SSB HOSPITAL LABORATORY

CLINICAL LABORATORY SERVICES

The laboratory provides a range of services which includes phlebotomy, specimen receiving, lab testing, blood donation, supply distribution and mortuary services.

Phlebotomy services are provided in the hospital and in the outlying health centres (Seria and Sungai Liang). Specimens are received from location within the hospital and from Health facilities in the Belait district (Health centres, Health Department, Lumut Army medical clinics and Gurkha medical clinics). Laboratory testing are done for routine tests in the disciplines of Clinical Chemistry, Haematology, Transfusion and Microbiology. Tests which are not done in the Laboratory will be referred to Reference Laboratories in RIPAS Hospital and Sumbiling Biomedical Research. The laboratory stocks and distributes laboratory consumables to relevant locations by request. Incoming donors are accepted for blood donation.

Address

Laboratory & Blood Bank
1st Floor, Block B,
SSB Hospital,
Kuala Belait,
KA1131

Phlebotomy
Ground Floor, Block A,
SSB Hospital,
Kuala Belait,
KA1131

Contact

Telephone	3335331, 3335961
Head of Section	EXT 4106
Phlebotomy	EXT 4130
Haematology	EXT 4114
Transfusion	EXT 4113
Clinical Chemistry	EXT 4128
Microbiology	EXT 4116
Blood Bank	EXT 4100

Laboratory Personnel

Head of Section	Salmah Zaini
Deputy Head of Section	Shong Yun Shan

Staff:
Scientific Officers (4)
JMPC MSO (2)
Lab Technician (4)
Laboratory Assistant/Phlebotomist (6)

Operating Hours

Monday to Thursday and Saturday

Phlebotomy (Hospital)	7:45 am – 12:00 pm & 1:30 pm – 4:30 pm
Phlebotomy (Health Centres)	7:45 am – 10:30 am
Blood Donation	8:00 am – 11:30 am & 1:45 pm – 4:00 pm
Laboratory Store (Tuesday and Saturday)	2.00 pm – 4.00 pm

Daily

Specimen receiving	24 hours
Lab Testing	24 hours

Alanine Transaminase (ALT, GPT)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Unacceptable	Haemolysed
Method	UV Absorbance
TAT	1 day
Clinical Usage	Liver profile assessment
Reference Range	Female: 10 - 35 U/L Male: 10 - 50 U/L

Albumin	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Method	Colorimetric
TAT	1 day
Clinical Usage	Indicator of nutritional status
Reference Range	35 – 52 g/L

Albumin:Creatinine Ratio (ACR),Urine	**Clinical Chemistry Ext 4128**
Specimen	Random urine - 20mL in sterile screw-capped container
Method	Calculated from urine albumin and urine creatinine, colorimetry
TAT	1 day
Clinical Usage	Early detection of diabetic nephropathy
Reference Range	Normal (Male): < or = 2.5 mg/mmol Normal (Female): < or = 3.5 mg/mmol Microalbuminuria (Male): >2.5 – 30 mg/mmol Microalbuminuria (Female): >3.5 – 30 mg/mmol Proteinuria: >30 mg/mmol

Alkaline Phosphatase (ALP)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Unacceptable	Haemolysed
Method	Colorimetric
TAT	1 day
Clinical Usage	Liver profile assessment
Reference Range	Female: 35 – 104 U/L Male: 40 – 129 U/L

Ammonia (NH3)	**Clinical Chemistry Ext 4128**
Specimen	Blood (EDTA, purple top - 4mL)
Transport	Specimen in ice, send to the Lab immediately
Unacceptable	Specimen not chilled
Method	Enzymatic
TAT	2 hr for STAT/URGENT
Clinical Usage	Screening test for amino acid disorders
Reference Range	Female: 11 – 51 µmol/L Male: 16 – 60 µmol/L

Amylase	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Unacceptable	Haemolysed, overnight

Method	Colorimetric
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis of pancreatitis
Reference Range	28 – 100 U/L

Bicarbonate, Serum (HCO3)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Transport	Send to the Lab immediately
Method	UV Absorbance
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Acid-base balance
Reference Range	22 – 29 mmol/L

