

**Sheffield Teaching  
Hospitals NHS  
Foundation Trust  
LEGION Division**

**Chesterfield Royal  
Hospital NHS Foundation  
Trust  
Integrated Care Division**

**University Hospitals of Derby  
and Burton  
Cancer, Diagnostics and  
Clinical Support Division**

**DERBYSHIRE PATHOLOGY and EASYPATH**

## **PATHOLOGY USER GUIDE**

### **1. OBJECTIVE**

The document is for Users of the Pathology Department Services located at Chesterfield Royal Hospital Foundation Trust.

### **2. SCOPE**

This document provides information on the services that Pathology offers including for example a list of tests, opening hours, contact details and information on the types of container to be used. This document is for clinical users of the service and is available on the Chesterfield Royal Hospital Foundation Trust intranet.

### **3. PROCESS**

The Pathology User Guide is an information document (not an instruction process) for Users of the Pathology services.

<b>First issued:</b>	22/09/2011
<b>Review Interval:</b>	1 years
<b>For review by:</b>	Service Managers
<b>Approved by:</b>	Service Managers

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## **1 INTRODUCTION**

1.1 The Pathology User Guide is a reference booklet for healthcare professionals and provides detailed information about the diagnostic pathology service offered at Chesterfield Royal Hospital NHS Foundation Trust. We hope that it will enable you to make the most efficient use of the service.

1.2 The Pathology department structure is as follows:

**Derbyshire Pathology** – Blood Sciences, Blood Transfusion, Microbiology, Phlebotomy and Mortuary & Bereavement, located at Chesterfield.

Derbyshire Pathology is a joint contracted pathology network accountable to both Chesterfield Royal Hospital Trust (Integrated Care Division) and University Hospitals of Derby and Burton Trust (Cancer, Diagnostics and Clinical Support Division).

**EasyPath** – Histopathology services are provided by Sheffield Teaching Hospitals via the EasyPath network.

1.3 This manual is reviewed annually. If there is any additional information which users think may be useful for inclusion please email [CRHFT.ContactPathology.nhs.net](mailto:CRHFT.ContactPathology.nhs.net) or contact the Service Manager for the relevant department. See Section 4 Key Contacts.

### 1.4 **Address**

Chesterfield Royal Hospital NHS Foundation Trust  
Calow  
Chesterfield  
Derbyshire  
S44 5BL

### 1.5 **How to find us**

The Pathology Department is based in Suite 9 towards the rear of the hospital. From the main entrance, follow the signage for the pink zone.

Blood Testing is next door to the Pathology Department.

1.6 The Pathology Department at Chesterfield Royal Hospital provides a routine and a 24-hour emergency laboratory service for the hospital and General Practitioners within the local catchment area.

The Pathology services include: -

- Blood Sciences (Biochemistry, Haematology, Coagulation, Blood Bank, Trust based Phlebotomy service)
- Microbiology
- Mortuary
- Histology & Cytology

1.7 If you have any questions or require information about the service provided by a specific laboratory, please contact the laboratory directly and ask for advice from a Pathologist or a Biomedical Scientist as appropriate.

## **2 QUALITY POLICY**

### **Derbyshire Pathology**

#### **Aim or Mission Statement**

Derbyshire Pathology is committed to providing a service of the highest quality and shall be aware and take into consideration the needs and requirements of its patients and clinical users.

#### **Scope of Pathology at CRH**

Blood Sciences comprises:

The Blood Sciences department provides a Clinical Diagnostic Blood Sciences service as appropriate to a District General Hospital.

- Blood Bank
- Haematology and Coagulation
- Clinical Chemistry
- Phlebotomy

Microbiology comprises:

Microbiology provides a Clinical Diagnostic Microbiology service as appropriate to a District General Hospital.

Micro-organisms are isolated from clinical samples, identified and, where necessary; antibiotic sensitivity testing carried out.

Services provided include:

- Bacteriology
- Mycology
- Parasitology
- Serology

It also provides a Chlamydia Screening Programme.

Mortuary & Post Mortem services comprise:

The Mortuary and Post Mortem Examination Services facilitate the reception, storage and examination of deceased persons from the hospital and the community.

Post mortem examinations are performed under the authority of HM Coroner to ascertain the cause of death and at the request of a clinical team following the issuing of the medical certificate of the cause of death and after obtaining a fully informed consent from the relatives/executor/next of kin to investigate the extend of a known disease process and to clarify the given cause of death.

