily destroyed by heat & light).
101	Purine & Pyrimidine	Random Urine	Sterile Container	2-5 ml	Borang Permohonan Ujian IEM HTA (HTA/PAT/GEN/PK-01-03)	HTA	14 days	Send in cold box with ice
102	Renin	Blood	K2 EDTA	5 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	30 days	Please follow protocol
103	Salicylate	Blood	Plain tube without gel	5 ml	PERPAT 301	Hospital Melaka	1 day	
104	Saline Loading Test	Blood	K2 EDTA	5 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	30 days	Please follow protocol
105	Salivary Cortisol	Saliva	Salivette tube	1.5 ml	PERPAT 301	Hospital Pulau Pinang	3 working days	Requested by Endocrinologist Specialist only.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
								Minimum 2 samples taken at different days. Sample sent in ice. Please call HPSF lab for instruction for collection of saliva sample.
106	Serum Protein Electrophoresis	Blood	Plain tube with gel	5 ml	PERPAT 301	HKL	30 days	
107	Sialic Acid, Total & Free	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN
108	Sirolimus	Blood	K2 EDTA	5 ml	PERPAT 301	HTA	Release on the same day of analysis.	
109	S-Sulphocysteine	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 days	Collect WITHOUT preservative
110	Succinylacetone, Urine	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
111	Sugar & Polyols	Urine	Sterile Container	20 ml	IEM Request Form Biochemistry Unit (IMR/SDC/BC/FORM -RQ_Version 7.0)	IMR	15 working days	Transport FROZEN
112	Sulphite & Sulphocystine	Random Urine	Sterile Container	2-5 ml	Borang Permohonan Ujian IEM HTA (HTA/PAT/GEN/PK-01-03)	HTA	14 days	Send in cold box with ice
113	Synthetic Cathinones Mephedrone	Urine	Sterile Container	30 ml	PERPAT 301	HKL	6 weeks	Clinical Case
114	Tacrolimus	Blood	K2 EDTA	5 ml	TDM FORM	HSAJB	5 days	
115	<b>TDM for Antifungal</b> -Itraconazole -Posaconazole -Voriconazole -Flucytosine -Isavuconazole	Blood	Plain Tube Without Gel	3 ml	HKL Antifungal Therapeutic Drug Monitoring (TDM) Request Form (v2_June 2025)	HKL	1-3 working days Analysis day : Tuesday and Thursday only	Requestor: -Pakar Perubatan Penyakit Berjangkit -Pakar Anaesthesiologi dan Rawatan Rapi -Pakar Hematologi *Send blood to Pathology Lab within 2 hours of collection for centrifugation.
116	Thyroglobulin (Tg)	Blood	Plain tube with gel	5 ml	PERPAT 301	HSAJB	5 days	Counter Sign Specialist required
117	Transferin	Blood	Plain tube with gel	5 ml	PERPAT 301	Hospital Ampang	7 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT REFFERAL LAB	REMARKS
118	Urine Protein Electrophoresis	Random Urine	Sterile Container	20 ml	PERPAT 301	HKL	30 days	
119	Vitamin D	Blood	Plain tube with gel	5 ml	PERPAT 301	Institut Endocrine, Hospital Putrajaya	30 days	Please follow protocol
120	Zinc	Blood	Sodium Flouride tube	5 ml	Borang Permohonan bagi Pemeriksaan Forensik/Toksikologi Jabatan Kimia (Kimia 15-Pin.2/2016)	Jabatan Kimia, Melaka	30 days	

**LIST OF TESTS**

**MEDICAL**

**MICROBIOLOGY**

## LIST OF MICROBIOLOGY IN-HOUSE TESTS

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
1	Acid Fast Bacilli Direct Smear	Sputum, Body Fluid, Tissue, Gastric lavage (for Paediatric patient only)	Sterile container	5.0-10.0 ml	Borang Permohonan Ujian Tibi TBIS 20C	1 day	
2	Alert organism screening (CRE & VRE)	Rectal swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	Test ordered only by Infection Control Staffs
3	Alert organism screening (MRSA)	Nasal swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
4	Anti-Streptolysin O Titre (ASOT)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 working day	
5	Blood & bone marrow culture & sensitivity/Bone marrow aspiration (For Fungal Pathogen)	Blood	Myc/F lytic bottle	Blood: 1.0-5.0 ml, BMA: 1.0-2.0ml	PER-PAT 301	14 days if no growth.	Preliminary results i.e. Gram stain from positive blood culture bottle will be informed immediately once blood culture bottle detected growth.
6	Blood catheter tip culture & sensitivity	5cm of blood catheter tip	Sterile container	5 cm	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
7	Blood culture & sensitivity/Bone marrow aspiration (For aerobic & anaerobic bacteria)	Blood	Blood culture vials: Plus Aerobic/F, Peads Plus/F, Anaerobic vial	Adult: 8.0-10.0 ml; Infant: 1.0-2.0 ml; BMA: 1.0-2.0ml	PER-PAT 301	5 days if no growth. 3 days if pure growth of non-fastidious organism	Preliminary results i.e. Gram stain from positive blood culture bottle will be informed immediately once blood culture bottle detected growth.

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
8	Blood culture & sensitivity/Bone marrow aspiration (For Mycobacterium)	Blood	Myco/F lytic bottle	Blood: 1.0-5.0 ml, BMA: 1.0-2.0ml	PER-PAT 301	42 days if no growth.	Preliminary results i.e. Gram stain from positive blood culture bottle will be informed immediately once blood culture bottle detected growth.
9	Blood Film For Malaria Parasite (BFMP)	Blood	Dried thick & thin blood smears on slide EDTA	10 cent size 2.0 ml	PER-PAT 301	2 hours verbal report	
10	Blood Film For Microfilaria Parasite (BFMF)	Blood	Dried thick blood smear on slide EDTA	Oval shape 2.0 ml	PER-PAT 301	6 hours verbal report	
11	Body fluid culture & sensitivity	Pericardial, Peritoneal, Pleural, Synovial Fluid	Sterile container	at least 1.0 ml	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
12	Cerebral spinal fluid culture & sensitivity	Cerebral spinal fluid	Bijou bottle	10 drops	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
13	Cerebral spinal fluid Full Examination & Microscopy Examination (FEME): Cell count, Indian Ink, Bacterial Antigen Test	Cerebral spinal fluid	Bijou bottle	10 drops	PER-PAT 301	1 hour	Test request granted by pathologist oncall
14	Clostridium difficile Antigen & Toxin Test	Fresh stool	Sterile container	50 mg	PER-PAT 301	24 hours	

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
15	Corynebacterium diphtheriae culture & sensitivity	Nasopharyngeal swab/ throat swab Nasopharyngeal aspirate	Swab in Amies with charcoal transport medium Sterile container	N/A  1-3 ml	PER-PAT 301		
16	COVID-19 Antigen Rapid Test	Nasopharyngeal swab	Falcon tube	NA	PER-PAT 301	2-4 hours	Tripple layer packaging, transport in ice
17	Dengue IgM/IgG Rapid Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 hour verbal report	
18	Dengue NS1 Antigen Rapid Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 hour verbal report	
19	Eye & ear swab culture & sensitivity	Eye/ear swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
20	Fungal culture	Hair, Nail, Skin scrapping, Pus, Tissue, Cerebral spinal fluid, Body fluid	Sterile container	For Pus and Body fluid at least 1.0 ml	PER-PAT 301	14 days if no growth.	
21	GENEXPERT MTB/RIF ULTRA	Sputum, Tissue, Pus, Body fluid except pleural fluid, BAL	Universal container with ice and cold box	Sputum, bone and fluid : > 1ml, CSF minimal 0.1ml	TB TBIS 20C	1 working day	Test request granted by Microbiologist/Chest Respiratory HSAJB
22	Genital discharge swab for Gonorrhoea	Endocervical swab/Urethral swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
23	Genital swab culture & sensitivity	High vaginal swab (HVS)	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
24	Hepatitis B core Total Antibody (Anti-HBcTotal) Serology Test (CMIA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
25	Hepatitis B surface Antibody (Anti-HBs) Serology (CMIA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
26	Hepatitis B surface Antigen (HBsAg) Rapid Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 hour verbal report	Test request granted by pathologist oncall
27	Hepatitis B surface Antigen (HBsAg) Serology (CMIA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
28	Hepatitis C antibody Rapid Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 hour verbal report	Test request granted by pathologist oncall
29	Hepatitis C antibody Serology (CMIA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
30	HIV Antigen/Antibody (HIV Ag/Ab) Serology Test (CMIA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
31	HIV antigen/antibody Combo Rapid Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 hour verbal report	Test request granted by pathologist oncall

