| Date of Review | Signed By | Date of Review | Signed By | Date of Review | Signed By | Date of Review | Signed By |
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# Haematology User Guide

## Contents



## Overview

Haematology forms part of the Blood Sciences Service, along with Blood Transfusion, Biochemistry, Flow Cytometry and Stem Cell Processing. All Services are provided by the Christie Pathology Partnership.

**The information in this user guide relates to Haematology services**.

The laboratory offers a comprehensive test repertoire for adult haematological investigation and treatment of patients including: Blood Counts, Coagulation, Stem Cell Therapeutics and Blood Transfusion services. The laboratory offers Blood Counts and Coagulation for paediatric patients.

There is a separate user guide for Biochemistry available via the Trust Intranet. Information relating to Blood Transfusion services can be found on the Trust Intranet. The Stem Cell Processing laboratory is closely linked with services provided by the Haematology Transplant Unit.

Expert clinical and scientific advice is available on the investigation of haematological disorders, the interpretation of test results, and on any further investigations which may be required.

## Contact details of key members of staff

| Medical Staff | Name | Telephone | E-mail |
|---|---|---|---|
| Consultant Haematologist and Laboratory Lead | Dr Richard Chasty | 446 3370 | richard.chasty@nhs.net |
| Consultant Haematologist | Professor Adrian Bloor | 446 3657 | a.bloor1@nhs.net |
| Consultant Haematologist | Dr Mike Dennis | 446 3271 | mike.dennis1@nhs.net |
| Consultant Haematologist | Dr Jim Cavet | 446 3272 | jim.cavet@nhs.net |
| Consultant Haematologist | Dr Samar Kulkarni | 446 3228 | samar.kulkarni2@nhs.net |
| **Scientific staff** | | | |
| Blood Sciences Service Manager/Deputy General Manager | Mrs Sylvia Blake | 07435557353 | sylvia.blake@nhs.net |
| Blood Transfusion Laboratory manager | Ms Debbie Seals | 446 3287/3316 | deborah.seals@nhs.net |
| Stem Cell Laboratory manager | Mrs Diane Sweeney | 446 8096 | diane.sweeney2@nhs.net |
| Out of hours Biomedical Scientist (8pm – 8am) | | 07387140948 | |

**NB all telephone numbers should be prefixed with 0161 from outside Manchester**

The contact number for the haematology department is 0161 446 3285.
The full contact details of all laboratory personnel can be found on the staff directory.

## The location of the laboratory

The Haematology laboratory is situated within the Pathology Department **(Department 45)** located at the Wilmslow Road end of the 1st floor corridor, above main out-patients. Follow the silver signage throughout the hospital for Pathology. Alternatively, you could download the Christie app for real time navigation on your phone. Search for 'The Christie' on the App Store or Google Play.

## Times of opening of the Haematology/Transfusion laboratory

| | |
|---|---|
| Monday to Friday 08:30 – 17:00 | Routine service - Please ensure that samples for routine requests are sent to the laboratory within these hours |
| Monday to Friday: 17:00-21:00 | Restricted service provided on site covering Haematology / Transfusion. |
| Saturday, Sunday & Bank holidays: 09:00-17:00 | Restricted service covering Haematology / Transfusion |
| Mon – Fri 20:00 – 07:00<br><br>Weekends 17:00 – 08:00 | One BMS providing a Blood Transfusion service for urgent work required for the immediate management of the patient. The BMS MUST be contacted prior to urgent samples being sent. |

Haematology Medical staff are available for advice. During normal working hours they can be contacted using the phone numbers provided above and via switchboard at all other times.

## Details of out of hours service

Please send haematology and blood transfusion samples via the pneumatic tube system to reception number 111 or 222.

Results will be available on CWP; Request forms should have a contact number to advise of grossly abnormal results.