Bilirubin, Direct	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top 5mL or green top - 4mL)
Transport	Protect sample from light and send to the Lab
Unacceptable	Haemolysed
Method	Colorimetric (Diazotization)
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Differential diagnosis of jaundice
Reference Range	≤ 3.4 µmol/L

Bilirubin, Total	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Transport	Protect sample from light and send to the Lab
Unacceptable	Haemolysed, overnight
Method	Colorimetric (Diazotization)
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis of neonatal jaundice
Reference Range	≤21 µmol/L

Calcium, Total	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Unacceptable	Haemolysed
Method	UV Absorbance
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Evaluation of calcium metabolism
Reference Range	2.15 - 2.5 mmol/L (Serum) 2.5 - 7.5 mmol/L (Urine)

Chloride (Cl)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Method	Ion Selective Electrode (ISE)
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Electrolyte balance

Reference Range	98 – 107 mmol/L

Chloride, Urine	**Clinical Chemistry Ext 4128**
Specimen	Random urine - 20mL in sterile screw-capped container or 24 hr urine collection, no preservative
Method	Ion Selective Electrode (ISE)
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Electrolyte balance
Reference Range	110 – 250 mmol/day

Cholesterol	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4mL)
Unacceptable	Fasting less than 10 – 12 hrs
Method	Enzymatic colorimetric
TAT	1 day
Clinical Usage	Evaluation of lipid status
Reference Range	0- 5.18 mmol/L

C-Reactive Protein (CRPRT)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Method	Immunoturbidimetric
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Detect inflammation and tissue injury
Reference Range	< 0.5 mg/dL

Creatinine	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII tube gold top - 5mL or green top - 4.5mL)
Method	Colorimetric
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Renal function test
Reference Range	Female: 44 – 80 μmol/L Male: 62 – 106 μmol/L

Creatinine Clearance Test (CCT), (24Hr)	**Clinical Chemistry Ext 4128**
Specimen	24 hr urine collection, no preservative AND blood (red top - 6mL or SSTII gold top - 5mL) taken during the collection period. Send both specimens together
Unacceptable	Only one specimen type received
Method	Colorimetric
Performed	Office hours only
TAT	1 day
Clinical Usage	Estimation of Glomerular Filtration Rate (GFR)
Reference Range	71 – 151 mL/min

Creatinine, Urine (24Hr)	**Clinical Chemistry Ext 4128**
Specimen	24 hr urine collection, no preservative
Unacceptable	Collection instruction not followed

Method	Colorimetric
Performed	Daily
TAT	1 day
Clinical Usage	Renal function test
Reference Range	Female: 7.0 – 14.0 mmol/24hr Male: 9.0 – 21.0 mmol/24hr

CSF Chemistry (Glucose and Total Protein)		**Clinical Chemistry Ext 4128**
Specimen	1mL in sterile screw-capped container	
Transport	Send to the Lab immediately	
Unacceptable	Contaminated with Blood	
Method	UV Absorbance for Glucose; Turbidimetric for Total Protein	
TAT	2 hr	
Clinical Usage	Assessment of CNS diseases and infection	
Reference Range	CSF Glucose CSF Protein	2.22 – 3.89 mmol/L 0.15 – 0.45 g/L

Ferritin		**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)	
Unacceptable	Haemolysed	
Method	Electrochemiluminescence	
Performed	Daily	
TAT	1 day	
Clinical Usage	Screening test for iron status	
Reference Range	Female: 13 – 150 ng/mL Male: 30 – 400 ng/mL	

Gamma-Glutamyl Transferase (GGT)		**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)	
Unacceptable	Haemolysed	
Method	Enzyme Colorimetric	
Performed	Daily	
TAT	1 day	
Clinical Usage	Liver profile assessment	
Reference Range	Female: 5 – 36 U/L Male: 8 – 61 U/L	

Glucose Tolerance Test (GTT)				**Clinical Chemistry Ext 4128**
Specimen	Blood (Grey top - 3mL). Submit 2 specimens: Fasting and 2 hours after glucose (75g) intake			
Unacceptable	Fasting less than 8 hrs			
Method	UV Absorbance			
Performed	Daily			
TAT	1 day			
Clinical Usage	Diagnosis of diabetes mellitus			
Reference Range		Normal	Impaired	Diabetic
	Fasting	3.5 – 6.0 mmol/L	6.1– 6.9 mmol/L	≥ 7.0 mmol/L
	2 hours	4.0 - 7.8 mmol/L	7.8–11.0mmol/L	≥ 11 mmol/L

