Blood Sciences Laboratory

Standard Operating Procedure

Title: Blood Sciences - Quick Guide to Turnaround Times and Key Factors Known to Affect Performance

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Significant Changes or Comments since Previous Version

Description	Pages
Procalcitonin added	3
Phaeo screening removed	4

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1 TURNAROUND TIMES

The following is a brief guide to standard service turnaround times and test availability. Further information on each test is available from the laboratory. Please contact the site Duty Biochemist (DB) regarding further details or expediting of tests outside of the standard service.

Please note that the turnaround times stated are laboratory quoted targets and can be affected by configuration of laboratory services and unplanned analyser downtime. It may be possible to tailor services and turnarounds to your clinical or service needs, please contact the laboratory to discuss.

General Chemistry / Haematology Tests	Test	Turnaround
24/7 Urgent Repertoire	Serum: U&E, LFT, Bone, Mg, CK, Amylase, Bicarbonate, Bilirubin, Chloride, CRP, Glucose, Urate, Lactate, ammonia. CSF: Glucose, Protein, Lactate	Available within 90 mins of receipt
	FBC, Malaria Screen, Reticulocytes PT/APTT/Coagulation screen, D-Dimer, Sickle screen ESR	60 mins 2 hours
	Drugs RSH: Carbamazepine, Lithium, Digoxin, Phenytoin Drugs PRH: Iron, Lithium, Digoxin	Approx. 90 mins at site of testing Need to Contact DB if test requires transfer to alternate site
	Troponin Blood film	2 hours
	Blood Gases	30 mins
	IM screen	6 hours
	Procalcitonin	Same day
	Factor VIII/IX assays	48 hrs (must be agreed with Consultant Haematologist)

General Chemistry / Haematology Tests	Test	Turnaround

General Chemistry / Haematology Tests	Test	Turnaround
Routine Service (working hours, Monday - Friday)	Malaria screen D-Dimer	All: 1 hour
	Standard Biochemical tests. Lithium, digoxin. Other TDM drugs (RSH) FBC, Reticulocytes, Sickle screen, PT/APTT/Coagulation screen	In patients: 4 hour GP/OP: 24 hours
	Other TDM drugs (PRH) Blood film , IM screen	All: 24 hours
Routine Service (working hours, Monday - Friday)	ESR	In patients: 6 hours GP/OP: 24 hours
	Haemoglobin electrophoresis	3 working days – longer if referred for specialist expertise
	Troponin	All: 2 hours
	TSH, PSA Other Endocrine tests	GP/OP 48 hours IP: 24 hours All: 2-3 days.
	Haematinic assays	All: 2 working days
	Intrinsic Factor Ab assay	All: 6 weeks
	Tumour markers	GP/OP 48 hours IP: 24 hours
	Electrophoresis and Immunofixation	10 days
	Urine test: Standard Biochemistry Electrophoresis.	 All: 4hrs All: 10 days
	Autoimmune serology	All:7-10 days
	Clotting factor assays	All: 6 weeks
	Thrombotic assay (ATIII, Protein C, Protein S, APCR) Lupus screen, Anticardiolipin antibody	All: 6 weeks

2 GUIDE TO COMMON PRE-ANALYTICAL FACTORS AFFECTING INTERPRETATION

In general there are two types of factors affecting interpretation of results:

1. Biological Factors which cause a true physiological rise or fall in a test.

2. Artefactual Factors which cause an analytical rise or fall, either by direct interference in the measurement process or, usually by suboptimal pre-analytical stages.

It is not possible to cover all artefactual factors which interfere. The table below details the most common issues. Further information on each assay is available from the laboratory if required.

Problem	**Common causes**	**Consequences**
Delay in separation of serum or inadequate centrifugation leaving cells on top of gel	Delay >90 minutes in spinning gold cap Delay >3hr in spinning gold cap Delay >24hr in spinning gold cap	Decreased glucose Raised K^+ Raised $PO4^{---}$
Inadequate mixing of anticoagulated tubes (Purple/Light Blue caps)	Can lead to totally / partially clotted samples	Degree of impact variable but can lead to erroneous Hb or decreased WBC or Platelets if sample partially clotted. Effect on clotting variable – can be erroneously prolonged or shortened.
Storage	Storage of unspun gold cap at 4°C Exposure of purple cap to excessive heat	Raised K, PO4 Inaccurate WBC differential due to damage to cells / Raised MCV
Age	White cells have limited life in vitro – count and differential increasingly unreliable after 24 hr. Blood Transfusion – antibody levels can diminish over time.	Clinically significant antibodies may not be detected.
Haemolysis	Shearing of red cells due to excessive use of positive or negative pressures (i.e. use of inappropriate needle size or filling bottles from a syringe). Over-vigorous mixing of sample. Excessively high or low temperatures	Raised K^+, $PO4^{---}$ BUT haemolysis affects many assays -the laboratory tests for haemolysis where necessary. Can interfere with the detection of blood group antibodies.
Lipaemia	Excessive lipids (usually if patient on TPN) interfere with Hb measurement and automated WBC differential (often rejected)	Can give rise to raised Hb and MCH. No WBC differential.
Inappropriate sampling	Specimen taken from drip arm	Dilutional effect

Problem	Common causes	Consequences
Incorrect container or cross-contamination of tube preservatives	Contamination of gold cap from grey/purple/white cap – ensure Order of Draw is adhered to during phlebotomy	Raised K, Decreased Ca, Mg, ALP
Incorrect filling (Purple cap)	Leads to incorrect blood:anticoagulant ratio.	Can lead to decreased platelet count due to clumping.
Incorrect filling (Light Blue cap)	Leads to incorrect blood:anticoagulant ratio.	Can give incorrect/ prolonged clotting times

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