Blood Sciences User Handbook

The User is asked to note the following:

Acceptance of a testing request by the laboratory acts as an agreement with the requestor. This means that a contract is established between the laboratory and the requester when the laboratory accepts a request. This will apply whether the request is written or electronic.

A note on UKAS ISO 15189 Accreditation

The GWH Blood Sciences laboratory is very keen to ensure it is completely clear to users which of its tests are UKAS ISO 15189 accredited and to positively demarcate these from those assessments that are not accredited.

Tests in the A to Z Table 8 on Pages 59 -113 that are performed in house but are not accredited are highlighted in yellow on their name in the left hand column.

Please note no point of care test is accredited. Please note at this time Haemoglobin Electrophoresis is not accredited.

The ongoing arrangements to seek referral laboratories that have the send-away test UKAS ISO 15189 (or equivalent) accredited still apply. The list of referral laboratories and the tests that the GWH sends to them can be inspected in Table 11 on Pages 130 - 129.

The laboratory would ask if the UKAS Accredited status of any test whatsoever is not totally clear or might seem the least equivocal please contact us without delay

Blood Sciences Manager Kirk Allott kirk.allott@nhs.net

Deputy Blood Sciences Manager Abdelhafiz Musa abdelhafiz.musa1@nhs.net

Table of Contents

1 INTRODUCTION

The Blood Sciences Service is provided by the laboratories at the Great Western Hospitals NHS Foundation Trust, Swindon. Blood Sciences comprises of Clinical Biochemistry, Haematology, Blood Transfusion, and Point of Care Testing (POCT). There is close co-operation with the separately managed Phlebotomy Service. Within the department, a formulary of tests is provided that reflect the usual demands of a contemporary District General hospital service. Specialist and Reference test services are used where necessary.

The Blood Sciences department operates a 24 hour service with a routine service available between 09:00 and 17:00 Monday to Friday, and the laboratory provides a core service for agreed priority tests outside of these hours. The Phlebotomy department provides an outpatients service Monday - Friday 08:30 - 17:15 and also a ward service weekdays 08:00 - 12:00, weekends 07:30 - 11:30 and Bank Holidays 07:30 - 13:30.

Consultant advice is available on-site during normal working hours and on an on-call basis at all other times.

An analytical and interpretative service is provided on a wide-range of clinical samples, processing over 560,000 requests each year. The efficiency of the service we provide is reliant on the cooperation of our users with the necessary policies relating to safety, sample transport and sample identification.

In its pursuit of excellence and as part of its continuous quality improvement programme the Blood Sciences service participates in all relevant internal and external quality assurance schemes. All laboratory work is carried out on up to date equipment in a modern laboratory which meets with all statutory requirements of a quality management system.

The repertoire of tests provided by Blood Sciences supports the Trust in its diagnostic and screening programmes.

The laboratory is accredited with the Institute of Biomedical Science (IBMS) for Biomedical Scientist training and Biomedical Scientist Specialist training. We also support the University of Bristol in the provision of clinical undergraduate training and the development of junior doctors at Great Western Hospital.

The Pathology services are fully computerised with all laboratories using Clinisys WinPath laboratory information system. Pathology results are available electronically via the Trust network at ward level or via the GP electronics links.

This book contains all of the information you require to use our service. However, please feel free to contact us to discuss any problems or issues you may have. Any comments or suggestions about the User Handbook should be addressed to the Blood Sciences Laboratory Manager.

2 LABORATORY LOCATION

The Department of Blood Sciences is part of the Medicine Division, within the Great Western Hospitals NHS Foundation Trust. The department is located on the fourth floor of the main hospital building (see Figure 1 below). The front entrance to Blood Sciences is via the doors signposted 'Pathology Reception' from the hospital corridor.

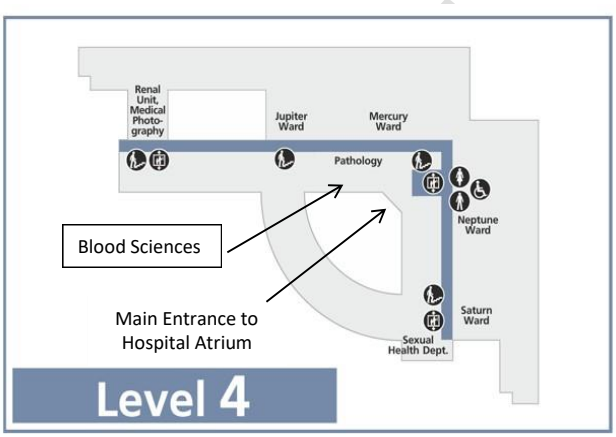


Figure 1

The postal address is as follows:

Blood Sciences
Department of Pathology
Great Western Hospitals NHS Foundation Trust
The Great Western Hospital
Marlborough Road
Swindon
Wiltshire
SN3 6BB

3 PATHOLOGY QUALITY POLICY

Quality Policy

The Pathology Department provides Microbiology, Cellular Pathology, Blood Sciences (incorporating Haematology, Biochemistry, Blood Transfusion and Point of Care Testing) and the Mortuary and Bereavement services to the Great Western Hospitals NHS Foundation Trust, Bath & North East Somerset, Swindon and Wiltshire Integrated Care Board (BSW ICB) and other users where such arrangements have been made.

The management of the Pathology Department is committed to delivering a service that is compliant with the requirements for Medical Laboratories set by the International Standard Organisation (UKAS ISO 15189:2022), Health and Safety Executive (HSE), UK Health Security Agency (UKHSA) - including the ANNB antenatal and new-born screening programmes for the participation in sickle cell and thalassaemia screening (SCT) and infectious diseases in pregnancy screening programme (IDPS), Medicines and Healthcare Products Regulatory Agency (MHRA) and the Human Tissue Authority (HTA).

The Pathology management team is fully committed to impartiality ensuring regular review of the service structure and the on-going development and improvement of laboratory services through the continual assessment of the Pathology Quality Management System and the establishment by means of regular meetings, internal and external audits, annual review of quality objectives during the Pathology Annual Management Review, participation in the Trust Improving Together programme and collaborative work with network partners within the South 4 Pathology Network.

The management of the Pathology Department is committed to good professional practice and the provision of examinations that are fit for intended use ensuring the delivery of a high-quality service that ensures that patients' well-being, safety and rights are at the forefront and that the service provided meets the requirements of its users. This commitment is reflected in the core values of the Quality Management System:

- The development of a friendly working environment dedicated to supporting training and development that encouraging the retention and recruitment of committed, highly professional staff.
- A commitment to maintaining a laboratory environment compliant with relevant legislation to ensure the health, safety and welfare of staff and visitors to the service.
- The provision of information on the collection, transportation and handling of all specimens to ensure the validity of results of laboratory examinations.
- The review of test repertoire, in conjunction with users, to ensure it is fit for intended use.
- The procurement and maintenance of appropriate equipment, reagents and consumables to assure provision of quality examinations of specimens including the development of digital pathology.
- Reporting of high-quality examination results in a timely, confidential, accurate and clinically useful manner.
- The provision of advice, in the context of clinical information, to support patient management.
- The engagement with users (e.g. by use of surveys, meetings, feedback, newsletters) to ensure that the Pathology service continues to meet their needs and requirements.
- Agreeing and monitoring quality indicators designed to improve our services to all our customers.
- To ensure all personnel are familiar with this quality policy and comply with the contents of the quality manual and all procedures relevant to their work to ensure user safety and satisfaction.

Dr Alex Sternberg Consultant Haematologist & Joint Pathology Clinical Lead 17.04.2024	Noman Manzoor General Manager for Pathology and Transfusion Services & Laboratory Director 17.04.2024

4 OPENING HOURS, CLINICAL ADVICE AND RESULTS

4.1 Laboratory Opening Hours

The laboratory is open:

Monday to Friday: 09.00 – 17.00 routine service

The Blood Sciences laboratory incorporating Clinical biochemistry, Haematology and Blood transfusion run a 24/7 shift service. The laboratory offers a full range of tests from 09.00 to 17.00 Monday to Friday. At all other times a core service for high priority tests is offered to match the reduced staffing levels.

The laboratory can be contacted on extension:

- Haematology 01793 604589
- Blood Transfusion 01793 604220/1
- Clinical biochemistry 01793 604291
- Coagulation call 01793 6054502

Please be aware that there are limited numbers of staff available during these hours. Please be patient when contacting the laboratory as staff may be busy dealing with emergencies or liaising with other clinical teams.

Out of Hours
Between 17.00 and 09.00 a BMS is on-site and available via:

- Bleep 1148 for Haematology/ blood transfusion
- Bleep 1147 for Biochemistry.

4.2 Phlebotomy Services

A Phlebotomy service is provided to both wards and outpatient departments at The Great Western Hospital

Ward Rounds:

Weekday mornings:	08.15 - 12.15
Weekday afternoon:	Bleep Service (by contacting 1224/1870) 13:00 -16:15
Weekend mornings:	07:30 - 11:30
Weekend afternoon:	Bleep Service (by contacting 1224/1870) 11:30 -16:00
Bank Holidays:	Weekend service

4.2 Phlebotomy Services (continued)

Outpatient Department:

The outpatient Phlebotomy department is located on Level 3

Opening hours
Monday - Friday 08:30 - 17:15 (except bank holidays)

- Patients will generally be seen in order of attendance but priority is given to certain categories of patients.
- For GP requested specialist blood tests please contact the Phlebotomy Reception on 01793 60 50 41
- Blood tests requested by a General Practitioner should be carried out at the GP Practice unless otherwise agreed.

4.3 Clinical advice

Specialist clinical advice is available 24/7 for Haematology, Blood Transfusion and Clinical biochemistry.

Contact switchboard (01793 604020) and request the on call Haematologist or Chemical pathologist and specify that it is medical advice you require.

During the normal working day (between 09:00 and 17:00) clinical advice for Haematology and Blood Transfusion may be sought from a specialist Haematology registrar on DECT 7425 or on bleep:

- Bleep 2162 or 1135-Laboratory registrar.
- Bleep 2002- Day unit registrar.
- Bleep 1299- Clinic registrar.

For any routine, non-urgent clinical haematology advice we encourage the use of the advice and guidance service

Email address gwh.haematologyadviceandguidance@nhs.net.

4.4 Result Availability

Routine samples from priority locations (emergency department (ED), Intensive Care and the acute admissions wards) will be processed within one hour of receipt of the sample in the laboratory. For other locations on the Great Western Hospital site, results for routine tests should be available within 2 hours of receipt of the sample.

For off-site locations routine results will be available within 24 hours of receipt of the sample in the laboratory. Turn-round times for less common investigations may be longer, particularly if the sample is sent away for analysis. Arrangements can be made to accelerate certain tests as required – please contact the laboratory. An indicative turnaround time for each individual test is listed in the A-Z of tests in Section 13.
The laboratory continually monitors its turn-around times. For any queries or for detailed performance data please contact the Blood Sciences laboratory manager.

4.5 Urgent samples

There is a standing arrangement with ED and other acute wards that work will performed urgently. This means results for most tests will be within the hour of receipt. For wards within the Hospital the results of the most common tests will be available within 2 hours of receipt. For less common tests and for users outside the Hospital if a result is required urgently the laboratory should be notified by telephone so that we can prioritize the request. Please clearly state on the request form (if used) or state when requesting on the ICE requesting system that the sample is urgent. A brightly coloured specimen bag either red or yellow is exclusively provided to AED so work can be identified as coming from that area.

All other requests for work to be handled urgently must be made to the laboratory concerned by telephone. It is the responsibility of the requesting clinician to obtain the sample and arrange delivery to the laboratory. Please ensure that the request form (if used) or ICE request clearly states that the sample is urgent and that the contact details of the requesting clinician and location of the patient are clearly stated to allow results to be telephoned as soon as they are available.

For samples from the community the specimen bag should be placed inside an ordinary paper envelope clearly labelled on the outside as “urgent”. This will enable the laboratory staff to identify

the specimens easily within the collection box. Please ensure there are appropriate contact details for results to be communicated outside of normal working hours.

4.6 Testing 'out of hours'

The Blood Sciences out-of-hours service is fundamentally an urgent focused service. Staffing at these times is very limited therefore telephone calls may not be answered straight away as staff will also be undertaking their core tasks of providing a service to acute users such as ED and others essential tasks such as analyser maintenance and quality control checks. (09:00 and 17:00 Monday to Friday are core hours).

4.7 Additional tests

Wherever possible, all tests should be requested at the time of submitting the sample to the laboratory. Requests for amendments or additional tests can be accommodated by completing the form available on the Intranet where available and sending to the laboratory via the pneumatic tube system see section 9.3. Where a request to add a test is made over the telephone an "add on test" form should be sent within an hour of the call being completed. Oral add on via telephone can be accepted from GPs, community services, wards with no access to pneumatic tube in condition of sample integrity & availability.

In general, additional tests must be requested within 48 hours of receipt of the sample in the laboratory. For technical reasons additional tests may not be possible and a fresh sample may need to be taken. If a test cannot be added this will be reflected in the report issued. Further advice can be obtained from the laboratory but always first please check this WHO guide to the stability of test analytes. This can be obtained from the laboratory or from the Blood Sciences laboratory manager.

For consent reasons – the COVID Antibody is not available as an "add on" test.

4.8 Accessing results

Pathology results are available electronically immediately after authorisation via Medway PAS at ward level or via the GP electronic links. Hard copies of reports agreed for limited areas are produced and returned daily Monday – Friday.

All laboratory results are returned to the requesting clinician who has ultimate responsibility for ensuring that results are actioned and communicated to the patient as appropriate. For any queries regarding results the laboratory enquiry telephone number is 01793 604293.
Please note that we need to establish the caller's identity before giving results over the telephone and we are unable to give results directly to patients or their relatives. It is Trust policy that staff must not access either their own results or those of friends or relatives.

4.9 Telephone results

It is policy that results of urgent investigations or any results that fall beyond established critical limits are telephoned to the requesting clinician. All other results will only be telephoned by prior arrangement.

4.10 Minimum re-testing interval

There is evidence to suggest that repeating tests too frequently adds little clinical value. Some tests have minimum repeat intervals will be highlighted on the report (the laboratory IT system blocks repeat tests within a specific timeframe). There are exceptions, but a minimum repeat interval of 12 hours is suggested for FBC (Full Blood Count). If you require a sample to be processed for a clinical indication, please discuss with on call haematology or clinical biochemistry. It is appreciated that circumstances can vary enormously but please consult the guidance document "National Minimum Re-testing Interval Project: A final report detailing consensus recommendations for minimum re-testing intervals for use in Clinical Biochemistry". This has been provided by the Clinical Practice Group of the Association for Clinical Biochemistry and Laboratory Medicine and supported by the Royal College of Pathologists. This can be obtained from the laboratory or from the Blood Sciences laboratory manager.

4.11 Retention of Specimens

The laboratory can receives over 2 200 specimens on a weekday and providing cold storage for this volume of specimens is a challenge. Routine Chemistry specimens will tend to be stored for four to seven days and Haematology specimens will have a shorter retention time.

If you have reason for a specimen to be retained for a longer period please contact the laboratory promptly. The retention of specimens is managed within a legislative framework. Please see section 15.3 where there is reference to arrangements in regard to The Human Tissue Act and other requirements.

4.12 Measurement of uncertainty

No measurement or test is perfect and imperfections give rise to error in the measurement of a result. Therefore a measurement or test only gives rise to an approximation of the true value. The spread in difference from the true value (the measurement uncertainty) is estimated and reported as part of good laboratory practice. Routine testing is backed up by a comprehensive programme of internal and external quality control.

The laboratory is ready to make its estimates of measurement of uncertainty available to users as well as details of internal quality control measurement and details of performance in external quality assurance schemes. Please contact blood sciences laboratory manager if required.

5 CONTACT DETAILS

Name	External Number	Internal Number
General Manager for Pathology and Transfusion Services Laboratory Director	07780250216	07780250216
Consultant Haematologist, Clinical Lead for Pathology	01793 605004	5004
Consultant Haematologist, Consultant Haematologist	01793 605004	5004
Consultant Chemical Pathologist	01793 604996	4996
Consultant Haematologist	01793 604503	4503
Consultant Haematologist	01793 605004	5004

Consultant Haematologist	01793 605005	5005
Blood Sciences Laboratory Manager	01793 607242	7242
Deputy Laboratory Manager	01793 607347	7347
Lead BMS Blood Transfusion	01793 604220/4221	4220/4221
Lead BMS Haematology / Coagulation	01793 604589	4589
Lead BMS Automation and point of contact with Chemical Pathology Referral Laboratories	01793 604291	4291
Lead BMS / Training Officer	01793 604291	4291
Lead BMS/ POCT Manager	01793 607031	7031
Laboratory	01793 604293	4293
Hospital switchboard	01793 604020	0

Table 2

6 SAMPLE COLLECTION

Accurate patient identification and proper labelling of samples are crucial in sample collection. Sampling conditions, specimen preparation and timely transport of the specimen to the laboratory are also necessary to ensure specimen integrity and accurate results.

6.1 Preparation of patient

On receipt of a sample in the laboratory it is assumed that appropriate consent for sampling and investigation has been obtained. **The responsibility for obtaining informed consent for the test resides with the individual ordering the test not the laboratory.**

Information for patients including instructions for patient-collected samples can be accessed at the Lab Tests on Line website. The laboratory or laboratory manager is ready to send you suitable extracts

from this on request.

6.2 Optimum conditions for collection

Some tests have specific requirements for collection to enable interpretation of results. For example a sample may need to be taken after the patient has fasted for a specified period.

Please see the A-Z of investigations for details of any special requirements associated with a particular test. Where these requirements are necessary please ensure that details of compliance are established at the time of collection and recorded on the request form (if used) or stated when requesting on the ICE requesting system.

6.3 Unequivocal determination of patient identity

The person collecting the sample is responsible for positively identifying the patient. The patient should be asked to state their name and date of birth. This should be checked against the patient's wristband if an inpatient. The NHS number should be used if available as an adjunct to other identifiers and all details should match the request.

6.4 Identification of Person Collecting the Primary Sample and Time of collection

Always clearly record the identity of the person collecting the primary sample, the collection date and the collection time.

6.5 Blood Sample Collection

The Phlebotomy Service is run independently to Blood Sciences and no attempt is made to give extensive guidance here. Some important key facts to remember include:

- Only use the vacuum container system to take blood rather than a needle and syringe. Artefact may affect results when using a syringe and decanting blood into vacuum tubes. There is also a risk of needle stick injury. Butterflies are available for 'difficult veins'.
- Do not remove tops from vacuum tubes to decant blood, the sample will leak.

- Use the correct blood tube for the test required- if in doubt please refer to the A-Z guide of tests in this document. Samples should be mixed gently after collection to ensure activation of any additive. Do not shake.
- Do not collect samples from an area where an IV infusion is running, this can create gross abnormalities in the results.
- It is crucial that coagulation bottles are filled to the fill line. Coagulation tests require a specific ratio of blood to the anticoagulant in the tube for results to be interpreted. Under-filled or overfilled tubes will therefore be rejected. If the patient is difficult to bleed and it is impossible to obtain sufficient sample please discuss with the laboratory it may be appropriate to use a paediatric tube.
- It is very important that samples are taken in the correct order to avoid contamination of samples with additives from the previous tube. This may adversely affect results. See figure on page 24 for the 'order of draw'.

For further guidance please see the WHO website that describes their Guidelines on Drawing Blood: Best Practices in Phlebotomy. The laboratory can supply details on request.

6.6 Health and safety issues relating to blood sample collection

It is the responsibility of the person collecting the specimen to ensure that it is properly labelled and safe for transportation (see Transportation of Samples).

Used sharps must be disposed of according to Trust policy (see Safe Handling and Disposal of Sharps Policy & Guidelines). This is the responsibility of the individual(s) who generates them.

Please see Section 10 for particular instructions e.g. regarding high risk specimens Refer to appropriate Trust policies for further information:

- Hand Hygiene and Skin Care Policy (including scrubbing gowning and gloving)
- Standard Infection Control Precautions Policy
- Safe Handling and Disposal of Sharps Policy & Guidelines
- Transportation of Samples

These are currently on the T Drive in the Trust – for users outside the Trust please contact the laboratory or the Blood Sciences Laboratory manager if a copy of any of the policies is required.

Users are required to follow the requirements of the Trust Sharps Policy - an extract follows on this page and over

Disposal of a Sharp Device

- Sharps should not be bent, broken or re-sheathed prior to disposal.

- The person assembling the sharps disposal container must sign the label attached to the bin to assume responsibility for its correct assembly.

- All containers must be secured / stored in an appropriate bracket / tray designed for sharps bin use to avoid accidental spillage, with the, temporary closure in place when not in use, at a height that enables safe disposal by all employees.

- Employees must take the sharps disposal container with them to ensure immediate disposal at the point of use - **USED sharps must never be carried in a receiver or on a tray, by hand or in pockets**. They must be disposed of directly into a sharps container, which should be placed next to the employee/patient so they can drop the use sharps directly into the sharps bin and the aperture should be visible to facilitate disposal.

- Once assembled for use, the sharps container must remain in the temporary closure position except when it is being used by the practitioner and therefore is under supervision. Sharps containers must not be left unattended in a public area when in use.

- At no time must any sharp be disposed of in such a way that is likely to cause injury to any other person, e.g. in a clinical waste sack, in the laundry with patients' linen, or in anything other than a designated sharps disposal container.

- Sharps disposal containers must be kept in a location where they are inaccessible to children and the general public. This is the responsibility of the user.

- Do not overfill sharps disposal container. When contents reach the manufacturer's marked fill line, ensure that the aperture is locked in the fully closed position and the label completed with the name of the ward/department and stored in the appropriate area for collection.

- All sharps disposal containers must be locked three months after first use even if the fill line has not been reached. For this reason, ensure the correct size container is supplied for the required use.

- Sharps containers should remain empty on the resuscitation trolley until required in an emergency situation.

- Ensure that the correct colour coded sharps disposal container is being used, e.g. Purple Lid and Label for cytotoxic and cytostatic waste and Yellow lidded for sharps that contain a quantity of medicinal product. Refer to the Waste Policy (Ref 2) for more information.
  Integrated Teams in the Community need to follow legislation/Trust Waste Policy and segregate their waste.

Users are required to follow the requirements of the Trust Sharps Policy - an extract follows on this page and on previous page

Disposal of a Sharp Device (continued)

- Ensure sharps disposal containers are used for the sole purpose of safe sharps disposal and no paper and other items.

- A giving set spike should remain embedded in the empty fluid bag and disposed of in an appropriate waste bag. (This would be an offensive waste bag from a non-infected patient or in a clinical waste bag if the patient has a known or suspected infection).

- A giving set that has IV fluid; not containing any chemical component, remaining in the bag should be cut and emptied to release the fluid down the sluice prior to disposal, as above. If the fluid does contain any chemical component such as Potassium Chloride dispose of the entire clamped set into a sharps disposal container. Please see Waste Policy

- There may be instances when an individual patient requires a sharps disposal container to be provided for personal use, this is to be identified when assessing the patient and communicated to the team caring for the patient.

- It is the prescriber's responsibility to ensure that the user is aware of how to dispose of the sharps bin in line with policy.

6.7 Urine Specimen Collection

Two types of urine collection are analysed in blood sciences:

1. Random Urine – Random urine samples can be mid-stream (MSU) or an early morning sample (EMU). Generally an EMU is preferable but is not essential.
2. 24 hour urine collections- the whole volume of urine voided over a 24 hour period.

It is important to use the correct container for the test required- (see A-Z of laboratory tests section 13)

- **Random Urines**

Urine specimens can be received in 20mL universal containers or dedicated 250mL CE marked leak proof containers. Red topped tubes contain boric acid preservative, which is useful for microbiology, however is unsuitable for chemistry analysis.

- **24 hour Urines**

There are several different indications for 24 hour urine collections. Different tests require different preservatives to be added to the bottles. To ensure you have the correct bottle for the test required please bring the request form to pathology reception on the 4th floor of GWH and reception staff will issue you with the appropriate bottle.

Patients should be given clear instructions on how to complete a 24 hour urine sample. Patient instruction leaflets are available from Lab Tests Online UK website. Patients are advised to empty their bladders down the toilet at a given start time, and from that point all urine should be collected. At the end of 24 hours the bladder is emptied and that urine added to the collection bottle.