Transport service comprises:

The Transport service calls twice each day to all community hospitals and GP practices. The service collects Pathology samples and delivers results as well as internal mail and pharmaceuticals.

The Pathology reception provides a service for the collection of consumables and reception of specimens.

**Objectives**

In order to ensure that the needs and requirements of users are met, Derbyshire Pathology will:

- Operate a robust quality management system to integrate the services' procedures, processes and resources.
- Set quality objectives and plans in order to implement this quality policy.
- Require that all personnel are familiar with this quality policy, the quality manual and all procedures relevant to their work to ensure user satisfaction. Derbyshire Pathology shall have processes in place that ensure all staff read the quality manual and acknowledge on Q-Pulse.
- Commit to the Health & Safety and well-being of its entire staff. Visitors to the department will be treated with respect, and due consideration will be given to their safety while on site.
- Uphold professional values and commit to good professional practice and conduct.
- Commit to current environmental legislation

**Procedure**

Derbyshire Pathology will comply with the requirements of ISO 15189:2012 and is committed to:

- Staff recruitment, training, development at all levels to provide a full and effective service to all its users.
- The proper procurement and maintenance of equipment, and other resources needed for the provision of the service.
- The collection, transport and handling of all specimens in such a way as to ensure the correct performance of laboratory examinations.
- The use of examination procedures that will ensure the highest achievable quality of all tests performed.
- Reporting results of examinations ensuring that they are timely, confidential, accurate and clinically useful.
- The assessment of user satisfaction, in addition to internal audit and external quality assessment, in order to produce continual quality improvement.

Approved on behalf of Derbyshire Pathology by:



Dr Gerry van Schalkwyk

Derbyshire Pathology Clinical Director

January 2019

**EasyPath**

Sheffield Teaching Hospitals NHS Foundation Trust	Procedure No: LMCP001
Directorate of Laboratory Medicine	Revision No: 24
Section: Common Procedure	Page 1 of 1
Approved by: Branko Perunovic	

**The Quality Policy of the Directorate  
of Laboratory Medicine**

The scope of service provided by the Laboratory Medicine Directorate is a diagnostic service for Haematology/Blood Transfusion, Clinical Chemistry, Microbiology/Virology, Histopathology, Cytology, Immunology, and Coagulation. The Directorate also provides Mortuary and Post Mortem facilities serving the Trusts hospitals. (4.2)\*

The Directorate is committed to providing a service of the highest quality and shall take into consideration the needs and requirements of its users.

In order to ensure the needs and requirements of users are met, the Directorate will;

- Operate a Quality Management System to integrate the organization, procedures, processes and resources. (4.2)
- Ensure that all personnel are familiar with this policy. (4.2)
- Commit to the health, safety and welfare of its staff, patients and visitors. (5.2, 5.7)
- Uphold professional values and is committed to good professional practice and conduct throughout. (4.2)
- Review the performance of the Quality Management System at planned intervals (4.15)
- Set objectives and plans linked to the performance of the Quality Management System (4.2)
- Comply with current EU directives and HTA regulations with respect to tissues or cells for human application handled under a HTA license.
- Comply with current EU directives and MHRA regulations (Blood Safety and Quality Regulations SI2005/50 as amended) with respect to the blood bank service supplied by Laboratory Medicine.
- Conform to confidentiality in accordance with the [General Data Protection Regulation](#), Data Protection Act and Caldicott guidelines. (5.3)

The Directorate will comply with standards set by BS EN ISO 15189:2012, [BS EN ISO 17025:2005](#) and is committed to:

- Staff recruitment, training, development and retention at all levels. (5.1)
- Planned procurement and maintenance of equipment and other resources. (4.6, 5.3)
- Collection, transport and handling of all specimens in such a way as to ensure the correct performance of laboratory examinations. (5.5)
- The use and review of examination procedures that will ensure the quality of the test being performed. (5.5, 5.7)
- Reporting results of examinations in ways which are timely, confidential, accurate and clinically useful this will improve user satisfaction. (5.8)
- Assessment of user satisfaction, (4.8) in addition to internal audit and external quality assessment, (4.14, 5.6) and identification and control of non-conformities (4.9) in order to produce continual quality improvement. (4.10, 4.11, 4.12)
- Compliance to environmental legislation. (4.2)
- Staff should be familiar with the quality manual and all procedures relevant to their area of work(4.2)

\*details in brackets relate to ISO 15189 clauses

Clinical Director: Dr Branko Perunovic

Signature:

Date:..