Glucose, Fasting (FBS)		**Clinical Chemistry Ext 4128**
Specimen	Blood (grey top - 3mL) preferred or SSTII gold top - 5mL	

Unacceptable	Fasting less than 8 hrs
Method	UV Absorbance
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis and monitoring of diabetes mellitus
Reference Range	3.5 – 6.0 mmol/L

Glucose, Post-prandial (2PPS)	**Clinical Chemistry Ext 4128**
Specimen	Blood (grey top - 3mL) preferred or SSTII gold top - 5mL
Unacceptable	Time taken less than 2 hours
Method	UV Absorbance
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis and monitoring of diabetes mellitus
Reference Range	4.0 – 7.8 mmol/L

Glucose, Random (RBS)	**Clinical Chemistry Ext 4128**
Specimen	Blood (grey top - 3mL) preferred or SSTII gold top - 5mL
Method	UV Absorbance
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis and monitoring of diabetes mellitus
Reference Range	4.0 – 7.8 mmol/L

HDL Cholesterol	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Fasting less than 10 – 12 hrs
Method	Homogenous Enzymatic Colorimetric Test
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of lipid status
Reference Range	Low: <1.04 mmol/L Desirable: >1.55 mmol/L

Human Chorionic Gonadotropin (hCG), Beta Total	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Haemolysed
Method	Electrochemiluminescence
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Evaluation of pregnancy status
Reference Range	Non- pregnant (Premenopausal): <5.3 IU/L Non- pregnant (Postmenopausal): <8.3 IU/L

Iron (Fe)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Unacceptable	Haemolysed

Method	Colorimetric
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of iron status
Reference Range	5.83 - 34.5 µmol/L

Lactate	**Clinical Chemistry Ext 4128**
Specimen	Blood (grey top - 3mL) Draw blood without stasis to avoid spurious lactate elevation
Transport	Specimen in ice, send to the Lab immediately
Unacceptable	Specimen not chilled, haemolysed, overnight
Method	Colorimetric
Performed	Daily
TAT	2 hr
Clinical Usage	Evaluation of metabolic and lactic acidosis
Reference Range	0.5 – 2.2 mmol/L

LDL Cholesterol	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Fasting less than 10 – 12 hrs
Method	Calculated
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of lipid status
Reference Range	Desirable: <3.36 mmol/L

Lipid Panel	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL) **Fasting 10-12 hrs is required**
Unacceptable	Non-fasting specimen
Method	*Panel test: Cholesterol, Triglyceride, HDL, LDL (calculated) See individual test*
Performed	Daily
TAT	1 day
Clinical Usage	Lipid profile assessment
Reference Range	Refer to individual analytes

Liver Function Test (LFT)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Unacceptable	Haemolysed, overnight
Method	*Panel test: Total Protein, Albumin, Total Bilirubin, ALT, ALP, GGT see individual test*
Performed	Daily
TAT	1 day
Clinical Usage	Liver profile assessment
Reference Range	Refer to individual analytes

Magnesium (Mg)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Haemolysed, overnight
Method	Colorimetric
Performed	Daily

TAT	1 day
Clinical Usage	Diagnosis and monitoring of hypo- and hypermagnesemia
Reference Range	0.66 – 1.07 mmol/L

Microalbumin, Urine		**Clinical Chemistry Ext 4128**
Specimen	Random urine, 20mL in sterile screw-capped container, no preservative. Preferred first morning urine specimen	
Method	Immunoturbidimetric	
Performed	Daily	
TAT	1 day	
Clinical Usage	Early detection of diabetic nephropathy	
Reference Range	Normal	< 20.0 mg/L
	Microalbuminuria	30.0 – 300.0 mg/L

Osmolality, Serum		**Clinical Chemistry Ext 4128**
Specimen	Blood (SSTII gold top - 5ml or red top- 6ml)	
Method	Freezing point osmometry	
Performed	Daily	
TAT	1 day	
Clinical Usage	Assessment of fluid and electrolyte balance	
Reference Range	275 – 295 mOsm/Kg	