24 hours service is provided for both routine and Urgent work. The following services are available:

- Full Blood Count & Coagulation Screen
- Clauss Fibrinogen, D.Dimer and Anti - Factor Xa, acute DIC, massive transfusion or active bleeding.
- ESR
- Blood Film e.g new leukaemia, manual differential etc
- Malaria Parasite

## Services offered by the Haematology laboratory

| GENERAL HAEMATOLOGY TEST REPERTOIRE TESTS | SPECIMEN REQUIRED | TURNAROUND TIMES (measured from receipt in lab) | SPECIAL INSTRUCTIONS | KEY FACTORS AFFECTING TEST PERFORMANCE OR INTERPRETATION |
|---|---|---|---|---|
| Full Blood Count (FBC) | 3.4 ml red top EDTA | 30 mins | | Cold red cell autoagglutinnins<br>Lipaemia<br>(these are corrected in lab) |
| Platelet clumping | 3.4 ml red top EDTA + 3.0 ml green top citrate | 30 mins | State '' for platelet clump'' on the request form | To obtain an accurate platelet count due to the platelet clumps in the blood |
| Erythrocyte Sedimentation Rate (ESR) | 3.5 ml purple top Citrate; fill exactly | 6 hrs | Tube must be correctly filled | Cold red cell autoagglutinnins (test will not be reported) |
| Reticulocyte count | 3.4 ml red top EDTA | 30mins | | |
| Blood film (manual differential) | 3.4 ml red top EDTA | 24 hrs | | Prolonged exposure to EDTA anticoagulant may result in abnormal cell morphology |
| Infectious mononucleosis screen (Glandular fever) | 3.4 ml red top EDTA | 8 hrs | | Some patients do not produce antibody.<br>In early stage antibody may be undetectable. |
| Malarial Parasites | 3.4 ml red top EDTA | 8 hrs | State travel history on the request form.<br><br>Send sample for 3 consecutive days if Malaria is suspected. | |

| GENERAL HAEMATOLOGY TEST REPERTOIRE TESTS | SPECIMEN REQUIRED | TURNAROUND TIMES (measured from receipt in lab) | SPECIAL INSTRUCTIONS | KEY FACTORS AFFECTING TEST PERFORMANCE OR INTERPRETATION |
|---|---|---|---|---|
| Sickle screen | 3.4 ml red top EDTA | 8 hrs | Urgent requests should be notified to the lab by phone | Requestor should indicate if patient has been recently transfused |
| Bone marrow aspirate | Bone marrow in EDTA | 7 days | Discuss with Haematologist | Refrigerate if not sending straight to lab<br>Prolonged exposure to EDTA anticoagulant may result in abnormal cell morphology |
| CSF Cell count and Cytopathology | Min Vol 1.5 ml (30 drops) CSF fluid in plain bottle | Cell count same day – 30 minutes<br><br>Cytopathology – 7 days | Send samples to lab before 19:00 | Urgent requests should be notified to the lab by phone.<br>Cell count might not be processed if sample is insufficient. |
| Ascitic and Pleural Fluids | Fluid in plain bottle | Cytopathology – 7 days | Patients with haematological malignancies only | |
| CD34 enumeration | 3.4 ml red top EDTA | 90 mins | Specimens should arrive no later than 16:15 | |
| CD4:8 ratio | 3.4 ml red top EDTA | 90 mins | Specimens should arrive no later than 16:15 | CD4 and CD8 subsets for monitoring HIV are performed at Manchester Foundation Trust. |

| COAGULATION TEST REPERTOIRE TESTS | SPECIMEN REQUIRED | TURNAROUND TIMES | SPECIAL INSTRUCTIONS | KEY FACTORS AFFECTING TEST PERFORMANCE OR INTERPRETATION |
|---|---|---|---|---|
| Clotting Screen (PT + INR + APTT + Fibrinogen + Clauss Fibrinogen) | 3.0 ml green top citrate; Fill exactly | 60 mins | All coagulation tests require a good clean venepuncture to avoid sample activation. | Patient on any anticoagulants – please inform the lab. Under filled samples may result in falsely prolonged clotting times and will not be processed. Contamination with heparin will result in a prolonged APTT |
| D-Dimer (DD) | 3.0 ml green top citrate. Fill excatly | 3 hours | | |
| Factor Xa | 3.0 ml green top citrate. Fill exactly | 60 mins | | State given dose on the request form. |
| Thrombin time (TT)<br><br>Reptilase Time (REPT) | 3.0 ml green top citrate | 3 hours | | |

## Referred tests

Some specialised or low volume assays are referred to suitably accredited external laboratories for analysis. See the list of referral laboratories.