### **3 QUALITY QUERIES**

To ensure the highest quality of service, all departments participate in the relevant external quality assurance schemes that are available. Rigorous quality control checks are regularly made and pathology conforms to ISO 15189:2012 standards with UKAS accreditation.

If you have any issues about the quality of service you receive please contact the Service Manager for the relevant department. See [Section 4](#) Key Contacts.

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**4 KEY CONTACTS****Divisional Director, Integrated Care Division**

Dr A Unnikrishnan  
Telephone: 01246 512050  
e-mail: [uanoop@nhs.net](mailto:uanoop@nhs.net)

**Clinical Director, Derbyshire Pathology**

Dr G Van-Schaklwyck  
Telephone:  
e-mail:

**General Manager, Integrated Care Division**

Andrew Loveridge  
Telephone: 01246 512274  
e-mail: [andrew.loveridge@nhs.net](mailto:andrew.loveridge@nhs.net)

**General Manager, Derbyshire Pathology**

Christine Ainger  
Telephone: 01246 512275  
e-mail: [chris.ainger@nhs.net](mailto:chris.ainger@nhs.net)

**Deputy General Manager, Derbyshire Pathology (Chesterfield Site)**

Lesley Cain  
Telephone: 01246 51  
e-mail: [Lesley.cain1@nhs.net](mailto:Lesley.cain1@nhs.net)

**Associate Clinical Director, Blood Sciences**

Dr J Forsyth  
Telephone: 01332 789383 (Derby)  
01246 512212 (Chesterfield)  
e-mail: [julia.forsyth1@nhs.net](mailto:julia.forsyth1@nhs.net)

**Associate Clinical Director, Microbiology**

Dr L Reed  
Telephone:  
e-mail:

**Histopathology Clinical Lead**

Dr Shawn Keen Foong, MBChB, MSc (Distinction), MRCS. FRCPath  
Telephone: 01246 512260  
e-mail [keen.foong@nhs.net](mailto:keen.foong@nhs.net)

**Cytology, Histology Service Manager, EasyPath**

Greg Zardin  
Telephone: 01246 513795  
e-mail: [greg.zardin2@nhs.net](mailto:greg.zardin2@nhs.net)

**Blood Sciences Service Manager, Derbyshire Pathology**

Maxine Hambidge  
Telephone: 01246 512242  
e-mail: [maxine.hambidge@nhs.net](mailto:maxine.hambidge@nhs.net)

**Microbiology Technical Specialist Manager, Derbyshire Pathology**

Michael Collins  
Telephone: 01246 512270  
e-mail: [michaelcollins3@nhs.net](mailto:michaelcollins3@nhs.net)



**Mortuary, Bereavement & Post Mortem Services Service Manager**

Michael Conway

Telephone: 01246 512217

e-mail: [michael.conway@nhs.net](mailto:michael.conway@nhs.net)

**Assistant Performance Manager (including transport)**

Kim Matthews

Telephone: 01246 512277

e-mail: [kim.matthews1@nhs.net](mailto:kim.matthews1@nhs.net)

**ICD Divisional Quality Governance Facilitator**

Julie Lyons

Telephone: 01246 513461

e-mail: [julie.lyons3@nhs.net](mailto:julie.lyons3@nhs.net)

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## **5 OPENING HOURS**

### **Routine Samples:**

#### **Pathology Reception**

Monday - Friday 8:30am – 5:00 pm

Telephone - 01246 512256

**\*Also see individual department details**

#### **Out of Hours**

Outside these normal working hours individual departments can be contacted using the appropriate bleep or via the hospital switchboard.

Telephone **01246 277271** and ask for the bleep as shown below:

- Chemical Pathology: 364
- Haematology / Blood Bank: 365
- Microbiology: 366

## **6 SAMPLE HANDLING**

### **Request Forms**

Chesterfield Royal Hospital use ICE request forms, hospital pathology general, Blood Bank ante-natal, Group and Save, Cross Match and histology specific request forms.

GP's have access to ICE.

Community midwives are supplied with Blood Bank ante-natal request forms.

The request form is considered an agreement to perform the requested tests either on site or at an approved Referral Laboratory as indicated in the Test List (section 16) providing the acceptance criteria is met.