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
32	Leptospirosis IgM Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301 & MKAK Laboratory Request Form MKAK-BPU-U01	1 working day	Leptospirosis IgM positive and inconclusive will be sent to MKAK for microagglutination test (MAT).  Leptospira IgM can be negative at early stage of infection. Please send another blood specimen after 14 days or prior discharge to repeat test if clinically indicated.
33	Mycobacterium culture & sensitivity	Sputum, Body Fluid, Tissue, Gastric lavage (for Paediatric patient only)	Sterile container	5.0-10.0 ml	Borang Permohonan Ujian Tibi TBIS 20C	8 weeks	
34	Mycobacterium leprae (Leprosy)	Slit Skin Smear (SSS)	Smear from lesions	2 slide- air dry fix smear	LIS 102A	2 working days	Smear done by skin clinic
35	Mycoplasma pneumoniae Serology Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
36	Pus aspirate culture & sensitivity	Pus aspirate	Sterile container	3.0 ml	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
37	Pus swab culture & sensitivity	Pus swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
38	QIASTAT Rapid Molecular Respiratory Panel	Nasopharyngeal swab/Nasopharyngeal aspirate	UTM for NPS, sterile container for aspirate (NPA)	at least 1.0 ml for ETT aspirate	PER-PAT 301	1 working day	Need to discuss with Clinical Microbiologist before request
39	Rapid Plasma Reagin (RPR)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
40	Respiratory virus screening Influenza A, B, RSV, Adeno Combo Test	Nasopharyngeal swab/Nasopharyngeal aspirate	Falcon tube (for NPS) /sterile container (NPA)	NA	PER-PAT 301		
41	Rotavirus/Adenovirus Antigen Detection	Fresh stool	Sterile container	50 mg	PER-PAT 301	24 hours	
42	Sputum culture & sensitivity	Sputum	Sterile container	at least 1.0 ml	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
43	Sterility test (Air sampling)	Inoculated Blood agar & Sabaroud Dextrose Agar	Agar plate	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	Test ordered only by Infection Control Staffs
44	Sterility test (Biological indicator)	Biological indicator	NA	NA	PER-PAT 301	24 hours	
45	Sterility test (Environmental swabs for outbreak investigation)	Swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	Test ordered only by Infection Control Staffs
46	Sterility test (Expressed breast milk)	Expressed Breast Milk	Sterile container	at least 1.0 ml	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	Need to discuss with Clinical Microbiologist before request
47	Sterility test (TPN)	Inoculated Nutrient Agar)	Agar plate	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
48	Stool culture & sensitivity	Soft/Watery Fresh Stool	Stool container with scoop	1g	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
49	Stool for Salmonella typhi	Fresh stool	Stool container with scoop	1g	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
50	Stool for Vibrio cholerae	Watery Stool	Stool container with scoop	1g	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
51	Stool ova & cyst	Soft/Watery Fresh Stool	Stool container with scoop	1g	PER-PAT 301	3 days	
52	Syphilis Rapid Test kit (trepanomal test)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	1 hour verbal report	Test request granted by pathologist oncall
53	Throat swab for culture & sensitivity	Throat swab	Amies Transport Medium with Charcoal	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
54	Tissue culture & sensitivity	Tissue	Sterile container	NA	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	For small tissue specimen, to add several drops of sterile normal saline to keep moist
55	Tracheal aspirate, bronchial alveolar lavage, bronchial wash, nasopharyngeal aspirate culture & sensitivity	Tracheal aspirate, bronchial alveolar lavage, bronchial wash	Sterile container	at least 1.0 ml	PER-PAT 301	2-5 days if pure growth of non-fastidious organism	
56	Treponema pallidum Particle Agglutination (TPPA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	3-5 working days	
57	Urine culture & sensitivity	Urine	Boric acid container	5.0-10.0 ml	PER-PAT 301	2-5 days if pure growth of non-	Please state the time of specimen collection.

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	TAT	REMARKS
						fastidious organism	

#### LIST OF MICROBIOLOGY SEND AWAY TESTS

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
1	(1,3)- Beta-D-Glucan Antigen	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	5 days	
2	Acanthamoeba spp. PCR	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	Sterile container air tight or contact lens storage	NA	PER-PAT 301	Parasitology unit, IMR	10 days	Medium in container: sterile distilled water or saline
3	Acanthamoeba spp./Naegleria spp microscopy	Corneal scraping, Contact lens, Contact lens suspension, Cerebrospinal fluid	Sterile container, air tight or contact lens storage	NA	PER-PAT 301	Parasitology unit, IMR	3 days	By Appointment at least 3 days before the sample is taken. Medium in container: sterile distilled water or saline.
4	Acute Flaccid Paralysis workout (Polio Virus and Non-Polio Enterovirus)	Fresh stool (preferred)(to collect within 14 days of onset, 2 adequate sample	i)Stool: Sterile container	i) Stool: >5gm (thumb size)	Acute Flaccid Paralysis Case Investigation Form	Virology unit, IMR	14-28 days	For age >15 years old require consultation

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
		to collect in 24-48hrs apart)						
5	Allergy test (Specific IgE)	Blood	Plain gel tube	5.0 ml	IMR Allergy request form	Allergy unit, IMR	10 days	
6	Allergy test (Total IgE)	Blood	Plain gel tube	5.0 ml	IMR Allergy request form	Allergy unit, IMR	10 days	
7	Amoebiasis Serology	Blood	Plain gel tube, EDTA tube	2.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	
8	Anti B2-Glycoprotein antibody (IgG & IgM)	Blood CSF	Plain gel tube	3.0 - 5.0 ml	PER-PAT 301	HSAJB	10-14 working days	
9	Anti Cardiolipin Antibody (IgG & IgM)	Blood	Plain gel tube	3.0 - 5.0 ml	PER-PAT 301	HSAJB	10-14 working days	
10	Anti Intrinsic Factor Antibody	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Microbiology unit, Hospital Selayang	30 days	
11	Anti-Acetylcholine Receptor Antibody (ACR)	Blood	Plain gel tube	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	21 days	
12	Anti-Aquaporin 4 (AQ4)	Blood, CSF	Plain gel tube, Bijou bottle	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	10 days	
13	Anti-Cyclic Citrullinated Peptide (CCP/ACPA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	10-14 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
14	Anti-Fungal Susceptibility Testing	Pure yeast isolates	Fungal culture	NA	IMR Bacteriology fungal form	Bacteriology unit, IMR	20 days	
15	Anti-Ganglioside Antibodies (GA) Panel: Anti-GM1, Anti-GM2, Anti-GM3, Anti-GM4, Anti-GD1a, Anti-GD1b, Anti-GD2, Anti-GD3, Anti-GT 1a, Anti-GT 1b, Anti-GQ1b	Blood, CSF	Plain gel tube Bijou bottle	5.0 ml 1.0 ml	Autoimmune request form	Autoimmune unit, IMR	14 days	
16	Anti-Glomerular Basement Membrane (GBM)	Blood	Plain gel tube	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	10 days	
17	Anti-Muscle-Specific Kinase (MuSK) Antibody	Blood	Plain gel tube	3.0 - 5.0 ml	Autoimmune request form	Autoimmune unit, IMR	21 days	send in ice
18	Anti-Myelin oligohendrocyte glycoprotein (MOG) Antibody	Blood	Plain gel tube	3.0 - 5.0 ml	Autoimmune request form	Autoimmune unit, IMR	10 working days	send in ice
19	Anti-neutrophil cytoplasmic antibodies (ANCA): P-anca, C-anca	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	10-14 working days	
20	Anti-N-Methyl-D-Aspartate Receptor (NMDAR) Encephalitis	Blood, CSF	Plain gel tube Bijou bottle	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	7 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
21	Antinuclear antibody (ANA)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	10-14 days	
22	Aspergillus Galactomannan Antigen	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSI, Johor Bahru	2 days	
23	Bartonella henselae IgG & IgM	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	5 days	
24	Bartonella PCR	EDTA blood , Tissue (Lymph node)	EDTA Sterile container	2.0 ml	Bartonella Request form (IMR/BACT /FORMS/B ART/01)	Bacteriology unit, IMR	5 days	By consultation with IMR Specialist Dr Siti Roszilawati/ Dr Wan Norazanin 03-33628358/ 03-33628935 / 03-33627464
25	Bartonella quintana IgG & IgM	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	5 days	
26	BK Virus PCR	Blood	EDTA tube	1.5 ml	PER-PAT 301	HSAJB	3- 5 working days	
27	BK Virus PCR	CSF, urine	CSF: Bijou bottle urine: sterile container	CSF: 1ml, urine: 5.0 ml	PER-PAT 301	Microbiology unit, Hospital Sungai Buloh	2- 5 days	
28	Bordetella pertussis PCR	Nasopharyngeal aspirate nasopharyngeal swabs	Sterile container sterile container with saline (NPS)	2.0 ml	IMR Bacteriology Request Form	Bacteriology unit, IMR	3 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
29	Borrelia burdorfri/ Lyme's serology (IgG & IgM)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Serology unit, Hospital Sungai Buloh	2-7 days	
30	Brucella PCR	Blood	3 EDTA tubes	2.0 ml each tubes	Brucellosis Laboratory Request Form (IMR/IDRC/B ACT/BRUCE/ 02)	Bacteriology unit, IMR	5	
31	Brucella serology (contact/ lab worker)	Blood	Plain gel tube	5.0 ml	MKAK- BPUU01/Re v2018	MKAK Sungai Buloh	NA	
32	Brucella Serology ELISA (screening patient) -Brucellacapt (Confirmation)	Blood	Plain gel tube	5.0 ml	Brucellosis Laboratory Request Form (IMR/IDRC/B ACT/BRUCE/ 02)	Bacteriology unit, IMR	10 days	
33	Bruton tyrosine kinase (BTK) Genetic detection	Fresh blood in room temperature (without ice)	3EDTA tube	10.0 ml	Primary Immunodef iciency (PID) Request Form	PID unit, IMR and consent form	90 days	1. By appointment only 2. A mother's blood is required to assist with interpretation. 3. Screening result MUST show Absence or less than 2%

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
								CD19+ B cells and Low serum antibodies, reduced BTK protein expression 4. Please inform Lab upon sending sample.
34	Bruton tyrosine kinase (BTK) Protein detection	Fresh blood in room temperature (without ice)	EDTA tube	2 mL of fresh blood each from patient, mother and unrelated healthy control	Primary Immunodeficiency (PID) Request Form	PID unit, IMR	10 days	1. By appointment only 2. A mother's blood is required to assist with interpretation. 3. Screening result MUST show Absence or less than 2% CD19+ B cells and Low serum antibodies, reduced BTK protein expression 4. Please inform Lab upon sending sample.
35	Chikungunya PCR	Blood	Plain gel tube/ EDTA	5.0 ml	Virology test request form	Virology unit, IMR	1-10 days	
36	Chikungunya serology (IgM & IgG)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	2-3 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
37	Coeliac Antibodies Panel: Anti-Endomysium, Anti Gliadin, Anti Tissue Transglutaminase	Blood	Plain gel tube	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	21 days	
38	Corynebacterium Diphtheriae PCR for Toxin Detection	Pure isolate culture	Blood agar	NA	MKAK-BPU-U01/Rev2018	MKAK Sungai Buloh	7 days	For contact cases only
39	COVID-19 Conventional PCR	Combined OPS/NPS, ETT aspirate	Swab: VTM; ETT aspirate: Sterile container	ETT aspirate: 2.0 - 5.0 ml	PER-PAT 301	HSAJB	24 hours	
40	Coxiella burnetii phase ii IgG & IgM	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	2-3 days	
41	Cryptococcal antigen	Blood CSF	Plain gel tube bijou bottle	5.0 ml	PER-PAT 301	HSAJB	2 days	
42	CSF for VDRL	CSF	Bijou bottle	1.0 ml	PER-PAT 301	Serology unit, Hospital Sultan Ismail (HSIJB)	7 days	
43	Cytokines (IL-6): IL-1 beta, IL-6, IL-8 & TNF alpha	Blood	Plain gel tube	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	21 days	For appointment only, please contact Dr Fatimah: 016-3807873 / 03-3362 8879