Osmolality, Urine		**Clinical Chemistry Ext 4128**
Specimen	Random urine, 20mL in sterile screw-capped container, no preservative	
Method	Freezing point osmometry	
Performed	Daily	
TAT	1 day	
Clinical Usage	Assessment of fluid and electrolyte balance	
Reference Range	50 to 1200 mOsm/kg H_2O	

Paracetamol (Acetaminophen)			**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)		
Method	Homogenous Enzyme Immunoassay		
Performed	Daily		
TAT	2 hr for STAT/URGENT 1 day for ROUTINE		
Clinical Usage	Diagnosis of paracetamol toxicity		
Reference Range	Therapeutic:	10 – 30 μg/L	
	Toxic levels:	After 4 hrs:	>200 μg/mL
		After 8 hrs:	>100 μg/mL
		After 12 hrs:	>50 μg/mL

Phosphate (PO4) / Phosphorus, Serum		**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)	
Unacceptable	Haemolysed, overnight	
Method	UV Absorbance	
Performed	Daily	
TAT	1 day	
Clinical Usage	Assessment of calcium and phosphate disorders	

Reference Range	0.81 – 1.45 mmol/L

Potassium, (K)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Haemolysed, overnight
Method	Ion Selective Electrode (ISE)
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Evaluation/assessment of electrolyte imbalance
Reference Range	3.5 – 5.1 mmol/L

Potassium, Urine	**Clinical Chemistry Ext 4128**
Specimen	Random urine, 20mL in sterile screw-capped container or 24 hr urine collection No preservative
Method	Ion Selective Electrode (ISE)
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation/assessment of electrolyte imbalance
Reference Range	25 – 125 mmol/24hr

Protein, Total	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Haemolysed, overnight
Method	Colorimetric
Performed	Daily
TAT	1 day
Clinical Usage	Marker of nutritional status
Reference Range	66 - 87 g/L

Protein, Urine	**Clinical Chemistry Ext 4128**
Specimen	Random urine, 20mL in sterile screw-capped container or 24 hr urine collection No preservative
Unacceptable	Collection instruction not followed
Method	Turbidimetric
Performed	Daily
TAT	1 day
Clinical Usage	Indicator of renal impairment
Reference Range	< 0.15 g/L

Protein:Creatinine Ratio, Urine	**Clinical Chemistry Ext 4128**
Specimen	Early morning urine, 20mL in sterile container
Method	Calculated
Performed	Daily
TAT	1 day
Clinical Usage	Assessment of renal impairment
Reference Range	Proteinuria > 45 mg/L

Sodium (Na)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Unacceptable	Haemolysed, overnight or lipaemic
Method	Ion Selective Electrode (ISE)

Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Evaluation of fluid and electrolyte imbalance
Reference Range	136 – 145 mmol/L

Sodium, Urine	**Clinical Chemistry Ext 4128**
Specimen	Random urine, 20mL in sterile screw-capped container, no preservative
Method	Ion Selective Electrode (ISE)
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of fluid and electrolyte imbalance
Reference Range	40 – 220 mmol/24hr

Thyroxine, Free (Free T4)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top – 6mL or SSTII gold top – 5 ml)
Unacceptable	Haemolysed
Method	Electrochemiluminescence
Performed	Daily
TAT	1 day
Clinical Usage	Diagnose hyperthyroidism and hypothyroidism
Reference Range	12 – 22 pmol/L

Thyroid Stimulating Hormone (TSH)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top – 6mL or SSTII gold top – 5 ml)
Unacceptable	Haemolysed
Method	Electrochemiluminescence
Performed	Daily
TAT	1 day
Clinical Usage	Diagnose hyperthyroidism and hypothyroidism
Reference Range	0.27 – 4.2 μIU/mL

Triiodothyronine, Free (Free T3)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top – 6mL or SSTII gold top – 5 ml)
Method	Electrochemiluminescence
Performed	Daily
TAT	1 day
Clinical Usage	Diagnose hyperthyroidism
Reference Range	3.1 – 6.8 pmol/L