### **PLEASE REMEMBER:**

**Inadequate information on your request form makes it impossible to issue a report or contact the doctor in the case of unexpected results. All requests must include the patients surname, forename, DOB and a unique ID (NHS, Hospital or ED number).**

### **High Risk Specimens**

Any person requesting examination of clinical specimens will, for the purpose of Health & Safety at Work Act, be assumed to have read the following instructions.

Appropriate clinical details and in addition, Danger of Infection (High Risk) stickers **MUST** be attached to the sample container, the request form and the sample bag for any specimen in the following categories:-

- (a)** An specimen which may contain MYCOBACTERIA (ACID FAST BACILLI)
- (b)** All specimens from:-
  - i) Known or suspected cases of infection by either blood borne hepatitis viruses or HIV.
  - ii) Groups who have a higher than average incidence of infection by blood-borne hepatitis viruses and/or HIV.

e.g. Intravenous drug abusers  
Male Homosexuals & Bisexuals  
Sex Workers  
Haemophiliacs,  
Immigrants, especially from Africa, Middle East and Far East.  
Institutionalized patients with learning disabilities.

- (c)** ANY OTHER SPECIMENS from known or suspected cases of infection with hazard group 3 micro-organisms, or where the handling of such specimens by laboratory staff carries a significant risk of infection – please refer to circular “Safety on Transmission of Pathology Specimens”

As a minimum precaution, all samples should be transported to the laboratory in the special biohazard bags:

The sample should be placed in the sealed compartment and the form in the open pocket, so that the patient details are visible.

Samples transported by road must be in a suitable container that will contain them during any type of impact.

Known High Risk samples must **NOT** be transported in the pneumatic air tube

### **Use of the Air tube**

See the trust policy for details.

[https://intranet.chesterfieldroyal.nhs.uk/policies/global/clinical\\_practices/use\\_of\\_the\\_pneumatic\\_air\\_tube\\_system](https://intranet.chesterfieldroyal.nhs.uk/policies/global/clinical_practices/use_of_the_pneumatic_air_tube_system)

### **Patient Information Leaflets**

Patient Information Leaflets (i.e. 'How to collect a 24hour Urine Sample') are given out on collection of appropriate containers. Master copies of available leaflets are kept on Qpulse

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## **7 NORMAL RANGES**

The concept of the 'normal range' has in many instances been misleading. The term is now technically obsolete and has been replaced by the "reference interval" commonly referred to as the "reference range".

The change in terminology is intended to reflect the increasing awareness of changes in physiological and pathological processes and the need for adequate description of individuals used for obtaining reference values and of analytical methods used.

In the hospital it is usually remembered that age and sex are important factors in the interpretation of data, but other factors may be equally or more important, such as time of specimen collection, intake of food and drugs, posture, degree of obesity, pregnancy or stage of menstrual cycle. The method of specimen collection (e.g. venous stasis) and the analytical method used will, in many cases, influence the result obtained. It is impossible in this booklet to indicate all the effects of such factors on reference ranges.

For these reasons, reference ranges are not included in this booklet. Instead, most reports indicate the reference range for the test being measured and the range quoted on the report will be the correct reference range for the laboratory at that time. When age and sex are given on the request form the laboratory report will show the reference range appropriate to age and sex.

More detailed information on individual tests can be obtained from the laboratory.

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## **8 NEAR PATIENT TESTING (POINT OF CARE TESTING)**

The Pathology Department supports near patient testing schemes across the Trust.

The monthly NPT committee provides advice to areas wishing to set up new initiatives; it is also involved in the monitoring of necessary internal quality control and organisation of relevant external quality control (EQA) scheme participation and a forum for user feedback.

Point of care equipment within the Trust includes: Blood Ketones, Urinalysis, Urine pregnancy testing, HbA1c, Blood Glucose, Blood Gases (including electrolytes and co-oximetry measurements on some of the analysers), Haemoglobin and INR testing.

Please refer to the policy 'Near Patient Testing (Point of Care Testing)' available on the intranet if considering the introduction of any near patient testing in your area.

For advice contact:  
Chair of the Near Patient Testing Group

Dr Julia Forsyth  
Associate Clinical Director  
Tel: 01246 512212 or 01332 789323

### **Roche Accucheck Glucose Monitoring**

Solutions for internal quality control are distributed to all areas quarterly by Blood Sciences. Reagent strips are available from pharmacy.