| TESTS REFERRED TO OTHER HOSPITALS TEST | SPECIMEN REQUIRED | TURNAROUND TIME | SPECIAL INSTRUCTIONS | REFERRED TO |
|---|---|---|---|---|
| Acute Panel<br>Chronic Panel<br>(haematological malignancy diagnosis) | EDTA Bone marrow / EDTA Peripheral Blood | 7 days | Samples should arrive before 15:30 pm Monday to Friday | Central Manchester NHS Trust |
| Hb Electrophoresis | 3.4ml red top EDTA | 7 days | Separate request from routine FBC EDTA | Central Manchester NHS Trust |
| Plasma viscosity (PV) | 3.4 ml red top EDTA | 7 days | DO NOT refrigerate | UHSM (Wythenshawe) |
| Confirmation haemoglobinopathy screen | 3.4 ml red top EDTA | 2 weeks | | Central Manchester NHS Trust |
| Glucose-6-phosphate dehydrogenase (G6PD) | 3.4 ml red top EDTA | 7 days | 1ml min volume.<br><br>Form below to be completed and send to the lab along with the sample<br>  <br>G6PD Referral form.docx | Central Manchester NHS Trust |

| TESTS REFERRED TO OTHER HOSPITALS TEST | SPECIMEN REQUIRED | TURNAROUND TIME | SPECIAL INSTRUCTIONS | REFERRED TO |
|---|---|---|---|---|
| PNH Screen (PNH) | 3.4 ml red top EDTA | 2 weeks | Samples should arrive before 15:30 Mon – Thurs ONLY | HMDS St James's University Hospital, Leeds |
| Coagulation factors (II,V,VII,VIII,IX,XI,XII, FXIII:Ag) | 2 x 3.0 green top citrate | 2 weeks | | Central Manchester NHS Trust |
| Von Willebrand Screen (FVIII, FVIII:Ag, FVIII: Act) | 2 x 3.0 ml green top citrate | 2 weeks | | Central Manchester NHS Trust |
| Lupus anticoagulant screen | 2 x 3.0 ml green top citrate | 2 weeks | Indicate if patient on anticoagulants | Central Manchester NHS Trust |
| Thrombophilia screen (AT, PC, FPS, APC, Lupus, TT) | 3 x 3.0 ml green top citrate | 2 weeks | Patient should be 1 month post anticoagulant therapy or post thrombotic episode | Central Manchester NHS Trust |
| Factor VIII inhibitor screen | 3.0 ml green CITRATE | 4 weeks unless urgent | | Central Manchester NHS Trust |
| Prothrombin gene variant | 3.0 ml green CITRATE | 2 weeks | | Central Manchester NHS Trust |
| VWF Multimers (VWD) | 3.0 ml green CITRATE | 4 weeks | | Central Manchester NHS Trust |
| Factor V Leiden | 3.4 ml EDTA sample | 2 weeks | | Central Manchester NHS Trust |

| TESTS REFERRED TO OTHER HOSPITALS TEST | SPECIMEN REQUIRED | TURNAROUND TIME | SPECIAL INSTRUCTIONS | REFERRED TO |
|---|---|---|---|---|
| ADAMTS13 | 2 x 3.0 ml green CITRATE plus %ml plain clotted | 2 - 4 weeks | Discuss with Haematologist | Sheffield Royal Hallamshire |
| BCR-ABL / JAK2 Gene analysis/ ALL MRD testing | 10.0 ml red top EDTA (minimum 2 tubes) | 4 weeks | Complete routine specimen request form | Central Manchester NHS Trust |
| BCR-ABL / JAK2 Gene analysis/ ALL MRD testing | Bone marrow in EDTA | 4 weeks | Bone Marrow procedure referral form (DOC 17) | Central Manchester NHS Trust |

For any test not listed, please contact Haematology (ext 3285) to discuss test availability and specimen requirements