Transferrin	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Unacceptable	Haemolysed
Method	Immunoturbidimetric
Performed	Daily
TAT	1 day
Clinical Usage	Differential diagnosis of microcystic anaemia
Reference Range	2.0 – 3.6 g/L

Triglyceride, Fasting	**Clinical Chemistry Ext 4128**

Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL) **10-12 hrs fasting is required**
Unacceptable	Fasting less than 10 – 12 hrs
Method	Enzymatic colorimetric
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of lipid status and acute pancreatitis
Reference Range	< 1.7 mmol/L

Troponin T	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Method	Electrochemiluminescence
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Marker of myocardial injury
Reference Range	≤ 14 ng/L

Urea, Serum	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL or green top - 4.5mL)
Method	Enzymatic
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Assessment of fluid balance and renal function
Reference Range	2.76 – 8.07 mmol/L

Uric Acid (UA)	**Clinical Chemistry Ext 4128**
Specimen	Blood (red top - 6mL or SSTII gold top - 5mL)
Unacceptable	Lipaemic
Method	Enzymatic colorimetric
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of uric acid metabolism
Reference Range	Female: 142.8 – 339.2 µmol/L Male: 202.3 – 416.5 µmol/L

Uric Acid (UA), 24 hr urine	**Clinical Chemistry Ext 4128**
Specimen	24 hr urine collection, preservative: 10mL 5% NaOH
Method	Enzymatic colorimetric
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of uric acid metabolism
Reference Range	773 - 3986 µmol/L (1200-5900 µmol/day) 2200-5475 µmol/L - 1st morning urine

Activated Partial Thromboplastin Time (APTT)	**Haematology ext 4114**
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Transport	Send to the Lab Immediately
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Clotting

Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Monitoring heparin therapy and screening test for clotting factors
Reference Range	26.6 – 39.0 sec

APTT 50% Correction	**Haematology ext 4114**
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Transport	Send to the Lab immediately
Unacceptable	Below or above the mark, haemolysed and clotted
Method	Clotting
Performed	Daily
TAT	1 day
Clinical Usage	To detect the presence of inhibitors of coagulation

D-Dimer	**Haematology ext 4114**
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Transport	Send to the Lab immediately
Unacceptable	Below or above the level, haemolysed, clotted
Method	Automated latex enhanced immunoassay
Performed	On Request
TAT	3 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Aid in the diagnosis of disseminated intravascular coagulation (DIC), acute thromboembolic event
Reference Range	0 – 255 ng/ml

Differential Count (Diff)	**Haematology ext 4114**
Specimen	Blood (EDTA, purple top - 3mL)
Unacceptable	Haemolysed, clotted
Method	Fluorescence Flow Cytometry
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Reference Range	See Lab Report

Erythrocyte Sedimentation Rate (ESR)	**Haematology ext 4114**
Specimen	Blood (EDTA, purple top – 1mL)
Unacceptable	Haemolysed, clotted
Method	Photometric rheology / miniiised® Alcor® Scientific
Performed	Daily
TAT	1 day
Reference Range	(Population Range) Male 1 – 31 mm/hr Female 1 – 34 mm/hr

Full Blood Count (FBC)	**Haematology ext 4114**
Specimen	Blood (EDTA, purple top - 3mL)
Unacceptable	Haemolysed, clotted
Method	Flow Cytometry, Hydrodynamic Focusing Detection, Photometry
Performed	Daily

TAT	1 hr for STAT/URGENT 1 day for ROUTINE
Reference Range	Refer to Laboratory Report

International Normalised Ratio (INR)	**Haematology ext 4114**
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Calculated
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Monitoring of warfarin dosage
Reference Range	0.9 – 1.1

Malaria Parasite	**Haematology ext 4114**
Specimen	Blood (EDTA, purple top - 3mL)
Unacceptable	Haemolysed, clotted
Method	Light microscopy
Performed	Daily
TAT	1-2 day
Clinical Usage	Detection and identification of malaria parasites

Prothrombin Time (PT)	**Haematology ext 4114**
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Clotting
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Screening test for clotting disorders. Monitoring of anticoagulation therapy
Reference Range	9.5 – 11.9 sec