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
44	Cytomegalovirus (CMV) DNA PCR/ Viral load	Blood	EDTA	1.5 ml	PER-PAT 301	HSAJB	3-5 working days	
45	Cytomegalovirus (CMV) IgG/IgM serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3 working days	
46	Cytomegalovirus (CMV) PCR	Urine	Sterile container	5.0 ml	PER-PAT 301	Microbiology unit, Hospital Sungai Buloh	2-5 days	
47	Cytomegalovirus Isolation	i) Urine. ii) Cerebrospinal Fluid (CSF). iii) Bronchialveolar lavage (BAL). iv) Tissue. v) Pericardial Fluid	i) Urine/ CSF/ BAL/ Pericardial fluid: Sterile leakproof container. ii) Tissue biopsy/ autopsy: Sterile leakproof container containing VTM or sterile normal saline to keep tissue moist.	) Urine/ CSF/BAL/ Pericardial fluid: 1-3 ml. ii) Tissue biopsy/ autopsy: About 1.5 cm cubes of various parts of affected organs	Virology test request form	Virology unit, IMR	14-35 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
48	Dengue PCR	Blood, CSF, Organ biopsy	Blood: Plain gel tube, CSF: Bijou bottle Organ biopsy: Sterile leakproof container containing VTM or sterile normal saline to keep tissue moist	Blood: 5 ml; CSF: 1ml Organ biopsy: About 1.5 cm cubes from various parts of affected organs	Virology test request form	Virology unit, IMR	7 days	Only for severe dengue cases and ICU patient
49	Dengue PCR	Blood	Plain gel tube	5.0 ml	Laboratory Request Form For Dengue And Flavivirus	MKAJB	5 days	1) Only for severe dengue cases and ICU patient
50	Dengue serology IgM/ IgG ELISA	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	1-3 days	
51	Dengue Serotype Surveillance	Blood	Plain gel tube	5.0 ml	Laboratory request form for Dengue and Flavivirus MKAK-BPU- D02	MKAJB	7 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
					(rev_Nov_2 015)			
52	Dimethylsulfoxide (DMSO) stain for Cryptosporidium spp., Cyclospora spp, and Isospora spp.) and Gram chromotrope (GC) Stain for Microsporidium spp.)	Fresh stool sample	Sterile container	5 g	PER-PAT 301	Institut Kanser Negara	3 working days	(Sampel perlu sampai ke IKN dalam masa 24- 48 jam pada suhu bilik)
53	Double Stranded DNA (dsDNA) Test	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSA JB	10-14 working days	
54	Ebstein Barr Virus (EBV) PCR	Blood	EDTA tube	1.5 ml	PER-PAT 301	HSAJB	3-5 Working days	
55	Ebstein Barr Virus (EBV) PCR	CSF, BAL	CSF: Bijou bottle, BAL: sterile container	<del>Blood: 5 ml;</del> CSF: 1ml, BAL: 5.0 ml	PER-PAT 301	Microbiology unit, Hospital Sungai Buloh	3-5 working days	
56	Ebstein Barr Virus (EBV) serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3 working days	
57	Echovirus 11 RT-qPCR	Throat swab Nasopharyngeal swab/ oropharyngeal swab	Throat swab Nasopharyngeal/oropharyngeal swab/ rectal swab	CSF: 1.0 ml	Virology test request FORM	Virology unit, IMR	1- 10 days	By consultation with IMR Specialist

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
		Rectal swab, Stool CSF	:Dacron swab/nylon swab in VTM stool in Sterile container CSF in Bijou bottle					
58	Enterovirus isolation	i) ARS: Refer to Respiratory Virus Isolation for specimen types. ii)Herpangina/HF MD: Culture Not Done (refer to Enterovirus RT- qPCR). iii) Acute Hemorrhagic Conjunctivitis: Conjunctival swab. iv) Myocarditis/ Pericarditis: Throat swab; Rectal Swab; Stool; Pericardial fluid;Endomyocar dial biopsy; Heart tissue.	i) Respiratory specimens: Refer to Respiratory Virus Isolation. ii) Swab specimens: Sterile leakproof vial containing 2-3 ml of VTM. iii) Pericardial fluid/ CSF/ Stool: Sterile leakproof container. iv) Tissue biopsy/ autopsy: Sterile leakproof container	i)Respiratory specimens: Refer to Respiratory Virus Isolation. ii) Swab specimens: Sterile plastic- shafted polyester swab in VTM. iii)Pericardial fluid/ CSF: 1- 3 ml. iv) Stool: >5 g (thumb size). v)Tissue biopsy/ autopsy:	Virology test request form	Virology unit, IMR	14-28 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
		v) Acute Neurological Syndrome: Throat swab; Rectal swab; Stool; CSF; Brain tissue.	containing VTM or sterile normal saline to keep tissue moist.	About 1.5 cm cubes of various parts of affected organs.				
59	Enterovirus PCR for HFMD	Rectal swab/mouth ulcer swab/ vesicle swab/ fresh stool	Swabs: VTM, Stool: Sterile container	Stool: 5g	Borang Permohonan Ujian HFMD	MKAJB	14	Only send 1 type of sample based on clinical priority
60	Enterovirus qRT-PCR (Inclusive of Pan-Enterovirus, EV71 & CA16)	CSF NPS/NPA/OPS/Throat swab, rectal swab, BAL, sputum, stool, biopsy, pericardial fluid	Bijou bottle, VTM Sterile container	1.0 ml NA NA	Virology test request form	Virology unit, IMR	1- 10 days	
61	Eosinophil Cationic Protein (ECP)	Blood	Plain gel tube	3.0 ml	IMR Allergy request form	Allergy unit, IMR	30 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
62	Extractable nuclear antigen (ENA) - Anti Sm - Anti-U1 RNP - Anti-SSA/ Ro - Anti-SSB/ La - Anti-Jo 1 - Anti-Scl – 70 - Anti-Centromere	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3-5 working days	For ANA positive (speckled pattern only)
63	Filariasis Microscopy	Blood	EDTA tube / Thick blood film	2.5 ml	PER-PAT 301	Parasitology unit, IMR	3 days	Blood taken between 10pm-12am
64	Filariasis PCR	Blood	EDTA tube	2.5 ml	PER-PAT 301	Parasitology unit, IMR	7 days	Blood taken between 10pm-12am
65	Filariasis Serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Parasitology unit, IMR	1 day	
66	Fungal identification	Pure isolate Tissue	Fungal Tissue block/ ribbon (reported out by HPE)	NA	IMR Bacteriolog y fungal form	Bacteriology unit, IMR	40 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
67	Fungal PCR	Fresh clinical specimens : i. Blood ii. Blood in blood culture vial iii. CSF and other sterile body fluids, skin/tissue biopsies	i. Blood in EDTA/Plain tube ii. Blood culture bottle iii. Tissue and other body fluids in sterile container.	2 ml blood; other samples as much as possible	IMR Mycology request form(IMR/I DRC/BACT/MYCO/01)	Bacteriology unit, IMR	14 days	Sample from sterile site only.
68	Gastrointestinal-Protozoa PCR A Multiplex PCR for identification of : -Blastocystis hominis -Cryptosporidium spp, -Cyclospora cayetanensis -Dientamoeba fragilis -Entamoeba histolytica -Giardia lamblia	Stool	Sterile container (penutup kuning) In icebox	NA	PER-PAT 301	Institut Kanser Negara	5 working days	1) To inform MO Microbiology (IKN) prior sending to the laboratory. 2) Transport in 2-8°C (within 2 days) or in -20°C (in 1 month)
69	Helminth microscopy & culture	Fresh stool	Sterile container	5g	PER-PAT 301	Parasitology unit, IMR	5 days	
70	Hepatitis A antibody	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3-5 working days	
71	Hepatitis B (HBV) DNA Viral Load	Blood	3 EDTA tubes	2.0 ml each tubes	PER-PAT 301	HSAJB	2-4 weeks	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
72	Hepatitis B virus envelope Antibody(HBeAb)/ Hepatitis B virus envelope Antigen(HBeAg)/ Hepatitis B virus core total antibody (HBcAb)/ Hepatitis B virus core IgM (HBc IgM)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3-5 working days	
72	Hepatitis B virus surface Antigen (HBs Ag) Confirmatory	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3-5 working days	
74	Hepatitis C core antigen (HCVcAg)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSNI	3-5 working days	A reflex test for Hepatitis C virus antibody reactive sample.
75	Hepatitis C Viral Genotyping	Blood	3 EDTA tubes	2.0 ml	PER-PAT 301	Virology unit, HKL	30 days	1) Criteria of sample: i. HCV viral load minimum 1000 IU/mL or Hepatitis C core Antigen positive ii. Relevant clinical history (i.e Liver cirrhosis) 2) Request form signed by

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
								Gastroenterologist/ Medical specialist
76	Hepatitis C virus (RNA) Viral load	Blood	3 EDTA tubes	2.0 ml each tubes	PER-PAT 301	HSAJB	2-4 weeks	
77	Hepatitis E and Hepatitis D IgM	Blood	Plain gel tube / EDTA tube	1.0 - 3.0 ml	IMR Virology form	Virology unit, IMR	7 days	1) Acute Gastrointestinal Syndrome Acute Jaundice Syndrome 2) Case by consultation. Please consult virologist IMR upon request, 03- 33628960/03- 33628114
78	Herpes simplex virus (HSV 1&2) serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	5 working days	
79	Herpes simplex virus PCR	Blood CSF Vesicle for STI	3 EDTA tubes Bijou bottle Vesicle in VTM	3.0 ml 1.0 ml	PER-PAT 301	Virology unit, HKL	7 days	
80	Herpes Virus Isolation ( herpes Simplex 1& 2)	i) Nasopharyngeal swab. ii) Throat swab. iii) Tissues: Brain, Heart, Lungs. iv) Rectal swab. v) Aspirates: Tracheal aspirate (TA),	i) CSF/ Vesicular fluid/ TA/ ETA/ BW/ BAL/ Pericardial fluid: Sterile leakproof container. ii) Corneal/	i) CSF/ BW/ BAL/ Pericardial fluid: 1-3ml. ii) Corneal/ Conjunctival/ Lesion scrapings: transfer to 2-	IMR Virology form	Virology unit, IMR	14-28 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
		Endotracheal aspirate (ETA), Pericardial aspirate. vi) Vesicular swab/scraping. vii) Eye swab, lacrimal tears. viii) Cerebrospinal fluid (CSF). ix) Bronchoalveolar lavage (BAL). x) Bronchial washing (BW). **N.B. Consultation is required for the testing of tissue specimens other than brain, heart, and lungs.	Conjunctival/ Lesion scrapings: Sterile leakproof vial. iii) Swab specimens: Sterile leakproof vial containing 2-3 ml of VTM. iv) Lacrimal tears: Sterile leakproof container. v) Tissue biopsy/autopsy: Sterile leakproof container containing VTM or sterile normal saline to keep tissue moist.	3 ml VTM. iii) Swab specimens: Sterile plastic-shafted polyester swab in VTM iv) Lacrimal tears: 10-20 ul. v) Vesicular fluid: in 1-2 ml VTM vi) TA/ ETA: 1-3 ml of aspirate. vii) Tissue biopsy/autopsy: About 1.5 cm cubes of various parts of affected organs				
81	HIV confirmation for neonate (0-18 months)	Blood	3 EDTA tubes	2.5 ml	Borang Ujian Polymerase	Virology unit, IMR	1-5 working days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
					Chain Reaction (PCR) Untuk Human Immunodef iciency Virus (HIV) Di Kalangan Bayi			
82	HIV Drug Resistance Test	Blood	3 EDTA tubes	5.0 ml	HIV Genotyping Resistance Typing Form	Virology unit, IMR	40 working days	
83	HIV RNA Viral Load/ PCR	Blood	3 EDTA tubes	5.0 ml	PER-PAT 301	HSAJB	2-4 weeks	
84	HIV-1 confirmatory PCR	Blood	3 EDTA tubes	3.0 ml each	PER-PAT 301	HSAJB	2-4 weeks	
85	HLA Antibody Test (PRA/DSA)	Blood	Plain tube	6.0 ml	(HLA Antibody request form(PRA/ DSA) IMR/AIRC/T I/RF-4	Transplantati on immunology unit, IMR	20 days	1) Test by appointment only. Please call HLA unit IMR at 03- 33628382/8383 for appointment 2) To inform Serology Lab HPSF (Ext 354/357) once get appointment and to