## NORMAL ADULT HAEMATOLOGICAL REFERENCE INTERVALS

| | Units | Male | Female | Range Basis |
|---|---|---|---|---|
| **WBC** | $x10^9/1$ | 4.0-11.0 | 4.0-11.0 | |
| **Hb** | G/L | 130-180 | 115-165 | |
| **PLATELETS** | $x10^9/1$ | 150-400 | 150-400 | |
| RBC | $x10^{12}/1$ | 4.50 6.50 | 3.80-5.80 | |
| MCV | fl | 76.0 – 96.0 | 76.0 – 96.0 | |
| HCT(PCV) | ratio | 0.40-0.54 | 0.37-0.47 | |
| MCH | pg | 27.0-32.0 | 27.0-32.0 | Haematological values for normal individuals taken from Dacie & Lewis * |
| MCHC | G/L | 30.5-35.0 | 30.5-35.0 | |
| RDW | % | 12.0 16.0 | 12.0 16.0 | |
| Differential | | | | |
| Neutrophils | $x10^9/1$ | 2.0-7.5 | 2.0-7.5 | |
| Lymphocytes | $x10^9/1$ | 1.5-4.0 | 1.5-4.0 | |
| Monocytes | $x10^9/1$ | 0.20 – 0.80 | 0.20 – 0.80 | |
| Eosinophils | $x10^9/1$ | 0.04 – 0.40 | 0.04 – 0.40 | |
| Basophils | $x10^9/1$ | 0.00 – 0.10 | 0.00 – 0.10 | |
| Reticulocytes | $x10^9/1$ | 9 - 130 | 8 - 116 | Local range |
| ESR (Westergren, 1hr at RT) | mm | 1 - 18 | 1 - 22 | See * above |
| Plasma Viscosity | cp | 1.45 - 1.8 | 1.45 - 1.8 | From external provider |
| **Blood coagulation** | | | | |
| Prothrombin Time | sec | 9.0 – 14.0 | 9.0 – 14.0 | |
| APTT | sec | 18.5 – 30 | 18.5 – 30 | |
| APTT Ratio for Heparin Dosage | | 1.50 - 2.50 | 1.50 - 2.50 | Local range |
| Thrombin Time | sec | 12 – 19 | 12 – 19 | |
| Fibrinogen | g/L | 2.0 - 4.0 | 2.0 - 4.0 | See *above |
| D-Dimer | ng/ml | 0 - 278 | 0 - 278 | Local range |
| Anti – Factor Xa | | | | |
| Therapeutic **once daily** dosing | | 0.5 – 1.5 IU/ml (Expected peak 1.0 IU/mL) | | |
| High-level ranges | | > 2.0 IU/ml | | |
| Therapeutic **twice daily** dosing | | 0.5 – 1.0 IU/ml | | |
| Serum B12, Serum Folate, Serum Ferritin | | See Biochemistry ref. ranges | | |

**Local ranges are established from 20 – 50 normal samples*

### Lymphocyte Populations (Adult 18 – 70 years)

| Lymphocyte Populations | | |
|---|---|---|
| T cells (CD3+) | 1100 – 1700 / uL | 67 – 76% |
| B cells (CD19+) | 200 – 400 / uL | 11 – 16% |
| NK cells (CD3-CD56+) | 200 – 400 / uL | 10 – 19% |
| Helper T cells (CD3 +/CD4 +) | 700 – 1100 / uL | 38 - 46% |
| Cytotoxic T cells (CD3+/CD8+) | 500 – 900 / uL | 31 – 40% |
| CD4:CD8 ratio | 0.9:1 – 1.9:1 | |