PT 50% Correction	**Haematology ext 4114**
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Clotting
Performed	Daily
TAT	1 day
Clinical Usage	To detect presence of inhibitors of coagulation

Reticulocyte Count	**Haematology ext 4114**
Specimen	Blood (EDTA, purple top - 3mL)
Unacceptable	Haemolysed, clotted
Method	Fluorescence Flow Cytometry
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Assessment of erythropoietic activity
Reference Range	Newborn 2.0 – 5.0 % Adult 0.2 – 2.0 %

ABO Group and Rh Type	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Unacceptable	Haemolysed
Method	Immune agglutination or column agglutination technology
Performed	Office hours only
TAT	1 day
Clinical Usage	Determine ABO and Rh(D) blood group

Antibody Screen (Red Cell)	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Unacceptable	Haemolysed
Method	Immune agglutination or column agglutination technology
Performed	Daily
TAT	1 day
Clinical Usage	Detect clinically significant alloantibodies
Reference Range	Not detected

Crossmatch	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Transport	Send to the Lab immediately
Unacceptable	Haemolysed / Clotted Incompletely filled request forms / no doctor's signature
Method	Immune agglutination or column agglutination technology
Performed	Daily
TAT	1 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Compatibility for blood transfusion

Direct Antiglobulin (Coomb's) Test (DCT)	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 3mL) Blood (EDTA, pink top - 3mL)
Transport	Send to the Lab immediately
Method	Immune agglutination or column agglutination technology
Performed	Daily
TAT	1 day
Clinical Usage	To detect the presence of globulins (IgG and C3d) coating red cells
Reference Range	Negative

Exchange Transfusion Compatibility Test	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Transport	Send to the Lab immediately
Unacceptable	Haemolysed
Method	Immune agglutination or column agglutination technology
Performed	Daily
TAT	1 day
Clinical Usage	Compatibility testing

Fresh Frozen Plasma	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Transport	Send to the Lab immediately
Unacceptable	Haemolysed / Clotted Incompletely filled request forms / no doctor's signature
Performed	On Request
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Therapeutic purpose

Platelet Donor Testing (including Blood Grouping and Antibody Screen)	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Unacceptable	Haemolysed
Method	Immune agglutination or column agglutination technology
Performed	Daily **Sent to RIPAS Lab**
TAT	1 day
Clinical Usage	Compatibility testing

Random Platelet	**Transfusion ext 4113**
Specimen	Blood (EDTA, purple top - 4mL) Blood (EDTA, pink top - 4mL)
Transport	Send to the Lab immediately
Unacceptable	Haemolysed / Clotted Incompletely filled request forms / no doctor's signature
Performed	On Request
TAT	1 day
Clinical Usage	Therapeutic Purpose

Amoeba, Microscopy	**Microbiology ext 4116**
Specimen	Stool and aspirate, fresh
Transport	Send to the Lab immediately
Method	Light microscopy
Performed	Daily
TAT	1 day
Clinical Usage	Diagnosis of amoebiasis

CSF Bacterial Antigen	**Microbiology ext 4116**
Specimen	CSF (sterile screw-capped container, 1mL)
Transport	Send to the Lab immediately
Method	Latex agglutination
Performed	Daily
TAT	2 hr for STAT/URGENT
Clinical Usage	Presumptive screen for common bacteria causing meningitis
Reference Range	Negative

CSF Exam - Microscopy and Culture	**Microbiology ext 4116**
Specimen	CSF (2 sterile screw-capped containers, 3mL)
Transport	Send to the Lab immediately

Method	Conventional
Performed	Daily
TAT	Microscopy: 2 hr Culture: 2 to 6 days, or 14 days for Cryptococcus
Clinical Usage	Diagnosis of meningitis

Culture & Susceptibility –Blood (Aerobic & Anaerobic)	**Microbiology ext 4116**
Specimen	8 to 10mL of blood into aerobic and anaerobic BacT/ALERT FA Plus and FN Plus culture bottles Do not refrigerate if there is delay in transportation
Method	BacT/ALERT system (fluorescence) & conventional culture
Performed	Daily
TAT	2 – 8 days
Clinical Usage	Diagnosis of septicaemia
Reference Range	No growth

