NATIONAL HAEMATOLOGY REFERENCE LABORATORY

Department of Laboratory Services

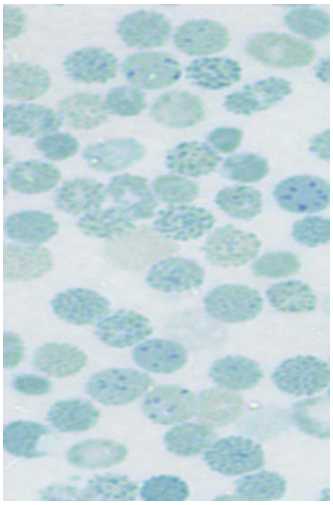
Haematology Laboratory Services provide routine and specialised haematological tests and interpretation of results. It is closely linked to Clinical Haematology and Blood Donation services.

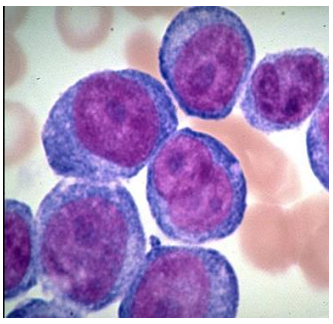
The laboratory provides:

- Routine haematology and coagulation tests.
- Specialised tests include:
  - Haematological oncology diagnosis
  - Process and interpret bone marrow studies
  - Haemophillia and Thrombophillia studies
  - Thalassaemia and Haemoglobinopathy

Address

RIPAS Hospital
Bandar Seri Begawan





Contact

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Telephone:	2242424
Head of Section	EXT 6045
Automation	EXT 6701
Coagulation	EXT 6701
Morphology/ Bone Marrow	EXT 6043
Special Haematology	EXT 6044

Laboratory Personnel

Head of Section: Hjh Sarinah Hj Ahmad
Deputy Head of Section: Aimi Diyana Hj Gapor

Staff: Scientific Officers
Medical Lab Technologist
Technicians
Attendant

Operating Hours

Automation	: 24 hrs/ 7 Days a week
Coagulation	: 24 hrs/ 7 Days a week
Morphology/Bone Marrow	: Office hrs only
Special Haematology	: Office hrs only

Office hrs:
Monday to Thursday and Saturday
7.45am - 12.15pm and 1.30pm - 4:30 pm

1. Activated Partial Thromboplastin Time (APTT)	2242424 ext 6701
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 hrs (STAT), 4 hrs (routine)
Clinical Usage	Monitoring heparin therapy and screening test for clotting factors
Reference	*(Population range)* 26.6 – 39.0 sec

2. Apixaban	2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Automated Chromogenic Assay
Performed	Daily
TAT	4 hours
Clinical Usage	To monitor the plasma concentration of Rivaroxaban
Reference	*(Journal Reference)*

Dosage	**Apixaban** **C-min (ng/mL)** trough plasma concentration (predose)	**Apixaban C-max (ng/mL)** peak plasma concentration (2-4 hours postdose)
Prevention of VTE: elective hip or knee replacement surgery		
2.5 mg twice daily	51 (23-109)	77 (41-146)
Prevention of stroke and systemic embolism: NVAF		

	2.5 mg twice daily	79 (34-162)	123 (69-221)
	5 mg twice daily	103 (41-230)	171 (91-321)
	Treatment of DVT, treatment of PE and prevention of recurrent DVT and PE (VTE)		
	2.5 mg twice daily	32 (11-90)	67 (30-153)
	5 mg twice daily	63 (22-177)	132 (59-302)
	10 mg twice daily	120 (41-335)	251 (111-572)

3. Anti-Thrombin	2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top – up to the mark)
Unacceptable	Below or above the level, haemolysed, clotted
Method	Automated Chromogenic assay
Performed	Samples accepted daily, frozen and tested in a bi-weekly basis
TAT	14 working days
Clinical Usage	Investigation of inherited and acquired thrombotic tendency
Reference	*(Population range)* 83 -131%

4. Anti-Xa (Low Molecular Weight Heparin)	2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top – up to the mark)
Unacceptable	Below or above the level, haemolysed, clotted
Method	Automated Chromogenic assay
Performed	Daily
TAT	4 hours
Clinical Usage	To monitor low molecular weight heparin therapy
Reference	*(Journal Reference)* Therapeutic range : 0.5 – 1.2 IU/mL

5. APTT 50% Correction	2242424 ext 6701
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	4 hours
Clinical Usage	To detect the presence of inhibitors of coagulation
Reference	*(Population range)* 26.6 – 39.0 sec

6. Blood Film	2242424 ext 6701
Specimen	Blood (EDTA, purple top – 1-2 mL)
Transport	Send to the Lab Immediately
Unacceptable	Haemolysed, clotted
Method	Light microscopy
Performed	Office hours only
TAT	3 working day
Clinical Usage	To interpret FBC result