*Ref Hannet et al; Immunology today 1992;13;215-218.*

## PAEDIATRIC/ YOUNG ADULTS HAEMATOLOGICAL REFERENCE INTERVALS

| | Birth (Term) | 2-14 days | 15-30 days | 1-3 month | 3 -12 months | 1-6 years | 6-12 years | 12-18 years (female) | 12-18 years (male) |
|---|---|---|---|---|---|---|---|---|---|
| RBC | 3.7 - 6.5 | 3.9 - 6.0 | 3.3 - 6.0 | 3.1 - 4.5 | 3.8 - 4.9 | 3.9 - 5.1 | 3.9 - 5.2 | 4.1 - 5.1 | 4.2 - 5.5 |
| x10*12/L | | | | | | | | | |
| Hb | 149 - 237 | 134 - 205 | 110 - 180 | 94 - 130 | 100-130 | 101-138 | 111-147 | 121-151 | 121-166 |
| g/L | | | | | | | | | |
| Hct | 0.47-0.75 | 0.41-0.68 | 0.3-0.5 | 0.28-0.42 | 0.30-0.38 | 0.3-0.4 | 0.32-0.43 | 0.35-0.44 | 0.35-0.49 |
| L/L | | | | | | | | | |
| MCV | 100-130 | 95-120 | 90-105 | 84-98 | 73-95 | 73-88 | 77-91 | 78-95 | 78-95 |
| fL | | | | | | | | | |
| MCH | 32.0-39.0 | 30.0 - 40.0 | 30.0-36.0 | 27.5-34.0 | 23.0 - 31.5 | 24.0 - 30.0 | 24.0 - 30.0 | 26.0 - 32.0 | 26.0 - 32.0 |
| pg | | | | | | | | | |
| MCHC | 300 - 360 | 300 - 365 | 300 - 360 | 300 - 350 | 330 - 360 | 310 - 350 | 310 - 350 | 310 - 360 | 310 - 360 |
| g/L | | | | | | | | | |
| WBC | 6.0 - 26.0 | 6.0 - 21.0 | 5.0 - 20.0 | 5.0 - 17.0 | 6.0 - 17.0 | 6.0 - 17.0 | 4.5 - 14.5 | 4.5 - 13.0 | 4.5 - 13.0 |
| x10*9/L | | | | | | | | | |
| Neuts | 2.7 - 14.4 | 1.5 - 10.0 | 1.0 - 9.0 | 1.0 - 8.0 | 1.0 - 6.0 | 1.0 - 8.5 | 1.5 - 8.0 | 1.5 - 6.0 | 1.5 - 6.0 |
| x10*9/L | | | | | | | | | |
| Lymphs | 2.0 - 7.3 | 2.8 - 9.1 | 2.8 - 10.0 | 3.3 - 10.3 | 3.3 - 11.5 | 1.8 - 10.5 | 1.5 - 5.0 | 1.5 - 4.5 | 1.5 - 4.5 |
| x10*9/L | | | | | | | | | |
| Monos | 0.1 - 2.5 | 0.1 - 2.0 | 0.1 - 1.5 | 0.2 - 1.5 | 0.2 - 1.3 | 0.1 - 1.3 | 0.1 - 1.3 | 0.1 - 1.3 | 0.1 - 1.3 |
| x10*9/L | | | | | | | | | |
| Eos | 0.0 - 0.9 | 0.0 - 0.9 | 0.0 - 0.9 | 0.02 - 0.9 | 0.05 - 1.1 | 0.05 - 1.1 | 0.05 - 1.0 | 0.05 - 0.8 | 0.05 - 0.8 |
| x10*9/L | | | | | | | | | |
| Baso | 0.0 - 0.1 | 0.0 - 0.1 | 0.0 0.1 | 0.02 - 0.13 | 0.02 - 0.2 | 0.02 - 0.13 | 0.02 - 0.12 | 0.02 - 0.12 | 0.02 - 0.12 |
| x10*9/L | | | | | | | | | |
| Plats | 150 - 450 | 150 - 500 | 150 - 600 | 150 - 650 | 150 - 560 | 150 -550 | 150 - 450 | 150 - 430 | 150 - 430 |
| x10*9/L | | | | | | | | | |
| Ret % | 2.0 - 6.0 | 2.0 - 6.0 | 1.0 - 3.0 | 0.2 - 2.0 | 0.2 - 2.0 | 0.2 - 2.0 | 0.2 - 2.0 | 0.2 - 2.0 | 0.2 - 2.0 |
| Ret Abs | 80 - 360 | 80 - 360 | 33 - 180 | 6 - 100 | 7 - 105 | 8 - 105 | 8 - 105 | 8 - 110 | 8 - 110 |
| x10*9/L | | | | | | | | | |
| RDW-CV | | | | | | | | | |
| % | | | | | | | | | |
| IPF | | | | | | | | | |
| % | | | | | | | | | |

***FBC Reference Ranges 2014 Central Manchester Foundation Trust. Paediatric Haematology, Chapter 37, Third Edition: Simpkin and Hinchliffe***

## Consent

It is the responsibility of the requesting clinician to obtain consent from the patient for the collection of blood specimens. For certain tests (e.g. bone marrow aspiration) a consent form may be required in addition to the request form.

## Instructions for requesting tests

**Patient preparation and blood sampling:**

Trust I.V. policies managed by clinical skills team can be found at the following link:
https://hive.xchristie.nhs.uk/Interact/Pages/Section/Default.aspx?Section=2399

- Select Haematology User Guide under User Guide

Any patient preparation requirements for tests are detailed in the Haematology Test Repertoire above

All specimens must be fully labelled and accompanied by a completed combined Blood Sciences request form. Inadequately or incorrectly labelled samples will not be processed

**Request form:**

Required:

- Forms should be labelled on both copies with an addressograph label showing patients full name, hospital number and date of birth.
- Hand written forms should have the full name and hospital number and / or date of birth.
- Test required must be clearly indicated.
- High risk status MUST be indicated where appropriate on the form.

