Torbay and South Devon NHS
NHS Foundation Trust

TORBAY AND SOUTH DEVON NHS FOUNDATION TRUST

Haematology User Manual

Contents

Aim of User Manual

This user guide is designed to inform all service users of the Haematology Department the services that are available through this Department.

All departments within Torbay and South Devon NHS Foundation Trust Pathology Directorate aim to provide high quality, efficient, transparent and cost-effective service.

Feedback on this document and all aspects of the services offered are always welcome, please contact a member of the management team which can be found in the contacts section of this document.

Please do not print or duplicate this document as it is a controlled document maintained in accordance with ISO 15189:2022 accreditation standards.

Please be aware that it is not appropriate for patients to contact the Laboratory directly for test results or advice. All patient enquiries for these should be made through a Healthcare professional such as your registered General Practitioner.

General Information

The Haematology Department offers a full analytical and robust advisory service for the Acute Trust and service users in the Trusts Local area. Where possible testing will be performed in house by Qualified and competent IBMS registered Biomedical Scientists and advice on Clinical Results is available from the Medical Team.

Location & Address

Haematology Department

Torbay Hospital

Lowes Bridge

Torquay

TQ2 7AA

Working Hours

Normal Working Hours: 0900 – 2000

Out of Hours: 2000 – 0900

Haematology lab Availability and Out of Hours				
Sample type	**Time of Day**	**Request**	**Contact**	**Results turnaround time**
Non-Urgent/Routine Samples	9am – 8pm	1.Ordercomms 2. Standard (a4,white) multidisciplinary form	No need to contact	Results normally available on computer within 2-4 hours of receipt of sample
Urgent Samples/Requests	Weekdays 9am – 5:30pm	1. Ordercomms – ***please use RED bag and sticker with RED border*** 2. Combined Haem-Chem emergency request form (pink/green) 3. Symphony forms (A&E)	Phone 55240	Results available within 1 hours
	Weekdays 5:30pm – 8pm	1. Ordercomms – ***please use RED bag and sticker with RED border*** 2. Combined Haem-Chem emergency request form (pink/green) 3. Symphony forms (A&E)	Phone 55240	Results available within 1 hours
	Weekdays 8pm – 9am	1. Ordercomms – ***please use RED bag and sticker with RED border*** 2. Pink form 3. Symphony forms (A&E)	Bleep 219 if STAT	Results available within 1 hours
	Weekends/Bank Holidays 9am – 4pm	1. Ordercomms – ***please use RED bag and sticker with RED border*** 2. Combined Haem-Chem emergency request form (pink/green) 3. Symphony forms (A&E)	Bleep 219 if STAT	Results available within 1 hours
	Weekends/Bank Holidays 4pm – 9am	1. Ordercomms – ***please use RED bag and sticker with RED border*** 2. Pink form 3. Symphony forms (A&E)	Bleep 219 if STAT	Results available within 1 hours

	Time/Days	Available Tests	Contact
Newton Abbot Hot Lab	**08:30-16:00 Mondays & Wednesdays**	**FBC (Full Blood Count)**	**Phone. 52563**

	Time	Available Tests	Notes
Urgent Requests – Available Investigations	9am – 5:30pm	1. Full blood count and Retic 2. INR: for warfarin therapy (please specify) 3. APTT: for heparin therapy (please specify) 4. Coagulation screen: for diagnostic purposes (please distinguish from anticoagulant therapy) 5. ESR & GFs	Phone Torbay Hospital Switchboard for Duty haematologist phone number
	5:30pm – 9am		Mon to Fri 9:00am to 17:30pm phone 55240 During out of hours, bleep #6219

Please be aware that it is not appropriate for patients to contact the Laboratory directly for test results or advice. All patient enquiries for these should be made through a Healthcare professional such as your registered General Practitioner.

Key Contacts

Consultant Haematologist

- Dr Barry Jackson - 01803 654597 / barry.jackson4@nhs.net
- Dr Deborah Turner - 01803 655244 / deborah.turner2@nhs.net
- Dr Patrick Roberts - 01803 654597 / patrick.roberts2@nhs.net
- Dr Heather Eve - 01803 655244 / h.eve@nhs.net
- Dr Rui Zhao - 01803 655244 / rui.zhao@nhs.net
- Dr Nwe Oo - 01803 654597 / nwe.oo@nhs.net
- Dr Thomas Skinner - 01803 655244 / thomas.skinner3@nhs.net

Haematology Secretaries

- Secretarial Team – 01803 655237

Technical Manager - Transfusion Medicine

- Steve Mills - 01803 655262 / steve.mills@nhs.net

Technical Manager - Haematology

- Reginald Norris - 01803 655261 / reginald.norris@nhs.net

Results and General Enquiries

- 01803 655240

Blood Bank Enquiries

- 01803 655241

For Haematology Clinical Advice please contact the Haematology Consultant on call (Haematologist of the week. HOW phone) via the Torbay Hospital Switchboard.

Outpatient Clinics / Haematology Out Patient Clinics

(held at Newton Abbot Hospital)

Clinics held Monday – Thursday

Patients

Please be aware that it is not appropriate for patients to contact the Laboratory directly for test results or advice. All patient enquiries for these should be made through a Healthcare professional such as your registered General Practitioner

Quality Assurance

Accreditation

The Haematology Department is a UKAS accredited Medical Laboratory No. 8917. Which is accredited to ISO15189:2022. The full scope of this accreditation and the tests accredited can be found on the UKAS Website.