24 hour urine collections are often incomplete. It is important that any deviation in collection is recorded on the request form (if used) or stated on the ICE request. Even if the sample is incomplete it may still yield some information and the patient should be advised not to discard the collection.

6.8 Cerebrospinal Fluid (CSF)

CSF samples must be taken using a strict aseptic technique by trained medical staff in line with Trust procedure. The procedure is currently on the T Drive in the Trust – for users outside the Trust please contact the laboratory or the Blood Sciences Laboratory manager if a copy of any of the procedure is required

- Dispense CSF (minimum 0.75mL in each bottle) into the required number of sterile single use containers for the investigations requested (usually 3 containers). Label each sample with the order that it was taken.
- If CSF glucose or lactate is required a sample of CSF should also be collected into a fluoride tube. A paired blood glucose sample is required.
- Avoid exposure to bright light for extended periods
- If CSF is being sent for flow cytometry the sample is sent away. Samples degrade quickly Therefore the specimen must be in the laboratory by 12.00 and the laboratory will require prior warning of its arrival in order that a courier can be arranged.
- If the sample is being sent for xanthochromia the specimen must be in the laboratory by 16.15 to be processed on the same day. Samples received after this time will be analysed the following full working day.
- Do not use the pneumatic air tube system for any requests that include xanthochromia.

6.9 Fluids - Pleural, Ascites and "Unknown Fluids"

The laboratory is geared towards the measurement of analytes in blood and urine. The laboratory does have the capacity to measure analytes in other fluids but it requires special dedicated preparation and there are limited reference ranges.

If analysis of fluid is required please clearly indicate what tests are required and the source of the material. Fluids should be sent in 20ml universal containers or dedicated 250mL CE marked leak proof containers. Please indicate if there is a particular high risk of infection - see section 10.

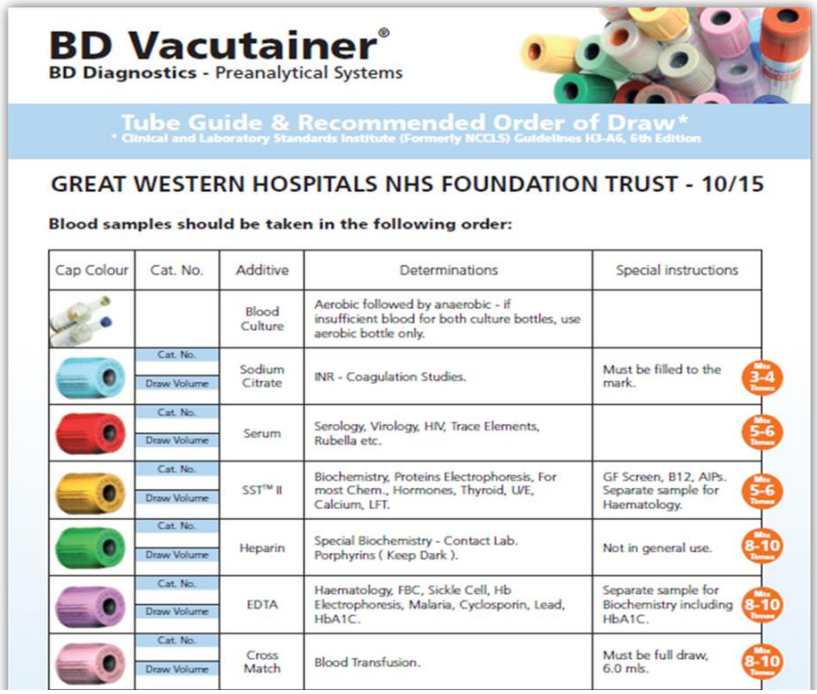
PLEASE NOTE THE GWH LABORATORY IS NOT ACCREDITED FOR TESTS ON DRAIN FLUIDS, PLEURAL FLUID, ASCITES AND UNKNOWN FLUDIS

ALSO HANDLE AND TRANSPORT THESE SPECIMENS WITH GREAT CARE DUE TO BIOHAZARD

7 SAMPLE CONTAINERS

7.1 Supply of specimen containers

In the event of any issue please contact the laboratory. See Figure 2 for the tubes issued by the Trust.



BD Vacutainer®
BD Diagnostics - Preanalytical Systems

Tube Guide & Recommended Order of Draw*
* Clinical and Laboratory Standards Institute (Formerly NCCLS) Guidelines H3-A6, 6th Edition

GREAT WESTERN HOSPITALS NHS FOUNDATION TRUST - 10/15

Blood samples should be taken in the following order:

Cap Colour	Cat. No.	Additive	Determinations	Special instructions
		Blood Culture	Aerobic followed by anaerobic - if insufficient blood for both culture bottles, use aerobic bottle only.	
	Cat. No. / Draw Volume	Sodium Citrate	INR - Coagulation Studies.	Must be filled to the mark. Mix 3-4 Times
	Cat. No. / Draw Volume	Serum	Serology, Virology, HIV, Trace Elements, Rubella etc.	Mix 5-6 Times
	Cat. No. / Draw Volume	SST™ II	Biochemistry, Proteins Electrophoresis, For most Chem., Hormones, Thyroid, LFE, Calcium, LFT.	GF Screen, B12, AIPs. Separate sample for Haematology. Mix 5-6 Times
	Cat. No. / Draw Volume	Heparin	Special Biochemistry - Contact Lab. Porphyrins (Keep Dark).	Not in general use. Mix 8-10 Times
	Cat. No. / Draw Volume	EDTA	Haematology, FBC, Sickle Cell, Hb Electrophoresis, Malaria, Cyclosporin, Lead, HbA1C.	Separate sample for Biochemistry including HbA1C. Mix 8-10 Times
	Cat. No. / Draw Volume	Cross Match	Blood Transfusion.	Must be full draw, 6.0 mls. Mix 8-10 Times

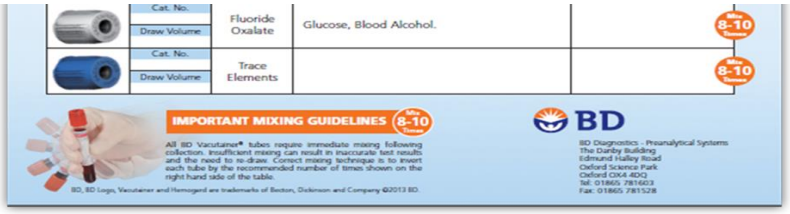


Figure 2

7.2 Selection of appropriate container

Please refer to the A-Z Index for the selection of appropriate container for test.

Sample containers must be CE marked and within the expiry date. Specimen containers must be leak proof and sufficiently robust to withstand stresses during transit. Only containers approved by the Blood Sciences Department may be used to ensure sample integrity during transit to the Laboratory. Samples that are sent in non-approved containers may not be processed. It is the responsibility of the person sending the sample to the Laboratory to ensure that the container used for transportation is appropriate.

The container must be adequately closed to avoid leakage. Samples that have leaked in transit may not be processed by the Laboratory.

Blood Sciences shall annualy review during the Pathology Annual Management Review (AMR) the appropriate containers, preservatives & sample volume for all sample types

7.3 Labelling of sample containers (excluding Blood Transfusion see Section 12)

The sample container must be labelled with sufficient information to provide an unequivocal link with the request form (if used) or request information on the ICE request, and the patient from whom they are collected. This is the clinician's responsibility.

There are specific instructions for the labelling of Blood Transfusion samples- please see section 12

For all other specimens:

- The date and time of collection should be recorded on both the sample and the request form (if used) or stated on the ICE request.
- The time a sample was taken must be recorded for therapeutic drug monitoring. The request form (if used) or ICE request should include the time the drug was administered.
- The time must be recorded if multiple samples are taken from the same patient on a particular

date.

- Time should ideally be recorded in terms of the 24 hour clock.
- For urine containers the type of specimen e.g. MSU, EMU should also be recorded.

Inadequately labelled samples may be rejected by the laboratory (refer to section 11 Sample Acceptance Criteria on page 39 (particularly the Table on page 36).

Blood Science will not accept specimens labelled with addressograph labels

7.4 Primary Sample Separation

In a condition where the primary sample needed to be separated (aliquot) Blood Sciences Department must ensures that all aliquoted sample shall be unequivocally traceable to the original (primary) sample

8 REQUEST FORMS – see Section 12 for arrangements in Blood Transfusion

8.1 General

All samples must be accompanied by an accurately and fully completed request form (if used) or be requested with a fully completed electronic ICE request. Test requests for Chemical Pathology and Haematology tests should preferably be requested via ICE rather than using paper forms (which should only be used when ICE is unavailable).

No verbal test requests are accepted - a request form/ICE request must be sent/made for each specimen.

There are specific instructions relating to requests for blood transfusion- please see section 12

For all other investigations the request form may be electronic or hand written and it is crucial the request includes the following information in a legible format:

A minimum Data Set for Identification:

- Patient's surname
- Date of birth /Hospital number / NHS number
- Patients address.
- Patient's gender.
- Patient category (PP/AQP/NHS).
- The name of Consultant or GP responsible for the patient.
- The requesting clinician, their location and contact details including details of any copy reports required.
- Specimen type including an indication if the sample confers a high risk of infection (see section 10).
- Date and time the sample was collected.
- Investigation(s) required.
- If a test requires any special collection conditions (e.g. fasting, timing) it should be clearly documented if these conditions have been met.
- Clinical information- Clinical information is crucial to the interpretation of results. This may include travel history, medication history or family history depending on the investigation requested (see A-Z of lab tests). If insufficient clinical information is provided the sample may be rejected.

If request forms or ICE requests are not correctly and legibly completed then the laboratory may cancel tests (refer to Sample Acceptance Criteria section 11).

Blood Sciences will review the format & details in request form (paper and electronic) annually to ensure that the information provided is correct.

8.2 Electronic requesting (ICE)

ICE (Integrated Clinical Environment) is a software application that allows clinical users to order pathology tests electronically and see results electronically.

For Blood Sciences test requests, electronic ICE requesting should be used to request Chemical Pathology or Haematology tests **only** – requests for Blood Transfusion should **NOT** be made on ICE; instead, solid red Blood Transfusion forms, Sample360 and Bloodhound must be used.

A brief description of how to use ICE to request tests is given below. This is not intended to be an exhaustive guide – ICE includes several other applications e.g. viewing reports, file (acknowledge receipt) and actioning reports, viewing unacknowledged reports and pathology results outside of reference ranges by using filters and ordering Microbiology and Radiology test requests. For more information about test requesting and other uses of ICE, users should refer to the full ICE User Handbook, short guidance videos, ICE FAQs and ICE Mobile e-learning courses that can be found in the IT Section of the Trust Intranet as well as referring to the other Pathology discipline User Handbooks.

- To login into ICE, click on the ICE Mobile desktop icon, enter your ICE username and password and select 'Login'.
- To begin a request, search for the patient record by either: searching via the 'Patient Search' widget from the Home Screen by typing the patient name into the search box and selecting the correct patient record; or, using the Navigation Panel icon to filter by patients in 'My' patient list, by location, by clinician or by clicking on the search icon to search by defined search criteria.
- Once the correct patient record has been selected, click on the 'More Options' icon to the right of the patient name and select 'New Request' or click on the 'Requesting' icon.
- This opens two screens: 'Select Tests' and 'Request Details'. 'Request Details' contains a 'General Information' section that applies to the entire request e.g. requesting clinician, contact number etc. and an 'Order Information' section that applies to the test and/or test provider e.g. sample collection options (such as immediate collection, booking collection by phlebotomy or for later collection), sample priority etc.
- If required, the patient requesting history can be reviewed by selecting 'Request History' or by clicking on the Request History icon.

- Under 'Select Tests', click on and type all or any part of the test code, description condition or disease to search for tests from the Blood Sciences test repertoire. The ICE requesting system will show those tests most commonly requested for Blood Sciences; should you require a test that is not visible please check the A-Z repertoire list (section 13.6) to ensure that the test is available and to check any other specific sample requirements.

- Select one or more tests to add them to the request. Tests that are defined as a collection (or group of tests) can be added be clicking on 'Select All' or removed by clicking on 'Deselect All'.

- After finishing the selection of all the required tests, continue to 'Request Details' or click on the 'Request Details' icon .

- Complete all required information as indicated by the following symbol . This may include information such as test information e.g. whether fasting is required etc. Please note that to reduce the number of inadmissible requests to the Blood Sciences laboratory, the completion of the 'Requesting Clinician' field is a **mandatory** requirement and the requesting clinician must be manually selected from the drop-down list when submitting the request.

- To submit the request, click . This option will only be available once all the required information for the request has been completed.

- To collect samples for the request just made, click on next to the patient name and select 'View patient pending samples' or click on the 'View samples pending for collection' icon .

- If required, to search for a pending request, select the Navigation Panel icon , select 'Samples' then search by patients in 'My' patient list or by location. Alternatively, the advanced search panel can be used to filter patients by clinic.

- If required, confirm the patient ID in the 'Confirm Patient' window by either scanning the patient ID barcode or by manually entering the patient ID. Select 'Confirm' to open the sample collection screen.

- The sample collection screen displays the required containers and current orders for that patient.

- All required containers for the requested tests are listed at the top of the screen. If a specimen container draw order is defined, the order is listed in ascending order. Alternatively, please refer to the Tube draw order table (Figure 2, Section 7.1).

- Samples can be marked individually or all at once as being collected or uncollected. To mark individual samples as collected, confirm that the toggle slider is set to 'Collected' and then click on 'Save'. To mark samples as not collected, move the toggle slider to 'Not Collected', type a reason for the samples not being collected and then click on 'Save'. Click to mark all samples at once as collected and select 'Collect' to confirm. Click to mark all samples as not collected,

typing a reason for non-collection in the 'order not collected reason' window and confirm by selecting 'Not Collect' to confirm.

- Once samples have been collected, specimen labels can be printed from a suitable portable label printer. If a session printer is set, a printer window will open after the samples are collected, allowing the label(s) to be printed from the session printer. (A session printer must be set during each session prior to printing. To set or change a printer for the session, click on the More Options icon and select 'Set Session Printer', or click on the Scan a barcode icon on the top bar of the ICE Mobile Home Screen and scan a printer barcode to set the printer as the new session printer).

- When labelling patient samples, please ensure that the sample barcode labels are applied to sample tubes **vertically** **NOT** horizontally as the analysers in the laboratory can only read sample barcodes vertically. Also, please ensure that the sample label is completely stuck to the sample tube in the correct position with all edges fully smoothed down. Please make sure that the printed ICE label is placed over the pre-attached Vacutainer label (see Figure 3) on the tube as this acts as a guide for aligning the ICE label to ensure that an essential 'window' is left on the sample to allow visibility of the blood inside.

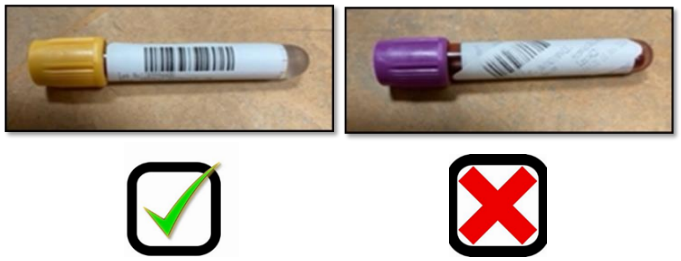


Figure 3

- Each ICE label must look like the following image (Figure 4), ensuring that the correct ICE label is placed onto the correct sample tube for the required test(s):

Figure 4

- **There may be a delay in providing results for samples which have poor quality barcodes or do not have labels correctly applied.**

- For blood taken into paediatric sample containers and for urine/CSF taken into universal containers, please ensure that extra labels are printed for use in the laboratory (these sample containers cannot be directly loaded onto the laboratory analysers) and that the sheet of labels is placed within the plastic sample bag to be transported to the laboratory with the sample(s).

- Make sure that the printer labels within the printer are correctly aligned before printing any sample labels. The barcode must be at the top of the label with the text below. If the labels have become misaligned within the printer, any affected labels must be reprinted.

- If the print roll is misaligned, open the printer using the levers on each side. Pull the reel until one full label is sticking out, and then close the printer. The labels can then be reprinted.

- To reprint any ICE labels you have just printed, click the 'Print' button at the end of the sample collection process (see Figure 5).

Figure 5

- ICE labels can also be reprinted by searching for the correct patient and clicking on the 'View Patient Requests' icon . Next, select the appropriate request and click the 'Print' icon to reprint the labels for this order (see Figure 6).

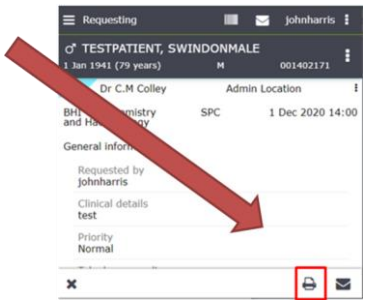


Figure 6

- **Ensure that the sample collection process is completed first before reprinting sample labels from the request screen – Failure to do so may risk the sample will be rejected by the lab.**

Please use electronic order-comm requesting via ICE for Chemical Pathology and Haematology requests where available. It is important to ensure that the correct sample accompanies the correct request form (if used or printed) before placing inside the sealed plastic sample bags to be sent to the laboratory. Samples taken within the hospital would not normally require a printed copy of the request form as all request information is contained within the sample barcode.

For Chemical Pathology and Haematology requests, paper request forms should only be used and will be made available as a contingency in instances when ICE is unavailable or for users who may not have access to ICE. However, requests for Blood Transfusion should continue to be made using the solid red forms as appropriate. Please refer to Section 8.3 and Section 8.5 for information regarding the use of Blood Sciences paper request forms.

8.3 Handwritten request forms

For contingency use and for those unable to access ICE:

Please write clearly! We will always endeavour to try and work with requestors and we do understand that every blood draw is a significant event for the patient but if request forms are not correctly or legibly completed then the laboratory may cancel tests for the safety of the patient.

It is essential to use a **ballpoint** pen when completing request forms. The forms are multi layers of carbon paper and felt tip and fountain pens do not copy down to lower layers. When addressograph labels are used, please ensure that a label is fixed to EACH part of the request form and remember to sign the request form.

NB addressograph labels are not accepeted for use on samples.

8.4 Anonymous/uniquely identified samples

In certain circumstances patient identification details are intentionally hidden or substituted with particular ID numbers (e.g. Sexual Health, donor samples, and samples from unconscious or incoherent patients). In such instances, a properly coded identifier must be used in place of the patient last name and first name.

Unidentified Patients
Samples from unconscious or incoherent patients should be labelled with "UNKNOWN MALE OR FEMALE" and the emergency unit number.

8.5 Blood Sciences department request forms

For contingency use and for those unable to access ICE:

When ICE is unavailable, please use the appropriate red or green Chemical Pathology/Haematology/Coagulation form (Figure 7 and 8) for requesting tests. When requesting investigations for Chemical pathology or Haematology, please do not use request forms or attach samples intended for other pathology disciplines. However, blood samples taken for Virology should be requested using the red Chemical Pathology/Haematology/Coagulation blood form if ICE is unavailable. Blood Transfusion requests must be made using the solid red Blood Transfusion form (Figure 9) and cannot be requested electronically via ICE.

The following request forms are used by the Blood Sciences department – see Figures 7, 8 and 9 below and over.

GREEN FORM (URINE, FAECAL AND FLUID)

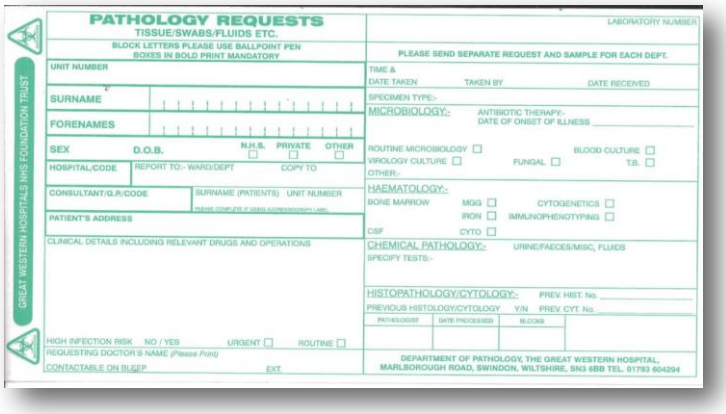


Figure 7

RED FORM (BLOOD CHEMISTRY, HAEMATOLOGY AND COAGULATION TESTS)

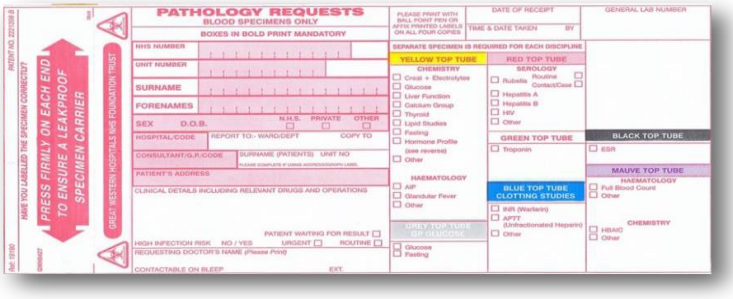
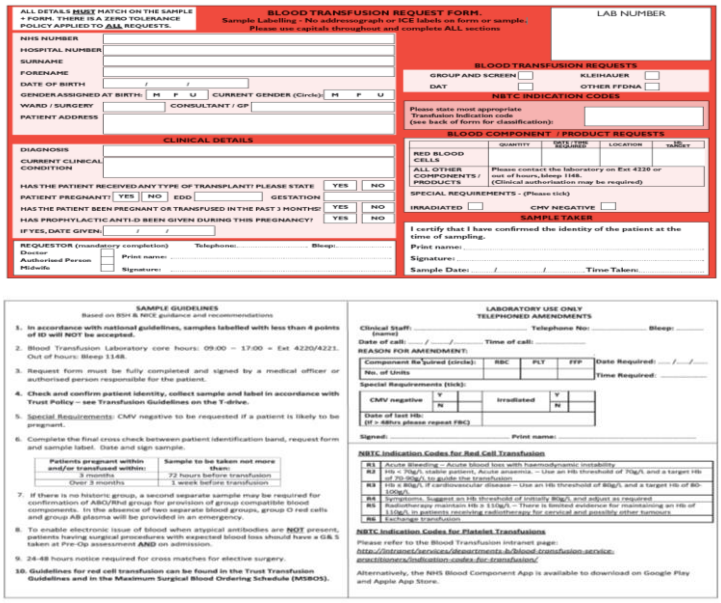


Figure 8

8.5 Blood Sciences department request forms (continued)

SOLID RED (BLOOD TRANSFUSION REQUESTS)



BLOOD TRANSFUSION REQUEST FORM.
Sample Labelling - No addressograph or ICE labels on form or sample.
Please use capitals throughout and complete ALL sections

LAB NUMBER

ALL DETAILS MUST MATCH ON THE SAMPLE + FORM. THERE IS A ZERO TOLERANCE POLICY APPLIED TO ALL REQUESTS.