Desirable:

- Consultant, location and date
- Reason for request / clinical information
- Requestor's contact number.
- The time the specimen was taken and signature of sample taker.

**The specimen**

Details of specimen type and volume required are detailed in the Haematology Test Directory.
Check expiry dates on the specimen tube before use

Required:

- All specimens must have the full name, hospital number and /or date of birth completed by hand. These much match the details on the request form. Addressograph labels may only be used on samples from the Endocrine unit only.
- High Risk status must be indicated by a label on the sample if appropriate.
- Specimens from patients receiving GMOs as part of treatment must be identified with the 'GMO'label.

- Coagulation and ESR samples must be correctly filled.
- NB. At no time should blood be transferred from one container to another. This may result in contamination of the specimen with inappropriate anticoagulant and will invalidate the results obtained.
- Date and time specimens were taken
- Location of patient
- Signature of specimen taker.

Urgent Samples

Requests to process samples urgently should be conveyed by a phone call to the laboratory or a personal request when the sample is delivered

**Non compliance:**

1. Unlabelled specimens will be referred to designated senior staff and discarded unless it is not possible for them to be repeated. An attempt will be made to contact the requestor and request a repeat sample.
2. Specimens that cannot be easily repeated - an attempt will be made to contact the staff member who took the specimen so that the sample can be identified and labelled. The specimen will not be processed until it has been labelled. A note will be made on the final report that the specimen was received unlabelled and that the laboratory cannot take responsibility for actions taken as a consequence of the report.
3. Incorrectly / inadequately labelled specimens - an attempt will be made to contact the requestor to allow correction / completion of the labelling. Where there is conflicting information the person taking the specimen will be asked to re-label it. If the name is correct but other details are incorrect the specimen can be sent back for correction. If the name is incorrect the sample must be discarded
4. Incorrectly filled coagulation and ESR specimens - the ward will be informed and repeat samples requested. The specimen will only be processed in extreme cases where it is difficult to obtain another sample. The decision as to the suitability of the sample rests with senior laboratory staff. If processed, the results will state that the laboratory cannot guarantee the accuracy of the results.

**Flow Cytometry Requests**

For Flow Cytometry requests please use HCDP or CPP flow cytometry request forms (available from the laboratory). Request forms should be completed with – patient name, hospital number, date of birth, diagnosis if known, clinical details, specimen type and tests required (‘markers’ is insufficient). Samples will be requested on HODS and sent to MFT for processing.

## Instruction for transportation of samples

All specimens collected must be transported to the laboratory as soon as possible unless otherwise stated. All specimens must be in a sealed bag. Carry all specimens in the trays or boxes where provided, but never in pockets.

All specimens must be transported to the laboratory at ambient temperature unless otherwise stated.

Bone Marrow and CSF samples MUST be sent immediacy after taken the samples and transported them in person. Never send bone marrows and CSFs in the tube system.

Various personnel within the Trust will be involved in transport of specimens to and from the laboratory either by hand or via the POD system. In order to protect theirs and others safety the following guidelines should be followed.

Touch specimen containers as little as possible. If you do touch them, wash your hands as soon as practicable afterwards. Cover any cuts and grazes with a waterproof dressing. Diagnostic samples must be sealed in the plastic bag attached to the request form. Carry all specimens in the trays or boxes, where provided, never in pockets. If a specimen leaks into a tray or box, tell the laboratory reception staff and ask them to make it safe. If you drop and break a specimen, do not touch it or try to clear up the mess stay with the specimen to prevent other people touching it and send someone to the laboratory for help. If you spill the specimen on to your overall, you must remove it at once and then wash your hands and put on a clean overall. Report the accident to your supervisor as soon as possible.

If a specimen is dropped or broken, do not touch it or try to clear up the mess. Stay with the specimen to prevent other people touching it and send someone to the laboratory for help. If you spill the specimen onto your overall, you must remove it at once and then wash your hands and put on a clean overall. Report the accident to a supervisor as soon as possible. Handle specimen containers gently at all times. See Trust Procedures available under Trust Documents on the Intranet: 'Safe use and disposal of sharps policy' (See also Trust Document on Intranet "Waste Management Policy").