7. Bone Marrow Aspirate	2242424 ext 6043
Specimen	Bone marrow aspirate
Transport	Send to Lab Immediately
Unacceptable	Dry tap
Method	May-Grunwald Giemsa Stain, Perl's Stain
Performed	Office hours
TAT	14 working days

8. D-Dimer		2242424 ext 6701
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	Immunoturbidimetry	
Performed	Daily	
TAT	4 hrs	
Clinical Usage	Aid in the diagnosis of disseminated intravascular coagulation (DIC), acute thromboembolic event	
Reference	(Population range) 0 - 255 ng/mL D-Dimer Unit	

9. Differential Count (Diff)		2242424 ext 6701
Specimen	Blood (EDTA,purple top - 3mL)	
Transport	Send to the Lab immediately	
Unacceptable	Haemolysed, clotted	
Method	Light Microscopy or Light Scattering Flow Cytometry	
Performed	Daily	
TAT	1 Hr (STAT), 8 Hrs (routine)	
Reference	See Lab Report	

10. Erythrocyte Sedimentation Rate (ESR)		2242424 ext 6701
Specimen	Blood (EDTA,purple top - 1mL)	
Unacceptable	Haemolysed, clotted	
Method	Photometric rheology/ Alcor Scientific iSED	
Performed	Daily	
TAT	1 day	
Reference	*(Population range)* Male Female	 1 - 31 mm/hr 1 – 34 mm/hr

11. Factor VIII assay	2242424 ext 6701
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	Samples accepted daily, frozen and tested in a bi-weekly basis
TAT	14 working days
Clinical Usage	To determine the Factor VIII activity
Reference	*(Journal Reference)* *50 – 150%*

12. Factor IX assay	2242424 ext 6701
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	Samples accepted daily, frozen and tested in a bi-weekly basis
TAT	14 working days
Clinical Usage	To determine the Factor IX activity
Reference	*(Journal Reference)* 65 – 150%

13. Fibrinogen Level	2242424 ext 6701
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	4 Hrs
Clinical Usage	Aids in the detection of fibrinogenaemia, disseminated intravascular coagulation and fibrinolysis
Reference	*(Population range)* 1.8 – 4.2 g/L

14. Full Blood Count (FBC)				2242424 ext 6701
Specimen	Blood (EDTA, purple top - 3mL)			
Unacceptable	Haemolysed, clotted			
Method	Test includes machine operated differential count by light scattering flow cytometry, cytochemistry			
Performed	Daily			
TAT	1 hr (STAT), 8 Hrs (routine)			
Reference	*(Population ranges for Male and Female)*			
		Newborn	**Male**	**Female**
	WBC x 10^9/L	10.0 - 26.0	4.2 - 12.6	4.2 – 12.6
	RBC x 10^{12}/L	5.0 - 7.0	4.67 - 6.13	4.00 – 5.62
	HB g/dL	14.0 - 22.0	13.5 - 17.9	11.5 – 15.9
	PCV %	44.0 - 75.0	41.6 - 53.6	35.8 – 49.0
	MCV fL	100 – 120	81.0 - 95.4	81.0 – 95.4
	MCH pg	31 - 37	26.0 - 31.6	26.0 – 31.6
	MCHC g/dL	30 – 36	30.4 - 34.8	30.4 – 34.8
	PLT x 10^9/L	100 – 450	174 – 430	174 – 430
	MPV x Fl		8.5 – 11.7	8.5 – 11.7

15. Lupus Anticoagulant screen (LA)		2242424 ext 6701
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	dVVRT	
Performed	Samples accepted daily, frozen and tested in a bi-weekly basis	
TAT	14 working days	
Clinical Usage	Consider this test in prolonged APTT, recurrent abortions, SLE or thrombotic conditions	
Reference	Not detected	

16. Malarial Parasites		2242424 ext 6701
Specimen	Blood (EDTA, purple top)	
Unacceptable	Haemolysed, clotted	
Method	Light microscopy	
Performed	Daily except Foreign worker only done during office hour	
TAT	4hr (STAT), 5 working days (Routine and Foreign Worker screening)	
Clinical Usage	Detection and identification of malarial parasites	

17. Osmotic Fragility (Red Cell)	2242424 ext 6044
Specimen	Fresh blood (Lithium Heparin,green top - 4mL)
Transport	Send to the Lab immediately
Unacceptable	Haemolysed
Method	Spectrometry
Performed	Office hours only
TAT	2 days
Clinical Usage	Detection of the presence of red cell with membrane defects e.g. hereditary spherocytosis
Reference	Increased osmotic fragility (shift to the right). Suggestive of Hereditary spherocytosis

18. Prothrombin Time –INR (PT-INR)	2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Clotting
Performed	Daily
TAT	2 Hrs, STAT
Clinical Usage	Screening test for clotting disorders. Monitoring of anticoagulation therapy
Reference	*(Population range)* PT: 9.5 – 11.9 sec INR: 0.9 – 1.1