On occasion some of the tests offered by the Laboratory may not be included in the scope for accreditation, this is due to the Laboratories commitment to keeping testing methods up to date and in line where possible with testing standards both at National and International level. Where a test is not UKAS accredited it will be noted in the result report.

The Laboratory has an in-house Pathology Quality Department which monitors the QMS and Governance key performance indicators.

External Quality Assurance (EQA)

The Laboratory also takes part in high quality External Quality Assessment Schemes such as NEQAS.

Providing Feedback

The Laboratory is committed to the continuous improvement of services and welcomes all feedback on its performance and services offered. Through a robust quality policy, we aim to deliver service improvements where possible.

If you wish to provide feedback, including compliments or complaints please contact a member of the Management Team. The contact details can be found in the Contacts section.

Complaints and Compliments

On occasion there may be the requirement for a service user to lodge a complaint against the Laboratory or a service offered. In this situation we would encourage this complaint to be raised with the Laboratory Manager in the first instance. Complaints can be an important improvement opportunity and a way to better patient care.

The Trust has Local policies and procedures for complaints which can be found on the Trust intranet pages.

In the event of a serious incident please liaise with the Laboratory management and if it is required a DATIX can be raised.

If a patient would like to raise a concern or complaint these can be raised via the Patient Advice and Liaison Service (PALS) and the most up to date advice and contact details can be found on the Trust Internet site.

Protection of Personal Information (Confidentiality)

The Laboratory adheres to legislation relating to data processing and the handling of sensitive clinical information. We work in line with the Trust local policies to ensure that the correct information is available to those who need it to improve patient care. The Department does not release information on patient results or samples to non-authorised requestors.

Requesting Tests

Request forms and Specimen Labelling

The Laboratory uses Laboratory Information Management Systems (LIMS) to manage patient samples, Users of the service are encouraged to use electronic requesting systems rather than paper request forms however we understand on occasion that it may be necessary to use a paper form.

When filling out the Pathology Request Forms, please ensure you have provided the patient information listed below. These are the minimum demographics that Haematology have requested to be provided on the forms depending on where the sample has come from.

Requestor type	First identifier	Second identifier	Third identifier
In-patient / Out-patient	NHS number Or Hospital number	Name	DOB
GP	NHS number	Name	DOB
GUM Patients	GUM Number	DOB	NA
Occupational Health	Occupational Health Number	Name	DOB

Please Note: Failing to provide enough information on the Request Form may result in the sample you have provided being rejected.

Rejection Criteria

Rejection Reason	
No Citrate Tube Sent	Where no sample is received the Laboratory is unable to perform any tests, users will be notified of this.
No Clotted Sample Received	As above
No Tall ESR Tube Sent	As above
No Grey Tube Received for Glucose	As above
No Grey Tube Received for Lactate	As above
No Sample Received	As above
No Test on Form/Request	When no test is formally requested the Laboratory is unable to perform any investigation.
Poor Label Quality	Illegible or unlabelled samples can not be tested without confidence in identity of patient.
Sample Mislabeled	As above
Sample Unlabeled	As above
Urine Pot Received Instead of Tube	Examples of incorrect samples.
EDTA Sample Required but Not Received	Examples of incorrect samples.
Order Not Collected in ICE – Original Sample Number Must be Entered in Comment Box	A LIMS specific issue relating to auditable trails of sample collection.
Other – Reason for Rejection Must be Entered in Comment Box	

Unacceptable Samples

Unlabelled and inadequately labelled samples will not be accepted in the interest of patient safety unless they are unrepeatable (e.g. tissue samples).

Any sample which has more than one patient's details on, even if one of the patients' details are crossed out will be rejected.

Forms without specimens will be kept for 2 to 3 days and the requester, where possible, will be informed.

Leaking samples will usually be rejected unless they can be safely retrieved

Examples of Poor Labelling

Specimen Containers and Sample Collection

Sample collection is conducted by the wards and service users of the Laboratory, when using electronic requesting the system will advise on what sample container to use but if you have any doubts users are encouraged to check the intranet pages, this guide and if the information needed is not obviously available to contact the Laboratory for assistance.

- Blue Top - Contains Sodium Citrate Anticoagulant
- Gold Top - Plain Bottle (contains separating gel)
- Pink Top - Contains Potassium EDTA anticoagulant
- Purple Top - Contains Potassium EDTA anticoagulant

Paediatric Samples

Blue	Brown	Purple	Grey
It is mandatory to fill to the broken line of the sample bottle (top of the label). For any special coagulation studies (other than the coagulation screen) please discuss with the consultant haematologist before collecting samples. Please ensure this sample is well mixed to avoid sample clotting.	If possible please fill to a minimum of 0.5ml or else the test(s) may have to be prioritised or not run.	A minimum of 0.5ml is required for Full Blood Count. Please ensure this sample is well mixed to avoid sample clotting.	If at all possible please fill to a minimum of 0.5ml or else the test(s) may have to be prioritised or not run.

High Risk Samples

A high-risk sample is the responsibility of the requesting clinician to indicate or highlight that a specimen may carry a high risk of harm to staff or other service users. This should be clearly stated on the request. They MUST supply all relevant clinical details as is reasonable and practical at the time of initial clinical assessment.

Where there is a failure to follow this procedure a Datix incident report will be raised for investigation.

If you have any concerns about the transportation of High-Risk samples please contact the Laboratory directly.