The use of the pneumatic tube system for the transport of specimens to the Blood Sciences laboratory must be performed in accordance with Trust policy. Guidance on the use of the pneumatic tube transfer system can be found by contacting the Tec bar directly:

## Reporting of Results

Some results are automatically validated if they fulfil stringent pre-set criteria; otherwise they are clinically validated by appropriately qualified laboratory personnel. Comments may be appended and additional analyses undertaken based on the clinical details provided and on previous results.

Results are produced in electronic form in the electronic patient record (CWP). Interim and final results are flagged in the appropriate column. *Please note: If any element of the test is marked with an 'I' then final validation for the whole test is incomplete and results may be subject to change, therefore clinicians are advised to contact the laboratory before making any clinical decisions based on an interim result.*

The laboratory will endeavour to telephone results when they have changed significantly from a previous episode or are grossly abnormal, to facilitate this please ensure the correct patient location is provided on the request form.

We aim to provide a user-responsive service with rapid turnaround of accurate results:

| Test | KPI | Target |
|---|---|---|
| FBC | 95% reported in | 30 Minutes |
| Coagulation Screen | 95% reported in | 60 Minutes |

For referral samples, please check the reports on CWP according to their turnaround times. If the reports are not available during the turnaround time, liaise with Haematology department.

### Telephoning Limits

The laboratory will endeavour to telephone results when they have changed significantly from a previous episode or are grossly abnormal; to facilitate this please ensure the correct patient location and contact number is provided on the request form. Note: except for wards that have requested us not to phone (see validation SOP).

The following results will be telephoned by the laboratory to the requesting location under the following circumstances:

| Test | | |
|---|---|---|
| Hb | < 80.0 g/L | If not previously at this level |
| Platelets | <10 x $x10^9$/1 | If not previously at this level |
| INR | > 5.0 | |
| Clauss Fibrinogen | <1.0 | 1st presentation |
| Anti – Factor Xa | >2.0 IU/ml OR <0.3 IU/ml | |

Please note that the primary method for transmission of all results is to the Clinical Web Portal (CWP).

Whilst internal and external quality assurance programmes are in operation to ensure accuracy and precision of results, occasionally random errors may occur and escape detection. The clinician is often best placed to detect such errors. Therefore if there is any doubt about a result, it is vital the laboratory is contacted (ext 3285) at once to investigate and re-test samples where possible.

Certain factors may affect and possibly invalidate some test results, causing potential biological and analytical interference. For example, blood transfusion and other intravenous fluids, anticoagulants, drugs, timing of specimen in relation to drug dose, type of tube. Please remember to give details of recent or current treatment on the request forms.

**Uncertainty of measurement**

All test results are subject to a degree of uncertainty of measurement. This may be due to a range of factors, including:

- Biological variation within individuals
- Analytical measurement imprecision
- Pre-analytical factors

If you require more information regarding the effects of these factors on the outcome of an individual test result please contact the lab on 3285.

## Clinical advice and interpretation

Clinical advice on examinations and interpretation of results is available by contacting a Consultant Haematologist or Specialist Registrar via the HTU or direct dial / bleep Interpretative comments are included in the laboratory reports of a number of specialist tests.

### Anticoagulant control

Anticoagulant control (Warfarin, heparin etc.) is undertaken by the medical team managing the patient.

For patients on Warfarin, the request form must indicate that patient is on warfarin and that an INR is required. The INR result will be available on CWP to allow the patient to be dosed by the doctor responsible for their care.

A policy for the Management of Patients on Anticoagulants is on the Intranet under Trust documents.