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
								inform lab on the day of sending specimen.
86	HLA Crossmatch (Complement Dependent Cytotoxicity) or (Flow Cytometry)	Fresh blood in room temperature (without ice)	Donor: whole blood in sodium heparin tube; Patient: whole blood in plain tube	sodium heparin tube: 18.0 ml; Plain tube: 6.0ml	HLA Crossmatch Test Request Form (Living Donor); HLA Crossmatch Test Request Form (Deceased Donor Donor)	Transplantati on immunology unit, IMR	10 days	1) Test by appointment only. Please call HLA unit IMR at 03-33628382/8383 for appointment 2) To inform Serology Lab HPSF (Ext 354/357) once get appointment and to inform lab on the day of sending specimen.
87	HLA Typing for Disease Association per loci	Blood	2 EDTA	6.0 ml	(HLA Typing test request form(Disease association), IMR/AIRC/TI/RF-3	Transplantati on immunology unit, IMR	10 days	1) Test by appointment only. Please call HLA unit IMR at 03-33628382/8383 for appointment 2) To inform Serology Lab HPSF (Ext 354/357) once get appointment and to inform lab on the day of sending spesimen.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
88	HLA Typing 1) Class I (Loci A, B and C) - Low/medium resolution (SSO/SSPPCR) 2) Class I and II (Loci A, B and DR) - HSCT:New case/Add donor for existing case 3) Class I and II (Loci A, B, C, DR and DQ) -High Resolution:HSCT:Confirmatory Typing (CT)/Cord blood / MSCR search 4) Class I and II (Loci A, B, C, DR and DQ):Solid Organ :New Case/Add donor for existing case;HSCT: Confirmation (Low Resolution) 5) Class II(Loci DR,DQ) - Low/medium resolution (SSO/SSPPCR)	Fresh blood in room temperature (without ice)	EDTA tube	6.0 ml	HLA Typing Test Request Form; HLA Typing Test Request Form (Disease Association )	Transplantati on immunology unit, IMR	10 days	1) Test by appointment only. Please call HLA unit IMR at 03-33628382/8383 for appointment 2) To inform Serology Lab HPSF (Ext 354/357) once get appointment and to inform lab on the day of sending spesimen.
89	Human Papilomavirus (HPV) DNA PCR	Cervix	Flexible flocced swab	NA	PER-PAT 301	Institut Kanser Negara	14 days	Test indication: To detect HPV genotypes associated with cervical dysplasia and

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
								malignancy in clinically indicated cases: 1) Abnormal Pap smear or LBC results (eg; Atypical; Squamous Cells of Undetermined Significance (ASCUS), Low-Grade Squamous Intraepithelial Lesion (LSIL) 2) Follow up post treatment for CIN2/3 or cervical cancer 3) Investigation of cervical lesions on clinical examination.
90	Human T-cell lymphotropic virus (HTLV I & II Antibody) (ELISA)	Blood	Plain gel tube	2.0 ml	PER-PAT 301	Hospital Kuala Lumpur (HKL)	7 days	
91	Hydatid disease/Echinococcosis Serology	Blood	Plain gel tube/ EDTA (Sample in ice)	2.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
92	Immunoglobulin G subclasses (IgG1, IgG2, IgG3, IgG4)	Blood	Plain gel tube	2.0 - 3.0 ml	PID request form latest version 6.0	PID unit, IMR	21 days	
93	Influenza A & B/H1N1 detection (PCR)	Nasal swab, Throat swab	VTM	NA	PER-PAT 301	HSAJB	1-3 working days	
94	Interferon Gamma Release Assay (IGRA)	Blood	Special tubes	0.8-1.2ml per tube	TBIS 20A	MKAJB		To get referral through Klinik Sejahtera HPSF for healthcare worker For patient, to request through microbiologist for the collection of IGRA tubes
95	Japanese encephalitis Virus (JEV) Serology	Blood	Plain gel tube	5.0 ml	MKAK-BPU-U01/Rev20 18	MKAK Sungai Buloh	5 working days	
96	Japanese Encephalitis, JE RT-qPCR	Blood CSF	Plain gel tube / 3 EDTA tubes Bijou bottle	5.0 ml 1.0 ml	Virology test request form	Virology unit, IMR	10 days	
97	JC Virus (Human polyomavirus 2) PCR	CSF	Bijou bottle	1.0 ml	PER-PAT 301	Hospital Sungai Buloh	2-5 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
98	Legionella pneumophila Antigen	Urine	Sterile container	5.0 ml	PER-PAT 301	HSAJB	1-3 working days	
99	Leishmaniasis Microscopy	Blood	EDTA tube	2.5 ml	PER-PAT 301	Parasitology unit, IMR	3 days	
100	Leishmaniasis PCR	Blood skin scrapping/ tissue	EDTA tube Sterile container	2.5 ml	PER-PAT 301	Parasitology unit, IMR	7 days	Send sample in ice
101	Leishmaniasis Serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	
102	Leptospira Culture	Blood	EDTA/ Heparin tubes	5.0 ml	Leptospir is Laboratory Request Form (IMR/IDRC/ BACT/LEPT O/01)	Bacteriology unit, IMR	21 days	Send whole blood at room temperature. DO NOT FREEZE OR CHILL THE SAMPLE. Sampling should be done during acute febrile stage before antibiotic treatment.
103	Leptospiral MAT	Blood	Plain gel tube	5.0 ml	MKAJB LEPTOSPIR OSIS REQUEST FORM (D/WS/01-016)	MKAJB	21 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
104	Leptospirosis PCR	Blood in EDTA, Sterile body fluids, CSF, bronchial lavage, Tissue biopsies/post mortem samples. Urine*	Blood in EDTA; other samples in sterile container	2.0 ml	Leptospirosis Laboratory Request Form	Bacteriology unit, IMR	5 days	1) For better sensitivity, blood samplings should be taken during acute febrile stage prior to antibiotic treatment. 2) *Test for urine sample is by consultation ONLY(Please call IMR at 03-33628960)
105	Malaria PCR	Tissue sample	Sterile container	NA	PER-PAT 301	Parasitology unit, IMR	7 days	
106	Malaria PCR	Blood	EDTA tube	2.5 ml	PER-PAT 301	MKA JB	7	
107	MDR detection by Line probe assay (LPA)	Sputum, pleural fluid, bronchial aspirate	Sterile container	3-5 ml	Borang Permohonan Ujian Tibi TBIS 20C	MKAK Sungai Buloh	7 working days	For TB smear positive case only
108	Measles PCR and/or Rubella PCR	Urine, Nasopharyngeal aspirate, throat swab	Urine: Sterile container NPA: Sterile container; Throat swab: VTM	Urine: 10 ml; NPA: 1 ml	Measles &Rubella/C ongenital rubella syndrome (CRS)- Borang permohonan ujian makmal	MKA JB	7 working days	1) Specimen should be collected within 5 days from onset of illness. 2) Respiratory secretion should be taken 1-7 days of rash onset. 3) A brief concise history of illness and

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
					(MSLF: 02/Rev202 4)			physical findings is required especially the date of onset of illness and the date of specimen collection.
109	Measles Serology IgG	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	2-3 days	
110	Measles Serology IgM	Blood	Plain gel tube	5.0 ml	Measles &Rubella/C ongenital rubella syndrome (CRS)- Borang permohona n ujian makmal (MSLF: 02/Rev202 4)	MKAJB	5 working days	
111	Melioidosis Serology (Detection of Burkholderia pseudomallei IgM)	Blood	Plain gel tube	5.0 ml	IMR Bacteriolog y Request Form	Bacteriology unit, IMR	5 days	
112	Meningoencephalitis Multiplex PCR Panel (QIASTAT) Virus: Enterovirus,	CSF	Bijou bottle	1 ml	PER-PAT 301	Unit Mikrobiologi HSA JB	24-48 hours	To request to Clinical Microbiologist and to Inform lab first

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
	HSV1, HSV 2, Human parechovirus, Human Herpes virus 6, Varicella zoster virus) Bacteria: Streptococcus pneumoniae, Neisseria meningitidis, Streptococcus agalactiae, Listeria monocytogenes, Haemophilus influenzae, E.coli K1, Streptococcus pyogenes, Mycoplasma pneumoniae. Yeast: Cryptococcus neoformans/ gatii)							
113	MERS-COV PCR	Sputum, ETT aspirate, BAL,  Combined Nasopharyngeal & Oropharyngeal swab	Sterile container  Dacron Swab in VTM	2.0 - 5.0 ml  NA	PER-PAT 301	HSAJB	1-2 working days	Please consult on-call pathologist upon request
114	MERS-COV PCR	Organ biopsy	Sterile containers containing VTM or sterile normal saline	About 1.5 cm cubes from various parts of affected organs.	IMR Virology request form	Virology unit, IMR	1- 10 days	By Consultation only. Please call 03-33628960/ 03-33628114