Requesting Urgent Tests

If a test is urgent, it is the responsibility of the requesting department and requesting healthcare professionals to pre alert the Laboratory where possible. Where it is not possible due to an emergency the sample should be hand transported and given to a member of the Laboratory staff with the full details of the test requested and the contact details, so staff know who to contact with the results.

Requesting Additional Tests

Where an additional test is required for a sample that the Laboratory has already received, please contact the Laboratory by telephone to discuss adding additional tests on. Please be aware that due to the high-volume nature of many of the Laboratories tests it may not always be possible to add on to an existing sample.

Specimen Transport

Transport of Patient samples to the Laboratory is primarily performed by the Trust Couriers.

The Torbay Hospital courier service collects samples from GP surgeries and local hospitals from Monday - Friday. Most sites are visited at least twice a day.

It is the responsibility of the clinician/nurse taking the sample from the patient to arrange transport of the specimen to the laboratory.

For an urgent or high-risk sample the Laboratory would advise Healthcare professionals to contact the laboratory prior to transport and ensure that the sample is handed to a member of the Laboratory staff. Please see the High-Risk sample section for more information.

Out of hours Testing

The Laboratory operates an out of hours testing service for urgent requests and clinical advice is available from the on-Duty Haematology Consultant.

Patient Consent

Please note that the laboratory may be required to disclose clinical information and family history to relevant healthcare professionals, where referral is required.

For example: The completion of an FOQ form will be viewed as implied consent

For Genetic testing: Where consent is required the requesting clinician will discuss requirements for consent and the patient and appropriate consent forms should be completed and signed.

In the event of an emergency situation the Laboratory may carry out necessary procedures provided they are in the patient's best interests.

Results

Validity of Results

While all assays are processed using extensive internal and external quality assurance procedures to ensure accuracy and precision,

very occasionally random errors may occur and escape detection. If your clinical opinion doubts the validity of a result, please contact the relevant pathology Consultant immediately.

Communication of critical results

All results to be phoned within 60 minutes of when results are available.

Parameter	Result	Comment
Haemoglobin	<70 g/l <50 g/l	Normochromic normocytic (? blood loss) Microcytic or macrocytic
Neutrophils	<0.5 x 10/9/l >50 x 10/9/l	After film examination
Lymphocytes	>50 x 10/9/l	After film examination (only if new)
Platelets	<30 x 10/9/l >1000 x 10/9/l	
Blood film abnormalities		Features suggestive of acute leukaemia or CML uncontrolled haemolytic anaemia MAHA (HUS, TTP)
Malaria (and other blood parasites)	Positive	
INR	>5.0	On Warfarin therapy
APTTR	>2.5	Unfractionated Heparin therapy
Fibrinogen	<1.0 g/l	
Plasma Viscosity	>3.0	If no previous results and no clinical details indicating cause.

Clinical Advice

Interpretation of Results

Senior clinical staff in all departments are available to discuss the choice of tests appropriate for a particular patient, interpretation

of the results and advice on further investigations. The reference ranges for paediatric samples are printed on the report form.

Detailed protocols on dynamic function tests are available. Factors such as daily variation, posture, venous stasis, many drugs etc.

can particularly affect some biochemical assays. If there is any doubt about the validity of an analytical result or drug effect please contact the laboratory.

Comments aiding in Interpretation

Each result generated by the Laboratory may include comments as an aid to interpretation, if these are unclear or you require more guidance please contact the Laboratory.

Investigations, Turnaround Times & Sample Requirements

Turnaround Times

The Laboratory considers the Turnaround Times of samples (TAT) to begin at the point the Laboratory receive the sample. Once within the Laboratory setting a full audit trail should be available from the point of receipt to the result being released for each sample.

A&E FBC result < 1 hour from receipt
All FBC results < 6 hours from receipt

Measurement of Uncertainty

In laboratory testing there are potential uncertainties that may affect test results (for example, specimen not collected correctly, presence of therapies, biological variation) Additionally, factors within the laboratory may lead to variation (for example time from arrival to processing). Laboratories have measures in place to minimize the level of uncertainty and this is reflected by the Quality Assurance processes in place.

Results provided by the laboratory are representative of the sample tested and must be considered against clinical presentation. There are several factors that may affect the quality and validity of a result that are outside of the laboratories control.

Please not this list is not exhaustive.

Factors that may affect results	Mitigating actions
Transport of sample/Delays	• Contact the laboratory in the event of any delays. • Inform the laboratory of any urgent samples. • Clearly label the date and time of collection where possible.
Underfilled	• Refer to user guide and check labels on collection bottles. • Contact laboratory if unsure of requirements
Out of Date Container	• Check stock regularly. • Check containers prior to collection. • Do not over stock.
Insufficient Clinical Details	• Complete clinical details and ensure tests are requested, without appropriate clinical details samples may be delayed.