NHS NUMBER
HOSPITAL NUMBER
SURNAME
FORENAME
DATE OF BIRTH
GENDER ASSIGNED AT BIRTH: M F U CURRENT GENDER (Circle): M F U
WARD / SURGERY CONSULTANT / GP
PATIENT ADDRESS

CLINICAL DETAILS
DIAGNOSIS
CURRENT CLINICAL CONDITION
HAS THE PATIENT RECEIVED ANY TYPE OF TRANSPLANT? PLEASE STATE YES NO
PATIENT PREGNANT? YES NO EDD GESTATION
HAS THE PATIENT BEEN PREGNANT OR TRANSFUSED IN THE PAST 3 MONTHS? YES NO
HAS PROPHYLACTIC ANTI-D BEEN GIVEN DURING THIS PREGNANCY? YES NO
IF YES, DATE GIVEN:
REQUESTOR (mandatory completion) Telephone: Bleep:
Doctor
Authorised Person Print name:
Midwife Signature:

BLOOD TRANSFUSION REQUESTS
GROUP AND SCREEN KLEIHAUER
DAT OTHER FFDNA

NBTC INDICATION CODES
Please state most appropriate Transfusion Indication code (see back of form for classification):

BLOOD COMPONENT / PRODUCT REQUESTS
RED BLOOD CELLS — QUANTITY — DATE / TIME REQUIRED — LOCATION — Hb TARGET
ALL OTHER COMPONENTS / PRODUCTS — Please contact the laboratory on Ext 4220 or out of hours, bleep 1148. (Clinical authorisation may be required)
SPECIAL REQUIREMENTS - (Please tick)
IRRADIATED CMV NEGATIVE

SAMPLE TAKEN
I certify that I have confirmed the identity of the patient at the time of sampling.
Print name:
Signature:
Sample Date: / / Time Taken:

SAMPLE GUIDELINES
Based on BSH & NICE guidance and recommendations

1. In accordance with national guidelines, samples labelled with less than 4 points of ID will NOT be accepted.
2. Blood Transfusion Laboratory core hours: 09:00 – 17:00 – Ext 4220/4221. Out of hours: Bleep 1148.
3. Request form must be fully completed and signed by a medical officer or authorised person responsible for the patient.
4. Check and confirm patient identity, collect sample and label in accordance with Trust Policy – see Transfusion Guidelines on the T-drive.
5. Special Requirements: CMV negative to be requested if a patient is likely to be pregnant.
6. Complete the final cross check between patient identification band, request form and sample label. Date and sign sample.

Patients pregnant within and/or transfused within:	Sample to be taken not more than:
3 months	72 hours before transfusion
Over 3 months	1 week before transfusion

7. If there is no historic group, a second separate sample may be required for confirmation of ABO/Rhd group for provision of group compatible blood components. In the absence of two separate blood groups, group O red cells and group AB plasma will be provided in an emergency.
8. To enable electronic issue of blood when atypical antibodies are NOT present, patients having surgical procedures with expected blood loss should have a G& S taken at Pre-Op assessment AND on admission.
9. 24-48 hours notice required for cross matches for elective surgery.
10. Guidelines for red cell transfusion can be found in the Trust Transfusion Guidelines and in the Maximum Surgical Blood Ordering Schedule (MSBOS).

LABORATORY USE ONLY
TELEPHONED AMENDMENTS
Clinical Staff: (name) Telephone No: Bleep:
Date of call: / / Time of call:
REASON FOR AMENDMENT:

Component Required (circle):	RBC	FLT	FFP	Date Required: / /
No. of Units				Time Required:

Special Requirements (tick):

CMV negative	Y		Irradiated	Y	
	N			N	

Date of last Hb: (If > 48hrs please repeat FBC)
Signed: Print name:

NBTC Indication Codes for Red Cell Transfusion

R1	Acute Bleeding – Acute blood loss with haemodynamic instability
R2	Hb < 70g/l, stable patient, Acute anaemia. – Use an Hb threshold of 70g/l and a target Hb of 70-90g/l, to guide the transfusion
R3	Hb ≤ 80g/l, if cardiovascular disease – Use an Hb threshold of 80g/l, and a target Hb of 80-100g/l.
R4	Symptoms. Suggest an Hb threshold of initially 80g/l, and adjust as required
R5	Radiotherapy maintain Hb ≥ 110g/l. – There is limited evidence for maintaining an Hb of 110g/l, in patients receiving radiotherapy for cervical and possibly other tumours
R6	Exchange transfusion

NBTC Indication Codes for Platelet Transfusions
Please refer to the Blood Transfusion Intranet page: http://intranet/services/departments-b/blood-transfusion-service-practitioners/indication-codes-for-transfusion/
Alternatively, the NHS Blood Component App is available to download on Google Play and Apple App Store.

Figure 9

9 TRANSPORTATION OF SAMPLES

Please refer to the Trust Specimen Transportation Policy for the correct procedures for submitting samples to the laboratory. Trust documents are currently on the T Drive in the Trust – for users outside the Trust please contact the laboratory or Blood Sciences laboratory manager if a copy of the policy is required.

All samples should be delivered to pathology reception. The laboratory would be still keen to request that all specimens to Pathology currently need to be double bagged i.e. They should be sealed in a plastic bag attached to the request form (if used or printed) in its sleeve and then this whole bag is placed ~~into another~~into another bag. This double bagging is now not a requirement, but the lab would encourage this as good practice. Any leaking samples are considered hazardous and may be destroyed.

Samples degrade, which can adversely affect results. All specimens should be delivered to the laboratory on the same day, ideally within 4 hours of collection. Some samples may have very specific requirements for transport e.g. must be kept warm or on ice. Please see A-Z guide laboratory investigations for any special

instructions.

Most routine blood samples should be kept at an ambient room temperature (18 – 25°C) away from extremes of heat, cold and bright light and they should not be refrigerated. Agitation, bumping or rough treatment of samples should be avoided.

9.1 Transportation from external sites

The Hospital van service is not managed by lab Where users outside the Trust site are not using the van service they need to ensure that their drivers are trained and Risk Assessments prepared.

All specimens collected should be in appropriate containers and packaged into specimen bags which should be transported to the laboratory in dedicated Transport containers. Specimens are delivered to the laboratory via the Trusts transport service and the times of these collections should be available locally. Delivery of quantities of specimen should be in the UN compliant dedicated Green Transport Bags.

If there is a breakdown in the normal arrangements or if your sample has missed the last collection of the day please consider if you need to make a special arrangements for transport. Please call the laboratory to discuss urgency of test and most suitable means of transportation.

In cases of difficulty or further clarification, the laboratory enquiry telephone number is 01793 604294.

9.2 Transportation of samples within the hospital

Porters regularly collect routine samples from wards and outpatients departments. Most samples may be sent direct to the laboratory via the pneumatic air tube system however see section 9.3 for further details and samples that can't be sent in this way.

Urgent samples must be sent to the laboratory immediately and arrangements need to be made with the portering service. It is the requesting clinician's responsibility to arrange transport of urgent specimens to the laboratory.

9.3 Leakages and Breakage

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If a leakage into a transport box or bag occurs during the journey to the GWH Pathology Service, the Laboratory reception employee must be informed immediately on arrival at the Pathology Specimen Reception. A non-conformance must be raised by Blood Sciences on the Quality management System (Q-Pulse). In the event of any leaks/breakages occurring during transport by road prior to arrival at GWH, the DGSA (Dangerous Goods Safety Advisor) should be informed.

On the rare occasion that a specimen is dropped and accidentally broken in the Laboratory, the Blood Sciences Department must ensure the ward/department/GPs is notified ASAP and an incident form completed.

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~~9.4~~

~~9.3~~9.4 Pneumatic air tube system

Blood Sciences are not responsible for the air tube system or the supply of pods. As soon as it is possible pods are sent back by the lab to their home "addresses". The pods have microchips in them such that they will go back to the source that they are pre-programmed to. The laboratory does not have a supply of pods to send.

Pathology address: 104

Please note that the air tube system is managed by Serco. Any failure of the system is to be reported to the Facilities Management Help Desk on 01793 60 4600.

The lab would ask that the following items must not be sent to the laboratory through the air tube system:

- Samples on ice
- Cryoglobulin or cold agglutinin samples.

The following directions for using the PTS are as prescribed by the Trust Infection Control Lead

What can / cannot be sent through the Pneumatic Tube System?

The PTS system is used for the transport of Pathology specimens and Pharmacy items within the GWH building.

The following Pathology Service items must NOT be sent through the system:

- Any items not correctly sealed in a specimen bag
- Any specimen container known or suspected of being faulty
- Blood packs (full or empty)
- Any Histopathology/Cytology slides/specimens
- Any specimen deemed to be a High Infectious Risk (refer to Section 3.4.2 and 3.4.3)
- CSF specimens for Xanthochromia examination (SAH)

Specimens that CANNOT be transported through the system are to be delivered to Pathology by hand or by use of the Portering Service ext. 4646.

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Formatted: Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, … + Start at: 3 + Alignment: Left + Aligned at: 0 cm + Indent at: 0.66 cm

10 HIGH RISK SAMPLES

All samples are regarded by the laboratory as potentially infectious. Separate procedures are used for the safe handling of samples from patients who are known, or suspected to have infections caused by hazard group 3 or 4 pathogens (described by ACDP guidance). For a copy of ACDP guidance please contact the laboratory or the Blood Sciences laboratory manager. The ACDP guidance describes:

High risk pathogens

- Hepatitis
- HIV
- Tuberculosis (samples from sites where tuberculosis infection is likely)
- E coli 0157
- Transmissible Spongiform Encephalopathy (including CJD)
- Typhoid/paratyphoid fever (faecal samples only)
- Dysentery (faecal samples only)
- Anthrax
- Brucellosis
- Transmissible Spongiform Encephalopathy (including CJD)
- Viral haemorrhagic fever
- Pandemic Flu

These lists are not exhaustive. If there is any suspicion of a high risk atypical organism advice on sample collection and transport should be sought from the Consultant Microbiologist.
It is the responsibility of the person taking the specimen from the patient to ensure that the request forms or ICE request 'Danger of infection' section is completed and the container are labelled to indicate a danger of infection.

The request form or ICE request must give sufficient information for laboratory staff to know what special precautions are necessary. In the interests of confidentiality only the warning label needs to be clearly visible to others.

Procedure for highlighting a high risk sample:

- Attach a "Danger of Infection" label to the sample container and request form (if used) for all qualifying samples (available from Phlebotomy Department, GWH)
- Specify the nature of the risk on the request form (if used)
- Use unambiguous and commonly recognised terminology
- Place the sample in a sealable plastic bag and close the seal

Samples should be transported to the laboratory in line with Trust Specimen Transportation Policy.
Do not use the pneumatic air tube system for high risk samples. Trust documents are currently on the T Drive in the Trust – for users outside the Trust please contact the laboratory if a copy of the policy is required.

The Consultant Microbiologist must be contacted **BEFORE** collecting samples from a patient suspected of having a viral haemorrhagic fever (VHF), human avian influenza, SARS or CJD. These organisms require special transport arrangements and specialist laboratories designed for containment during manipulation of samples and cultures.

11. SAMPLE ACCEPTANCE CRITERIA

The laboratory will make every effort to ensure requests are processed in a safe and timely manner but it is essential that request forms or ICE requests and samples are labelled/completed appropriately and legibly in compliance with this policy. It is important to clearly identify the investigations required with relevant supporting information. The requesting clinician is responsible for the correct completion of the request form and the correct labelling of the sample.

Samples will not be accepted for analysis if

- There is no unique identification of the patient i.e. they do not meet the minimum data set for Identification
- Sample or request form (if used) is unlabelled or incorrectly labelled with less than the minimum data sets for patient identification
- Mismatch of details between the form or ICE request and sample(s)
- There is an incorrect sample type or tube
- Incorrect transportation conditions
- Sample is received in a hazardous condition e.g. leaking or sharps attached
- The information provided is illegible
- Samples are not unequivocally traceable, by request and labelling, to an identified patient or site
- Inadequate clinical information is provided

Any labelling discrepancy will be included on the Blood Sciences report. Please note where an unlabelled specimen is received from AED, AED will be phoned to advise This is the only area the lab will call to advise on mislabelled specimens

Inadequately or inaccurately labelled samples or forms/ICE requests will not be accepted unless they are considered to be unrepeatable or non-reproducible. A classification of unrepeatable or non-reproducible tests will be made by the Consultant Chemical Pathologist, Blood Transfusion Lead or Blood Sciences Management staff on an individual basis. The risk to the patient of rejection of the sample will be weighed against the risk of acceptance of a wrongly labelled sample. Blood Sciences will accept no responsibility for samples analysed which initially failed to meet the acceptance criteria and will issue a disclaimer on such reports.

Where the sample is unrepeatable/non-reproducible, no analysis will be performed and an appropriate comment will be included on the Blood Sciences report. The event may be reported as an incident on the Trust incident report system.

PLEASE SEE OVER THE PAGE FOR AN "AT A GLANCE GUIDE TABLE "

SAMPLE IDENTIFICATION CRITERIA excluding Blood Transfusion

Laboratory Specimen Reception will check details on the request form/ICE request against the specimen for the following:

Essential criteria are listed in bold:

	Essential	Desirable
Sample	**3 points of identification** **NHS Number or Hospital Number or Unique coded identifier** AND **Patients Name – minimum Surname and Forename** AND **Date of Birth** In addition Date and time of collection is required	Unequivocal Identification of Specimen collector - phlebotomist name for blood (not initials)
Request Form/ICE Request	**3 points of identification** **NHS Number or Hospital Number or Unique coded identifier** AND **Patients Name – minimum Surname and Forename** AND **Date of Birth** **In addition** • Patient's location and destination for report • Patients consultant, GP or name of requesting practitioner • Investigation/s required	• Patients Address including postcode • Gender • Clinical information including • Medication Time of dosing History of Travel and duration of signs and symptoms can be needed • Practitioner's contact number (bleep or extension) • Time and Date of Sample collection

Table 3

SAMPLE IDENTIFICATION CRITERIA in Blood Transfusion

- **Four points of ID matching sample and form, with date/time and signature on form and sample.**
- **Blood 360 labelling is accepted – no addressograph labels on samples or forms.**
- **GP labelling we do NOT accept locally printed samples labels. They must be hand written.**

It is imperative that all details match or samples will be rejected

12 BLOOD TRANSFUSION

Blood transfusion carries a clinical risk and blood components should only be prescribed when the benefit to patients outweighs the risks.

This is not intended to be an exhaustive guide. Please refer to the Trust wide transfusion policies and guidelines available on the T:/ drive (select Trust wide documents, blood-transfusion). These guidelines are kept regularly updated.

Contacts:

- Transfusion Laboratory Ext. 4220/4221
- Transfusion Laboratory manager- Ext. 4796

Transfusion Nurses:

Available 08.00-16.00 Monday-Friday

- Transfusion nurse practitioner- Ext. 4223
- Transfusion nurse- Bleep 2185
- Transfusion nurse- Bleep 1229

Haematology SpRs:

09.00-1700 Monday-Friday the haematology registrars are available for advice on

- Bleep 2162 or 1135- Laboratory registrar.
- Bleep 2002- Day unit registrar.
- Bleep 1299- Clinic registrar.

Consultants:

- Haematology consultant on call- can be contacted via switch board 01793604020
- Hospital Transfusion lead
- Haematology clinical lead for transfusion

12.1 Blood 360

Transfusion laboratories are required by law to demonstrate the fate of every blood component used with evidence of 'vein to vein' traceability. They are required to achieve 100% compliance. The GWH hospital uses Blood 360 as an electronic blood tracking system in addition sample 360, a Phlebotomy sample labelling system. These systems enable the laboratory to manage the entire transfusion process and maintain traceability.

Please note: Blood 360 is not yet available in the community hospital locations

- **Process for blood 360 downtime**

If the Blood 360 system is temporarily out of action the laboratory will inform high use areas. The procedure will be to revert to the downtime processes for Blood Collection and Traceability will be captured using manual admin logs. For any questions about the process please discuss with the laboratory or transfusion nurses.

- **Ordering blood components and taking blood transfusion samples**

All requests for tests carried out in the Blood Transfusion Laboratory must be made on a dedicated blood transfusion request form see section 8.5 page 33.

Errors in patient identification or sample labelling can lead to fatal ABO incompatible transfusion. Positive patient identification is essential at all stages of the blood transfusion process.

The laboratory operates a zero tolerance policy for requests and samples that do not adhere to this policy will be rejected.

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- **Sample360 - positive patient identification**
  The Great Western Hospital uses sample360 to support best practice in positive patient identification and labelling of specimens. The system relies on the patients electronically generated bar coded wrist band to generate labels at the patient's bedside. This labelling system should be used wherever possible for transfusion samples.

- Taking samples for blood transfusion:

- **Transfusion samples may only be taken by individuals who have completed training and competency assessment**
- For details of competency training please discuss with transfusion nurses.
- **Samples should always be labelled at the bedside.**
- **Blood must only be taken from one patient at a time.**
- **Tubes must be labelled by the person taking the sample.**
- **Sample tubes must NEVER be PRELABELLED or retrospectively labelled.**
- **Addressograph labels must not be used on either the blood samples or the request forms.**

- If the patient has an electronically generated bar coded wrist band:

- **The patient should be asked to confirm their full name and DOB and this should be compared with the wrist band.**
- **Samples should be labelled at the bedside.**
- **Never use a wristband that is not attached to the patient to generate labels.**

- In circumstances where the patient cannot confirm their identity and no relative/carer is available, to verify the patients' identification, the ID band will be the only means of positive patient identification.

12.2 Hand written samples and request forms

If the patient is not wearing an electronically generated bar coded wrist band, the patient should be asked to confirm their full name, DOB and the first line of their address. These details must match with the request form and the hospital record.

Where it is necessary to hand write the sample and request form the details must be legible and contain the following key identifiers:

- **Unique patient number** (This is usually the Hospital number but may be the NHS number or a rolling major incident number for unknown patients).
- **Surname.**
- **First name** (in the case of a newborn baby this may be entered as "Boy" or "Girl" of 'Mum's forename'.)
- **Date of birth.**
- **Gender**.
- **Signature of clinician taking the sample.**
- **Date and time the sample was taken.**
- **The EDTA tube must be within its expiry date.**

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Any discrepancy will result in the specimen being rejected

In addition to the core patient identification details the following information is required

- Location of patient and where the blood is required.
- Diagnosis and any significant co-morbidity.
- Any past obstetric and transfusion history.
- If the patient is Antenatal the EDD or gestation must be provided.
- Any relevant transfusion history if known e.g. blood group antibodies, previous transfusion reactions.
- Reason for transfusion. ('Pre-op' is not acceptable.)
- Date when blood is required.
- Urgency of request.
- Number of units and type of blood, blood products or blood components, including any special requirements e.g. Cytomegalovirus (CMV) negative and/or irradiated.
- Date of request.
- Name of employee making the request, together with contact details (Telephone number / Bleep).
- Sampler's signature and printed name, together with contact number.

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12.3 Special Requirement (including need for Irradiated Blood)

There is Trust Guideline that applies. Ordering Blood Components for Patients with Special Requirements – Clinical Guideline EDRMS000640 v2.0 Trust documents are currently on the T Drive in the Trust – for users outside the Trust please contact the laboratory if a copy of the policy is required.

- The Transfusion Laboratory must be informed immediately if a patient newly requires irradiated blood components.

- The lab can be informed either by telephone (01793 604220 or bleep 1148), in person, or by e-mailing the Irradiated_Blood_Group email group on gwh.bloodspecialrequirements@nhs.net. Relying on a transfusion request card alone is not acceptable.

- If the lab does receive a transfusion request card specifying irradiated components, in the absence of any other communication, irradiated blood components will be issued unless further enquiry to the requesting team deems this clinically inappropriate.

- It is the responsibility of the lab and clinical teams to ensure that the requirement for irradiated blood components is an alert on Careflow and the laboratories responsibility to add an alert to the LIMS system once notified for its requirement.

Failing to disclose special requirements may result in major morbidity or mortality. If the need for special requirements has previously been identified a CAREFLOW alert should be visible. If you are in any doubt about whether your patient has any special requirements please discuss with the

transfusion nurses or clinical haematology.

12.4 ABO confirmatory testing - the two sample rule

All patients who have no historical blood group must have two group and save samples. This is to reduce the risk of a patient receiving an ABO incompatible transfusion due to identification errors, and it is requirement before group compatible blood can be issued.
The samples must be taken in two separate venepunctures and a process of positive patient identification should be followed on each occasion.

Two samples taken at the same time point do not constitute a confirmatory sample as this will not protect the patient if they have been wrongly identified during Phlebotomy.

If a cross-match has been requested and there is no historical group the laboratory will contact the requesting clinician to request a second sample.
Fully cross matched blood will not be issued until two samples have been received. In cases of emergency group O Rh (D) negative or O RhD Positive blood will be supplied until the confirmatory sample has been received.

12.5 Planned Red Cell Transfusion

It is well established that the risk to patients from a blood transfusion are significantly greater during the out-of-hours period. It is essential that requests for non-urgent, planned transfusions are carried out during normal working hours.

There is not one universal trigger for red cell transfusion. However, red cell transfusions are unlikely to be indicated in the non-bleeding patient where the Hb is greater than (>) 100 g/l. NICE guidance recommends the following transfusion thresholds and targets:-

- Consider a Hb threshold of 70 g/l with a target of 70 – 90 g/l post transfusion
- Patients with ACS consider Hb threshold of 80 g/l with a target of 80 – 100 g/l post transfusion
- Consider setting individual thresholds and Hb concentration targets for each patient who needs regular blood transfusions for chronic anaemia
- For patients with haematinic deficiency consider whether transfusion is required, see trust policy for IV iron infusion.

12.6 Consent

Wherever possible, informed consent should be obtained prior to a blood transfusion and this should be documented in the patient's notes. **The responsibility for obtaining informed consent for the test**

or administration resides with the individual ordering the test not the laboratory. Written information is available in the 'Will I Need a Blood Transfusion?' leaflet published by NHS Blood & Transplant (NHSBT). It is available in clinical areas or from the Blood Transfusion nursing team (extension 4223/ bleep 2185).

12.7 Transfusion Associated Circulatory Overload (TACO)

TACO is an increasingly recognised adverse complication of transfusion. When requesting blood please consider how many units are required based on the patient's body weight. The table below is a useful guide. As a general guide, **transfusing a volume of four millilitres per kilogram (mL/kg) will typically give a Haemoglobin (Hb) increment of 10 grams per litre (g/l),** Please use this calculation for any body weights not listed in the table 4 below. Table 4 continues over page.

Patient weight In kilograms (Kg)	four mL/kg	one unit (average 300mL) would raise Hb by approximately:
50kg	200mL	15g/l
55kg	220mL	13.6g/l
60kg	240mL	12.5g/l
65kg	260mL	11.5g/l
70kg	280mL	10.7g/l
75kg	300mL	10g/l
80kg	320mL	9.4g/l
85kg	340mL	8.8g/l
90kg	360mL	8.3g/l
95kg	380mL	7.9g/l
100kg	400mL	7.5g/l
105kg	420mL	7.1g/l
110kg	440mL	6.8g/l

Calculation used: Patient weight X 4 (mL/kg) = (A) Blood in mL to give Hb rise of 10g/l
300mL (average blood unit) divided by (A) X 10 = HB rise for 1 unit

Table 4

12.8 Notice required by the laboratory for routine/planned transfusion

The laboratory requires a 24 hour notice period for planned red cell transfusion. In exceptional circumstances a cross match for a routine transfusion can be done within 2 hours during normal working hours upon request.

Blood will be issued after ABO and Rh (D) groups have been checked and the blood has been screened for atypical antibodies. If there are atypical antibodies samples may need to be sent to NHSBT for further investigation, which may take up to 48 hours.

12.9 Patients with alloantibodies

If a patient has produced an alloantibody as a result of a previous transfusion or pregnancy it will be necessary to provide blood negative for the antigen. Patients with known antibodies should carry an antibody identification card.

If a patient is known to have an antibody - please provide this information on the request form and please give at least 48 hours' notice of a transfusion to allow appropriate antigen negative blood to be sourced.

Patients with known antibodies should not be transfused at weekends or out of hours.

If a new antibody is identified the laboratory will request a further sample for investigation of the antibody by the National Blood Service (NHSBT). This may result in a delay in supplying blood.

12.10 Complicated cross matches

The presence of allo- or autoantibodies can cause difficulties for the laboratory. The sample may need to be sent to an NHSBT reference laboratory. This may result in a delay in the ability to provide fully compatible blood.

If blood is required more urgently than it can be supplied please discuss with clinical haematology on call.

12.11 Blood ordering for elective surgery

In elective & scheduled surgery, the likelihood of a blood transfusion being needed during the peri-operative period is closely related to the pre-operative haemoglobin and the type of planned

procedure.
The scheduled procedure is categorised into three 'risk' groups for managing blood requirements:

- Very low risk (less than 1% require pre-operative transfusion)
- Low risk (1-5% transfusion risk)
- Medium risk (5-10%) / high risk (greater than 10%).

For each of the three risk groups, blood work-ups are further sub-divided based on the patient's haemoglobin, transfusion history & presence of antibodies.

For further information please refer to:
'blood ordering for elective and scheduled surgery at the great western hospital clinical guideline' available on the T:/ drive.