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
			to keep tissue moist					
115	Monkey pox PCR	i) Lesion Fluid Aspirate ii) Lesion Fluid Swab iii) Lesion Roof iv) Scab/Crust v) Tonsillar Tissue Swab vi) Nasopharyngeal Swab	Sterile container, Dacron swab	1.5- 2.0ml	MKA form	MKA JB	1 - 5 days	To request to Clinical Microbiologist and to Inform lab first
116	Mumps Virus Serology (IgG, IgM)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	5 working days	
117	Mycobacterium leprae PCR	Skin incision/ punch biopsy	Sterile container	Minimum 4 mm x 12 mm skin incision or minimum 5 mm punch biopsy	Borang permohonan ujian kusta LIS102C (MKAK)	MKAK Sungai Buloh	7 days	
118	Mycobacterium leprae viability & Drug sensitivity test	Slit skin smear	Sterile container	NA	Mycobacterium leprae Viability & Drug Sensitivity Test Request Form	MKAK Sungai Buloh	31 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
119	Mycobacterium other than Tuberculosis (MOTT)	Sputum, pus, tissue, stool, FFPE block, urine, CSF, other body fluid.	Sterile container	For CSF and other body fluid 1-2mls	TB/MOTT Request Form (IMR/IDRC/BACT/TB/01)	Bacteriology unit, IMR	10 days	
120	Myositis antibody panel (autoimmune inflammatory myopathies panel) (Mi-2 $\alpha$ , Mi-2 $\beta$ , TIF1 $\gamma$ , MDA5, NXP2, SAE, Ku, PM-Scl100, PMScl75, Jo-1, SRP, PL-12, EJ, OJ and Ro-52)	Blood	Plain gel tube	Adult 5.0 ml paeds: 1.5-2.0 ml	PER-PAT 301	Hospital Selayang	40 days	
121	Nipah Virus Antibody	Blood CSF	Plain gel tube/ EDTA Bijou bottle	5.0 ml 1.0 ml	Virology test request form	Virology unit, IMR	1-10 days	
122	Paraneoplastic Neurological Syndrome (PNS) Panel: Anti-Amphiphysin, Anti-Ma, Anti-Yo, Anti-Ri, Anti-Hu, Anti-CV2	Blood CSF	Plain gel tube Bijou bottle	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	14 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
123	Parvovirus B19 PCR	Bone marrow aspirate Blood CSF	Sterile container Plain tube Bijou bottle	1.0-3.0 ml	MKAK-BPU-U01/Rev2018	MKAK Sungai Buloh	7 days	
124	Parvovirus IgG/IgM serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	5 working days	
125	Phospholipase A2 Receptor antibody (PLA2R)	Blood	Plain gel tube	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	21 days	
126	PID SCREENING: Dihydrorhodamine test (DHR)	Fresh blood in room temperature (without ice)	Lithium heparin tube	2 mL of fresh blood each from patient and unrelated healthy person	Primary Immunodeficiency (PID) Request Form	PID unit, IMR	10 days	1) By appointment only. Please call 03-33628386 for appointment. 2) To inform Serology Lab HPSF (Ext 354/357) once get appointment and to inform lab on the day of sending specimen.
127	PID SCREENING: Lymphocyte Proliferation Assay/Lymphocyte Transformation Test/	Fresh blood in room temperature (without ice)	EDTA	5 mL of fresh blood each from patient and unrelated	Primary Immunodeficiency (PID)	PID unit, IMR	10 days	1) By appointment only. Please call 03-33628386 for appointment. 2) To inform Serology

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
	Lymphocyte activation test (LAT)			healthy control	Request Form			Lab HPSF (Ext 354/357) once get appointment and to inform lab on the day of sending specimen.
128	PID SCREENING: Lymphocyte subset enumeration (TBNK)	Fresh blood in room temperature (without ice)	EDTA tube	2.0 ml	Primary Immunodeficiency (PID) Request Form	PID unit, IMR	5 days	1) By appointment only. Please call 03-33628386 for appointment. 2) To inform Serology Lab HPSF (Ext 354/357) once get appointment.
129	Pneumocystis jirovecii Genome Detection (PCR)	Induced Sputum; BAL	Sterile container	5.0 ml	PER-PAT 301	Hospital Sungai Buloh	2-5 working days	
130	Pneumocystis jirovecii pneumonia (PCP) Immunofluorescent Test	Induced Sputum; BAL, bronchial wash	Sterile container	2.0-5.0 ml	PER-PAT 301	HSAJB	5 working days	
131	Respiratory virus isolation and identification (Influenza A and B, Adenovirus, Respiratory Syncytial virus, Para influenza virus 1,2,3 and Human metapneumovirus)	i) Nasal aspirate/ wash. (NA/NW) ii) Nasopharyngeal aspirate/ wash. (NPA/NPW) iii) NPS iv) Throat/ Tonsillar/ Oropharyngeal swab.	i) NA/ NW/ NPA/ NPW/ Sputum/ TA/ ETA/ BW/ BAL/ Pleural fluid: Sterile leakproof container. ii) Swab specimens:	i) NA/ NW/ NPA/ NPW/ TA/ ETA: 1-3ml of aspirate or wash. ii) Sputum/ BW/ BAL/ Pleural Fluid: 1-3ml. iii)	IMR Virology form	Virology unit, IMR	14-28 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
		v) Sputum. vi) Tracheal aspirate. (TA) vii) Endotracheal aspirate. (ETA) viii) Bronchial wash. (BW) ix) BAL x) Tracheal/ Bronchial/ Lower airway/ Lung swab. xi) Tracheal/ Bronchial/ Lung tissue. xii) Pleural fluid. **Only respiratory specimens are accepted.	Sterile leakproof vial containing 2-3 ml of VTM. iii) Tissue biopsy/ autopsy: Sterile leakproof container containing VTM or sterile normal saline to keep tissue moist.	Swab specimens: Sterile plastic shafted polyester swab in VTM. iv) Tissue biopsy/ autopsy: About 1.5 cm cubes from various parts of affected organs.				
132	Rickettsia (Scrub Typhus) serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Hospital Sultan Ismail (HSIJB)	5 working days	
133	Rickettsia PCR (Scrub typhus / murine typhus / tick typhus)	Blood Tissue (eschar biopsy) Eschar swab	Blood in EDTA; Tissue (eschar) in sterile container Eschar swab	5.0 ml	Rickettsia Request Form (IMR/IDRC/ BACT/RICK/ 02)	Bacteriology unit, IMR	5 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
			dacron swab in VTM					
134	Rubella IgG/IgM serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	3 working days	
135	SARS-CoV-2 RTqPCR	CSF Pleural fluid Lung/heart/brain tissue	Bijou bottle Sterile container Tissue: sterile leakproof vial containing 2-3 ml of VTM	CSF: 1 ml Pleural fluid: 1- 3 ml	Imr virology test request form	Virology unit, IMR	1 - 10 days	
136	Schistosomiasis Serology	Blood	Plain gel tube / EDTA tube	5.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	
137	Sexually-Transmitted Disease (STD) Panel Real Time PCR (Chlamydia trachomatis, Neisseria gonorrhoea, Mycoplasma genitalium, Ureaplasma urealyticum, Ureaplasma parvum, Mycoplasma hominis).	First catch Urine	Sterile container	>20ml	PER-PAT 301	HSAJB	7 -14 working days	Need to request to Dermatology specialist (gate keeper) Prior to urine sampling, patients should not urinate for at least 1 hour and should not clean the genital area.
138	Skin Antibodies Panel: Anti-BP 180, Anti-BP- 230, Anti-Desmoglein 1 & Anti-Desmoglein 3	Blood	Plain gel tube	5.0 ml	Autoimmu ne request form	Autoimmune unit, IMR	14 days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
139	Soluble CD25 (sCD25)	Blood	Plain gel tube	2.0 - 3.0 ml	PID request form latest version 6.0	PID Unit, IMR	21 working days	By appointment only. Please call 03-3362 8386/ 03-3362 7412/ 03-3362 7406/ 03-3362 7746/03-3362 7747//03-3362 8815
140	Specific Liver Antibodies (SLA) Panel: Anti-AMA-M2, M2 3E/BPO, Sp100, PML, gp210, LKM1, LC-1, SLA/LP, Ro-52	Blood	Plain gel tube	5.0 ml	Autoimmune request form	Autoimmune unit, IMR	14 days	Compulsory to have Tissue antibodies result prior to send for this test (To attach result with request form)
141	Taeniasis/Cysticercosis Serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	
142	TB identification & Antibiotic Susceptibility Test	Sputum, Sterile fluid, Tissue, Pus, Blood BAL	Sterile container	3.0 ml	Borang Permohonan Ujian Tibi TBIS 20C	MKAK Sungai Buloh	31 days	
143	TB liquid (Bactec) culture	Sputum/body fluid/tissue/pus	Sterile container	5.0 ml	PER-PAT 301	HSAJB	Liquid media culture MGIT Myco F Lytic-42days, Solid	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
							media(LJ) - 8 weeks	
144	TB PCR	Sputum, bronchial wash, body fluids, Blood	Sterile container Plain tube	at least 5.0 ml 5.0 ml	Borang Permohonan Ujian Tibi TBIS 20C	MKAK Sungai Buloh	7 working days	
145	TB targeted NGS for drug susceptibility test	Culture Sputum (AFB positive or GeneXpert positive : high/moderate)	Sterile container		TB NGS Laboratory request form	IMR Bacteriology unit	4 weeks	Kes TB yang tidak responsif terhadap rawatan selama 3 bulan. Kes perlu dirujuk kepada Pakar perunding respiratori IMR (03-40232966 ext 107/ 013- 3401564)
146	Tissue Antibodies (TA) Panel: Anti-Gastric Parietal Cell Antibody (APC), Anti- Mitochondrial Antibodies (AMA), Anti- Smooth Muscle (ASMA), Anti Liver Kidney Microsomal (LKM)	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	10-14 working days	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERRAL LAB	LTAT REFERRAL LAB	REMARKS
147	TORCHES SCREENING (toxoplasma, rubella, cytomegalovirus, HSV)	Blood	Plain gel tube	5.0 ml	TORCHES Programme Form	HSAJB	5 working days	
148	Toxocariasis Serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	
149	Toxoplasma serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	1-3 working days	
150	Trichinellosis Serology	Blood	Plain gel tube / EDTA tube	5.0 ml	PER-PAT 301	Parasitology unit, IMR	5 days	
151	Trypanosomiasis Microscopy	Blood	EDTA tube	2.5 ml	PER-PAT 301	Parasitology unit, IMR	3 days	
152	Tryptase test	Blood	Plain gel tube	5.0 ml	IMR Allergy request form	Allergy unit, IMR	14 days	
153	Varicella zoster (VZV) PCR	Blood, CSF Vesicle for STI	Blood: 3 EDTA tube, CSF: Bijou bottle Dacron swab	Blood: 5 ml; CSF: 1ml	PER-PAT 301	Virology unit, HKL	7 working days	
155	Varicella Zoster Virus (VZV) IgG/IgM serology	Blood	Plain gel tube	5.0 ml	PER-PAT 301	HSAJB	5 working days	
155	ZIKA Virus PCR	Blood Urine	Plain gel tube Sterile container	3.0 -5.0 ml 5.0- 10 ml	PER-PAT 301	HSAJB	1-3 working days	Blood sample MUST sent together with urine sample.