Laboratory Portfolio & Reference Ranges

General Haematology

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
Y	FULL BLOOD COUNT	Daily TAT- 2 hours	Purple Top		
Please note that FBC results generated at the Newton Abbot Hospital site are not UKAS accredited.					
	FBC samples should be received within 24hrs of collection - Prolonged exposure to cold or heat may affect results				
Y	Hb			M - 130 – 180 F - 120 - 150	g/L
Y	RBC			M - 4.5 - 6.0 F - 3.8 - 5.5	1012/L
Y	HCT			M - 0.40 - 0.53 F - 0.37 - 0.47	L/L
Y	MCV			80 - 100	fl
Y	MCH			27 - 32	pg
Y	MCHC			280 - 350	g/L
Y	RDW			12 - 16	
Y	PLT			150 - 400	109/L
Y	MPV			7.4 - 10.4	fl
Y	WBC			4.0 - 10.0	109/L
Y	WBC DIFFERENTIAL				
Y	Neut			1.8 - 7.5	109/L
Y	Lymph			1.0 - 4.0	109/L
Y	Mono			0.2 - 1.0	109/L
Y	Eos			0.0 - 0.4	109/L
Y	Baso			0.0 - 0.1	109/L
Y	BLOOD FILMS	TAT - 24 hours			
	Blood films are made dependant on results obtained from the full blood count or if specifically requested. Blood films can be requested up to 8 hours post sample collection after which integrity of the cells prevent accurate reporting.				
Y	PLATELET FUNCTION	by arrangement	Blue		
	Please call the Consultant Haematologists to authorise platelet function test before requesting. Samples should arrive in the lab as soon as possible post collection. Transport of samples via tube systems, exposure to prolonged cold or heat may affect results				

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
N	PLAMA VISCOSITY	Plasma Viscosity is no longer routinely available. Indications for testing include SLE crisis, hyper viscosity syndrome under the direction of Rheumatologist or Haematologist. Please request CRP as the primary inflammatory marker. PV is now tested at Derriford Hospital. TAT-5 Days	Purple	1.50 - 1.72	mPa/s
	Samples for PV should be received in the laboratory within 24 hrs of collection. Prolonged exposure to cold or heat may affect results.				
Y	ESR	Daily TAT - Within an hour *Please note ESRs will be performed only for following criteria: Suspected TA, Giant Cell Arteritis, SLE and PMR. ESR is also used for the risk stratification of some patients with early-stage Classical Hodgkins Lymphoma*	Black	M - 0-10 F - 0 - 19	mm/hr
	This is only in suspected cases of TA/GCA. Please do NOT cover tube with patient ID label below the white section at the top of the tube as this will cover the measurement area of the tube. Samples should arrive in the lab within 4 hrs of collection. Prolonged exposure to cold or heat may affect results				
Y	RETICULOCYTES	Daily - up to 24hrs post sample collection TAT - 2 hours	Purple	50-100	109/L
	This cannot be done on inadequately filled samples therefore ideally take a second sample for this test.				
Y	GLANDULAR FEVER	Daily TAT - <24 hours	Gold (Ideally) or EDTA (Purple)		
Y*	MALARIA PARASITES	Daily TAT - 24 hours	Purple		
	It is essential to include the countries patient has visited in the clinical details or else the sample will not be processed.				
	Screen includes: • Antigen Card – not UKAS accredited. * • Thin film • Thick film Samples for Malaria screen should be received in the laboratory within 24 hrs of collection. Prolonged exposure to cold or heat may affect results				

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
Y	**COAGULATION SCREEN**	Daily TAT - 2 hours	Blue Top		
Y	Prothrombin time			12.3-15.0	sec
Y	Fibrinogen			1.7 - 4.0	g/l
	Only adequately filled samples can be tested. Samples received >8hrs post collection cannot be processed. Prolonged exposure to cold or heat may affect results Indication for coagulation screens: • Patient history is suggestive of an underlying bleeding disorder. • Patient history of liver disease presenting with bleeding and requires an invasive procedure. • Paracetamol overdose. • Severe sepsis and at risk of DIC. • Novel anticoagulant overdose e.g. rivaroxaban, dabigatran, apixaban.				
Y	**ANTICOAGULANT CONTROL**	TAT - 2 hours	Blue Top		
Y	INR (Warfarin) Indication for INR only: Patient on warfarin Aspirin overdose.	Daily			
Y	APTT Ratio (Unfractionated Heparin)	Daily		1.5-2.5	Ratio
N	Anti Xa	On request			Iu/ml
	Only adequately filled samples can be tested. Samples received >8hrs post collection cannot be processed. Prolonged exposure to cold or heat may affect results.				
Y	**SUSPECTED THROMBOPHILIA**	TAT - 7 days			
	Important: All tests below must be authorised by consultant Haematologist first before requesting. Only adequately filled samples can be tested. Samples received >8hrs post collection cannot be processed. Prolonged exposure to cold or heat may affect results.				
Y	Prothrombin Ratio	Daily	Blue	12.3 -15.0	sec
Y	APTT Ratio	Daily	Blue	25.0-34.0	sec
Y	Fibrinogen	Daily	Blue	1.7 - 4.0	g/L
Y	Antithrombin Activity	2 Weekly	Blue	80 - 129	iu/dl
Y	Protein C Activity	2 Weekly	Blue	70 - 130	iu/dl