12.12 Repeat transfusions (sample intervals)

When a patient has had a transfusion or a pregnancy within the last 3 months there is a risk that they will develop a new red cell antibody. These antibodies can cause serious transfusion reactions.

The cross match sample must be taken within 72 hours of the transfusion.

All transfusions must be completed within the 72 hour window of the sample being taken. After this time a repeat sample will be required.

Cross matched units will be made available for 24 hours. After this time the units will be returned to stock.

12.13 Blood issue fridges and emergency group O Rh (D) negative supplies

Great Western Hospital

Fridge location	Standard blood issue fridge.	Number of O Rh (D) negative units Adult packs	Number of Rh (D) negative units- Paediatric packs
Pathology reception (4th floor)	Yes	4	10
Theatres (1st floor)	Yes	2	0
Delivery suite (2nd floor)	Yes	2	1
Osprey Day therapy unit (3rd floor).	Yes	0	0

12.14 Urgent/immediate transfusion

If urgent transfusion is required the blood bank must be informed and the urgency of blood should be stated.

If there is massive blood loss the **'Major Haemorrhage Protocol for Obtaining Blood & Blood Components in an Emergency Protocol' (**accessed on the T:/drive) should be activated.

Community staff must call emergency services by dialling 999.

12.15 Activating the Major Haemorrhage protocol

Triggering the protocol in the Great Western Hospital is a two-step process:

- **Call the Transfusion laboratory (TL) on extension 4220 or bleep 1148**
- **Call the switchboard on 2222**
- The following exact phrase should be used **"I want to trigger the major haemorrhage protocol"** or for Paediatrics **"I want to trigger the Paediatric major haemorrhage protocol"**.

- **The caller must give: -**
- Location (may change. e.g. Emergency Dept to Theatre)
- Patient details (if unknown, give emergency issue identification (ID) number)- to TL only
- Name & contact telephone number of the senior clinical co-ordinator- to TL only.

12.16 Components issued following a Major haemorrhage Activation

The following components will be issued following a declaration of a Major haemorrhage.

Adults:

- Four units of red cells (O negative if blood group unknown)
- De-frost & issue 4 units of Fresh Frozen Plasma (FFP). (AB if group unknown) – I unit of Thawed AB OctoplasLG (equivalent to 1 FFP) is available immediately in the Issue fridge.
- Platelets will be requested (blue light) from Oxford if no suitable units available on site.

Paediatrics:

Please note the laboratory will issue whole units, the Paediatric/Medical Team attending will **need to calculate (10-20mLs /kg)** for volumes to be administered.

Staff declaring the major haemorrhage must be able to give the child's weight or estimated weight to the BMS. The declaration of the 'Paediatric major Haemorrhage' will trigger the lab to issue the below:

12.16 Components issued for major haemorrhage (continued)

Paediatrics (continued)

Weight	Red cells issued	Dose	Octaplas issued	Dose	Platelets issued	Dose
<5 kilograms (kg)	2 Paediatric Units (Volume (vol) 80 – 100 mL)	10-20mL/kg	1 unit Octaplas = 200 mL	10-20 mL/kg	50mL	10-20mL/kg
5 – 10.9 kg	1 Adult unit (Vol 250 mL)		1 unit Octaplas = 200 mL		110mL	
11 – 20 kg	2 Adult units (Vol 500 mL)		2 units Octaplas = 400 mL		200mL	
> 20 kg	4 adult units (Vol 1000 mL)		2 units Octaplas = 400 mL		200mL	

Table 6

While the haemorrhage and transfusion is on-going, red cells and FFP should normally be ordered in batches of four units and given on a ratio of 1:1. Platelets should be given according to platelet count and kept greater than 50 X 109 per litre (/l). Laboratory measurements of coagulation (APTT, PT and fibrinogen) and FBC should be undertaken after transfusion of each 'round' of blood components (4 x red cells, 4 x FFP/Cryoprecipitate and/ or, platelets).

12.17 Group O Rh(D) negative blood

Group O Rh(D) negative blood is stored in the blood issue fridges in pathology, theatres and the delivery suite. Two paediatric units are available in the delivery suite fridge (see section 12.3).

Note Group O Rh(D) negative blood is compatible in all blood groups but may cause transfusion reactions in patients with antibodies.

When blood is issued from the blood bank before full compatibility testing can be established the responsibility for the safety of the transfusion rests with the requesting /prescribing clinician and the laboratory will ask for the name of the authorising clinician.

A specimen for a group and antibody screen must be sent to the laboratory at the earliest opportunity so that group specific blood can be supplied and should be prior to any transfusions.

A quick identification of the patients ABO group can be carried out within 15mins allowing ABO group compatible blood to be issued. An antibody screen will be carried out retrospectively.

- Emergency group specific un-cross matched red cells- 15mins
- Urgent cross matched red cells with antibody screening- 50mins

In a community setting the initial response to haemorrhage would be to telephone 999 to arrange transfer to an acute hospital.

12.18 Traceability for emergency blood

If blood has been issued in an emergency without using Blood360 a confirmation of use (Manual Administration Log) form must be completed and returned to the laboratory.

12.19 Non red cell components

Non red cell components do not require a cross match but the blood group of the patient must be known before components can be issued (this will require 2 samples if there is no historic group).

Please see the 'use of blood components and blood products clinical guideline' available on the T:/ drive. If further advice is required please discuss with clinical haematology- (see contacts 13.1).

The following products are available on request from the laboratory:

Platelets
Platelets are not kept on site. They are obtained as required from the National Blood Service in Oxford. A routine blood order and delivery occurs twice daily Monday to Friday:

Morning delivery
Orders must be placed with the laboratory by 07.45am for delivery to the Blood transfusion laboratory by 11.20am +/- 30mins.

Afternoon delivery
Orders must be placed with the laboratory by 10.45am to the Blood transfusion laboratory by 14.00 +/-30 mins.

Outside of these times platelets can be delivered by "blue lights" from NHSBT, they may take up to 2 hours to arrive from the time the request is received.
Any ad hoc urgent platelet requests must be authorised by a haematologist (SpR or consultant).

- **Fresh frozen plasma (FFP) and cryoprecipitate:**
  These products take up to 30 minutes to thaw and should be used as soon as possible for maximum effect. FFP should not be used for warfarin reversal.

Outside of a major haemorrhage the use of FFP, platelets or cryoprecipitate needs to be authorised by a haematologist (SpR or consultant), an up to date clotting result is essential (including fibrinogen if Cryoprecipitate is requested).

- **Pooled plasma products**
  The following products are available from the laboratory on request:

- **Human Albumin Solution 20% (HAS):**
  HAS is available from the laboratory on request. There are no restrictions. If it is not being used immediately it should be returned to the laboratory return to stock. It must not be stored locally.

- **Prothrombin complex concentrate (octaplex)**
  PCC is available for the management of life, limb or sight threatening haemorrhage associated with warfarin therapy.

It may be also used where there is bleeding in association with Direct oral anticoagulants (DOACS) but evidence for its use in this context is limited.

PCC must be authorised by the on call haematologist (consultant or registrar). The laboratory will require an INR result and the patients weight (in kilograms) to supply the correct dose.
For the Emergency Department only there is 3000iu of Octaplex issued and available for immediate collection from the Issue fridge, as per their protocol.

Anti-D

Routine Prophylaxis:
Routine prophylaxis is requested via GP practices and antenatal clinics. It should be requested during normal working hours using form BTR-F-130. Copies of the form should be held locally but are available from the laboratory on request.

A form BTR-F-132 will be issued with the anti D and must be returned ASAP to the laboratory on administration of the product for traceability purposes.

Sensitising events:
A 24 hour service is provided for the issue of anti-D for sensitising events. Form BTR-F-131 should be completed. Copies should be held locally but can be obtained from the laboratory on request.

A Form BTR-F -132 will be issued with the anti-D and must be returned ASAP to the laboratory on administration of the product for traceability purposes.

Post-natal:
Post-natal anti-D will be issued by the laboratory on receipt of a request for Kleihauer testing. A Form BTR-F-132 will be issued with the anti-D and must be returned ASAP to the laboratory on administration of the product for traceability purposes.

Clotting factors

Clotting factors are not routinely kept on site. Any patient requiring clotting factors will be managed in conjunction with the regional haemophilia centre in Oxford, who will supply factor concentrates if required.

12.20 Transfusion Reactions

Please refer to the trust guideline: 'the investigation and management of transfusion reactions and serious adverse events at great western hospital and community hospitals- clinical guideline' Available on the T:/drive.

It is mandatory that serious transfusion incidents are recognised, managed and reported to SHOT (serious hazards of transfusion) or SABRE (serious adverse blood reactions and events). In the event of a suspected transfusion reaction follow the trust guideline.

The laboratory must be contacted immediately so that appropriate investigation can be initiated and other available units or components can be withdrawn if necessary. All suspected transfusion reactions will be investigated by the laboratory and the hospital transfusion team, who will report to SHOT and SABRE if required.

A trust clinical incident form (DATIX) must be generated.

If you require any clinical advice regarding a suspected transfusion reaction please contact the on call haematologist.

13 REPERTOIRE OF TESTS (A – Z)

This section covers the tests that the Blood Sciences department offers according to the service repertoire agreed with our users.

A full list of the Blood Sciences UKAS accredited tests can be seen on the Schedule of Accreditation, see (PAT-EX-339)

All tests which are not currently accredited to UKAS ISO15189 standards, are offered as an unaccredited service.

Find a test or clinical condition using the A – Z list. With each test we provide the following information where appropriate:

- Name of test and common pseudonyms
- Examinations offered
  - Which sample containers are required
  - What specimen type is required
  - What sample volume is required
  - Which request form (if required) should be used
- Sample instructions
  - Collection of the specimen
  - Specimen transportation
  - requirements Specimen
  - storage requirements
  - Special requirements for performing this examination
- Laboratory information
  - What test will be performed in a profile e.g. U/E
  - Measurement units of examination performed
  - Biological reference intervals of examination performed
  - Turnaround time of examination performed
  - When the test is available i.e. how often the lab runs the test – daily/weekly/weekdays only is indicated by the Turnaround time please ask the lab if details are required.
- Clinical information
  - Factors known to significantly affect the results

For test cost maybe available on request, for more information please contact the Laboratory

For more information on any of these tests see the website Lab Tests Online UK website. In the event of any issue or need for more information please contact the Laboratory

13.1 Reference Intervals

Reference intervals for any test are specific to that test and laboratory methodology. They can also vary by many other factors such as gender and age. Reference intervals will be displayed with the patient results taking these factors into account. This is why many of the tests in the table say "See Report". Please consult the laboratory if we can supply more information.

These will be available, whether the result is sent via paper, through ward/web enquiries or via the electronic links to General Practice.

Biological reference intervals and clinical decision limits will be periodically reviewed by appropriate Clinicians within Blood Sciences, and any changes will be communicated to users.

The laboratory provides a range of specialist testing which is undertaken at reference centres. These tests are indicated within section 14. Please contact the laboratory on Telephone 01793 604286 for details of the tests offered, name and location of the testing laboratory and information regarding any special sample requirements.

13.2 Turnaround Times

Please note that the Turnaround Time in the A to Z table is indicative. On occasions tests can be performed quicker - for certain areas where clinically indicated **and** where there has been agreement with the laboratory. All Turnaround Times apply from the time the specimen arrives in the laboratory to the time the result is available - but it is appreciated that the time from sample collection to result availability is the important measure.

13.3 Breadth of Repertoire

The table provided aims to cover nearly all of the tests that can be expected from this laboratory's users. It would not be desirable, if feasible, to cover all of the tests that may be required in every conceivable situation. Please contact the laboratory if the test you require is not listed.

13.4 Test profiles

13.4.1 General

These are provided in the table but for the most commonly used please note the given tests:

U/E: Sodium, Potassium and Creatinine

LFT: Albumin ALP, ALT, Bilirubin and Total Protein

BONE PROFILE: Calcium, Albumin, Phosphate, ALP, Total Protein

CALCIUM PROFILE: Calcium, Albumin, Phosphate, ALP, Total Protein

MYELOMA SCREEN: Electrophoresis. Albumin, Total Protein

FBC HGB,RBC,HCT,MCV,MCH,MCHB,RDW,RBC,NEUT,LWMP,MONO,EOS,BASO,PLAT,MPV & NRBC

13.4 Test profiles (continued)

13.4.2 Profiles – COVID

The Trust COVID Profile is dependent on gender as male and female HS Troponin Tests have different reference ranges.

COVID PROFILE (Male) High Sensitivity Troponin Male, D-Dimer, CRP, Ferritin, FBC, U/E, Creatinine, LFT, Coagulation Screen, Fibrinogen and Glucose

COVID PROFILE (Female) High Sensitivity Troponin Female, D-Dimer, CRP, Ferritin, FBC, U/E, Creatinine LFT, Coagulation Screen, Fibrinogen and Glucose

13.4.3 Profiles - Coagulation Testing

When a coagulation test is requested the following tests are performed

PT (Prothrombin Time) and APTT (Activated Partial Thromboplastin Time) PTR and APTR ratios are calculated

Patients on warfarin should have the following test: INR

APTT if requested will be performed

Fibrinogen needs to be requested as a distinct separate test

13.4.4 Blood Films and Bone Marrow Smears

Blood films will be examined for pre-specified abnormalities of certain parameters in the blood count. In addition, users may request a blood film when they request a full blood count. Most films will be authorised by the laboratory BMSs but where they have clinical concerns they are referred to a clinician for further interpretation.

Bone marrow smears can only be requested by the haematology department. If your patient requires a bone marrow please refer to the Specialist Registrar in Haematology. The bone marrow smears are reported by haematology medical staff in conjunction with other clinically relevant data such as cytogenetics, immunophenotype and molecular genetics.

13.5 Point of Care Testing

The laboratory has a key role in the co-ordination of point of care testing (POCT) for users. These cover Blood Gas machines, Coaguchek, Blood Glucose and Blood ketone meters. Please contact us for support and advice with any enquiry regarding POCT in the first instance by contacting Lead BMS/ POCT Manager on 01793 607031. Tests performed under POCT are not covered within the scope of UKAS ISO15189 accreditation. The Ambulatory Care POCT Suite has an AQT available for D Dimer Testing

Location and repertoire on Blood Gas machines
Locations: AAU, ED, ICU, Maternity, Neonatal Unit (SCBU), Saturn and Ambulatory Care
The test menu at each and every location is the same; the repertoire is given in Table 7.

Location and repertoire on Blood Gas machines

Please note tests on the Point of Care equipment including Blood Gas Machines are not ISO 15189 ACCREDITED at this time

Abbreviation	Full Name
pH	pH
pO2	pOxygen - partial pressure Oxygen
pCO2	pCarbon Dioxide - partial pressure Carbon Dioxide
tHb	total Haemoglobin
sO2	Oxygen Saturation of Haemoglobin
OxyHb	OxyHaemoglobin
MetHb	Met Haemoglobin
COHb	Carboxyhaemoglobin
HHb	reduced Haemoglobin (deoxyHaemoglobin)
HbF	Haemoglobin F (Foetal)
Na	Sodium
K	Potassium
Ca - Ca^{2+}	Ionised Calcium
Cl	Chloride
Glucose	Glucose
Lactate	Lactate

Table 7

13.5 Point of Care Testing (continued)

Blood Gas machines are only approved for analysing blood – not other fluids
Analytical equipment is validated at the factory for CE marking and locally verified for acceptable use but only for those materials that are meant to be analysed. Using Blood Gas machines for any other fluid apart from heparinised whole blood or approved quality control material is outside of the quality arrangements forming part of the governance for the use of the equipment.

Reminder - comparison of POCT and laboratory results
The laboratory would like to remind users that results from Glucose meters or Blood Gas Machines cannot, without consideration, be compared to those in the laboratory as the former uses whole blood and the laboratory uses serum or plasma. It further warns that extremes high level of protein or lipid can lead to Blood Gas machine results that will need special care in interpretation.

Infection Control
Infection control measures that exist across the Trust need to be considered when using POCT equipment.

The A to Z Table – Table 8 follows on the next page

Please note:

Coagulation
The coagulation bottles do need to be fully filled to the line. The test requires a certain ratio of blood volume to factory allocated anti-coagulant to work.

D Dimers
To obtain the D - Dimer test a Wells score must be given along with the clinical details that indicate the request is to rule out PE and DVT

Biochemistry
From 17.10.22 chemistry will inspect all the paediatric specimens by eye and if it is slightly haemolysed only - please report all results with the caveat "slightly haemolysed - interpret results with great care.

Moderate or frank haemolysis should be suppressed as now. This approach has been approved by Dr. Mayur Patel on 7.10.22

13.6 A-Z Repertoire index

Table 8

TEST NAME (and common pseudonyms)	BHI CODE	SAMPLE CONTAINER TYPE See BD Vacutainer Tube Guide on Page Preceding Table	ALTERNATIVE SAMPLE TYPE	SAMPLE VOLUME	DISCIPLINE as a guide to ideal Request Form for Enquiries	REFERENCE RANGE or THERAPEUTIC RANGE UNITS	INDICATIVE TARGET TURNAROUND TIME Number of Days Unless stated	SPECIAL REQUIREMENTS AND COMMENTS
0 - 9								
3 HYDROXYBUTYRATE	3HYB	**Fluoride**		2 – 4 mL	Chem	See Report	CONSIDER USING KETONE METER FOR IMMEDIATE RESULT – may take 10 days	Test rarely indicated
7 DEHYDROCHOLESTEROL	7DEH	**Lithium Heparin**		3.5 mL	Chem	<2.0 micromol/L	10	Must be protected from light
17 HYDROXY PROGESTERONE	17HP	**SST**		2 – 4 mL	Chem	0.8-7.9 micromol/L	10	
18 HYDROXY-CORTISOL	18HA (ambulant)	**EDTA**		4mL	Chem	1.6-10.7 micromol/L	10	Usually requested in conjunction with Renin / Aldosterone.
						0.7-6.5		

	18HS (supine					micromol/L	10	
A								
ACETYLCHOLINE RECEPTOR AB	ACRA	**SST**		2 – 4 mL	Chem	See report	18	
ACRA SENT TO OXFORD	AARA	**SST**	Red clotted	2 – 4 mL	Chem	See report	18	
A.C.T.H.	ACTH	**EDTA**			Chem	0-40 ng/L	10	
ACTIVATED PROTEIN C RESISTANCE(as part of Thrombophilia screen)	ICOM	**Citrate x 6** **SST** **EDTA**	Paed Green	 2 – 4 mL 4 mL	Coag	See report	10	X 6 blue + 1 SST + 1 EDTA. Also known APCR. Lab input –THRO. Citrate tubes need to be filled to mark. Please supply full clinical information with Thrombophilia requests as they will be vetted
ACYL CARNITINE	ACYL	**Special**			Chem	See report	10	Test rarely indicated
ACYL CARNITINE. URINE	ACYU	**Special**			Chem	See report	10	Test rarely indicated
ADALIMUMAB	HUMP	**SST Adult bottle**	No other sample type	2 - 4mL	Haem	See report	14	

		Paed RED Top						Please only send Adult SST bottle or Paed red top
ADRENAL ANTIBODIES	ADRA	**SST**	Red clotted	2 – 4 mL	Haem	See report	15	
ALBUMIN		**SST**		2- 4 mL	Chem	0 – 4 Days: 28 – 44 g/L >4 Days – see note 35 – 52 g/L	1	The Reference Range for more than 4 days applies to the whole population – infant children and adults
ALCOHOL (ETHANOL)	ETOH	**Fluoride**	or SST	2 – 4 mL	Chem	Not normally present Units: mg/dL	2 hour if urgent 2 days otherwise	Fluoride if needs to be stored prior to lab analysis
ALDOSTERONE	ALDO	**SST**		2 – 4 mL	Chem	30-340 ng/L	11	To lab asap
ALKALINE PHOSPHATASE. ISOENZYMES	APIS	**SST**	Red clotted	2 – 4 mL	Chem	See Report	10	
ALKALINE PHOSPHATASE (ALP)	ALP	**SST**	Red clotted	2 – 4 mL	Chem	Adult (>19): 30 – 120 U/L Ranges vary with age and gender (See report)	1	Alkaline phosphatase or Alk. Phos part of routine LFT
ALT (ALANINE TRANSAMINASE)	ALT	**SST**		2 - 4mL	Chem	Male/Female (≤2Y): 13 - 45 U/L Male (>2Y): <50 U/L	1	Part of routine LFT

						Female (>2Y): <35 U/L		
ALPHA FETO PROTEIN	AFP	**SST**	Red clotted	2 – 4 mL	Chem	Male/Non-pregnant Female: <7 U/mL	1	
ALPHA GALACTOSIDASE	GALA	**Special**			Chem	70-300 IU/L	10	Test rarely indicated
ALPHA-1-ANTITRYPSIN	A1	**SST**	Red clotted	2 – 4 mL	Chem	1.3-2.4 g/L	10	
ALPHA-1-AT PHENOTYPING	A1AP	**SST**		2 – 4 mL	Chem	Qualitative	10	
AMINO ACIDS	AA	**SST**	Red clotted	2 – 4 mL	Chem	Qualitative	10	Although rarely required as an immediate test - in exceptional cases where the referral lab has agreed to test urgently the GWH lab can send these at any time of day or night
AMIODARONE	AMIO	**Red clotted**		2 – 6 mL	Chem	0.6-2.5 mg/L	15	Specimen can be accepted as SST or Lithium Heparin too
AMITRIPTYLINE	AMIT	**SST**		2 – 4 mL	Chem	See report microg/L	10	
AMMONIA	SNH4	**EDTA**	**EDTA only**	4 mL	Chem	See Report micromol/L	1	Biochem should be advised when a sample needs to be taken. Sample placed on ICE straight to lab ASAP
AMYLASE	AMS	**SST**	Red clotted	2 – 4 mL	Chem	28 - 100 U/L	1	
ANA IGG TITRE	ANAT	**SST**		2 – 4 mL	Haem	See report	10	
ANA SCREEN	ANAS	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	

ANCA MYLEOPEROXIDASE AB	ANCG	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Anti-neutrophil cytoplasmic antibodies
Anti-neutrophil cytoplasmic antibodies - ANCA (Oxford)	ANCO	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Anti-neutrophil cytoplasmic antibodies (for Renal unit)
ANCA MYLEOPEROXIDASE AB	ANCM	**SST**		2 – 4 mL	Haem	0-5.0 IU/mL	10	
ANDROLOGY PROFILE	ANDP	**SST**	Red clotted	2 – 4 mL	Chem	Various tests - See Report	7	
ANDROSTENEDIONE	ANDR	**SST**	Red clotted	2 – 4 mL	Chem	(SEE REPORT) nmol/L	11	
ANF	ANF	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	ANTI NUCLEAR FACTOR part of CTAN (connective tissue screen)
ANGIOTENSIN CONVERTING ENZYME	ACE	**SST**	Red clotted	2 – 4 mls	Chem	18-55 U/L	10	
ANTENATAL ABS	Blood Bank request	**EDTA**		2-6mL	Blood Bank	See report	1	
ANTI C1Q ANTIBODY	C1Q	**SST**		2 – 4 mL	Haem	See Report	10	Performed at SGH
ANTI CCP ANTIBODY		**SST**		2 – 4 mL	Haem	See report	5	
ANTI CARDIOLIPIN ABS (SGH)	CARL	**SST**	Red clotted	2 – 4 mL	Haem	See report	15	ACA / CARD / ACL part of lupus. Please supply full clinical information with lupus requests as they will be vetted
ANTI CENTROMERE (SGH)	CENT	**SST**	Red clotted	2 – 4 mL	Haem	See report	20	Part of CTAN
ANTI GM1-GANGLIOSIDE(OXF)	GM1	**SST**		2 – 4 mL	Haem	See report	10	
ANTI-DS DNA	DSDN	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of CTAN