**LIST OF TESTS**

# **HEMATOLOGY**

**LIST OF HEMATOLOGY IN-HOUSE TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
1	Activated Partial Prothrombin Time (APTT)	Plasma	Sodium Citrate	1.8 ml - 2.7 ml according to brand of tube (Collect until indicated mark)	PER-PAT 301	Routine: 4 hours Stat :1 hour	Sample must be sent within 4 hours prior to sample collection
2	Bone Marrow Aspiration (BMA)	Marrow	Bone marrow direct smeared onto slide	10 slides	PER-PAT 301	Routine: 7 days Urgent: 3 days	-Consultation and grant from Hematopathologist required. -Once approved, kindly inform Haematology lab -Specialist signature on the request forms is required.
3	Coagulation Profile [Prothrombin Time (PT), Activated Partial Prothrombin Time (APTT) and International Normalised Ratio (INR)]	Plasma	Sodium Citrate	1.8 ml - 2.7 ml according to brand of tube (Collect until indicated mark)	PER-PAT 301	Routine: 4 hours Stat: 1 hour	Sample must be sent within 4 hours prior to sample collection
4	D-Dimer (Quantitative)	Plasma	Sodium Citrate	1.8 ml - 2.7 ml according to brand of tube (Collect until indicated mark)	PER-PAT 301	Routine: 4 hours Stat: 1 hour	-Sample must be send within 2 hours prior to sample collection -Grant from Pathologist general on call is required

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
5	Erythrocyte Sedimentation Rate (ESR)	Blood	EDTA	2 ml – 3 ml	PER-PAT 301	24 hours	-Any request should be sent separately from other test (Sample must be accompanied with a request form) -Sample must be send within 4 hours prior to sample collection
6	Fibrinogen	Plasma	Sodium Citrate	1.8 ml - 2.7 ml according to brand of tube (Collect until indicated mark)	PER-PAT 301	Routine: 4 hours	-Sample must be send within 2 hours prior to sample collection -Grant from Pathologist general on call is required
7	Full Blood Count (FBC)	Blood	EDTA	2 ml – 3 ml	PER-PAT 301	Routine: 4 hours Stat: 45 minutes	Sample must be sent within 4 hours prior to sample collection
8	Full Blood Picture (FBP)	Blood	EDTA	2 ml – 3 ml	PER-PAT 301	Routine: 7 days Urgent: 24 Hours	-Sample must be send within 4 hours after sample collection -Request form must provide relevant clinical history, date and time of sample collection -Urgent request needs grant from Medical Officer in charge of PBF/on call.
9	G6PD (Qualitative)	Blood spot	Blood spot on filter paper	NA	PER-PAT 301	6 hours	-Blood spot need to be properly dried before sent to lab
10	Kleihauer test	Blood	EDTA	2.0ml - 3.0ml	PER-PAT 301	24 hours	-Test only offered during office hour. -Grant from Hematopathologist is required. -Specimen must be collected from baby's mother.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
							-Please arrange and provide cord blood sample (for positive control) as well.
11	Mixing Test	Plasma	Sodium Citrate	1.8ml - 2.7ml according to brand of tube (Collect until indicated mark) x (2 tubes)	PER-PAT 301	24 hours	- To call Hematopathologist for appointment -Sample must be send within 2 hours of sample collection -Test only offered during office hour.
12	Prothrombin Time (PT) and International Normalised Ratio (INR)	Plasma	Sodium Citrate	1.8ml - 2.7ml according to brand of tube (Collect until indicated mark)	PER-PAT 301	Routine: 4 hours Stat: 1 hour	Sample must be sent within 4 hours prior to sample collection
13	Reticulocyte Count	Blood	EDTA	2ml - 3ml	PER-PAT 301	Routine: 4 hours Stat: 1 hour	EDTA Paediatrics tube is available for paediatrics patient
* Any discrepancies or inquiry regarding sample requirement or test offered, please call Hematology Laboratory at ext. 298.							

**LIST OF HEMATOLOGY SEND AWAY TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
1	Acute Myeloid Leukaemia Mutation Studies	Blood/Bone marrow	EDTA	2.5 - 5ml	Molecular Analysis for haemato-oncology request form (Version 3.0)	CaRC IMR, NIH	30 working days	Newly diagnosed Acute Myeloid Leukaemia case only
2	ADAMTS 13 study	Blood	Sodium Citrate	Collect until indicated mark x 3 tube	Hospital Ampang Special Hematology Lab Requisition Form.	Hospital Ampang	6 weeks	Deliver tubes immediately to the laboratory at room temperature.
3	Alagille Syndrome (JAG-1) -Deletion/Duplication	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
4	Anti Xa	Blood	Sodium Citrate	Collect until indicated mark x 2 tube	Hospital Ampang Special Hematology Lab Requisition Form.	Hospital Ampang	2 weeks	-Requester to arrange appointment with MRKH, Hospital Ampang -Deliver tubes immediately to the laboratory at room temperature.
5	Array comparative genomic hybridization (CGH Microarray)	Blood	EDTA	6.0 ml	Borang Permohonan Ujian Molecular HTA/PAT/GEN /PK-01-02	Molecular genetic Lab Hospital Tunku Azizah	3-6 months	Granted by Hospital Tunku Azizah

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
6	BCR/ABL Qualitative (For suspected CML only)	Blood/Bone marrow (Before starting therapy)	EDTA	PB: min 10 ml B<: 1-2 ml	Hospital Ampang Special Hematology Lab Requisition form.	Hospital Ampang	4 weeks	Suspected Chronic Myeloid Leukaemia case
7	BCR:ABL1 Qualitative Diagnostic Analysis	Blood/Bone marrow	EDTA	2.5 - 5ml	Molecular Analysis for haemato-oncology request form (Version 3.0)	CaRC IMR, NIH	7 working days	Suspected Chronic Myeloid Leukaemia at diagnosis
8	BCR:ABL 1 Kinase Domain Mutation Analysis	Blood/Bone marrow	EDTA	2.5 - 5ml	Molecular Analysis for haemato-oncology request form (Version 3.0)	CaRC IMR, NIH	30 working days	Chronic Myeloid Leukaemia case on TKI
9	CD20 Enumeration	Blood	EDTA	2.0 ml x 2 tubes	PER-PAT 301	Hospital Sultanah Aminah	2 weeks	-Please contact Haematopathologist On-Call HSA for appointment. -Transport samples within 4 hours of blood collection with ice pack (20-25°C). Avoid direct contact with ice.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
10	CD4 / CD8 enumeration	Blood	EDTA	3 ml	PER-PAT 301	Hospital Sultanah Aminah	5 days	-Request form must include the following information: a) Date of latest CD4 / CD8 count b) Date of specimen taken c) Date of HAART treatment started -Need to book appointment via MOPC HPSF Muar before sending sample to lab hematology -Need fresh sample, please send sample to hematology lab on Wednesday latest by 4.00 pm
11	Constitutional Conventional Cytogenetics	Blood	Lithium Heparin	3-5 ml Storage: 2-8 degrees	Borang Permohonan Ujian Cytogenetic HTA/PAT/GEN /PK-01-01	Hospital Tunku Azizah	Urgent: 10 working days Routine: 30-60 days	-Test should be requested by specialist only. -Need to get appointment from Genetic lab, HTAKL for urgent request -Need fresh sample and to call Hematology lab, before sending sample.
12	DNA Analysis for Alpha Globin gene, Beta Globin gene and hemoglobinopathies (Hb E, Hb C and Hb S only)	Blood	EDTA	Adult: 2.5ml Pediatrics: 0.5 ml	DNA analysis for thalassemia syndrome & hemoglobinopathies	HKL	90 days	All request form must be accompanied with latest FBC (within 3 months) and detailed Hb analysis result

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
13	DNA Analysis for Thalassemia syndromes, hemoglobinopathies and further testing for Alpha and Beta Globin gene.	Blood	EDTA	Adult: 2.5ml Infant: 0.5ml	DNA analysis for thalassemia syndromes and hemoglobinopathies	CaRC IMR, NIH	120 working days	-For pediatrics patient: All request form must be accompanied with latest (within 3 months) FBC and detailed Hb analysis result of patient and parents. -Adult patient: All request form must be accompanied with latest FBC (within 3 months) and detailed Hb analysis result
14	DNA for extraction & storage	Blood	EDTA	6 ml	Borang Permohonan Ujian Molecular HTA/PAT/GEN /PK-01-02	Molecular genetic Lab Hospital Tunku Azizah	For storage purpose	Need grant/appointment from molecular genetic laboratory, HTAKL
15	Duchenne Muscular Dystrophy (DMD)	Blood	EDTA	6.0 ml Storage: 2-8 degrees	Borang Permohonan Ujian Molecular HTA/PAT/GEN /PK-01-02	Molecular genetic Lab Hospital Tunku Azizah	3-6 months	-Test should be requested by specialist only. -Need fresh sample and to call Hematology lab, before sending sample.
16	Factor II/ Factor V/Factor VII/ Factor X /Factor XI/Factor XII/Factor XIII Activity Assay	Blood	Sodium Citrate	Collect until indicated mark (2 tube for each Factor)	PER-PAT 301	Hospital Tunku Azizah	21 days	-To write detailed clinical history in request form