Y	Free protein S antigen	2 Weekly	Blue	52 - 139	iu/dl
Y	Lupus Anticoagulant (DRVVT)	2 Weekly	Blue	<1.2	
Y	Cardiolipin antibodies*	2 Weekly	Gold	<19.9	CU
Y	Beta 2 GP1 antibodies*	2 Weekly	Gold	<19.9	CU
	* These are also available as **Cardiolipin Abs.** Samples should be spun and stored in a fridge within 24 hrs of collection Prolonged exposure to cold or heat may affect results.				
Y	Factor V Leiden mutation Pro-thrombin gene mutation	2 Weekly	Purple or Blue		
	Note: If patient has been tested before for Factor V then repeat testing not indicated. Samples should be received into the lab as soon as possible post collection. Prolonged exposure to cold or heat may affect results. This test is referred to an external laboratory so samples should not be sent to lab late on a Friday or on Bank holidays to avoid transport delays which may affect the integrity of the sample.				
	SUSPECTED DVT/PE	TAT - 2 hours			
Y	D Dimer	as required	Blue	0 - 0.5	feu/ml
	Note: The D Dimer is a negative predictor test meaning it is designed to exclude DVT, PE etc. if the result is normal. A high result does not necessarily indicate anything clinically relevant. The D Dimer test is available up to 8 hours post samples collection.				
	SUSPECTED BLEEDING DISORDERS	as required TAT - 2 hours			
Y	Prothrombin time		Blue	12.3 - 15.0	Sec
Y	APTT		Blue	25.0-34.0	Sec
Y	Fibrinogen		Blue	1.7 - 4.0	g/L
	Note: Factor assays may be performed if initial screen shows an abnormality. Please consult the Haematologist if specific tests are required.				
Y	Platelet Count		Purple	150 - 400	10^9/L
	SUSPECTED vWF/ HAEMOPHILIA/ PLATELET DISORDER	by arrangement TAT - 1 week	Blue (x3)		
Y	APTT			25.0-34.0	Sec

Y	Factor VIII			50 - 150	Iu/dl
Y	Factor IX			50 - 150	Iu/dl
Y	vWF : Ag			50 - 150	Iu/dl
Y	vWF : (RiCoF)			56 - 187	Iu/dl

Note: Please liase with the consultant Haematologist before requesting. For platelet disorder investigations please send an FBC as well. (See General Haematology Tests)

Only adequately filled samples can be tested. Samples received >8hrs post collection cannot be processed. Prolonged exposure to cold or heat may affect results

HAEMATOLOGY MOLECULAR BIOLOGY INVESTIGATION

Immunophenotyping, Cell Marker and Lymphocyte Monitoring

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
Y	IMMUNOPHENOTYPING (CELL MARKERS)	TAT - 48 hours	Purple		
Note: For cell markers consult with the Haematologist. Non urgent requests do not send on a Friday or directly before bank holiday. Please contact 01803 655240 for the following tests:					
Y	Acute Leukaemia	Not Friday			
Y	LPD/CLL	Mon - Wed			
Y	Natural Killer Cell	Not Friday			
Y	Plasma Cell Disorders	Not Friday			
Y	PNH	Not Friday			
	HAEMATOLOGY MOLECULAR BIOLOGY INVESTIGATION	TAT - 1 week	Purple x2		
Y	HLA	Not Friday			
Y	JAK2	Not Friday			
Y	HFE gene mutation	Not Friday			
Y	BCR	Not Friday			
	Note: Please identify which HLA is required. These never need repeating. JAK2, HFE and BCR tests are all PCR and so samples cannot be used for any other testing. If other tests are requested on the sample the PCR will take preference. Samples should be received as soon as possible post collection, no longer than 24 hrs.				
N	TPMT	Daily TAT - <3 weeks			
	LYMPHOCYTE MONITORING	Mon - Thurs TAT - 72 hours	Purple		
Y	CD3			1100-1700	cells/cmm
Y	CD19			200 - 400	cells/cmm
Y	CD4			700 - 1100	cells/cmm
Y	CD8			00 - 900	cells/cmm
Y	CD 8/4 Ratio			1.0 - 1.5	

Haemoglobinopathy Investigation

Confirmation of abnormal haemoglobins is confirmed by electrophoresis run within 14 days

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
Y	**THALASSAEMIA SCREEN**	Daily TAT - 3 working days	Purple		
Y	Capillary electrophoresis				
Y	Haemoglobin A2 - Quantitation			2.2 - 3.5	%
Y	Haemoglobin F - Quantitation			0.2 - 0.8	%

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
Y	**SICKLE SCREEN**	Daily TAT - Within the hour	Purple		
Y	Sickle Test*				
Y	Capillary electrophoresis				
Y	Haemoglobin S - Quantitation				
	*The Sickle Solubility test is offered out of hours if urgent and is also performed as a confirmatory test to Capillary electrophoresis. Capillary electrophoresis will be performed for sickle cell requests in normal working hours.				
N	**G6PD SCREEN**	as required TAT - < 7 days	Purple		
	For other red cell enzyme investigations please consult with the Consultant Haematologist.				

Other Available Tests

UKAS Accredited?	Test Name	Availability	Sample Container
Y	**BONE MARROW ASPIRATE/TREPHINE**	as required.	
	Please contact the Haematology Consultant to arrange test. To include iron stain, cytochemistry, cell markers, cytogenetics and DNA studies where appropriate.		
Y	URINARY HAEMOSIDERIN	as required	Urine container

Immunology Testing Available at Torbay

UKAS Accredited?	Test Name	Availability	Sample Container	Adult Range	Units
N	**INTRINSIC FACTOR**	Weekly	Gold	<25	
Y	**ANTI-CARDIOLIPIN** (including Beta 2 glycoprotein 1)	2 Weekly	Gold	<19.9	CU
Y	**TISSUE TRANSGLUTAMINASE (TTG)**	Daily	Gold	<20	U

Please be aware that if numerous immunology tests are requested then more than one gold topped sample will be required. If too many tests are requested on ICE there may be insufficient room for any add on tests - consider using a separate order for immunology.