ANTI ENDOMYSIAL ABS	TTG	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
ANTI-GAD ANTIBODIES	AGAD	**SST**		2 – 4 mL	Haem	See report	18	
ANTI-GANGLIOSIDE ANTIBODY	GQ1B	**SST**		2 – 4 mL	Haem	See report	10	
ANTI GLIADIN TISSUE ABS	TTG	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
ANTI GLOMERULAR BASEMENT MEMBRANE (SGH)	GBM	**SST**	Red clotted	2 – 4 mL	Haem	0-7.0 U/mL	10	ANTI GBM
ANTI GLOMERULAR BASEMENT MEMBRANE (OXFORD)	GBMO	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	ANTI GBM
ANTI GMI (OXF)	GM1	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
ANTI HISTONE		**SST**		2 – 4 mL	Chem	See report	15	
ANTI HU	PURK	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of neuronal abs
ANTI JO - 1	ROLA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
ANTI-MAG ANTIBODIES	AMAG	**SST**		2 – 4 mL	Haem	See report	10	
ANTI MITOCHONDRIAL ABS	ANDS	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of AIP liver panel
ANTI MULLERIAN HORMONE	AMH	**SST**		2 – 4 mL	Chem	See report	5	Not routinely available – primarily available to Fertility Clinic
ANTI PARIETAL ABS (SGH)	AIP	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
ANTI PHOSPHOLIPID ABS	ICOM CS	**Citrate x 4**		2.7mL	Haem	See report	10	Part of lupus. Lab to input –LUPU. Citrate tubes need to be filled to the mark. Please supply full clinical information with lupus

								requests as they will be vetted
		SST				See report	10	
ANTI RO + LA	ROLA	**SST**		2 – 4 mL	Haem	See report	10	Part of CTAN
ANTI THROMBIN III (as part of thrombophilia screen)	ICOM CS	**Citrate x 6**	Paed Green	2-4 mL	Coag		10	AT3 / ATIII / APCC. Lab to input THRO. Citrate tubes need to be filled to the mark.
		SST						
		EDTA						Please supply full clinical information with Thrombophilia requests as they will be vetted
ANTI TPO (SGH)	TPO	**SST**		2 – 4 mL	Haem	See report	10	
ANTI XA	AXAA	**Citrate x 2**	Paed Green	2.7mL	Coag	See report	1	X2 to lab asap. Citrate tubes need to be filled to the mark.
ANTI YO	PURK	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of neuronal abs
AP50	A50	**Special**			Chem	80-200 Seconds	15	Test rarely indicated
APTT (APT RATIO)	APTT	**Citrate**	Paed Green	2.7 mL	Coag	19.0 – 28.6 seconds	1	Therapeutic range for unfractionated heparin 1.5-2.5 ratio
AQUAPORIN ABS	AQ4	**SST**		2 – 4 mL	Haem	See report	18	
ARSENIC (BLOOD)	ARSB	**Lithium Heparin**	EDTA	3.5 mL	Chem	See report	10	
ARSENIC (URINE)	ARSN	**Plain Universal**			Chem	See report	10	
	AST	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female		

ASPARTATE AMINOTRANSFERASE (AST)						(<2M): 25 - 75 U/L Male/Female (2M – 2Y): 15 - 60 U/L Male (>2Y): <50 U/L Female (>2Y): <35 U/L	1	**NOT** part of offered LFT
Autoantibodies for new Type1 Diabetics		**SST** **Paed red top**		2-4mL	Chem	See report	10	This can be requested by all personnel from Diabetes team including DSNs Also can be requested by paediatricians
B								
B12 & FOLATE	B12F	**SST**	Red clotted	2 – 4 mL	Chem	Vitamin B12: 145 - 914 ng/L Folate: 3.1 - 19.9 µg/L	1	Also known as part of dementia screen or known as folate / haematinics
B2 GLYCOPROTEINS		**Citrate**		2.7 mL	Haem	See Report	10	Part of Lupus - take extra citrate tube. Citrate tubes need to be filled to the mark. Please supply full clinical information with lupus requests as they will be vetted
B2 TRANSFERRIN	B2TR	**Plain Universal**		10mL	Chem		10	Nasal Discharge investigation - Ask in chemistry

β-2-MICROGLOBULIN	B2M	**SST**	Red clotted	2 – 4 mL	Chem	1.2-2.4 mg/L	10	B2M
B27	BB request	**Pink x 2**			Blood Bank	See report	10	x2 pink tops to blood bank / no barcodes
HCG	BHCG	**SST**	Red clotted	2 – 4 mL	Chem	Male: <3 U/L Female: Range not reported, Units: U/L	1	Beta human chorionic gonadotrophin
BENCE JONES PROTEIN (BJP)	BJP	**Plain Urine**		MSU	Chem	See Report	10	
BICARBONATE	CO2	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: <1M: 17 - 24 mmol/L 1M - <2M: 19 – 24 mmol/L 2M - 2Y: 16 - 24 mmol/L >2Y: 21 – 31 mmol/L	1	Specimen needs to be measured within hours for reliable result
BILE ACIDS	BILA	**SST**	Red clotted	2 – 4 mL	Chem	0 - 6 µmol/L	5	
BILIRUBIN	BILI	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: <1 Day: 24 - 149 µmol/L 1 – 2 Days: 58 - 197 µmol/L 3 – 5 Days: 26 - 205 µmol/L	1	

						>5D: 5 - 21 µmol/L		
BIOPTERIN	BOPT	**SST**		2 – 4 mL	Chem	See report	10	
BIOTINIDASE	BIO	**Lithium Heparin**		3.5 mL	Chem	See Report	20	
BLOOD ALUMINIUM	AL	**Lithium Heparin**		3.5 mL	Chem	See Report	10	Test rarely indicated
Blood Film		**EDTA**		4mL	Haem	Does not apply	6	All Blood Film requests will have a FBC performed The TAT is 6 days but urgent and expedited same day analysis is available
BLOOD GROUP	BB request	**EDTA PINK**		2-6 mL	Blood Bank	Qualitative	1	
BLOOD LEAD	LEAD	**EDTA**		4 mL	Chem	See Report micromo1/L	10	
BLOOD MERCURY	MER	**EDTA**		4 mL	Chem	See Report nmo1/L	10	
BLOOD TRYPTASE	TRPT	**EDTA**		4 mL	Chem	2-14 IU/L	10	Test rarely indicated
BNP		**EDTA**		4 mL	Chem	Male/Female: <100 pg/mL	3	In difficult to bleed patients this can be performed on a capillary sample providing tube is full

								This test is intended for Primary Care only
C								
CARBOXYHAEMOGLOBIN	COHB	**On Blood Gas Machines**				0.5 – 1.5% Can be raised up to 5% in heavy smokers	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
C1-ESTERASE INHIBITOR	C1ES	**SST**		2 – 4 mL	Chem	0.15-0.35 g/L	14	
C3 COMPLEMENT	C3	**SST**		2 – 4 mL	Chem	Male/Female: 0.9 - 1.8 g/L	1	
C4 COMPLEMENT	C4	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 0.1 - 0.4 g/L	1	
C3 NEPHRITIC FACTOR		**SST**			Chem	See Report	10	Send straight to the lab
		Red Clotted				See Report	10	
CA 15-3	C153	**SST**		2 – 4 mL	Chem	0 to 32iu/mL	5	** If finger prick - please use x2 amber paed tube tubes**
CA 125	C125	**SST**	Red clotted	2 – 4 mL	Chem	<35 U/mL	1	** If finger prick - please use x2 amber paed tubes**
CA19-9	CA19-9	**SST**		500 µL	Chem	<35 ku/L	137	
CH50 Classical Haemolytic Pathway CH100 (REQUEST AND	CH50	**SST**	Red clotted	100 µL	CHEM	80 – 120 %	109	Send straight to the lab

TREAT AS CH50)								
CADMIUM	CAD	**EDTA**	TWO TUBES	4 mL	Chem	0-27 nmol/L	10	Please also send an empty EDTA tube too
CAERULOPLASMIN	CAEP	**Red clotted**		2 – 6 mL	Chem	0.16-0.35 g/L	10	
CAFFEINE	CAFF	**SST**		2 – 4 mL	Chem	See report mg/L	10	
CALCITONIN	CALC	**Red x 2**			Chem	See report ng/L	16	Fasting, separate & freeze within 10mins
CALCIUM		**SST**		2 – 4 mL	Chem	Male/Female: 0 -10 Days: 1.90 - 2.60 mmol/L 10 Days - 24M: 2.25 - 2.75 mmol/L 2Y - 12Y: 2.20 - 2.70 mmol/L >12Y: 2.20 - 2.65 mmol/L	1	
CALCIUM (CORRECTED)		**SST**			Chem	2.12-2.62mmol/L	1	
CALCIUM (IONISED)		**on Blood Gas Machines**			ABG	1.15-1.29 mmol/L	Within minutes	On Blood Gas Machines – Analyse straightaway

								THIS TEST IS NOT ISO 15189 ACCREDITED
CALCIUM GROUP	CG	**SST**		2 – 4 mL	Chem	Various – See Report	1	Blood to be taken without use of tourniquet if possible.
CARBAMAZEPINE	CARB	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 8 - 12 mg/L	1	Often abbreviated to CBZ
CREATINE KINASE ENZYME	CK	**SST**	Red clotted	2 – 4 mL	Chem	Male: ≤171 U/L Female: ≤145 U/L	1	
CARDIOLIPIN ABS	CARL	**SST**	Red clotted	2 – 4 mL	Haem	See Report	15	Part of lupus. Please supply full clinical information with lupus requests as they will be vetted
CD3 & CD4	CD4	**EDTA**		4 mL	Haem	See Report	1	X2
CD19 / 20		**EDTA**		4 mL	Haem	See Report	1	
CEA	CEA	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: <5 µg/L	1	Carcinoembryonic antigen
CELL MARKERS BIRMINGHAM	MARB	**EDTA x 2**			Haem	See Report	10	
CELL SORTING FOR PNH	FACS	**Special**			Haem	See Report	10	
CENTROMERE ANTIBODIES	CENT	**SST**	Red clotted	2 – 4 mL	Haem	See Report	20	
CHITOTRIOSIDASE	CHIT	**SST**	Red clotted	2 – 4 mL	Chem	25-290 nmol/mL/h	10	
CHLORIDE	CL	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 101 - 109 mmol/L	1	
CHOLESTEROL	CHOL	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female:		

						3.5 - 5.2 mmol/L	1 day	
CHOLINESTERASE	CHE	**SST**	Red clotted	2 – 4 mL	Chem	See Report	10	
CHROMIUM	CHRO	**Trace Elements**		6 mL	Chem	0-20 nmol/L	10	Bottle only available in Phlebotomy
CHROMOGRANIN A (AND B - ALSO KNOWN AS GAWK)	CHRA	**Special instructions as for gut hormone profile** **Needs:** **2 X EDTA** **1 X SST**		Each tube full	Chem	<60 pmol/L	10	12 hour fast. To lab ASAP Within 15 minutes of sampling at the very latest Patient should be waiting until blood is centrifuged as haemolysis invalidates results
CLOTTING SCREEN / STUDIES	CS	**Citrate**	Paed Green	2.7 mL	Coag	See report	1C	**Citrate tubes always need to be filled to the mark.**
CLOZAPINE	CLOZ	**Special**			Chem	See report	10	Test rarely indicated
COAGUCHEK		**On Ward meters**			Meter	INR less than 1.1 – no intervention required Typical Therapeutic range 2.0 – 3.0	Within minutes	Not available in the laboratory THIS TEST IS NOT ISO 15189 ACCREDITED
COAGULATION SCREEN	CS	**Citrate**	Paed Green	2.7 mL	Coag			

						See Report	1	Citrate tubes need to be filled to the mark
COBALT	COBA	**Trace Elements**		6 mL	Chem	0-17 nmol/L	10	Bottle only available in Phlebotomy
COCAINE (BLOOD)	COCA	**Special**		6 ml	Chem	Not normally present – See Report for cut off guide	10	Test rarely indicated
COELIAC ANTIBODY SCREEN	TTG	**SST**	Red clotted	2 – 4 mL	Haem	Qualitative	10	Also known as coeliac screen
CARBOXYHAEMOGLOBIN (COHB)		**Blood Gas**			ABG	0.5-1.5% Reference range higher in smokers	Within minutes	Available on Blood Gas Machines THIS TEST IS NOT ISO 15189 ACCREDITED
COLD AGGLUTINS	BB request	**x 1**			Blood bank	See Report	10	Specimen to be kept warm. THIS TEST IS NOT ISO 15189 ACCREDITED
CONJUGATED BILIRUBIN	CBIL	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: <20 µmol/L	1	

CONNECTIVE TISSUE ANA SCR	CTAN	**SST**		2 – 4 mL	Haem	Qualitative	10	Replaces AIP
COOMBS TEST	BB request	**EDTA x 1**		4 mL	Blood bank	See report	1	No barcode
COPPER	CU	**Red clotted**		2 – 6 mL	Chem	See Report micromo1/L	4	
COPPER and CAERULOPLASMIN	CUCA	**Red clotted**		2 – 6 mL	Chem	See Report	10	
CORTISOL	CORS	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 185 - 624 nmol/L Can vary with time of day, certain drugs and stress	1 1	**Short synacthen test = X3 SST**. Needs consecutive numbers, note time on each specimen and barcode i.e. 0, 30, & 60 mins.
COVID ANTIBODY TEST	COVA	**SST**	If Red Clotted sent this will need separating before sending	2-4mL	Chem/Micro	Qualitative Result	3 to 5	NOTE THIS TEST IS FORMALLY A MICROBIOLOGY TEST – although the booking In and sending away is by Chemistry Send-away bench

								any interpretation or guidance will be by Microbiology For consent reasons – the COVID Antibody is not available as an add on test Users are requested specimens are sent as a one test on a separate form i.e. no other tests on form
C-PEPTIDE (INSULIN)	CPEP	**SST AND Fluoride**	**BOTH TUBES REQUIRED**	2- 4mL	Chem	350-1800 pmol/L	10	With a glucose to lab asap. For paediatric requests – a plain red top bottle is required
CREATINE KINASE	CK	**SST**	Red clotted	2 – 4 mL	Chem	Male: ≤171 U/L Female: ≤145 U/L	1	
CREATININE	CR	**SST**	Red clotted	2 – 4 mL	Chem	Male (>14Y): 59 - 104 µmol/L Female (>14Y): 45 - 84 µmol/L	1	

CRP	CRP	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: <5 mg/L	1	C-reactive protein
CRYOGLOBULINS	CRYO	**Red clotted**		2 – 6 mL	Chem	See report Qualitative	10	Sample needs to be continuously kept warm while transferring **immediately** to laboratory. On arrival at the lab give the sample personally to a member of Biochem, advising it is a cryoglobulin.
CTD SCREEN	CTAN	**SST**	Red clotted		Haem	See report	10	Replaces AIP
CTX		**EDTA**			Chem	See report	10	Specimen must get to the lab within 4 hours from collection
CYTOSPIN	CSPN	**CSF Universal**			Haem	See report	1	**ALL SPECIMENS TO MICROBIOLOGY FIRST**
CYCLOSPORIN	CYCO	**EDTA**		4 mL	Chem	See Report	2	If a shared sample send to haem first - pass asap, Phlebotomist should have listed: **dose, last dose and time blood taken.**
CYCLOSPORIN TO OXFORD	CYOX	**EDTA**		4 mL	Chem	See Report ng/mL	10	

CYTOGENETICS WESSEX	CYTW	**Special cytogenetic bone marrow medium**			Haem	Qualitative	10	Contact Haem
D								
DAY 1 INFERTILITY PROFILE	D1	**SST**	Red clotted	2 – 4 mL	Chem	Various tests– See Report	10	Day one hormone bloods (LH/FSH/PROL/TEST
DAGT / DAT	BB request	**EDTA**	Pink	4 mL	Blood Bank	See report	1	Can go via haem if shared
D DIMERS	DDI	**Citrate**		2.7 mL	Coag	Variable with age (See Report) ng/mL	1	**NB. D Dimers can only be taken at the hospital or SEQOL.** **Wells Score required.** **Citrate tubes need to be filled to the mark.**
DEOXYPYRIDINOLINE	DPD	**EDTA**			Chem	See Report nmol/L	10	Test rarely indicated
DESETHYLAMIODARONE	DESE	**Special**			Chem	0.6-2.5 mg/L	10	Test rarely indicated
DHEA - SULPHATE	DHEA	**SST**	Red clotted	2 – 4 mL	Chem	See Report	10	DHEAS

DIBUCAINE NUMBER (Part of Cholinesterase typing – do not request on its own)	DIBU	**SST**	Red clotted	2 – 4 mL	Chem	See Report 78-85	10	Usually requested in conjunction with cholinesterase /pseudocholinesterase (Part of part of Cholinesterase typing)
DIC SCREEN	see notes	**Citrate** EDTA		2.7 mL 4 mL	Coag	See report	1	Input as FBC CS FIB DDI. Citrate tubes need to be filled to the mark.
DIGOXIN	DIG	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: Child (>6 hrs post dose): 1.1 - 1.7 ng/mL Adult (>6 hrs post dose): 1.0 - 2.0 ng/mL	1	At least 6 hours post dose
DIHYDROTESTOSTERONE	DHT	**x 2 SST**			Chem	See Report	10	
DIURETIC SCREEN	DIUR	**Special**			Chem	Not normally present - See Report for cut off guidance	10	Test rarely indicated
DNA ANTIBODIES / DS-DNA	DNAB	**SST**	Red clotted	2 – 4 mL	Haem	Qualitative	10	DS DNA
DNA BINDING ANTIBODIES	DNAB	**SST**		2 – 4 mL	Haem	Qualitative	5	
DOWNS SCREENING (TRIPLE TEST/QUAD TEST) - Maternal Serum usually	DOWN	**SST**		2 – 4 mL	Chem	See Report	7	Requests sent to Kettering

First Trimester but second trimester can be accommodated)								
DOXEPIN	DOXE	**Special**			Chem	See Report mg/L	10	Test rarely indicated
DRUG SCREEN Drugs of Abuse	DRUX	**Plain white top universal container.**			Chem	Not normally present - See Report for cut off guidance	1	Test rarely indicated The only case for emergency drugs of abuse assessment is psychosis or unconsciousness in ED for reasons unknown – all other requests if accepted will be performed routinely
DRVVT (as part of Thrombophilia Screen)	DRVV	**Citrate x4** **SST**		2.7mL 2 – 4 mL	Coag	See report	10	Please supply full clinical information with Thrombophilia requests as they will be vetted
E								
ERYTHROPOETIN		**SST**		2 – 4 mL	Haem	See report	6	

GFR-EPI (GFRE) but it's a calculated test not a request	GFRE (GFR-EPI)	**SST**	Red clotted	2 – 4 mL	Chem	See report	1	Estimated GFR gets automatically added when U&E's are requested
ELECTROPHORESIS HB	EP1	**EDTA**		4 mL	Haem	See report	3	Also known as : haemoglobin electrophoresis THIS TEST IS NOT CURRENTLY ISO 15189 ACCREDITED
ENA	ENA	**SST**	Red clotted	2 – 4 mL	Haem	Qualitative	10	Part of CTAN
ENDOMYSIAL ANTIBODIES	TTG	**SST**	Red clotted	2 – 4 mL	Haem	Qualitative	10	
ENDOMYSIAL AB IGA CLASS	ENDO	**SST**		2 – 4 mL	Haem	Qualitative	10	
ENT RAST PROFILE	RENT	**SST**		2 – 4 mL	Chem	See Report	10	
EPILIM (SEE VALPROATE)	VAL	**SST**	Red clotted	2 – 4 mL	Chem	mg/L	5	
ESR	ESR	**EDTA**	EDTA	Minimum of 2mL required	Haem	Variable with age (see report) mm in one hour	1	Erythrocyte Sedimentation Rate (ESR). Do NOT USE ELONGATED BLACK TUBES – these are obsolete please return these tubes to lab
ETHANOL (ALCOHOL)	ETOH	**SST**	Red clotted	2 – 4	Chem	Not normally		

				mL		present Units: mg/dL	2 hours 2 days if routine send in an oxalate tube	
ETHOSUXIMIDE	ETHO	**SST**	Red clotted	2 – 4 mL	Chem	40-80 mg/L	6	
F								
FK 506 (SEE TACROLIMUS)	F506	**EDTA**		4 mL	Chem	See report	10	By 16:00 tacrolimus - Note dose, last dose & time taken.
FACTOR V LEIDEN	F5L	**Citrate**	EDTA		Coag	See report	10	
FACTOR ASSAYS I -XIII	ICOM CS	**Citrate x 2**		Fill to mark	Coag	See report	10	Lab to input. Citrate tubes need to be filled to the mark
FULL BLOOD COUNT (FBC)	FBC	**EDTA**	Pink	4 mL	Haem	Various constituents - see report	1	Includes White Cells / HB or Haemoglobin / Platelets.
FDP	DDI	**Citrate**		2.7 mL	Coag	See report	1	Fibrinogen degradation products/ D-Dimer. Fill to mark on tube. Needs Well Score
FERRITIN	FER	**SST**	Red clotted	2 – 4 mL	Chem	Male: 24 - 336 µg/L	1	

						Female: 11 - 307 µg/L		
FIBRINOGEN		**Citrate**		2.7 mL	Coag	2.3 - 4.7 g/L	3	Citrate tubes need to be filled to the mark.
FOLATE & B12	B12F	**SST**	Red clotted	2 – 4 mL	Chem	Vitamin B12: 145 - 914 ng/L Folate: 3.1 - 19.9 µg/L	1	
FOLIC ACID		**SST**	Red clotted	2 – 4 mL	Chem	See report	1	
FOOD & INHALANT ALLERGY SCREEN	FIAL	**SST**		2 – 4 mL	Chem	Qualitative	10	Rare allergens may take longer for investigation
FREE FATTY ACIDS	FFA	**EDTA**		4 mL	Chem	0.10-0.60 mmol/L	10	Test rarely indicated
Free Foetal DNA Testing (ffDNA)	Blood Bank send away	**EDTA**		6 mL	BB	N/A	7	EDD must be submitted + correctly labelled sample+ Request form- or the tests will be rejected and we will be charged
FRUCTOSAMINE/S	FRUC	**SST**	Red clotted	2 – 4 mL	Chem	205-285 micromol/L	10	Test rarely indicated
FSH	FSH	**SST**	Red clotted	2 – 4 mL	Chem	Male: 1.3 - 19.3 U/L Female: Mid-Follicular: 3.9 - 8.8 U/L	1	

						Mid-Cycle peak: 4.5 - 22.5 U/L Mid-Luteal: 1.8 - 5.1 U/L Menopausal: 16.7 - 114.6 U/L		
FREE T3	FT3	**SST**		2 – 4 mL	Chem	Male/Female: 3.8 - 6.0 pmol/L	1	This is a reflex test and performed as part of a Thyroid Function Test as necessary
FREE T4	FT4	**SST**	Red clotted	2 – 4 mL	Chem	Note age specific ranges Adult Male/Female: 8.0-17.0 pmol/L 0 to 20 days 17.4 – 57.7 pmol/L 20 days to 3 years 9.5-17.8 pmol/L 3 years to 19 years 7.9-13.6	1	This is a reflex test and performed as part of a Thyroid Function Test as necessary

						pmol/L		
G								
GFR-EPI (GFRE) but it's a calculated test not a request	EGFR	**SST**	Red clotted	2 – 4 mL	Chem	See report	1	Estimated GFR gets automatically added when U&E's are requested
G6PD ASSAY	G6PA	**EDTA**		4 mL	Haem	See report	15	
GAD ANTIBODIES	GAD	**SST**		2 – 4 mL	Haem	See Report	10	
GAL-1-PHOS URIDYL TRANSF	GPUT	**Heparin**		4-6 mL	Chem	See report	10	Only send Mon –Thurs by 09.00-14.30 to be sent special delivery. Blood spots may not be used.
GALACTOSE-1-PHOSPHATE	G1PO	**Heparin**		4-6 mL	Chem	See report micromol/L	20	Only send Mon –Thurs by 09.00-14.30 to be sent special delivery.
GANGLIOSIDE ANTIBODIES	GM1	**SST**	Red clotted	2 – 4 mL	Haem	see report	10	

GASTRIN	GASN	**Special instructions as for gut hormone profile** **Needs:** **3 X EDTA** **1 X SST**			Chem	See report 0-40 pmol/L	10	12 hour fast. Follow instructions for Gut Hormone Profile. Take straight to the lab. Patient should wait until blood is centrifuged as haemolysis invalidates results.
GENTAMICIN	GEL	**SST**		2 – 4 mL	Chem	Time of dose dependent Units: mg/L	1	GEL - if this is a general gentamicin and not pre or post dose
GGT GAMMA-GLUTAMYL TRANSFERASE (GGT)	GGT	**SST**	Red clotted	2 – 4 mL	Chem	Adult Male (>18Y): <55 U/L Adult Female (>18Y): <38 U/L Ranges vary with age and gender	1	Also known as Gamma GT/GGT