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
17	Factor IX Assay	Blood	Sodium Citrate	Collect until indicated mark x 2 tube	PER-PAT 301	Hospital Sultanah Aminah	Urgent: 1-3 days Routine: 4 weeks	-Must write date and time sample taken/ Transfusion date/pre or post factor sample). -Please contact Haematopathologist HSAJB On-Call for urgent case
18	Factor VIII Assay	Blood	Sodium Citrate	Collect until indicated mark x 2 tube	PER-PAT 301	Hospital Sultanah Aminah	Urgent: 1-3 days Routine: 4 weeks	-Must write date and time sample taken/ Transfusion date/pre or post factor sample). -Please contact Haematopathologist HSAJB On-Call for urgent case
19	Factor VIII/Factor IX Inhibitor Assay	Blood (Plasma)	Sodium Citrate	Collect until indicated mark x 4 tube	PER-PAT 301	Hospital Sultanah Aminah	Urgent: 1-3 days Routine: 4 weeks	-Please contact Haematopathologist HSAJB On-Call for urgent case
20	Floating Harbor Syndrome (SRCAP)-Hotspots	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
21	Fragile X Syndrome (FRAXA) FMR1 Disorders (Fragile X Syndrome, FXTAS, FXPOI, FXAND) (CGG Repeat Analysis – FMR1)	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By Consultation only
22	G6PD Quantitative Assay	Blood	EDTA	2ml	PER-PAT 301	Hospital Melaka	7 days	-Reticulocytes count shall be <5% (neonate), <2.5%

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
								(pediatrics & adult) -To call Hematology lab HPSF before sending sample
23	Genetic disorders	Blood	EDTA	6.0 ml Storage: 2-8 degrees	Borang Permohonan Ujian Cytogenetic HTA/PAT/GEN /PK-01-01	Hospital Tunku Azizah	3-6 months	Kindly contact Genetic lab for further information prior sending sample
24	Hemato-Oncology Conventional Cytogenetics	Bone marrow (First aspirate)	Sodium Heparin	3-5 ml	Borang Permohonan Ujian Cytogenetic	Hospital Tunku Azizah	Urgent: 10 working days	Request form must be complete and signed by specialist
25	Hemato-Oncology Conventional Cytogenetics (CLL Only)	Peripheral blood (CLL only)		Storage: 2-8 degrees	HTA/PAT/GEN /PK-01-01		Routine: 30-60 days	Sample must reach HTA Genetic Laboratory within 48 hours after sample collection in an ice-packed container. Reflex testing: Haemato-oncology molecular cytogenetic fluorescence in situ hybridization (FISH) if indicated.
26	Hemophilia A & B genetic testing	Blood	EDTA	3 ml	Hemophilia Genetic Testing Request Form	CaRC IMR, NIH	60 working days	-Shall have a copy of the factor assay test result and factor inhibitor test result -Family tree need to be included.

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
27	Hemoglobin Analysis	Blood	EDTA	3 ml	PER-PAT 301	Hospital Sultanah Aminah	28 days	-Must write latest Iron profile and serum Ferritin results if patient anemic. -Shall include index case details (Name, ID No., Diagnosis, relationship with index case) if for cascade screening
28	Immunophenotyping (IPT)	Bone marrow/ blood	EDTA	6.0 ml BM-1 direct smear/1 MGG stained smear PB- 1 Leishman-stained slide	PER-PAT 301	Hospital Sultanah Aminah	5 working days (All urgent reports - Verbal report within 24 hours)	For peripheral blood sample - please consult Hematopathologist in charge / oncall before sending sample.
29	Immunophenotyping- Double Negative T cells	Blood	EDTA	2.0 ml x 2 tubes	PER-PAT 301	Hospital Tunku Azizah	21 days	-Inform Hematology lab before sending sample. -Needs fresh sample (within 24 hours) -Transport at RT (20-24°C), within 48 hours of collection.
30	Immunophenotyping for Paroxysmal Nocturnal Hemoglobinuria (PNH)	Blood	EDTA	2.0 ml x 2 tubes	PER-PAT 301	Hospital Tunku Azizah	21 days	-Inform Hematology lab before sending sample. -Needs fresh sample (within 24 hours)

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
31	Inherited Thrombophilia screening panel (Protein C, Protein S, Antithrombin & APCR)	Blood	Sodium Citrate	Collect until indicated mark x 3 (pediatrics), 4 tubes (adult)	PER-PAT 301	Hospital Tunku Azizah	6 weeks	Must follow Guideline for Thrombophilia Testing
32	JAK 2/Calreticulin	Blood/ Bone marrow	EDTA	PB: 5.0 ml BM:1-2 ml	Hospital Ampang Special Hematology Lab Requisition Form.	Hospital Ampang	8 weeks	Referral lab will proceed for Calreticulin if JAK2V617F mutation negative
33	Leukaemia Translocation Study	Bone marrow/ Blood	EDTA Sample must be accompanied with unstained bone marrow slide	2.5 - 5ml	Molecular Analysis for haemato-oncology request form (Version 3.0)	CaRC IMR, NIH	7 working days	For Acute leukemia case at diagnosis or relapse only
34	Lupus Anticoagulant	Blood	Sodium Citrate	Collect until indicated mark x 5 tubes	PER-PAT 301	Hospital Sultanah Aminah	4 weeks	Please adhere the Checklist for Thrombophilia testing in the Appendix (HSAJB/PAT-18/VER3.0/2022)

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
35	<b>MELAS</b> (Mitochondrial Encephalomyopathy, Lactate Acidosis and Stroke-like Episode) - Full panel	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
36	Molecular Quantitation of Major BCR-ABL1 (p210) for Chronic Myeloid Leukaemia (CML) Patients	Blood/Bone marrow	EDTA	2 ml x 3 tubes	PER-PAT 301	Hospital Sultanah Aminah	7 days	Chronic Myeloid Leukaemia case (Follow up only).
37	Minor BCL-ABL (By Quantitative RT-PCR)	Bone marrow aspirate	EDTA	4 ml	Hospital Ampang Special Hematology Lab Requisition Form.	Hospital Ampang	7 weeks	Chronic Myeloid Leukaemia case (Follow up only)
38	Noonan Syndrome (PTPN11)	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
39	Osmotic Fragility Test (OFT)	Blood	Lithium Heparin EDTA	4.0 ml 2 tube	PER-PAT 301	Hospital Sultanah Aminah	2 weeks	-Any request should be granted by Hematopathologist On-call HSAJB and get appointment from the Hematology laboratory HSAJB. -Deliver sample immediately to the laboratory

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
								at room temperature. - Sample should not exceed 4 hours after blood taking.
40	PDGFRA/B for Hypereosinophilia cases	Bone marrow/Blood	Sodium heparin	BM: 2 tube Blood: 4 tubes	Hospital Ampang Special Hematology Lab Requisition.	Unit Genetic Hospital Ampang	18 days	Need grant by MRKH, Hospital Ampang
41	Prader Willi Syndrome (SNRPN)	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
42	SCN1A-Related Seizure Disorders (SCN1A)	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
43	Serum erythropoietin	Blood	Gel Tube	5.0 ml Serum (min 1.5 ml)	Hospital Ampang Special Hematology Lab Requisition Form.	MRKH, Hospital Ampang	MDS: 8 weeks MPN & PRV: 12 weeks	Deliver tubes immediately to the laboratory at room temperature.
44	Spinal Muscular Atrophy (SMA) Sequencing	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	5 months	By appointment / consultation only
45	Spinocerebellar Ataxia (SCA) - Full Panel (CAG Repeat Analysis - SCA1, SCA2, SCA3, SCA6, SCA7)	Blood	EDTA	2-5 ml	IMR/SDC/UM D/REQUEST FORM	IMR	6 months	By appointment / consultation only

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	REFERENCE LAB	LTAT	REMARKS
46	Molecular Red Cells Membrane Disorder (Southeast Asian Ovalocytosis)	Blood	EDTA	Adult- 3 ml, Pediatrics – 1 ml	PER-PAT 301 with consent form	Hospital Sultanah Bahiyah Kedah	6 weeks	-Need grant by Hemapathologist -Sample accepted every Monday and Tuesday only before 4:00 PM -FBP report must be submitted together with FBC parameters (dated within the last 3 months)
47	Von Willebrand Factor (VWF) Profile	Blood	Sodium Citrate	Collect until indicated mark x 3 tubes	PER-PAT 301	Hospital Tunku Azizah	4 weeks	-

**LIST OF TESTS**

**ANATOMIC**

**PATHOLOGY**

**(HISTOPATHOLOGY)**

**LIST OF HISTOPATHOLOGY IN-HOUSE TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
1	Histochemistry stain	Surgical resected specimen / tissue paraffin block / cell block	Plain container with 10% formalin/ tissue paraffin block	As collected	PER-PAT 301		
2	Histopathology Examination (HPE)	Surgical resected specimen	Plain container with 10% formalin	As collected	PER-PAT 301	<p><b>Urgent Biopsy without ancillary test:</b> 3 working days</p> <p><b>with ancillary test:</b> 14 calender days</p> <p><b>Non Urgent Biopsy &amp; Medium to Complex Specimen:</b> 14 calender days</p>	
3	Histopathology Examination (HPE) - Block	Tissue cassette /paraffin block	Tissue cassette	As collected	PER-PAT 301	<p><b>Urgent Biopsy without ancillary test:</b> 3 working days</p> <p><b>with ancillary test:</b> 14 calender days</p> <p><b>Non Urgent Biopsy &amp; Medium to Complex Specimen:</b> 14 calender days</p>	

<b>NO</b>	<b>TEST</b>	<b>SPECIMEN TYPE</b>	<b>TUBE/ CONTAINER</b>	<b>VOLUME</b>	<b>REQUEST FORM</b>	<b>LTAT</b>	<b>REMARKS</b>
4	Immunofluorescence test	Fresh tissue (renal / skin/ Soft tissue dental)	Plain container with PBS into the ice box with ice pack	As collected	PER-PAT 301	14 Calendar day	
5	Intraoperative Frozen section	Fresh tissue	Universal container into the ice box with ice pack	As collected	PER-PAT 301	30 minute after receiving sample	Depends on number of specimen
6	Immunohistochemistry stain	Surgical resected specimen / tissue paraffin block / cell block	Plain container with 10% formalin/ tissue paraffin block	As collected	PER-PAT 301		