Referred Work

Referred Immunology Tests

Immunology tests referred to Derriford Hospital or Royal Devon & Exeter Hospital may be referred elsewhere by them.

Please be aware that if numerous immunology tests are requested then more than one gold topped sample will b e required. If too many tests are requested on ICE

There may be insufficient room for any add on tests - consider using a separate order for immunology.

TAT's are usually around 14 days with the exceptions of ANCA's if urgent (which is straight away, within 24 hours by agreement with Royal Devon & Exeter Immunology Lab.)

Test Name	Availability	Sample Container
AUTO IMMUNE PROFILE LIVER SCREEN	Daily	Gold
Anti-nuclear ab		
Smooth muscle ab		
Mitochondrial ab		
Gastro parietal cell ab		
Liver/Kidney ab		
Only request if liver involvement and NB ANA will be reported as NEG or POS no pattern or titre will be issued.		
ANTI-NUCLEAR ab	Daily	Gold
dsDNA	Daily	Gold
ENA (EXTRACTABLE NUCLEAR ab)	Daily	Gold
ENA will only be tested if there is a POS ANA with titre => 1:160. If ENA is positive an identification test will be run unless already known positive.		
ANCA (ANTI NEUTROPHIL CYTOPLASMIC ab)	Daily	Gold
PR3 & MPO antibodies will be tested on Positive ANCA's.		
ATSH = anti - TSH ab	Daily	Gold
ADRENAL abs	Daily	Gold
ANTI-SKIN ab	Daily	Gold
AQUAPORIN 4 abs	Daily	Gold
N-METHYL D ASPARATE RECEPTOR abs	Daily	Gold
BASAL GANGLIA abs	Daily	Gold
GADD DIABETIC (GLUTAMIC ACID DECARBOXYLASE)	Daily	Gold
Includes GAD ab, IA2 ab and zinc transporter ab. N.B On ICE this is GAD (Diabetes)		
GAD ab - STIFF PERSON	Daily	Gold
N.B On ICE this is GAD (STIFF PERSON)		
GANGLIOSIDE ab	Daily	Gold
GLOMERULAR BASEMENT MEMBRANE ab	Daily	Gold
ANTI-INSULIN ab	Daily	Gold
MYELIN ASSOCIATED GLYCOPROTEIN ab	Daily	Gold
MYELIN OLIGODENDROCYTE GLYCOPROTEIN ab	Daily	Gold
ANTI MUSCARINIC ANTIBODY	Daily	Gold
MYOSITIS SPECIFIC ANTIBODIES	Daily	Gold
NEURONAL abs	Daily	Gold
OVARIAN abs	Daily	Gold
PLA2R antibodies	Daily	Gold
ANTI-PANCREATIC ISLET CELL ANTIBODY	Daily	Gold
SALIVARY GLAND ab	Daily	Gold
SKELETAL MUSCLE ab	Daily	Gold
VOLTAGE GATED POTASSIUM CHANNEL ab	Daily	Gold
VOLTAGE GATED CALCIUM CHANNEL ab	Daily	Gold
G6PD		

Haemoglobinopathies (Sickle Cell and Thalassemia) Antenatal Screening

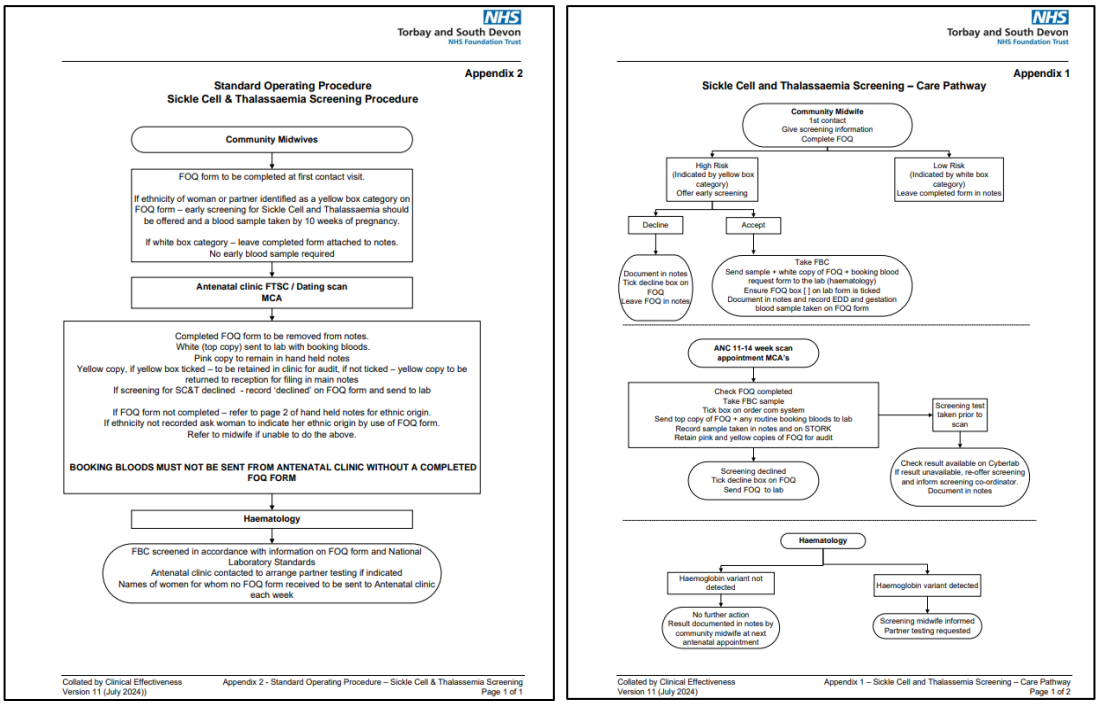
The Haematology Laboratory at Torbay Hospital takes part in the Sickle Cell and Thalassemia (SCT) screening programme.