						(See report)		
GLANDULAR FEVER	GFT	**SST**	EDTA	2 – 4 mL	Haem	See report	10	Also known as Paul Bunnell , Monospot or GFT
GLIADIN	TTG	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
GLOMERULAR BASEMENT MEMB	GBM	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
GLUCAGON	GLUG	**Special instructions as for gut hormone profile** **Needs:** **3 X EDTA** **1 X SST**		Each tube full	Chem	<60 pmol/L	10	12 hour fast. To lab ASAP Within 15 minutes of sampling at the very latest Take straight to the laboratory Patient should be waiting until blood is centrifuged as haemolysis invalidates results
GLUCOCEREBROSIDASE	GLCB	**EDTA**		4 mL	Chem	see report	10	Test very rarely indicated

GLUCOSE	GLU	**Fluoride**	SST	2 – 4 mL	Chem	Male/Female (≤14Y): 3.3 - 5.6 mmol/L Male/Female (>14Y): 4.1 - 5.9 mmol/L	1	The Glucose meters are not ISO 15189 ACCREDITED
GLUCOSE 6 PHOSPHATE DEHYDROGENASE	G6PD	**EDTA**		4 mL	Haem	See report	15	
GLYCATED HAEMOGLOBIN	HBA1	**EDTA**		4 mL	Chem	see report	2	
GROUP & SAVE	BB request				Blood Bank	Qualitative	1	No barcodes
GROWTH HORMONE	GH	**SST**		2 – 4 mL	Chem	see report	10	
GTT - Glucose Tolerance Test	GTT	**Fluoride x2**	SST	2-4mL each	Chem	see report	1	**x2 samples x2 separate barcodes pre (fasting) / post glucose drink.** Noting times taken. To input seek advice. **Outside of pregnancy RARELY REQUIRED NOW – please consult Consultant Chemical Pathologist before arranging**

GUTHRIE FORM	see notes	Special Paper Form see comment		See comment	Chem	see report	Week/s Specialist Centre can Advise	Take to chem - no sample or barcode
GUT HORMONES PROFILE (May be in conjunction with Chromogranin **A** & **B** or GAWK).	GUTH	**Special instructions** **Needs:** **3 X EDTA** **1 X SST**		Each tube full	Chem			

						See Report	10	Requires Immediate attention - take straight away to the lab Patient should be waiting until blood is centrifuged as haemolysis invalidates results
H								
HbF - Foetal Haemoglobin		**On Blood Gas Machine**				<0.6%	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
HHB		**On Blood Gas Machine**				<2.0%	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
HAEMOGLOBIN ELECTROPHORESIS	EP1	**EDTA**		4.0 mL	Haem	See Report	3	THIS TEST IS NOT CURRENTLY ISO 15190 ACCREDITED
HAEMOGLOBINOPATHY	EP1	**EDTA**		4.0 mL	Haem	See report	3	
HAEMATINICS	HAEM	**SST**		2 – 4 mL	Chem	Various See report	1	Tests that apply B12,

								Folate & ferritin
HAPTOGLOBINS	HAPT	**SST**	Red clotted	2 – 4 mL	Haem	M-0.5-2.0 F-0.4-1.6 g/L	10	
HBA1C	HBA1	**EDTA**		4.0 mL	Chem	See report	2	HbA1c is an abbreviation of Glycated Haemoglobin
HDL CHOLESTEROL	HDL	**SST**	Red clotted		Chem	Male: 1.7 – 2.2 mmol/L Female: 1.70 - 2.20 mmol/L	1	
HISTONE ANTIBODIES	HIS	**SST**	Red clotted	2 – 4 mL	Haem	0-5 U/mL	15	
HLA ANTIBODY SCREEN	BB request	**EDTA x 2**	Pink x 2		Blood Bank	See report	10	Hla b27/ hla tissue typing
HLA-A29	BB request	**EDTA x 2**	Pink x 2		Blood Bank	See report	10	
HLA- B27	BB request	EDTA x 2	Pink x 2		Blood Bank	See report	10	
HLA B51	BB request	**EDTA x2**	Pink x 2		Blood Bank	See report	10	
HLA DQ2 / HLA DQ8	HLAD	**EDTA x 2**	Pink x 2		Haem	See report	14	Tests fall under Haematology Genetics rather than Blood Bank

HOMOCYSTEINE (PLASMA) **Only to be done with assistance from chemistry staff.**	HCYS	**EDTA x 2**	-	2 – 4 mL	Chem	Adult 5 - 15 µmol/L (fasting) Paediatric ranges: 0 - 10 years 3.3 - 8.3 µmol/L 11 - 15 years 4.7 - 10.3 µmol/L 16 - 18 years 4.7 - 11.3 µmol/L	14	Specimen must be received and separated from the cells within 4 hours of collection. Specimen must be frozen within 24 hours of collection. Processing Instructions: Centrifuge and separate within 4 hours of collection. Freeze within 24 hours of collection. Retrospective Requirements: NOT generally suitable for a retrospective request as it requires a suitable specimen separated from the cells within 4 hours of collection and then frozen within 24 hours
HYDROXYPROLINE	OHPR	**Special**			Chem	See report	10	
I								
IGF-BP3	IGF3	**SST**	Red clotted	2 – 4 mL	Chem	2.1-5.3 mg/L	10	
IMMUNOGLOBULINS	IMM	**SST**	Red clotted	2 – 4 mL	Chem	Various (IgA, IgG, IgM - see report) Units: g/L (Age related)	1	

IMMUNOGLOBULIN E	IGE	**SST**	Red clotted	2 – 4 mL	Chem	(see report) IU/mL	10	
IGF1 (SOMATOMEDIN	IGF1	**SST**	Red clotted	2 – 4 mL	Chem	(See report) microg/L	6	
IMMUNO-REACTIVE TRYPSIN	IRT	**Special**			Chem	0-60 microg/L	7	Test rarely indicated
INFLIXIMAB	-	**SST**		2 - 4mL	Chem	See report	14	
INHIBIN	INH	**Special**			Chem	<341 ng/L	10	Test rarely indicated
INR	INR	**Citrate**		2.7 mL	Haem	INR Therapeutic range 2-3 for AF and DVT and 3-4 for mechanical valve (heart valves)	1	Clinical details must specify patient is on warfarin or if the patient has a flag (check F6) otherwise request as PTR. Fill tube to the mark.
INSULIN / C PEPTIDE	INS CPEP	**Fluoride** **SST**			Chem	See report	10	Straight to lab should have clotted & fluoride bottles.

INTRINSIC FACTOR AB (SHG)	IFA	**SST**	Red clotted		Haem	0-6 U/mL	10	
IONISED CALCIUM		**On Blood Gas Machine**		2 – 6 mL	Chem	1.15 – 1.29 mmo1/L	Within minutes	Analysis needs to be prompt THIS TEST IS NOT ISO 15189 ACCREDITED
IRON	FE	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: <2M: 17.9 - 44.8µmol/L 2M – 2Y: 7.2 - 17.9 µmol/L 2Y – 14Y: 9 - 21.5 µmol/L Male (>14Y): 12.5 - 32.2µmol/L Female (>14Y): 10.7 - 32.2µmol/L	1	
J								
JAK 2	JAK2	**EDTA x 2**			Haem	See report	10	
JO 1	ROLA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
K								
KERATIN AB (SHG)	KERR	**SST**	Red clotted		Haem	See report	10	

KETONES	KETS	TO BE CARRIED OUT ON THE WARD ON METERS				See report	Within minutes	No longer available as a lab test The Ketone meters are not ISO 15189 ACCREDITED
"KETTERING" Maternal Serum Down Screening Test	DOWN	**SST**		2 – 4 mL	Chem	See report	7	
KLEIHAUER	BB request	**EDTA**	Pink	4 mL	Blood Bank	See report	3	Only if child is Rh (D) +ve
L								
LA	ROLA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of ENA screen
LACTATE		**On Blood Gas Machine**				0.5-1.6mmo1/L	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
LACTATE DEHYDROGENASE	LD	**SST**	Red Clotted	2 – 4 mL	Chem	Male/Female: 1 Day: <1327 U/L 2 - 5 Days: <1732 U/L		

						6 Days - 6M: <975 U/L 4 - 6Y: <615 U/L Adult: 208 – 378 U/L		
LAMOTRIGINE	LAM	**SST**	Red clotted	2 – 4 mL	Chem	3-15 mg/L	6	
LEAD	LEAD	**EDTA**		4 mL	Chem	See Report	10	
LEUCOCYTE CYSTINE	LECY	**Special**			Chem	0-0.3 nmol/mg PRMA	10	Test rarely indicated
LEUKAEMIA TRIAL LEEDS	LTLG	**Special**			Haem	See report	Does not apply	Contact haem
LIPID STUDIES	LS	**SST**	Red clotted		Chem	See report	1	If not fasting then CHOL. Lipids includes Cholesterol & Triglycerides
LITHIUM	LI	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 0.6 - 1.2 mmol/L	1	
LIVER FUNCTION TEST	LFT	**SST**		2 – 4 mL	Chem	Various See report	1	Liver Function Test (LFT) includes: ALP, ALT, Total Bilirubin, Albumin and Total Protein. GGT is not part of the current profile but would be reflexed if ALP suitably elevated

LIVER MICROSOMAL AB	ANAS	**SST**		2 – 4 mL	Haem	See report	10	
LIVER/KIDNEY MICROSOMAL	ANAS	**SST**		2 – 4 mL	Haem	See report	10	
LONG CHAIN FATTY ACIDS	LCFA	**SST**	Red clotted	2 – 4 mL	Chem	See report	20	
LUPUS ANTICOAGULANT (LAC)	ICOM CS	**Citrate x 4** **SST x 1** **EDTA x 1**			Coag	See report	10	Lab to request LUP Please supply full clinical information with lupus requests as they will be vetted
LUTEINISING HORMONE	LH	**SST**	Red clotted	2 – 4 mL	Chem	Male: 1.2 - 8.6 U/L Female: Mid-Follicular: 2.1 – 10.9 U/L Mid-Cycle peak: 19.2 - 103 U/L Mid-Luteal: 1.2 – 12.9 U/L Postmenopausal: 10.9 – 58.6 U/L		

LYMPHOCYTE SUBSETS		**EDTA x 1**		4.0 mL	Haem	Varies with age	1	Send straight to the lab
M								
M2 ANTIBODIES	M2	**SST**		2 – 4 mL	Haem	0-5.0 units	10	
MAG	AMAG	**SST**	Red clotted	2 – 4 mL	Haem	See Report	10	
MACROPROLACTIN	MAPR	**SST**		2 – 4 mL	Chem	See report	6	
MAGNESIUM	MG	**SST**	Red clotted	2 – 4 mL	Chem	Male: 0.73 - 1.06 mmol/L Female: 0.77 - 1.03 mmol/L	1	
MAGNESIUM (URINE)	UMAG	**Urine**			Chem	mmo1/24 hours	1	
MALARIAL PARASITES	MALP	**EDTA**		4.0 mL	Haem	See Report	1	**FULL History of overseas travel and prophylaxis and medication must be prescribed** Although the lab accepts requests of malarial parasites the film made will be inspected for parasites in a generic sense
MANGANESE	MN	**EDTA**		4.0 mL	Chem	See Report nmo1/L	10	

Maternal Serum Down Screening Test ("KETTERING")	DOWN	**SST**		2 – 4 mL	Chem	Various see report	7	
MCAD SCREEN	MCAD	**Special**		A/28	Chem	See report	10	Ask chem. Blood spots.
MED A - Medical Admission Profile.		**SST** **EDTA** **Citrate**				See report	1	Medical Admission Profile. Usually from A&E
MENOPAUSAL PROFILE	FSH	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	
MERCURY		**EDTA**		4 mL	Chem	See report	10	Urine collected into a plain universal container can be sent at the same time
Metanephrine (plasma)		**CONTACT CHEMISTRY BEFORE SENDING**			Chem	See report	10	Test very restricted availability. Also sample is labile. Please contact lab for clinical advice

METHB – Methaemoglobin		On Blood Gas Machine				0.0-1.5%	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
METHOTREXATE (HIGH DOSE)	METH	**Special**			Chem	See report	10	Test rarely indicated
METHOTREXATE (LOW DOSE)	MTXL	**Special**			Chem	See report	10	Test rarely indicated
METHYL MALONIC ACID	MMA	**Special**			Chem	See report	10	Test rarely indicated
MICROALBUMIN	MALB	**Urine Plain**		2 - 4mL	Chem	Reference Range Albumin/ Creatinine ratio: Male: <2.5 mg/mol Creatinine Female: <3.5 mg/mol Creatinine	3	
MITOCHONDRIAL AB	ANAS	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of liver panel
MOLECULAR SCREENING FOR HAEMOGLOBINOPATHY /THALASSAEMIA	MTFT	**EDTA**		4mL	Haem	See repot	21	
MONOSPOT	GFT	**SST**	EDTA	2 – 4 mL	Haem	Does not apply	1	Also known as GFT / PAUL BUNNELL
MUSK ANTIBODIES	MUSK	**SST**		2 – 4 mL	Haem	See report	10	
MYCOPHENOLATE	MYPH	**EDTA**		4 mL	Chem	See report	10	Note dose, last dose and time blood taken.

								CURRENTLY NOT CREDITED
MYELOMA SCREEN		**SST**	Red clotted	2 – 4 mL	Chem	See report	10	
MYELOMA TRIAL BIRMINGHAM	MTB	**Special**			Haem	See report	Does not apply	Contact haem
MYOCARDIAL AB	MYO	**SST**		2 – 4 mL	Haem	See report	10	
MYOSITIS ANTIBODY PANEL	**EXMY**	**x 2 SST**		4- 8 mL	Haem	See report	10	
N								
C3 NEPHRITIC FACTOR		**SST** **Red Clotted**				See report	10	Send straight to the lab.
NEURONAL ANTIBODIES	PURK	**SST**	Red clotted	2 – 4 mL		See report	10	
NEUROTENSIN	NEUR	**Special**			Chem	See report Units pmol/mol creatinine	10	Test rarely indicated
NT-Pro BNP	NTBP	**Lithium Heparin**			Chem	See report	10	CARDIOLOGY patients and Consultant Haematologists ONLY The specimen must be Heparin SST are not suitable Sample needs to be frozen within24 hours of collection
O								
OESTRADIOL	EDIO	**SST**	Red clotted	2 – 4 mL	Chem	Male (>19Y): <116 pmol/L	1	

						Female: Follicular Phase: 82 - 422 pmol/L Ovulatory Peak: 118 - 1898 pmol/L Luteal: 134 - 903 pmol/L Menopausal: <92 pmol/L		
OLIGOSACCHARIDES (URINE)	OLIU	**Urine**			Chem	See report	20	
OROTIC ACID (URINE)	UORO	**Special**		10mL Urine	Chem	See Report Units pmol/mol creatinine	10	Test rarely indicated
OSMOLALITY	OSM	**SST**	Red clotted for serum	2 – 4 mL	Chem	mosmol/L	1	This test can be performed for serum and urine samples. Paired samples can have clinical utility
OVARIAN ANTIBODIES (SHG)	OA	**SST**	Red clotted	2 – 4 mL	Haem	See report	25	
OXYHB – Oxyhaemoglobin		**On Blood Gas Machine**				94.0-98.0%	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
P								
PIIINP	P3NP	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	Type 3 procollagen

								peptide
PANCREATIC ISLET CELL (SGH)	PIA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	PIA / PICA
PANCREATIC POLYPEPTIDE	PP	**Special**			Chem	<300 pmol/L	20	Test rarely indicated
PARACETAMOL is acetaminophen various brand names	OD	**SST**		2 – 4 mL	Chem	Not normally present Units: mg/L	Non urgent e.g. monitoring of therapy 1 day but usually performed as an emergency so less than 1 hour from arrival in lab	
PARANEOPLASTIC SCREEN (PURKINJE ANTIBODY)		**SST**		2 – 4 mL	Haem	See report	10	
PARAPROTEIN	PARP	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	
PARASITES by inspection of blood film	MALP	EDTA		4.0 mL	Haem	See Report	1	FULL History of overseas travel and prophylaxis and medication must be prescribed Although the lab accepts requests of malarial parasites the film made will be inspected for parasites in a generic sense

PARATHYROID HORMONE	PTH	**SST**		2 – 4 mL	Chem	1.3 – 9.3pmol/L	1	Straight to lab
PARIETAL CELL ANITBODY (SGH) No longer offer by referral test from 17th oct. Please request Intrisic fator antibodies (IFA) as recommended.	IFA	**SST**		2 – 4 mL	Haem	See report	10	No longer offer by referral test from 17th oct. Please request Intrisic fator antibodies (IFA) as recommended.
PLASMA P'CHOLINESTERASE TYPING	PSCT	**SST**		2 – 4 mL	Chem	See report	10	
PAUL BUNNELL	GFT	**SST**	EDTA	2 – 4 mL	Haem	See report	10	Also known as Glandular fever, GFT , Monospot
PCO (POLYCYSTIC OVARY PROFILE)	PCO	**SST**	Red clotted	2 – 4 mL	Chem	Various tests See report	7	Profile includes: FSH, LH, PROL, TEST
pCO2		**On Blood Gas Machines**				M: 4.67-6.40kPa F: 4.27-6.00kPa Arterial Blood	Available within minutes	Test on the Blood Gas Machines are not ISO 15189 ACCREDITED
pH		**On Blood Gas Machines**				7.350-7.450 Arterial Blood	Available within minutes	Only non-infectious blood to be tested on Blood Gas Machines. Other fluids will need to come to laboratory for lab meter reading – will take longer Test on the Blood Gas Machines are not ISO 15189 ACCREDITED

PHENOBARBITONE	PBRB	**SST**	Red clotted	2 – 4 mL	Chem	See report	2	
PHENYLALANINE	PAL	**SST**	Red clotted	2 – 4 mL	Chem	See Report micromol/L	3	
PHENYLKETONURIA TYPING	PKUT	**Heparin**		3.5 mL A/28	Chem	See report	20	Test rarely indicated **CURRENTLY NOT CREDITED**
PHENYTOIN	PHTN	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female (≤14Y): 6 - 14 mg/L Male/Female (>14Y): 10 - 20 mg/L	1	
PHOSPHATE	PO4	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female (≤14Y): 1.29 - 2.26 mmol/L Male/Female (>14Y): 0.81 - 1.45 mmol/L	1	
PLA2R ANTIBODY	PLA2	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
PLASMA CHOLINESTERASE	CHE	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	
PLASMA METANEPHRINE		**CONTACT CHEMISTRY BEFORE SENDING**			Chem	See report	10	Test very restricted availability. Also sample is labile. Please contact lab for clinical advice
PLASMA RENIN	RENI	**EDTA x 2**			Chem	See report	10	Test rarely indicated

PLASMA VISCOSITY	PVIS	**EDTA**	Blue Citrate	4 mL	Haem	1.5-1.72 mpa/s	10	Not routinely available - requires consultant approval
PLATELETS	FBC	**EDTA**	Blue Citrate	4 mL	Haem	See report	10	Can be blue citrate if previously clumped
PLATELET IMMUNOLOGY	BB request	**Special**			Blood Bank	See report	10	Seek advice as to what samples to take / to lab asap.
PNP		**SST** **Heparin**			Chem	See report	10	Send samples straight to the lab.
pO2		**On Blood Gas Machines**				11.1 – 14.4 kPa Arterial Blood	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
PO4 (SERUM PHOSPHATE)	PO4	**SST**		2 – 4 mL	Chem	See report	1	
PORPHYRIN (ADULT SAMPLES)	PPOR	**EDTA**		4 mL	Chem	See report	10	Protect from light.
PORPHYRIN (PAEDIATRIC SAMPLES)	PPOR	**Heparin**		3.5 mL	Chem	See report	10	Protect from light. An empty green top Lithium Heparin bottle should also be supplied as a blank
POTASSIUM		**SST**		2 – 4 mL	Chem	Male/Female: 3.5 - 5.1 mmol/L	1	Raised If specimen left on cells or haemolysis
PR3 ANTIBODY	PR3	**SST**		2 – 4 mL	Haem	0-3.0 IU/mL	10	
PREECLAMPSIA AND TOXAEMIA PROFILE	PET	**SST**		2 – 4 mL	Chem	Various See report	1	PET includes: UE, LFT, UA

PRIMIDONE	PRIM	**SST**	Red clotted	2 – 4 mL mg/L	Chem	See report	10	
PROCOLLAGEN EXTENSION PEP	P1CP	**Red clotted**		2 – 6 mL	Chem	38-202	10	
PROCALCITONIN	PCT	**SST**	Red Clotted	2- 4mL	Chem	Procalcitonin comment Procalcitonin interpretation: <0.5 ug/L Low risk of bacterial infection and/or bacterial septic shock. 0.5 to 2.0 ug/L Moderate risk of progression to severe bacterial sepsis and/or bacterial septic shock.	1	**THIS TEST IS NOT FREELY AVAILABLE** **<u>THIS IS CURRENTLY FOR ICU PATEINTS ONLY</u>**

						>2.0 ug/L High risk of severe bacterial sepsis and/or bacterial septic shock. and/or septic shock. > 2.0 µg/L High risk of severe sepsis and/or septic shock.		
PROCOLLAGEN 1 N-TERMINAL PEPTIDE	P1NP	**Heparin**		3.5 mL microg/L	Chem	20-60	10	
PROGESTERONE	PROG	**SST**	Red clotted	2 – 4 mL	Chem	Range not reported. Units: nmol/L	1	
PROLACTIN	PROL	**SST**	Red clotted	2 – 4 mL	Chem	Units: miu/L	1	Common abbreviation PRL
PROTEIN: CREATININE RATIO (Urine)	PRCR	Plain Universal		10-15mL	Chem	Male/Female: <20 mg/mmol Creatinine	1	Urine test
PROTEIN C OR PC	PROC	**Citrate x 6** **SST** **EDTA**		4 mL	Coag	See report	10	Lab to request THRO. Citrate tubes need to be filled to the mark.