A full set of Anticoagulation guidelines is available on every ward. For any further advice, please contact the Haematology registrar or Consultants

## Common interferences in haematology tests

Certain factors may affect some test results, causing potential biological and analytical interference. For example, intravenous fluids, anticoagulants, iv feed. Please remember to give details of recent or current treatment on the request forms
See Haematology Test Directory

## Time limits for requesting additional examinations

Requests for additional tests on haematology samples will normally only be available for the day the specimen was taken. However the following tests can be added on within the time limits stated

| SPECIMEN TYPE IN LAB | TEST TO BE ADDED | TIME LIMIT FROM SAMPLE BEING TAKEN |
|---|---|---|
| EDTA | Reticulocytes | Same day |
| EDTA | Infectious Mononucleosis. screen | Same day |
| EDTA | Malarial Parasites | Same day |
| EDTA | Blood film | Same day |
| EDTA | Haemoglobinopathy screen | Within 2 days |
| EDTA | HFE gene | Within 2 days |
| EDTA | JAK2 | Within 2 days |
| EDTA | BCR-ABL | Within 2 days |
| CITRATE | All coagulation/clotting test | Within 4 hours |
| EDTA | Flow Cytometry - Immunophenotyping | Within 2 days |

## Comments/Complaints Procedure

Any complaints or concerns about any aspect of the service should be raised initially with the Blood Sciences Service manager, Mrs Sylvia Blake, telephone 0161 446 3316

We are keen to know about any problems arising from the laboratory service. Feedback from our users will help in our constant efforts to improve our service.
**Feedback:** There is a User Satisfaction Survey is available for completion.

## Data Protection

Christie Pathology Partnership (CPP) is committed to deliver a first class confidential service ensuring that all patient information is processed fairly, lawfully and transparently. Confidential information about patients can only be used for healthcare and relevant business purposes. All staff are required to comply fully with The Trust Governance Operating Framework for handling of patient confidential information.
In addition to this all HCPC registered staff follow the HCPC confidentiality guidance for registrants
In addition the CPP also follow the Synlab group Privacy Policy

## Quality assurance and Accreditation

**Quality Statement:** The laboratory examinations, procedures and reports of test results are compliant with the requirements for quality and competence in medical laboratories according to United Kingdom Accreditation Service against the International Standard ISO15189:2012. UKAS **Registration Number 8697**
The department participates in all appropriate National External Quality Assurance Schemes (NEQAS) where available. Documentation relating to Internal Quality Control and performance in NEQAS are available for scrutiny by users of the service.

**Accreditation**
The **Haematology department** (**including Flow cytometry to support Stem cell processing)** is accredited by UKAS in conformance with 'Standards for the Medical Laboratory' incorporating ISO15189:2012.

The department is approved by the Institute of Biomedical Sciences (IBMS) as a **Training Laboratory** and all our qualified scientists are registered with the Health & Care Professions Council (HCPC).

The **Blood Transfusion** service conforms with the UK Blood Safety and Quality Regulations and is deemed compliant as such by the Medicines and Healthcare products Regulatory Agency (MHRA).

Our **Stem Cell** Therapeutics service is accredited by the Joint Accreditation Committee of ISCT and EBMT (JACIE) and holds an Establishment License issued by the Human Tissue Authority (HTA).

The department participates in internal quality control (IQC) and external quality assurance (EQA) for all the tests undertaken within the laboratory. Performance is monitored and subject to rigorous control, to ensure that analyses are accurate, precise and results are comparable with other laboratories.

The lab also regularly monitors the UKAS accreditation status of the referral laboratories used for specialist testing.

## Names and addresses of referral laboratories

| Referral laboratory | UKAS Registration No. | Accreditation status |
|---|---|---|
| Haematology Department<br>Manchester Royal Infirmary<br>Oxford Road<br>Manchester<br>M13 9WH<br>Tel: 0161 276 | **8650** | **Accredited** |
| HMDS Leeds<br>St James's University Hospital<br>Beckett Street<br>Leeds<br>West Yorkshire<br>LS9 7TF | **8105** | **Accredited** |
| Adult ALL MRD Laboratory<br>UCL Cancer Institute<br>Paul o'Gorman Building<br>University College London<br>72 Huntley Street<br>London<br>WC1E 6DD | **Research Laboratory** | **URO MRF Consortium** |
| Coagulation Lab<br>Sheffield Royal Hallamshire Hospital<br>Glossop Rd,<br>Sheffield,<br>S10 2JF | **7873** | **Accredited** |

## Useful Links

Lab Tests Online: Lab Tests Online.org.uk

## 11. Document Locations

| | |
|---|---|
| Hard copies are issued to the following locations: | 1. Haematology |
| Electronic Version | 1. Haematology Intranet Site |
| **Any other printed copies of this document are unauthorised.** | |

## 12. Procedure Amendments

This replaces all previous versions of the document.

**Controlled Document - Do Not Photocopy**