Haemoglobinopathies are a group of inherited blood disorders that fall into two main categories: haemoglobin variants such as sickle cell disease (SCD) and thalassaemias. If a patient is a carrier of the sickle cell or thalassaemia gene, it can be passed onto the baby. All pregnant women in England who have accepted screening will have laboratory testing for haemoglobin variants and thalassaemia. If the mother is found to be a carrier, screening may also be offered to the father.

The aim of the screening programme, is to offer sickle cell and thalassaemia screening by 8-10 weeks of pregnancy. This allows for the option of early prenatal diagnosis and the subsequent offer of termination to those found to have an affected pregnancy.
The screening test is based on the red blood cell indices and the family origin of the woman or birthing person and the biological father of the baby (FoB) as identified from the family origin questionnaire (FOQ).

For more information on screening please see the Trust Policy **Haemoglobinopathies (Sickle Cell And Thalassemia), Antenatal Screening For** (Reference Number: 0963)

Below is a copy of the Screening Pathway



Torbay and South Devon NHS Foundation Trust

Appendix 2

Standard Operating Procedure
Sickle Cell & Thalassaemia Screening Procedure

Community Midwives

FOQ form to be completed at first contact visit.

If ethnicity of woman or partner identified as a yellow box category on FOQ form – early screening for Sickle Cell and Thalassaemia should be offered and a blood sample taken by 10 weeks of pregnancy.

If white box category – leave completed form attached to notes. No early blood sample required

Antenatal clinic FTSC / Dating scan MCA

Completed FOQ form to be removed from notes.
White (top copy) sent to lab with booking bloods.
Pink copy to remain in hand held notes
Yellow copy, if yellow box ticked – to be retained in clinic for audit, if not ticked – yellow copy to be returned to reception for filing in main notes
If screening for SC&T declined - record 'declined' on FOQ form and send to lab

If FOQ form not completed – refer to page 2 of hand held notes for ethnic origin.
If ethnicity not recorded ask woman to indicate her ethnic origin by use of FOQ form.
Refer to midwife if unable to do the above.

BOOKING BLOODS MUST NOT BE SENT FROM ANTENATAL CLINIC WITHOUT A COMPLETED FOQ FORM

Haematology

FBC screened in accordance with information on FOQ form and National Laboratory Standards
Antenatal clinic contacted to arrange partner testing if indicated
Names of women for whom no FOQ form received to be sent to Antenatal clinic each week

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Appendix 1

Sickle Cell and Thalassaemia Screening – Care Pathway

Community Midwife
1st contact
Give screening information
Complete FOQ

High Risk (Indicated by yellow box category) Offer early screening

Low Risk (Indicated by white box category) Leave completed form in notes

Decline

Accept

Document in notes
Tick decline box on FOQ
Leave FOQ in notes

Take FBC
Send sample + white copy of FOQ + booking blood request form to the lab (haematology)
Ensure FOQ box [ ] on lab form is ticked
Document in notes and record EDD and gestation
blood sample taken on FOQ form

ANC 11-14 week scan appointment MCA's

Check FOQ completed
Take FBC sample
Tick box on order com system
Send top copy of FOQ + any routine booking bloods to lab
Record sample taken in notes and on STORK
Retain pink and yellow copies of FOQ for audit

Screening test taken prior to scan

Screening declined
Tick decline box on FOQ
Send FOQ to lab

Check result available on Cyberlab
If result unavailable, re-offer screening and inform screening co-ordinator.
Document in notes

Haematology

Haemoglobin variant not detected

Haemoglobin variant detected

No further action
Result documented in notes by community midwife at next antenatal appointment

Screening midwife informed
Partner testing requested

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Specimen Guides

Blood Collection: Vacutainer System

General Advice and Guidance

- Avoid contamination by using skin sterilizing fluids; all skin is to dry before venepuncture. Avoid prolonged use of tourniquet
- Use the vacutainer system where possible. Use of syringe and needle is NOT recommended. If a syringe is used, do not apply strong suction. Remove the needle before ejecting the blood in the uncapped container to avoid haemolysis.
- Blood cultures should be collected with a Butterfly needle system.
- Ensure the sample is put into the correct tube for the required test(s).
- It is important to follow the Trust order of draw.
- Do not pour blood from one type of collected tube to another.
- Mix blood in the sample tubes by gentle, repeated inversion.
- Label the sample clearly.
- Materials used for sample collection should be safely disposed of, as per Trust Policy.

Blood Collection Safety Concerns.

The Pathology department holds standard operating procedures which cover Health and Safety pre-examination, examination and post-examination for all specimens and samples.

These documents are updated regularly and are currently available on request. Please see a list of available documents below:

COSHH

This document is designed to help understand the COSHH regulations and responsibilities under these regulations, and to give simple guidelines to help with risk assessment and the controlling of hazards at work

Health & Safety Policy

This is the H&S policy designed for the Department of Pathology. Each member of staff must read the document at least once every twelve months

Specimen Guidance and Transport

This policy outlines the principles and laboratory guidelines for specimen collection and handling, transportation and referral to other laboratories.