PROTEIN ELECTROPHORESIS	EPP	**SST**	Red clotted		Chem	See report	10	
PROTEIN S OR PS	PROS	**Citrate x 6** **SST** **EDTA**		TO LINE 2 – 4 mL 4 mL	Coag	See report	10	Lab to request THRO. Citrate tubes need to be filled to the mark
PROTHROMBIN TIME VARIANT PT	PROV	**Citrate x 6** **SST** **EDTA**		TO LINE 2 – 4 mL 4 mL	Coag	See report	10	Lab to request THRO. Citrate tubes need to be filled to the mark.
PROSTATIC-SPECIFIC ANTIGEN (PSA)	PSA	**SST**	Red clotted	2 – 4 mL	Chem	Reference Range is age dependent Male: less than 60 years RR less than 2.6microg/L Male: over 60 less than 69 years RR less than 4.5microg/ Male: over 70	1	*Male patients only - test looking for prostate cancer

						years RR less than 6.5microg/		
PTR Ratio	PTR	**Citrate**		2.7mL	Haem	0.8-1.2 (Ratio)	1	
PSEUDOCHOLINESTERASE	PSEU	**SST**	Red clotted	2 – 4 mL	Chem	1900-3800 U/L	10	
PARATHYROID HORMONE (usually need urea + calcium/alb)	PTH	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	Take samples to lab asap, note time taken X1 additional SST
PURKINJE CELL ANTIBODIES	PURK	**SST**		2 – 4 mL	Haem	See report	18	
PYRIVATE KINASE	PKS	**EDTA**		4 mL	Haem	See report	21	PK TEST
Q								
QUANTITATIVE AMINO ACIDS	see notes	**24hr urine**			Chem	Various See report	10	
R								
RAST 40 ALLERGENS	RA40	**SST**	Red clotted	2 – 4 mL	Chem	See Report	10	**Repeat period of allergy testing (RAST):** Generally repeat testing of allergy or RAST testing is discouraged where there has been a positive result in an appropriate clinical context (the lab has been

								advised this by an Immunologist) There are always exceptions and so the lab for Hospital based clinicians will accept repeat work for children and in certain cases adults (adults and GP repeat requests will need to be discussed with the laboratory) **CURRENTLY NOT CREDITED**
RED CELL FOLATE	RCF	**EDTA**		4 mL	Haem	Male/Female: 140 - 836 ng/mL	10	**CURRENTLY NOT CREDITED**
RENAL GLOMERULAR ANTIBODIES	RG	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
RENIN / ALDOSTERONE		**EDTA x 3**		3 X 4 mL	Chem	See Report	10	Samples straight to lab after collection. (Will be a random sample if patient has walked into the unit)
RENIN (AMBULANT)	RENA	**EDTA x2**			Chem	See report	10	
RETICULOCYTES	RET	**EDTA**		4 mL	Haem	Variable with age (see report) X10	1	Also known as retics. To also request FBC
RETICULIN AB (SHG)	RETA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
RHEUMATOID FACTOR	RHEU	**SST**		2 – 4 mL	Haem	Male/Female: <14 U/mL (12 - 16 equivocal)	7	RA LATEX
RO + LA (SGH)	ROLA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of ENA screen
RO / SSA	SSA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	Part of ENA screen

S								
S02 Saturation of Oxygen		**On Blood Gas Machines**				94.0- 98.0% Arterial Blood	Within Minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
SALICYLATE (Aspirin various brand names)		**SST**		2 – 4 mL	Chem	Not normally present. Units: mg/L	Non urgent e.g. monitoring of therapy 1 day but usually performed as an emergency so less than 1 hour from arrival in lab	
SALIVARY 17OH PROG	SOHP	**Universal Container**		2 – 4 mL	Chem	See report	10	**CURRENTLY NOT CREDITED**
SALIVARY DUCT AB (SHG)	SDCA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
SCL70 AB (SHG)	SCL	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
SELENIUM	SELE	**EDTA**	Red clotted	4 mL	Chem	0.8-2.0 micromol/L	10	
SERUM AMINO ACIDS	AA	**SST**		2 – 4 mL	Chem	See report	10	
SERUM ELECTROPHORESIS	EPP	**SST**	Red Clotted	2 – 4 mL	Chem	See report	10	For finger pricks use the red clotted
SERUM ERYTHROPOIETIN	EPO	**Special**			Haem	See report	10	
SERUM FREE LIGHT CHAINS	SFLC	**SST x 3**			Haem	See report	20	
SERUM IRON	FE	**SST**		2 – 4 mL	Chem	Male/Female: <2M: 17.9 - 44.8µmol/L 2M – 2Y:	1	

						7.2 - 17.9 µmol/L 2Y – 14Y: 9 - 21.5 µmol/L Male (>14Y): 12.5 - 32.2µmol/L Female (>14Y): 10.7 - 32.2µmol/L		
SERUM IMMUNOGLOBULINS	IMM	**SST**	Red clotted	2 – 4 mL	Chem	Various (IgA, IgG, IgM - see report) Units: g/L (Age related)	1	
SERUM OSMOLALITY	OSM	**SST**	Red clotted	2 – 4 mL	Chem	285-295 mosmol/L	1	
SERUM PROGESTERONE	PROG	**SST**	Red clotted	2 – 4 mL	Chem	Range not reported. Units: nmol/L	1	
SERUM TOTAL PROTEIN	TP	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 1-30 Days: 41 – 63 g/L 1 month -18Y: 57 – 80 g/L Adult: 66 – 83 g/L	1	
SERUM ZINC	ZINC	**Red clotted**	Trace Metal Tube Best	2 – 6 mL	Chem	11-24micromol/L	10	

SEX HORMONE BINDING GLOBULIN	SHBG	**SST**	Red clotted	2 – 4 mL	Chem	M-10-50 F-30-90 nmol/L	10	
Sfit/PIGF	SFPL	**SST**		2-4ml	Chem	See report	2	Investigation of Pre – eclampsia ONLY
SHORT SYNACTHEN TEST	SYN	**SST**		2 – 4 mL	Chem	See report	1	Half hour gaps 'O' '30min' & '60min'
SICKLE CELL	EP1	**EDTA**		4 mL	Haem	See report	1	SC&T
SIROLIMUS	SIRO	**EDTA**		4 mL	Chem	See report Units: ng/m1	10	
SKELETAL MUSCLE AB (SHG)	SKEL	**SST**		2 – 4 mL	Haem	See report	10	
SMOOTH MUSCLE AB (SHG)	SM2	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	
SODIUM		**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 136- 146 mmol/L	1	
SODIUM VALPROATE	VAL	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	
SOMATOMEDIN C/IGF1	SOMA	**SST**	Red clotted	2 – 4 mL	Chem	See report	10	
SPLIT SBR (paed)	CBIL	**Heparin**	Heparin	2 – 4 mL	Chem	See Report	1	Either SST or Lithium heparin is an acceptable sample
SWINDON RENAL OUTPATIENTS PROFILE	SROP	**SST**	Red clotted	2 – 4 mL	Chem	Various See report	1	Swindon renal outpatients profile includes CG, CCAL, UE, UR, GLU

SWINDON RENAL UNIT PATIENTS PROFILE			Red clotted	2 – 4 mL	Chem	Various See report	1	Swindon renal unit profile code. Includes CRP SROP
STEROID PROFILE (URINE)	STER	**24hr urine**			Chem	See report	10	
SULPHITES (URINE)	SULP	**Special**			Chem	See report	10	
T								
tHB (Haemoglobin)		**On Blood Gas Machine**				M: 135 -175 g/L F: 120 -160g/L	Within Minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
TACROLIMUS	TACR	**EDTA**		4 mL	Chem	See Report Please take care with therapeutic range as can be sent to multiple sites microg/L	3	Mon-Thurs only if possible. Do not refuse but advise patient for future. Details of dose, time of dose and time taken are helpful in interpretation
TELLURIUM (BLOOD)	TELL	**EDTA**		4 mL	Chem	<39.2 nmol/L	10	Plus one empty bottle **CURRENTLY NOT CREDITED**
TESTOSTERONE	TEST	**SST**	Red clotted	2 – 4 mL	Chem			

						Male 9.0-28.3nmol/L See note Female: 0.3 – 3.1 nmol/L	1	Male reports have caveat on RR - This range should only be used for a non –obese adult male patient. For males with a BMI more than 30 a free calculated testosterone is recommended
THYROID FUNCTION TEST (TFT)	TFT/ TSH	**SST**	Red clotted	2 – 4 mL	Chem	Note - Age specific reference ranges TSH: Male/Female: 0.38 - 5.33 mU/L Less than 2 days old 2.5 – 66mu/L	1	TSH only. Free T4 and Free T3 by reflex testing or agreement with Clinical Chemist.

						Less than one month old 0.5-16 mu/L Less than 5 years old 0.7-8.5mu/L		
THALASSAEMIA	EP1	**EDTA**		4 mL	Haem	See report	3	
THEOPHYLLINE	THEO	**SST**	Red clotted	2 – 4 mL	Chem	Male/Female: 10 - 20 mg/L	1	
THICK FILM FOR PARASITES	MALP	**EDTA**		4 mL	Haem	See report	1	Treat as high risk.
THB – Total Haemoglobin		**On Blood Gas Machines**				M-135-175 g/L F-120-160 g/L	Within minutes	Please note tests on the Blood Gas Machines are not ISO 15189 ACCREDITED
THIORIDAZINE	THIO	**Special**			Chem	See Report	10	Test rarely indicated
THROMBOPHILIA SCREEN	ICOM CS	**Citrate x 6** **SST**			Coag	See report	10	Citrate samples to be filled to the mark. Please supply full clinical information with Thrombophilia requests as they will be vetted
THYROID BINDING IMMUNOGLOBULIN	TBII	**SST**		2 – 4 mL	Chem	See Report	10	
THYROGLOBULIN	THYR	**SST**	Red clotted	2 – 4 mL	Chem	<1.0 post ablation microg/L	10	

THYROGLOBULIN ABS	TG2	SST		2 – 4 mL	Haem	0-20 KU/L	10	
THYROID MICROSOMAL	TMA2	SST		2 – 4 mL	Haem	See report	10	
THYROXINE BINDING GLOBULIN	TBG	SST	Red clotted	2 – 4 mL	Chem	See report	10	
TISSUE TRANSGLUTAMINASE	TTG	SST	Red clotted	2 – 4 mL	Haem	See report	10	Also known TTG
TOPIRAMATE	TOPI	SST	Red clotted	2 – 4 mL	Chem	5-20 mg/L	2	**CURRENTLY NOT CREDITED**
TPMT	TPMT	EDTA		4 mL	Chem	See report	10	X2 Mon-Thurs pre 14.00
TPO ANTIBODIES	TPO	SST		2 – 4 mL	Haem	See report	10	
TRANSFERRIN	TRAN	SST		2 – 4 mL	Chem	see report	10	
TRANSFERRIN ELECTROPHORESIS	TREL	Special			Chem	See report	10	Test rarely indicated
TRANSFERRIN GLYCOFORMS	TRGL	Special			Chem	See report	10	Test rarely indicated
TRAUMA PROFILE	TRAU	SST			Chem	Various See report	1	Trauma profile includes: UEC, LFT, AMS, FBC, CS.
		EDTA			Haem	See report	1	Should have: 1 x SST, EDTA & Citrate
		Citrate			Coag	See report	1	
TRIGLYCERIDES	TRIG	SST	Red clotted	2 – 4 mL	Chem	Male/Female: <1.7 mmol/L	1	TRIGS
TRIMETHYLAMINE	TRIM	Special			Chem	2.5-10.8 micromol/L	10	Test rarely indicated
TROPONIN I	TROH	Heparin		3.5 mL	Chem	Male less than 19.8 ng/L	1	**This is a High Sensitivity Troponin please note this**

						Female less than 11.6 ng/L		**has had a gender specific reference range since its introduction on 4.4.18**
TRYPTASE	TRPT	**EDTA**		4 mL	Chem	See Report microg/L	10	Alternative sample requirements SST/no anticoagulant / Lithium Heparin
TRYPTASE (URINE)	TRPU	**Special**			Chem	See report	10	Test rarely indicated
TTG (TISSUE TRANSGLUTAMASE)	TTG	**SST**	Red Clotted	2 – 4 mL	Haem	See report	1	
TYPE3 PROCOLLAGEN PEPTIDE	P3NP	**Special**		microg/L	Chem	See report	1	Test rarely indicated
U								
UREA	UR	**SST**		2 – 4 mL	Chem	Male/Female: <2M: 1.4 - 4.3 mmol/L 2M- 14Y: 1.8 - 6.4 mmol/L >14Y: 2.8 - 7.2 mmol/L	1	
URIC ACID	UA	**SST**	Red Clotted	2 – 4 mL	Chem	Male: 208 - 428 µmol/L Female: 155 - 357 µmol/L	1	

Urine Uric Acid	MISC	**Urine PLAIN**			Chem	See report	20	
UK 34 FOOD PANEL(ADC)	FP34	**SST**		2 – 4 mL	Chem	See report	21	**CURRENTLY NOT CREDITED**
URINE OSMOLALITY		**Urine PLAIN**			Chem	See report	1	Must be a plain urine container NOT boric acid type
V								
VALPROATE	VAL	**SST**	Red clotted	2 – 4 mL	Chem	mg/L	10	
VANCOMYCIN	see notes	**SST**	Red clotted	2 – 4 mL	Chem	Time of dose dependent Therapeutic range Male/Female: Trough/Pre-dose: 5 - 15 mg/L Peak: 18 – 26 mg/L	1	Input as VANS if clinical details do not specify dose. Input as VAN1 if pre-dose, VAN2 if post-dose
VASCULITIC SCREEN	ANCA	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	see ANCA
VERY LONG CHAIN FATTY ACIDS	LCFA	**Special**			Chem	See Report	10	Test rarely indicated
VIGABATRIN	VIGA	**SST**	Red clotted	2 – 4 mL	Chem	5-35 mg/L	10	

VISCOSITY	PVIS	**EDTA**		4 mL	Haem	See report	See next column	Plasma viscosity - is only done with the authorisation of a Consultant Haematologist
VITAMIN A	VITA	**SST**	Red clotted	2 – 4 mL	Chem	Varies with age See report	10	Send to lab asap
VITAMIN B12 & FOLATE	B12F	**SST**		2 – 4 mL	Haem	Vitamin B12: 145 - 914 ng/L Folate: 3.1 - 19.9 µg/L	1	
VITAMIN C	VITC	**Special**			Chem	12-114 micromol/L	10	Test rarely indicated
VITAMIN D	TVD	**SST**		2 – 4 mL	Chem	Male/Female: <30 nmol/L: Consistent with deficiency 30 – 50 nmol/L: May indicate deficiency; consider treatment if fragility fracture, osteoporosis, medication with anticonvulsants / glucocorticoids/ anti-resorptives, malabsorption	1	If finger prick-use amber tube.

						or dark skin. >50 nmol/L: Adequate Level >374 nmol/L: Toxicity possible, consider dose reduction >750 nmol/L: Toxicity likely – dose reduction recommended		
VITAMIN E	VITE	**SST**	Red clotted	2 – 4 mL	Chem	Varies with age See report	20	Send to lab asap
VOLTAGE GATED POTASSIUM CHANNEL ABS	VGCK	**SST**	Red clotted	2 – 4 mL	Chem	0-69 pmol/L	10	
VOLTAGE GATED CALCIUM CHANNEL ABS	VGCC	**SST**	Red clotted	2 – 4 mL	Chem	See Report pmol/L	10	
VON WILLEBRAND PROFILE	VON P	**Citrate x 4** **EDTA** **SST**			Coag	See report	10	Citrate samples to be filled to the mark.
W								
WARFARIN	INR	**Citrate**		2.7 mL	Coag	See report	1	Tube filled to mark.
WHITE CELL CYSTEINE	LCYS	**Special**			Chem	See report	10	Test rarely indicated
WHITE CELL ENZYMES	WCE	**EDTA**		4 mL				

					Chem	See report	10	
X								
XANTHOCHROMIA	CSFX	**CSF**	For collection and transport see Trust Documents DO NOT SEND SAMPLE THROUGH THE AIRTUBE	Minimum volume requires 0.75 ml	Chem	See report	1	In foil, protect from light
Y								
YO	PURK	**SST**	Red clotted	2 – 4 mL	Haem	See report	10	

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Z								
ZINC	ZINC	Trace Metal Tube Best	Trace Metal Tube Best	2 – 6 mL	Chem	11 -24 micromol/L	10	Sample requirements are Navy Blue Trace Elements bottle Paediatric requests require DARK GREEN PAEDIATRIC LITHIUM HEPARIN TUBE plus a ' blank' bottle for background reading Orange paed Lith. Hep. tubes are unsuitable
ZPP - Zinc Protoporphyrin	ZPP	**EDTA**		4 mL	Chem	4-30 microg/dl	10	Protect from light to lab asap

Table 8

Not ISO 15189 ACCREDITED Tests

Abbreviation	Full Name
BB	COLD AGGLUTINS
EP1	ELECTROPHORESIS HB

Table 9

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13.7 Critical Values – result limits where the laboratory should phone unexpected results

13.7.1 TELEPHONING CRITERIA - BIOCHEMISTRY LAB – continues on next page

Results need only be telephoned if they are a new finding i.e. previous results have not been a similar level.

Table 9

Analyte (Serum/Plasma)		Action Limits					
		Phone during "normal" hours		Phone to "Out Of Hours" Service		Phone to Renal Unit	
		Below	Above	Below	Above	Below	Above
Sodium Under 15 years	mmol/L	120 125	160 160	120 125	160 160	120 125	160 160
Potassium Sl. Haem. Samples	mmol/L	2.5 2.5	6 6.5#	2.5 2.5	6.5 6.5#	2.5 2.5	7.0 7.0#
Urea	mmol/L		20*		30*		30*
Creatinine	µmol/L		200**		400**		400**
Glucose	mmol/L	2.5	20***	2.5(fl sample)	25	2.5(fl sample)	25
Calcium (corrected)	mmol/L	1.5	3.0	1.5	3.5	1.5	3.5
Mg	mmol/L	0.4		0.4		0.4	
PO_4	mmol/L	0.3		0.3		0.3	
ALT	IU/L		675		675		675
Amylase	IU/L		500		500		500
Paediatric Bilirubin	µmol/L		250		250		
Creatine Kinase	IU/L		5000		5000		5000
CRP##	mg/L		300		300		300
Paracetamol	mg/L		80		80		80
Salicylate	mg/L		300		300		300
Gentamicin Pre-dose	mg/L		1.0		1.0		1.0
Tobramycin Pre-dose	mg/L		1.0		1.0		1.0
Tobramycin Post-dose/ Random	mg/L		10.0		10.0		10.0

Vancomycin Pre-dose	mg/L		20.0		20.0		20 .0
Digoxin	ng/L		2.5		2.5		2.5
Lithium	mmol/L		1.5		1.5		1.5
Phenytoin	mg/L		25		25		25
Theophylline	mg/L		25		25		25
Cortisol	nmol/L	50¥¥		50¥¥		50¥¥	
Triglyceride	mmol/L		20		20		20
Paediatric Ammonia	µmol/L		100		100		100

#To only phone if first result, or result is >6.5 mmol/L and has increased by ≥0.5 mmol/L since previous sample.

*To phone if first abnormal or result has increased by 15 mmol/L or more since previous urea.

** To phone if first abnormal or result has increased by 100 µmol/L or more since previous creatinine.

***Glucoses between 11 – 20 mmol/L should also be phoned if patient is not a diagnosed diabetic.

Sodiums in Paediatrics - As well as the established values for critical sodium any sodium less than 125 mmol/L in children under 15 are to be phoned without delay

As of 9AM on 1st December 2022 there will be a new arrangement where chemisrty critical results are put out to Winpath/Careflow as soon as they are checked and available. ED will be expected to look up their results in a timely way.

The one exception is potassium where non haemolysed results greater than 6.5mmol/L are to be phoned to 7474. Please note that 7474 is the ED consultants' phone so with the exception of the potassium arrangement, this phone number is to be used sparingly as possible and any dialogue with ED put to their other numbers"

13.7.2 The following results are critical values in Haematology

Where patients have these results the laboratory will take all reasonable steps to telephone the results to the requesting clinician or other suitable agency. Where results are not significantly different from the previous results phoning of critical results only happens on request.

Test	**Cut Off Values**	
Coagulation	Critical limits in coagulation generally apply to non-anti-coagulated patients i.e. patients on such therapeutics may be expected to give results beyond these values	
INRs – GP patients	Less than 1.5 or more than 4.5 for GP patients	
INRs - Outpatients	If they are more than 5.0 should be telephoned on Ext 4344 until 6PM	After 6PM all Outpatients INRs greater than 5 should be phoned to the OOH GP service
INRs - Wards	INRs more than 4.5 to be phoned to the ward	
PTR	More than 1.2 or if there is a sudden change or the result is unexpected - exceptions may include post op, post transfusion, liver disease, active bleeding	
Fibrinogen	less than 2.0 and more than 10g/L	
APTT	If more than 29 - if no clinical reason and not on heparin. More than 180 if on heparin	
FBC		
HB	less than 80 g/L	
NEUTS	less than 1 X 10^9/L	
PLATELETS	less than 50 X 10^9/L	
WBC	High WBC - above 50 X10^9/L should be phoned <u>after a film has been examined</u> and a decision made as to whether the result is to be phoned or passed onto the Specialist Registrar for further advice	
MALARIA	All positive results will be phoned	
VITAMIN B12	less than 50	

Table 10

13.8 Receipt of pre-arranged Urgent or Critical Results - authorised personnel

Results will be phoned to the originator of the request or these authorised staff as follows:

Inpatients: **Either nurse in charge of ward (staff nurse or above) or requesting clinician (bleep number on request).**

Outpatients: **Requesting consultant's secretary**

GP Patient: **Receptionist or other member of the practice who has responsibility for receiving phoned results.**

GPs Out-of-Hours**: If the GP practice is closed the lab will be follow the phone message giving a contact phone number to call. The number for the Swindon Out-of-Hours GP Service is 646466. OOH for Wilts and Bath and North East Somerset (BANES) is now be provided by NHS 111. It is important to check that the correct and full demographic details and clinical details are given.**

14 REFERENCE LABORATORIES

14.1 General

As part of the testing process, it may be necessary to refer some, or all, of the sample to an external reference laboratory.

There is a detailed policy in place to govern how we choose these referral laboratories. They are selected for their expertise and their quality standards. They are also regularly checked for their accreditation status and performance including timeliness in returning results.

The details of the tests offered, name and location of the testing laboratory and information regarding any special sample requirements are given in Table 11 below.

The parameters analysed in referred tests and any reference ranges for these parameters will be displayed on the report when it is returned to the requestor.