**LIST OF HISTOPATHOLOGY SEND-AWAY TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
<b>IMMUNOHISTOCHEMISTRY</b>								
1.	AFP	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
2.	BETA CATENIN	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
3.	BHCG	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
4.	C1Q	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
5.	C3	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
6.	C4D	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
7.	CD 19	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
8.	CK 19	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) And Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
9.	DS-40	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
10.	EBV	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
11.	GLYPICAN 3	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
12.	HEPAR 1	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
13.	HHV-8	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
14.	Ig A	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
15.	MUC	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
16.	OCT	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
17.	OCT 314	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
18.	PLAP	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
19.	SV40	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
20.	STAT-6	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
21.	TLE 1	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
22.	WARTHIN STARY	5X UNSTAINED SLIDES	NA	5 slides	Request Form For Immunohistochemistry (IHC) and Histochemistry Test	Patologi Anatomi HKL	14 Calendar day	
<b>MOLECULAR TESTING</b>								
<b>FISH TESTING</b>								
23.	HER 2	1 PARAFFIN BLOCK, 1 H&E SLIDE, 1 Her-2 SLIDE	NA	NA	Referral Letter	Patologi Anatomi HKL	14 Calendar day	Reflex testing when IHC HER 2 test is equivocal (2+)
<b>NEUROPATHOLOGY</b>								
24.	1p19q	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
25.	MYCN	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE,1 PARAFFIN BLOCK	NA	NA	Request Form For Molecular Testing	Molecular Histopatholog y HKL	30-90 Calendar day	
<b>SOFT TISSUE TUMOUR</b>								
26.	CDK4	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
27.	EWSR1	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
28.	MDM2	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
29.	SS18	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
<b>LYMPHOMA</b>								
30.	CMYC	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
<b>PCR AND SEQEUNCING TEST</b>								
31.	ALK, ROS1	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN SITOGENETIK (HTA/PAT/GEN/PK-01- 01)	Molecular Genetic Lab Hospital Tunku Azizah	30-90 calendar day	
32.	BRAF	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30 calendar day	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
33.	Breast/ Ovarian gene panel	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01- 02)	Molecular Genetic Lab Hospital Tunku Azizah	30-90 calendar day	
34.	Colorectal/ gastric cancer gene panel	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01- 02)	Molecular Genetic Lab Hospital Tunku Azizah	30-90 calendar day	
35.	EGFR	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01- 02)	Molecular Genetic Lab Hospital Tunku Azizah	30 calendar day	
36.	Fungal PCR	TISSUE RIBBON	STERILE CONTAINER	5-10 ribbon tissue	MYCOLOGY REQUEST FORM(IMR/IDRC/BACT/ MYCO/01	IMR (NIH)	30 calendar day	
37.	IDH1/2	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
38.	KRAS	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01- 02)	Molecular Genetic Lab Hospital Tunku Azizah	90 calendar day	

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
39.	KRAS (Sequencing)	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopathology HKL	30-90 calendar day	
40.	Leptospira PCR	TISSUE RIBBON	STERILE CONTAINER	5-10 ribbon tissue	IMR/IDRC/BACT/LEPTO/ 01	IMR (KL)	30 Calendar day	
41.	Lung cancer gene panel	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01- 02)	Molecular Genetic Lab Hospital Tunku Azizah	30-90 calendar day	
42.	MGMT	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopathology HKL	30-90 calendar day	
43.	MSI testing	5X UNSTAINED SLIDES	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01- 02)	Molecular Genetic Lab Hospital Tunku Azizah	30-90 calendar day	
44.	MTB PCR	TISSUE RIBBON	STERILE CONTAINER	5-10 ribbon tissue	BACTERIOLOGY REQUEST FORM (LAMPIRAN 1)	IMR (NIH)	30 calendar day	
45.	Muscle biopsy	FRESH TISSUE	NA	0.5 x 1mm	PERPAT 301	Patologi Anatomi HKL	30 calendar day	By appointment

NO	TEST	SPECIMEN TYPE	TUBE/ CONTAINER	VOLUME/ SLIDE	REQUEST FORM	EXTERNAL REFERRAL LAB	LTAT	REMARKS
46.	RAS Extension	1 COPY PATIENT HPE REPORT, 1 H&E SLIDE, 1 PARAFFIN BLOCK	NA	NA	REQUEST FORM FOR MOLECULAR TESTING	Molecular Histopatholog y HKL	30-90 calendar day	
47.	<b>SOFT TISSUE DENTAL FOR HPE</b>	Surgical resected specimen	plain container with 10% formalin	NA	PERPAT 301	HSAJB/NIH	<b>Urgent &amp; Simple specimen without ancillary test:</b> 5 working days <b>Non Urgent &amp; Medium to Complex Specimen:</b> 14 working days	

**LIST OF TESTS**

**ANATOMIC**

**PATHOLOGY**

**(CYTOLOGY)**

**LIST OF CYTOLOGY IN-HOUSE TESTS**

<b>NO</b>	<b>TEST</b>	<b>SPECIMEN TYPE</b>	<b>TUBE/CONTAINER</b>	<b>VOLUME</b>	<b>REQUEST FORM</b>	<b>LTAT</b>	<b>REMARKS</b>
1	Ascites fluid for cytology	Ascites fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C
2	Bronchial alveolar lavage (BAL) for cytology	BAL fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C
3	Bronchial brushing for cytology	Bronchial fluid	Place smeared slides in a closed container containing 95% ethyl alcohol (minimum 30 minutes)	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Minimum 2 slides.
4	Bronchial washing for cytology	Bronchial fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C
5	Cerebrospinal fluid (CSF) for cytology	Cerebrospinal fluid (CSF)	Sterile bijou bottle	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delay is anticipated, keep refrigerated at 4°C

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
6	Cystic fluid for cytology	Cystic fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C.
7	Eye fluids for cytology	Eye fluid	Sterile bijou bottle	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delay is anticipated, keep refrigerated at 4°C
8	Fine Needle Aspiration for cytology (FNAC)	Breast, thyroid, salivary glands, lymph node, other superficial lumps or palpable lumps. Deep seated masses or non palpable lump (with radiological imaging guided)	Send patient to surgical clinic (SOPD)/ ultrasound room/ CT room	Direct smear	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	FNA done by appointment, FNAC with radiological imaging guided to call radiology department.

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
9	Nipple discharge for cytology	Nipple discharge	Placed smeared slides in clean container that contained 95% ethyl alcohol.	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Minimum 2 slides.
10	Pap smear - Liquid based for cytology (LBC)	Cervical/ Vagina smear	BD SurePath Vial	As collected	PS 1/98 (Pindaan 2019)	Non urgent / Urgent: 14 working days.	Detached brush head in BD Surepath vial.
11	Pap smear - Conventional	Cervical/ Vagina smear	Slides	As collected	PS 1/98 (Pindaan 2019)	Non urgent / Urgent: 14 working days.	Fixed slide with 95% alcohol.
12	Pericardial fluid for cytology	Pericardial fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C
13	Peritoneal fluid for cytology	Peritoneal fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C
14	Pleural for cytology	Pleural fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	LTAT	REMARKS
15	Seminal fluid analysis (SFA)	Seminal fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent / Urgent: 14 working days.	Send early morning and within 1 hour after collection. SFA need by appointment (Every Tuesday)
16	Sputum for cytology	Sputum	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Fresh morning specimen produces from deep cough (minimum of 3 samples over 3 consecutive days). Send fresh sample immediately
17	Synovial fluid for cytology	Synovial fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delayed is anticipated fix 20ml of specimen with equal volume of 50% ethyl alcohol & refrigerate at 4°C
18	Urine for cytology	Urine	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. 50-100ml freshly voided urine preferable mid-morning. (Avoid urine as cells are too degenerate for microscopy)
19	Vitreous fluid for cytology	Vitreous fluid	Sterile specimen container	As collected	PER PAT 301 (Duplicated form)	Non urgent: 14 working days / Urgent: 3 working days	Send immediately. If delay is anticipated, keep refrigerated at 4°C

**LIST OF CYTOLOGY SEND AWAY TESTS**

<b>NO</b>	<b>TEST</b>	<b>SPECIMEN TYPE</b>	<b>TUBE/ CONTAINER</b>	<b>VOLUME</b>	<b>REQUEST FORM</b>	<b>EXTERNAL REFERRAL LAB</b>	<b>LTAT</b>	<b>REMARKS</b>
1	EGFR test	Cell block	NA	5 slides of biopsied tissue cut at 5mm thickness	BORANG PERMOHONAN UJIAN MOLEKULAR (HTA/PAT/GEN/PK-01-02)	Molecular Genetic Lab Hospital Tunku Azizah	30 Calendar day	
2	Pap smear - Liquid based for cytology (LBC)	Cervical/ Vagina smear	BD SurePath Vial	As collected	PS 1/98 (Pindaan 2019)	Hospital Pakar Sultanah Aminah Johor Bahru (HSAJB)	14 Calendar day	Send away for processing only

**LIST OF TESTS**

**TRANSFUSION**

**MEDICINE**

**LIST OF TRANSFUSION MEDICINE TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	REMARKS
1	ABO & RhD Grouping	Blood	K2 EDTA	2-3 ml	PER PAT 301	N/A
5	ABO Antibody Titre	Blood	K2 EDTA	2-3 ml	PER PAT 301	Need grant from TMS
4	Coomb's Test	Blood	K2 EDTA	2-3 ml	PER PAT 301	N/A
3	Group and Crossmatching	Blood	K2 EDTA	2-3 ml	PER-SS-BT 105 ( Pind. 1/2016)	Need code from MO
2	Group, Screen and Hold	Blood	K2 EDTA	2-3 ml	PER-SS-BT 105 ( Pind. 1/2016)	N/A

**LIST OF SEND AWAY TRANSFUSION MEDICINE TESTS**

NO	TEST	SPECIMEN TYPE	TUBE/CONTAINER	VOLUME	REQUEST FORM	EXTERNAL REFERRAL LAB	REMARKS
1	Antibody identification	Blood	K2 EDTA & Plain Tube	10 ml	PER PAT with or without GXM	HSAJB / PDN	N/A
2	Investigation for TRALI	Blood	K2EDTA Tube & Plain Tube / Gel Separator tube	12 ml for donor & recipient	PDN/HI/QP-02/11 & PDN/HI/QP-02/12	PDN	Form need to be downloaded from PDN Website. Need to spoken to TMS oncall PDN
3	Platelet Immunology Test	Blood	K2 EDTA & Plain Tube	10 ml	PDN/IH/QP05/02	PDN	Form need to be downloaded from PDN Website. Need to spoken to TMS oncall PDN
4	RBC / Platelet Genotyping	Blood	EDTA, non gel tube :	2-4mL	PDN-Immunohematology Test Request form PDN/IH/QP-05/01	PDN	Form need to be downloaded from PDN Website. Need to spoken to TMS oncall PDN