19. Protein C	2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Chromogenic assay
Performed	Samples accepted daily, frozen and tested in a bi-weekly basis
TAT	14 working days
Clinical Usage	Thrombophilia screening
Reference	*(Population range)* 66 – 178%

20. Protein S	2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top - up to the mark)
Unacceptable	Below or above the mark, haemolysed, clotted
Method	Automated latex ligand immunoassay
Performed	Samples accepted daily, frozen and tested in a bi-weekly basis
TAT	14 working days
Clinical Usage	Thrombophilia screening
Reference	(Population range) 42 - 122%

21. PT 50% Correction		2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top - up to the mark)	
Unacceptable	Below or above the mark, haemolysed, clotted	
Method	Clotting	
Performed	Daily	
TAT	4 Hrs	
Clinical Usage	To detect presence of inhibitors of coagulation	

22. Reticulocyte Count			2242424 ext 6701
Specimen	Blood (EDTA, purple top - 3mL)		
Unacceptable	Haemolysed, clotted		
Method	Light scattering flow cytometry, cytochemistry		
Performed	Daily		
TAT	1 Hrs (STAT), 8 Hrs (routine)		
Clinical Usage	Assessment of erythropoietic activity		
Reference	(Population range for 12 yrs. Dacie and Lewis Practical Haematology for less than 12 yrs)		
	Age	Retic (%)	Retic # (x 10^6/µL)
	0-1 mth	2.3 – 5.4 %	0.12-0.4
	1-6 mths	0.7-1.1 %	0.02-0.06
	6 mths- 1 yr	1.0-1.8 %	0.04-0.1
	1 yr-12 yrs	0.76-1.9 %	0.03-0.1
	12 yrs	0.7-2.6 %	0.02-0.14

23. Rivaroxaban		2242424 ext 6701
Specimen	Blood (Sodium Citrate, blue top - up to the mark)	
Unacceptable	Below or above the mark, haemolysed, clotted	
Method	Automated Chromogenic Assay	
Performed	Daily	
TAT	4 hours	
Clinical Usage	To monitor the plasma concentration of Rivaroxaban	
Reference	*(Journal Reference)*	

Rivaroxaban (Peak)	**Rivaroxaban (Trough)**
For Dose : 10mg od Range : 91 – 195 ng/mL	For Dose : 10md od Range : 1 - 38 ng/mL
For Dose : 20md od Range : 160 -360 ng/mL	For dose : 20mg od Range : 4 – 96 ng/mL

24. Sickling Test		2242424 ext 6044
Specimen	Blood (EDTA, purple top - 3mL), fresh	
Method	Sickle Scan, Reduction test (Sodium bisulphate)	
Performed	Office hours only	
TAT	1 day	
Clinical Usage	Detection of the presence of Hb S	
Reference	Negative	

25. Thalassaemia Screen or Hb Electrophoresis		2242424 ext 6044
Specimen	Blood (EDTA, purple top - 3mL)	
Unacceptable	Clotted	
Method	HPLC, electrophoresis, Briliant Cresyl Blue Stain	
Performed	Office hours only	
TAT	14 working days	
Clinical Usage	Investigation of thalassaemia and other haemoglobinopathies. Patient should not have blood transfusion in the last 3 months	
Reference	**Test Hb A2** **Hb F** **Hb C** **Hb S**	1.8 – 3.5 % 0.1 – 1.4 % Absent Absent

26. Thrombin Time		2242424 ext 6701
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	4 Hrs	
Clinical Usage	Aids in the detection of presence of heparin, dysfibrinogenaemia, DIC	
Reference	*(Population range)* 11.6 – 17.2 sec	

27. Urine Haemosiderin	2242424 ext 6043
Specimen	Urine - 20mL, freshly taken
Transport	Send to the Lab immediately
Method	Perl's Prussian Blue
Performed	Office hours only
TAT	1 working day

28. Von Willebrand Factor Activity	2242424 ext 6701
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	Latex enhanced Immunoassay
Performed	Samples accepted daily, frozen and tested in bi-weekly basis
TAT	14 working days
Clinical Usage	To assess the functional activity of von Willebrand factor (VWF) for the diagnosis and classification of von Willebrand disease (VWD).
Reference	50 – 150% (validated reference range from University Malaya Medical Centre)

29. Von Willebrand Factor Antigen	2242424 ext 6701
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	Latex enhanced Immunoassay
Performed	Samples accepted daily, frozen and tested in a bi-weekly basis
TAT	14 working days
Clinical Usage	To measure the quantity of von Willebrand factor (VWF) present in plasma for the diagnosis and classification of von Willebrand disease (VWD).
Reference	50 – 150% (validated reference range from University Malaya Medical Centre)