The name of the reference laboratory used will be indicated on the Medway /ICE Blood Sciences report. The reference laboratories currently used are shown in Table 11 below and continues over the following pages. The order is in A to Z in order of the town or city in which the laboratory is based. Using the find option will find data inside the table

Table of Reference Laboratories – Table 11 follows below and on subsequent pages

14.1 - Table of Reference Laboratories - Table 11

Bath	Chemical Pathology, Royal United Hospital, Coombe Park,BATH,BA1 3NG	UKAS REF: 9403	FRUCTOSAMINE, PLASMA VISCOSITY
Birmingham - B15	Clinical Immunology Laboratory, Division of Immunity & Infection, Vincent Drive, BIRMINGHAM, B15 2TT	UKAS: 9556	BONE MARROW & CELL MARKER STUDIES,MYELOMA FOLLOW UP,SERUM FREE LIGHT CHAINS,URINARY FREE LIGHT CHAINS,LYMPHOPROLIF DISORDER,LYMPTH NODES,HODGKIN'S MARKERS,LYMPH NODES,LEUKAEMIA MARKERS,LYMPH NODES,MYELOMA MARKERS,LYMPH NODES
Birmingham-BCH	The Metabolic Section, Clinical biochemistry, Birmingham Children's Hospital, Laboratory Medicine Block, Whittle Street, BIRMINGHAM,B4 6NH	UKAS: 9948	TACROLIMUS

Birmingham - City	Birmingham City Hospital, Dudley Road, BIRMINGHAM, WEST MIDLANDS,B18 7QH	UKAS: 8407	AZATHIOPRINE METABOLITES, 6MMPN (6 METHYLMERCAPTOPURINE) THIOPURINE METABOLITE, 6 TGN (6 THIOGUANINE NEUCLEOTIDE THIOPURINE METABOLITE). 6 TGN THIOPURINE METABOLITE, TPMT THIOPURINE METHYL TRANSFERASE, TPMT THIOPURINE METHYL TRANSFERASE ETHYLENE GLYCOL AND METHANOL
Brighton	Department of Clinical Pathology Royal Sussex County Hospital Eastern Road Brighton BN2 5BE	UKAS: 9676	HOMOCYSTEINE
Bristol - Filton NHSBT	500-600 North Bristol Park Northway, Bristol BS34 7QH	UKAS: 8740	Specialist Antibody and BT work FFDNA is performed at International Blood Group Reference Laboratory
Bristol -BRI	Department of Chemical Pathology, Bristol Royal Infirmary, Marlborough Street,BRISTOL,BS2 8HW	UKAS: 8061	ALPHA GALACTOSIDASE, ARYLSULPHATE, BETA-GALACTOSIDASE, BETA-GLUCOCEREBROSIDZASE, MUCOPOLYSACCHARIDES, SPHINGOMYELINASE, TACROLIMUS, WHITE CELL ENZYMES
Bristol-SMD-CIU	Cholinesterase Investigation Unit, Pathology Sciences Laboratory, Blood Sciences & Bristol Genetics, Southmead Hospital,Westbury-on-Trym,BRISTOL,BS10 5NB	UKAS: 8071	CHOLINESTERASE, DIBUCAINIDE NUMBER

Bristol-SMD-BBG	Bristol Biochemical Genetics Department, Pathology Sciences Laboratory, Southmead Hospital, Westbury-on-Trym, BRISTOL,BS10 5NB	UKAS: 8071	7 DEHYDROCHOLESTEROL, GALACTITOL, GALACTITOL-1-PHOSPHATE URIDYL TRANSFERASE (G1PUT), GALACTOSE-1-PHOSPHATE
Bristol -SMD-IMM	Department of Immunology Southmead Hospital, Westbury-on Trym,BRISTOL,BS10 5NB	UKAS: 8067	CD19.CD20,CD11,CD18,T CELLS,B CELLS AND NK CELLS Leptin Insulin DNA
Bristol-SMD-TOX	Toxicology Department, Pathology Sciences Laboratory, Blood Sciences & Bristol Genetics, Southmead Hospital,Westbury-on-Trym,BRISTOL,BS10 5NB	UKAS: 8071	CYCLOSPORIN, FPARAQUAT
Cambridge - Add	University Department of Clinical Biochemistry, Box 232,Level 4,Addenbrooke's Hospital, Hills Road, CAMBRIDGE, CB2 2QR	UKAS: 9814	GAMT (GUANIDINO-ACETATE & CREATINE), GAMT(URINE), IRT IMMUNO REACTIVE TRYPSIN
Cardiff - CF14	Department of Medical Biochemistry,1st Floor Laboratory, University of Wales College of Medicine, CARDIFF, CF14 4XW	UKAS: 8989	COMPLEMENT CASCADE C5-C9, HYDROXYPROGESTERONE (INCLUDING SALIVARY SAMPLES)

Cardiff Porphyria Lab	Porphyria Lab, Department of Medical Biochemistry,1st Floor Laboratory, University of Wales College of Medicine, CARDIFF, CF14 4XW	UKAS 8989	FAECAL PORPHYRINS, PORPHOBILINOGEN (URINE), RED CELL TOTAL PORPHYRIN, URINE PORPHYRINS
Chalfont St Peter	National Society for Epilepsy, Therapeutic Drug Monitoring Unit,(NSE TDM),Chalfont Centre For Epilepsy, Chesham Lane, CHALFONT ST.PETER,SL9 0RJ	UKAS: 8353	ETHOSUXIMIDE, LAMOTRIGINE, LEVETIRACETAM, PRIMIDONE, TOPIRAMATE. **THE FOLLOWING ARE UNLIKELY TO BE REFERRED UNLESS THERE ARE EXCEPTIONAL CIRCUMSTANCES:** CARBAMAZEPINE, CARBAMAZEPINE EPOXIDE,CLOBAZAM + METABOLITE, CLONAZEPAM, ESLICARBAZEPINE, ETHOSUXIMIDE , FELBAMATE, GABAPENTIN, LACOSAMIDE, OXCARBAZEPINE, PERAMPANEL, PHENYTOIN, PREGABALIN, RUFINAMIDE, STIRIPENTO, TIAGBINE, TOPIRAMATE, VALPROIC ACID, VIGABATRIN, ZONISAMIDE FREE LEVEL CARBAMAZEPINE , FREE LEVEL PHENOBARBITAL , FREE LEVEL aciPHENYTOIN, FREE LEVEL VALPROIC ACID, FREE LEVEL LAMOTRIGINE
Exeter - RDE	Department of Blood Sciences, Royal Devon and Exeter Hospital (Wonford) Barrack Road Exeter EX2 5DW	UKAS 8210	Infliximab and antibodies
Glasgow - QE	Neuroimmunology Laboratories, Queen Elizabeth University Hospital, Level 1B, Laboratory Medicine, 1345 Govan Road, GLASGOW, G51 4TF	UKAS 9713	ANTI GLYCOLIPID ANTIBODIES

Glasgow - Southern	Department of Neurology, Institute of Neurological Sciences, Southern General Hospital,1345 Govan Road, GLASGOW, SCOTLAND, G51 4TF	UKAS 8290	ANTI SULPHATIDE ABS.ANTI GLYCOLIPID ABS
Guildford	Clinical Laboratory, Royal Surrey County Hospital, Egerton Road,GUILDFORD,SURREY,GU2 7XX	UKAS: 9732	IGF-11, IGF-BP3, INSULIN ANTIBODIES, SULPHONYLUREA SCREEN, GASTRIN, IGFBP-1, IGFBP-2
Kettering Northants	Pathology Department, Kettering General Hospital, NHS Trust,KETTERING,NN16 8UZ	UKAS: 8118	MATERNAL SERUM DOWNS SCREENING
Leeds	National Blood and Transplant. Red Cell Immunohaematology. NHS Blood and Transplant, Bridle Path, Leeds, LS15 7TW	UKAS: 8740	Red Cell Immunohaematology (RCI) for serological investigations and antenatal serology, including antibody identification, quantitation and titration. Histocompatibility and Immunogenetics (HI) for all white cell and tissue typing investigations. Platelet Immunology for all platelet related serological testing. Granulocyte Immunology for all granulocyte related serological testing. Including HLA B27 and other HLA typing
Liverpool	Royal Liverpool University Hospital, , LIVERPOOL, L7 8XP	UKAS: 9785	ALUMINIUM, BETA TRANSFERRIN

London-Bio lab	Bio lab Medical Unit, Weymouth Street, LONDON, W1W 6DB	Not accredited	RASTS ONLY (Private Patients)
London - Char X	The SAS Laboratories, Clinical Biochemistry and Medical Oncology, Charing Cross Hospital, Fulham Palace Road,LONDON,W6 8RF	UKAS: 8673	ANGIOTENSIN, CA19-9/CEA CYST FLUID, CART (COCAINE AND AMPHETAMINE RELATED TRANSCRIPT), CHROMOGRANIN A/B, GASTRIN, GUT HORMONE PROFILE,RENIN
London - GOSH	Chemical Pathology, Camellia Botnar Building, 85 Lamb Conduit Street, GOSH NHS Trust, LONDON, WC1N 3JH	UKAS: 8692	CYCLOSPORIN, MCAD/MCADD (ACYL CARNITINES), FAECAL SUGAR CHROMATOGRAPHY, MCAD/MCADD (ACYL CARNITINES), TACROLIMUS,
London - Guys	Guy's and St. Thomas' Trust, Chemical Pathology Department,5th Floor, Guy's Tower, Guy's Hospital, St. Thomas Street, LONDON SE1 9RT	UKAS: 9093	OROTIC ACID
London -Guys Purine	Purine Research Laboratory, Floor 5,Thomas Guy House, Guy's & St. Thomas' Hospital, London Bridge,LONDON,SE1 9RT	UKAS: 9093	PURINES

London - ICH	The Enzyme Laboratory, Institute Of Child Health,30,Guildford Street,LONDON,WC1 N 1EH	Not available	5-METHYLTETRAHYDROFOLATE AND RED CELL FOLATE, ,PIVKA 11 (UNDERCARBOXYLATED PROTHROMBIN), WARFARIN AND SUPER-WARFARINS
London-ILS	Institute of Liver Studies, Kings College Hospital, Denmark Hill,LONDON,SE5 9RS	Not available	MPA/MMF, MYCOPHENYLATE, TACROLIMUS
London - Malarial Reference Laboratory	Malarial Reference Laboratory, London School of Hygiene and Tropical Medicine, Keppal St, LONDON, WC1E 7HT	UKAS: 9148	INVESTIGATIONS FOR MALARIAL PARASITES FURTHER TO BLOOD FILM
London - Queens Sq	Dept of Neuroimmunology The National Hospital for Neurology and Neurosurgery, Institute of Neurology, Queens Square,LONDON,WC 1N 3BG	UKAS: 8045	CSF ACE,BASAL GANGLIA ABS, TRANSFERRIN GLYCOFORMS (TRANSFERRIN ELECTROPHORESIS)
London St G	Dr Phil Rice, Institute of Microbiology and Virology, St George's Hospital, Blackstow Road,LONDON,SW17 OQT	UKAS: 9810	EBV-PCR
London St T	Nutristasis Unit, Haemostasis and Thrombosis, GSTS pathology,5th floor, North Wing, St.Thomas' Hospital,LONDON,SE 1 7EH	UKAS: 8595	METHYL MALONIC ACID (MMA) BLOOD

London TDL	The Halo Building 1 Mabledon Place LONDON WC1H 9AJ	UKAS: 8860	AMH (Anti Mullerian Hormone) CYCLOSPORIN, CK ISOENZYMES
London - Wellchild	Wellchild Lab,(1st floor), Children's Hospital, St. Thomas' Hospital, Lambeth Palace Road,LONDON,SE1 7EH	Not available	BIOTINIDASE
Manchester	Clinical Biochemistry, Clinical Sciences Building, Manchester Royal Infirmary, Oxford Road, MANCHESTER, M13 9WL	UKAS: 8651	OLIGOSACCHARIDE SCREENING
Oxford - Churchill	Immunology Department, Churchill Hospital,Headington, OXFORD,OX3 7LJ	UKAS: 8782	ANTI-CASPR2 ANTIBODIES, ANTI-LGIL ANTIBODIES, TSH RECEPTOR ANTIBODIES ALSO WRITTEN AS TRAB, VOLTAGE GATED CALCIUM CHANNEL ABS, VOLTAGE GATED POTASSIUM CHANNEL ABS,PURKINJE CELL ABS,ANTI YO,HU,RI,PARANEOPLASTIC NEUROPATHY,GAD ABS,ANTI GM1 ABS,AQUAPORIN 4 ABS,ANTI MAG ABS,ANTI GQ1B ABS,MUSK ABS,ANCA (RENAL UNIT ONLY),ANCA MYELOPEROXIDASE(RENAL UNIT ONLY),ANCA PR3(RENAL UNIT ONLY),GLOMERULER BASEMENT MEMBRANE(RENAL UNIT ONLY),SERUM FREE LIGHT CHAIN(RENAL UNIT ONLY),URINARY FREE LIGHT CHAIN(RENAL UNIT ONLY)
Oxford - JR-BIO	Biochemistry Reception, Level 4,John Radcliffe Hospital,Headington, OXFORD,OX3 9DU	UKAS: 8202 Haem tests are against	ANGIOTENSIN CONVERTING ENZYME (ACE),C-PEPTIDE, CA 153, CYCLOSPORIN (RENAL UNIT ONLY), CSF XANTHOCHROMIA as back up only, INSULIN, MOLECULAR SCREENING FOR HAEMOGLOBINOPATHY/THALASSAEMIA, P1NP, PTH (RENAL UNIT), SIROLIMUS, TACROLIMUS, THYROGLOBULIN ,

		UKAS: 8464	AMMONIA as back up only, THYROID ANTIBODIES Sflt/PIGF (eclampsia) Macroprolactin COVID Antibody Test – known to be PHE approved - UKAS accreditation yet to be arranged
Oxford-JR-TVHMD	TVHMDS, Thames Valley, Haemato-Molecular Diagnostic Service, Level 4 John Radcliffe Hospital,OXFORD,OX 3 9DS	UKAS: 8464	HAEMOCHROMATOSIS,HFE GENOTYPE,JAK2,BCR-ABL PCR,JAK3,FLT3,NPM1,PML-RARA
Penarth	Toxicology Laboratory, The Academic Centre, Llandough Hospital,PENARTH, CF64 2XX	Not accredit-ed	CAFFEINE, FLECAINIDE, LAXATIVE SCREEN, HYDROXYPROGESTERONE (INCLUDING SALIVARY SAMPLES)
Salisbury	Wessex Regional Genetics Laboratory, Salisbury District Hospital,ODSTOCK,SALISBURY,SP2 8BJ	UKAS: 9005	LEUKAEMIA CYTOGENETIC & BONE MARROW STUDIES,FISH TEST
Sheffield- CHI	Paediatric Pathology Section Of Neonatal Screening And Metabolic Investigation, Sheffield Children's Hospital, Western Bank, SHEFFIELD S10 2TH	UKAS: 8652	HYDROXYBUTYRATE, TRIMETHYLAMINE
Sheffield-PRU	Sheffield Immunology and Protein Reference Unit, Department of Immunology, PO Box 894,SHEFFIELD,S5 7YT	UKAS ref: 8494	AMYLOID, IgD, MANNOSE BINDING LECTIN,INSULIN ABS

Southampton-CHE	Chemical Pathology, Southampton General Hospital, Tremona Road,SOUTHAMPTON,S016 6YD	UKAS 8483	**SERIES ONE: A to Z ORDER:** 5HIAA, G6PD SCREEN, ACTH, AMINO ACIDS SERUM/PLASMA, AMIDARONE , AMINO ACIDS;URINE, ANDROSTENEDIONE, AP50 ALTERNATIVE PATHWAY HAEMOLYSIS, ARSENIC (BLOOD), C3 NEPHRITIC FACTOR, CA19-9, CH50 CLASSICAL HAEMOLYTIC PATHWAY, CALCITONIN, CADMIUM, CAERULOPLASMIN, CYCLOSPORIN, CORTISOL (SALIVARY), CORTISOL (URINE), CRYOGLOBULINS (CRYOPRECIPITAN), CYSTINE, DHEA SULPHATE, DEPAKOTE VALPRONIC ACID-SEMI-SODIUM VALPROATE, FAECAL ELASTASE, FAT GLOBULES, GROWTH HORMONE, HAPTOGLOBIN, HYDROXY PROGESTERONE, IGF-1,I, MERCURY (BLOOD), METHOTREXATE, OXALATE, P111NP, PHENOBARBITAL, PHENOBARBITONE, PHENYLANINE, PTH (OTHER THAN RENAL UNIT PATIENTS),, RMET, SELENIUM, SHBG, SPOT VMA RANDOM METANEPHRINES, STONE ANALYSIS, THROGLOBULIN+(THYROID ANTIBODIES TG2 ONLY FOR SOUTHAMPTON SAMPLES), TRANSFERRIN (TRANSFERRIN SATURATION), VALPROATE, VITAMINS A, E, ZINC

Southampton-CHE	Chemical Pathology, Southampton General Hospital, Tremona Road, SOUTHAMPTON, S016 6YD	**UKAS 8483**	**SERIES TWO: A to Z ORDER:** 17-HYDROXY-PROGESTERONE,ALPHA-1-ANTITRYPSIN,ALPHA-1-ANTITRYPSIN PHENOTYPE,BETA-2 GLYCOPROTEIN, CYROGLOBULIN ,CA 19.9,CHROMIUM (BLOOD),CHROMIUM (PLASMA),CHROMIUM +COBALT WHOLE,COBALT (BLOOD),COBALT (PLASMA),COPPER SERUM AND URINE ,GLUTAMIC ACID DECARBOXYLASE AB,HLAB27,HMMA,HVA CREATININE RATIO,IMMUNOFIXATION,IMMUNOGLOBULIN A,IMMUNOGLOBULIN E,LACTATE ,LEAD (BLOOD),MAGNESIUM (URINE),MANGANESE (BLOOD),MERCURY(URINE),METHANEPHRINES/CREATININE RATIO,OXALATE (URINE),OXALATE/CREAT RATIO URINE,PHENYLANINE BLOODSPOT,TRANSFERRIN, TYROSINE,TRYPTASE,URINE CATECHOLAMINES/METANEPHRINES & URINE ORGANIC ACIDS
Southampton-IMM	Wessex Immunology Department, Mailpoint 8, Level C, South Path & Lab Block Southampton General Hospital, Tremona Road,SOUTHAMPTON,S016 6YD	UKAS 8483	**ALLERGEN TESTING: A to G ONLY** RAST (MISCELLANEOUS), RAST TO ALMOND, RAST TO AMOXYCILLOYL, RAST TO ANIMAL DANDERS, RAST TO APPLE, RAST TO ASPERGILLUS, RAST TO AVOCADO, RAST TO BAKER'S YEAST F45, RAST TO BANANA, RAST TO BRAZIL NUT, RAST TO CACAO, RAST TO CAGED BIRDS, RAST TO CASHEW NUT, RAST TO CAT EPITHELIUM, RAST TO CELERY, RAST TO CEREAL MIX, RAST TO CHEESE, RAST TO CHICK PEA, RAST TO CHICKEN, RAST TO CHILLI PEPPER, RAST TO COCONUT, RAST TO COD, RAST TO CORN/MAIZE, RAST TO COW EPITHELIUM, RAST TO DOG DANDER, RAST TO EGG WHITE, RAST TO EGG YOLK, RAST TO FOOD (PAEDIATRIC PANEL), RAST TO GLUTEN, RAST TO GRASS POLLEN , RAST TO GUINEA PIG EPITHELIUM

Southampton-IMM	Wessex Immunology Department, Mailpoint 8, Level C, South Path & Lab Block Southampton General Hospital, Tremona Road,SOUTHAMPTON,S016 6YD	UKAS ref: 8483	**ALLERGEN TESTING: H to Z :** RAST TO HAMSTER EPITHELIUM,RAST TO HAMSTER EPITHELIUM,RAST TO HAZELNUT,RAST TO HONEY BEE,RAST TO HORSE HAIR/DANDER,RAST TO HOUSEDUST MITE,RAST TO KIWI FRUIT,RAST TO LATEX,RAST TO LEMON,RAST TO LENTIL,RAST TO MILK (COWS),RAST TO MOULD,RAST TO NUTS,RAST TO OATS,RAST TO PEACH LTP (RPRUP3),RAST TO PEANUT,RAST TO PECAN NUT,RAST TO PENICILLIN G,RAST TO PENICILLIN V,RAST TO PISTACHIO NUT,RAST TO PORK,RAST TO POTATO,RAST TO POULTRY FEATHERS,RAST TO RABBIT EPITHELIUM,RAST TO SALMON,RAST TO SEAFOOD,RAST TO SESAME SEED,RAST TO SHRIMP/PRAWN,RAST TO SOYA,RAST TO STRAWBERRY,RAST TO SUXAMETHONIUM,RAST TO TIMOTHY GRASS,RAST TO TOMATO,RAST TO TREE POLLEN,RAST TO WALNUT,RAST TO WASP,RASP TO WHEAT & RAST TO WHOLE EGG

Southampton-IMM	Wessex Immunology Department, Mailpoint 8, Level C, South Path & Lab Block Southampton General Hospital, Tremona Road, SOUTHAMPTON, S016 6YD	UKAS ref: 8483	ACRA, ANTIBODY SCREENING: AIPS (LIVER SCREEN), ANTI CCP ANTIBODIES, BENCE JONES PROTEIN, B2-MICROGLOBULIN, COELIAC SCREEN,DNA BINDING ANTIBODIES, ENDOMYSIAL ABS, PANCA,CANCA, ANCA MYELOPEROXIDASE, GLOMERULAR BASEMENT, CARDIOLIPIN ABS, ovarai ABS, INTRINSIC FACTOR ABS, PEMPHIGUS ABS, PEMPHIGOID ABS, PANCREATIC ISLET CELLS ABS, PARIETAL CELL ANTIBODY, CONNECTIVE TISSUE SCREEN, LIVER PANEL SCREEN, THYROID PEROXIDASE ABS, ENA SCREEN (SM,SSB,SSA), ELECTROPHORESIS (SERUM), RNP JO1,SCL70, TRYPTASE, URINE IEF

Table 11

15 PATIENT CONSENT DISCLOSURE

The Blood Sciences Department regards the lawful and correct treatment of patients' personal information as vital to successful operations and to maintaining the confidence of users of the service. Request form information may additionally be used for billing purposes, financial audit, resource management and utilization reviews. **The responsibility for obtaining informed consent for the test resides with the individual ordering the test not the laboratory.**

Our policy is that we will treat personal information lawfully and correctly in adherence to the principles of data protection described in the Data Protection Act 1998.

As part of the Great Western Hospital NHS Foundation Trust we also work to its governance and data protection policies which incorporate the Data Protection Act, the Department of Health Confidentiality NHS Code of Practice, and Department of Health Security Management NHS Code of Practise, as listed below:

- Information Governance Strategy and Policy
- Information Protection and Security Policy
- Information Asset Register Procedure
- Data Protection Policy
- Data Transfer Policy
- Data Quality Policy
- Code of Conduct for Employees in Respect of Confidentiality Policy
- Freedom of Information Requests Procedure

Trust documents are currently on the T Drive in the Trust – for users outside the Trust please contact the laboratory if a copy of the policy is required.

- The Consent for Medical Treatment for All Patients at the Great Western Hospitals Policy is available in the Trust please advise the Lab Manager if you should require a copy

All the above Trust policy documentation is available upon request to the Blood Sciences Laboratory Manager on 01793 607242

The responsibility for obtaining informed consent for the test resides with the individual ordering the test not the laboratory.

15.1 Patient consent

Consent to a specimen being taken and analysed is implied by the patient presenting to the point of specimen collection. **The responsibility for obtaining informed consent for the test resides with the individual ordering the test not the laboratory**. Informed consent should cover all the tests being done, implications of their results and disclosure of clinical and personal details to personnel (in the requesting organisation and any other healthcare organisations involved in providing the test). Special procedures, including more invasive procedures, or those with an increased risk of complications to the procedure, will need a more detailed explanation and, in some cases, written consent.

Patients with due capacity in a hospital bed should normally be given the opportunity to refuse testing. In emergency situations consent may not be possible.

All patient samples received in the laboratory shall be treated with respect whilst in the care of the Blood Sciences Department.

15.2 Medico-legal samples

The laboratory is geared primarily for Clinical Investigation of patients. Handling over two thousand specimens each weekday in a timely, cost efficient way does not usually facilitate the additional formal concerns of medico-legal casework such as having a fully documented chain of custody.

Should you have a particular requirement please talk to the Blood Sciences Laboratory Manager on 01793 607242.

15.3 The Human Tissue Act and Forensic Work

Great Western Hospitals NHS Foundation Trust is licensed by the Human Tissue Act (HTA) to undertake examinations of post mortem samples submitted by clinical consultants and pathologists. Under the license, the samples may be retained until the examination has been completed and in line with the sample retention policies.

It is the obligation of the requesting clinician or pathologist to ensure that examination of samples they submit have been requested by the coroner or appropriate consent has been obtained from the deceased person or their relatives.

Only the specific examinations requested by the sending clinician or pathologist may be performed. It must be assumed that the coroner has not asked for any other examinations to be performed and consent has not been obtained for any other work and so this would be outside the scope of the licence.

All relevant material is stored securely and under conditions which maintain the integrity of the sample if possible and confidentiality is maintained in compliance with Caldicott principles, as are all samples received. Following processing, relevant material is only retained for the period

of time specified by the retention policy.

16 Duty of Candour Policy

Blood Sciences as per the Trust Policy (PAT-EX-450) is committed to a safety culture dedicated to learning and improving care and striving to reduce avoidable harm. Being open and honest about patients' or service users' treatment and care is of a high priority, ensuring we all promote good relationships with patients and their families or carers.

• The Care Quality Commission (CQC) Regulation puts a legal duty on all health and social care providers to be open and transparent with people using services, and their families, in relation to their treatment and care. This means that providers must be open and transparent with people who use services and other 'relevant persons' (people acting lawfully on their behalf) in relation to care and treatment. It sets out specific requirements that providers must follow when things go wrong with care and treatment, including informing people about the incident, providing reasonable support, and providing truthful information and an apology when things go wrong.
• Notifiable Safety Incident
• Incidents that result in no harm or low harm are not part of the Statutory Duty of Candour legislative requirements, but patients should still be informed of such events in line with being open and honest. This is called the Non-Statutory Duty of Candour.

All incidents involved Blood Sciences shall be reported on Datix or as non-conformance or both.

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~~18~~17 FEEDBACK ON BLOOD SCIENCES SERVICE AND COMPLAINTS PROCEDURE

We are always keen to receive any comments you may have about the quality of our service and would welcome any suggestions on ways we might be able to improve our service. Any compliments, concerns, comments or complaints should in the first instance be directed to the Blood Sciences Laboratory Manager or the Clinical Lead for the relevant laboratory.

The Laboratory Complaints Procedure is described in Document: Pathology User Engagement Policy, Including Management of Complaints (Laboratory Document PAT-Q-043) which describes Departmental arrangements to comply with the Trust Complaints Policy ((Laboratory Document PAT-EX-229)

This Trust has a Patient Advice and Liaison Service (PALS) and they can be contacted as below:

You can visit the team on the ground floor of the Great Western Hospital (the PALS office). Their offices are open Monday-Friday, from 8.30am-5pm.

Tel: 01793 604031

Email: GWHPALS@NHS.NET

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Any comment or idea from users on how this user guide could be improved would be welcomed for inclusion in future editions. Please forward suggestions to the Blood Sciences Laboratory Manager.