Standard Precautions

Standard Precautions(SP) are a set of precautions designed to prevent parenteral, mucous membrane, and non-intact skin exposures of healthcare workers to blood borne pathogens.

For additional information or to receive a copy of one of the above documents please get in touch with a member of the relevant department.

Blood Samples – General Guidance

What is Required

All tests require a minimum volume of Plasma/Serum or whole blood depending on the test. Please ensure that where possible Blood samples are filled to an acceptable level and consider each patient's individual condition and requirements to minimise adverse effects on the patient's wellbeing.

If you require guidance, please contact the Laboratory to discuss a specific test or in the event you are unsure if the sample you have collected will be suitable for testing.

Sample storage (prior to sample collection)

Please ensure that each sample container or blood collection device is stored appropriately as per the manufacturer's instructions and guidance. If you have a query please contact the Laboratory in the first instance.

Taking the Sample

Follow trust policy on the use of Blood Collection Vacutainer Systems and see above for general guidance on this area.

Sample storage (after collection)

Please ensure that samples are kept safely at an appropriate temperature and in a confidential area prior to transport to the Laboratory. If there are to be extended delays in transport please contact the Laboratory for guidance.

Transporting the sample to the Laboratory

The Laboratory would recommend that a member of staff from the source of the sample taking area drops the sample at the drop off point located within Pathology on Level 3 at Torbay Hospital. If this is not possible please ask a member of the portering team to do so.

If you are located external to the Torbay Hospital Site, please check the Trust Courier transport schedule and liase with the transport team to ensure that the sample is sent at the earliest possible opportunity.

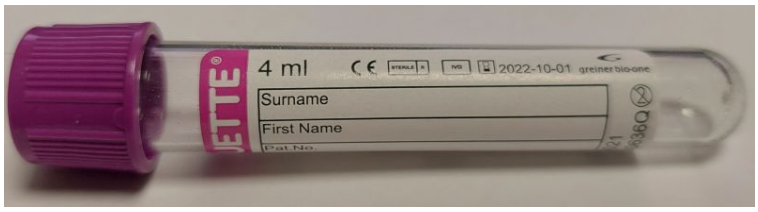
Where possible please indicate if a sample is to be considered urgent.

Other considerations

Factors that may affect the results

- Delayed transport to the Laboratory.
- Incorrect/insufficient patient details on sample or if a form has been used.
- Incorrect/insufficient clinical details that may impact the tests performed and the priority of the testing.
- Damaged or out of date sample containers, blood tubes often contain chemical/reagents which may require specific storage and stock management.

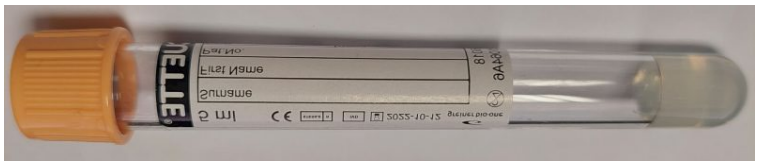
Potassium EDTA tube



- **Colour: Purple or Lavender**
- **Information:** Potassium EDTA serves as the anticoagulant for the performance of almost all haematological tests. Larger EDTA bottles are used for transfusion samples only.
- **Important notes:** The tubes should be filled up to the line indicated on the tube to ensure the correct ratio to blood to anticoagulant is achieved for analysis. The sample should be inverted about six times to ensure the blood and anticoagulant mixes. The samples must not be shaken to mix the blood.

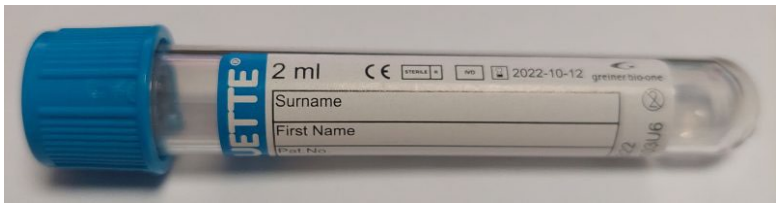
Please note that Haemoglobinopathy (Sickle Cell and Thalassaemia Screen) testing is performed on EDTA tubes and a FOQ (Family Origin Questionnaire) must be submitted with the sample.

Serum separating tube (SST)



- **Colour:** Gold
- **Information:** This tube type is used for the vast majority of Biochemistry, Immunology Serology tests.
- **Important notes:** The sample should be inverted about six times to ensure the blood and gel mixes to activate the clotting process. **The samples must not be shaken to mix the blood.**

Sodium citrate tube



- **Colour:** Light blue
- **Information:** The ratio between anticoagulant and blood for physiological examinations is 1:9.
- **Important notes:** The tubes should be filled up to the line indicated on the tube to ensure the correct ratio to blood to anticoagulant is achieved for analysis. The sample should be inverted about six times to ensure the blood and anticoagulant mixes. The samples must not be shaken to mix the blood.

ESR Sodium citrate

Colour: Black Lid

Information: Contains Sodium citrate and is only used for patients suspected of having GCA (Giant Cell Arthtitis).

Important Notes: This sample should be brought to room temperature prior to testing. The sample should be gently inverted 5-10 times to obtain the correct mixuture.

Please Note:

For details on collection please see the Trust Venepuncture Procedure (Document Number 1535).

Disposal of materials used in collection of patient samples should follow local trust policies.