Culture & Susceptibility – Blood (Paediatrics)	**Microbiology ext 4116**
Specimen	1 to 3mL of blood into BacT/ALERT PF culture bottles. Do not refrigerate if there is delay in transportation
Method	BacT/ALERT system (fluorescence) & conventional culture
Performed	Daily
TAT	2 – 8 days
Clinical Usage	Diagnosis of septicaemia
Reference Range	No growth

Culture and Susceptibility - PD Fluid (Peritoneal dialysis fluid)	**Microbiology ext 4116**
Specimen	10mL fluid in aerobic and anaerobic BacT/ALERT FA Plus and FN Plus culture bottles. Do not refrigerate if there is delay in transportation.
Unacceptable	Specimen in unsterile container
Method	BacT/ALERT system (fluorescence) and conventional culture
TAT	2 - 8 days
Clinical Usage	Diagnosis of peritonitis
Reference Range	No growth

Culture & Susceptibility – Urine	**Microbiology ext 4116**
Specimen	Urine (sterile screw-capped container), indicate MSU, catheterised or SPA
Unacceptable	Unrefrigerated specimens of more than 24 hours old
Method	Conventional culture
Performed	Daily
TAT	2 – 5 days
Clinical Usage	Diagnosis of urinary tract infection

Gram-Stain	**Microbiology ext 4116**
Specimen	Specimen (sterile screw-capped container) or transwab. Smear on a labelled slide
Unacceptable	Dry swab
Method	Light microscopy
Performed	Daily
TAT	1 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Presumptive diagnosis of bacterial infection

Microscopy, Body Fluids	**Microbiology ext 4116**
Specimen	Fluid (sterile, screw-capped container, 1–3mL), indicate source of specimen
Transport	Send to the Lab immediately
Unacceptable	Clotted
Method	Light microscopy
Performed	Daily
TAT	2 hr for STAT/URGENT 1 day for ROUTINE

PD Fluid (Peritoneal dialysis fluid), Microscopy	**Microbiology ext 4116**
Specimen	50mL fluid in sterile screw-capped container Send to the Lab as soon as possible
Unacceptable	Specimen in unsterile container
Method	Automated Bactec (fluorescence) and conventional culture
TAT	2 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis of peritonitis

Pregnancy Test, Urine	**Microbiology ext 4116**
Specimen	Urine (sterile screw-capped container, 10mL), early morning specimen is preferred
Method	Immunochromatographic 1 -step test
Performed	Daily
TAT	1 hr for STAT/URGENT 1 day for ROUTINE
Clinical Usage	Diagnosis of pregnancy and gestational trophoblastic diseases

Stool Microscopic Examination (Stool ME)	**Microbiology ext 4116**
Specimen	Stool (sterile screw-capped container with attached spatula)
Unacceptable	Swab
Method	Light microscopy
Performed	Daily
TAT	1 day
Clinical Usage	Diagnosis of parasitic infections

Stool Occult Blood (SOB)	**Microbiology ext 4116**
Specimen	Stool in sterile screw-capped container with attached spatula
Unacceptable	Specimens other than stool
Method	Immunochromatographic Test
Performed	Daily
TAT	1 day
Clinical Usage	Detect the presence of blood in stool specimen
Reference Range	Negative

Urinalysis	**Microbiology ext 4116**
Specimen	Random urine (sterile screw-capped container, 10-20mL)
Unacceptable	More than 24-hour old
Transport	Send to the Lab as soon as possible
Method	Dipstick / microscopy

Performed	Daily
TAT	1 hr for STAT/URGENT 1 day for ROUTINE
Reference Range	PH 5.5-8.5 Specific Gravity 1.005-1.025 Leukocytes – Negative Nitrite – Negative Urine Protein, Total – Negative Glucose – Negative Ketones – Negative Urobilinogen – Normal Bilirubin – Negative Blood - Negative

Urine for Dysmorphic RBC	**Microbiology ext 4116**
Specimen	Random urine (sterile screw-capped container, 10-20mL), fresh
Unacceptable	More than 6 hours old
Transport	Send to the Lab immediately
Method	Light microscopy
Performed	Daily
TAT	1 day
Clinical Usage	Evaluation of glomerular diseases