During normal working hours faulty meters should be reported to Equipment Library who are able to provide loan meters. Outside these hours a loan meter can be obtained from Blood Sciences.

### **Abbott Ketone Meters**

Solutions for internal quality control are available from the Diabetic Nurses. Reagent strips are available from pharmacy.

### **GP and Primary Care**

The Department is also happy to be contacted by general practices to provide advice on near patient testing issues including participation in EQA schemes where possible.

### **Urinalysis and Urine Pregnancy Testing**

Reagent kits for urine pregnancy testing and internal quality control solutions for both urinalysis and urine pregnancy testing are supplied by Microbiology.  
For advice, contact Bill Purdon 01246 512278.

## 9 TRANSPORT/RECEPTION AND PORTERING SERVICES

For information relating to the Pathology Transport, Portering and Reception Services, please contact the Assistant Performance Manager on 01246 512275.

### **IMPORTANT**

**All samples from cases of high risk (see back of request form) should be labelled and transported in accordance with the agreed procedure never by the vacuum POD system. Both the sample and the outside of the package should be labelled "High Risk, Danger of Infection".**

Detailed instructions are available in the Trust policies entitled:

- Safety in the transport of pathology specimens
- Policy on the labelling of pathology specimens and request forms
- Policy on the use of pneumatic Air Tube system

## 10 -TYPES OF CONTAINER

<b>Code</b>	<b>Container type</b>
Citrate	Blue (4.5ml) topped vacutainer
Cross	Pink (6ml) topped vacutainer
EDTA	Pale Purple (3ml) topped vacutainer
Hep	Hep Green (4ml) topped vacutainer Lithium
Heparin	Heparin
Plain	Red (6ml) topped vacutainer
Yellow	Yellow (6ml) topped vacutainer
Fl	Grey (2ml) topped vacutainer Fluoride Oxalate
Trans	Amies Transport swabs
<b>*Volumes are shown on the label</b>	
24hr U	24hr urine container please contact Pathology reception.
EMU	Large sterile plastic container 250 ml for AFB urines
Form	Formalin - see Histology section for full details
Spe	Special container please contact Pathology reception.
Univ	Sterile Universal 30 ml
WM	Wide mouthed container 60 ml
UM	Urine Monovette tube
Chlam	Special swabs available from the laboratory

## **SUPPLY OF CONTAINERS**

All containers and consumables needed to perform Pathology investigations are supplied by the department through reception.

### **Chesterfield Royal Hospital**

Staff from wards and departments can collect containers from Pathology Reception at any time during normal opening hours.

Needles and needle holders must be signed for and will be cross charged to the Department concerned.

### **GP's and Community Premises**

All supplies should be ordered using the correct order forms. These should be sent to Pathology Reception through the van collection service if possible. Needles and needle holders will be charged to appropriate Primary Care Trust.

The form allows users to request the actual number of consumables:

- Blood bottles in multiples of 100
- MSU containers in multiples of 50
- Needles in multiples of 48

**\*So the system is not overloaded please order a minimum of a month's supply of all containers at the same time.**



## **11 RESULTS**

### **Within the Hospital**

Paper results, if required are available on the next routine delivery. Results are transmitted electronically to ICE at the same time as the result is available in the laboratory.

### **Outside the Hospital**

Paper results will arrive on the next van delivery. Electronic results will generally be downloaded to GP's systems on a regular basis.

### **Critical Alert Results**

Results deemed to be clinically significant are phoned by qualified BMS staff or consultants according to the telephone policy and procedures within each department.

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**12 BLOOD SCIENCES****CHEMISTRY, HAEMATOLOGY, COAGULATION, TRANSFUSION AND PHLEBOTOMY****Key Contacts:****Chemistry - Consultant Clinical Scientists**

Julia Forsyth  
Tel: 01246 512212 or 01332 789383  
Email: [Julia.Forsyth1@nhs.net](mailto:Julia.Forsyth1@nhs.net)

Dr John Monaghan  
Telephone 01246 512212 or 01332 789383  
e-mail: [john.monaghan@nhs.net](mailto:john.monaghan@nhs.net)

**Haematology - Consultant Haematologists (See below for how to contact the Haematology Consultants)**

Dr Emma Welch  
Bleep 360

Dr Peter Toth  
Bleep 460

Dr Jennifer Tam  
Bleep 361

Dr Katherine Lam  
Bleep 900

Dr Rowena Faulkner  
Bleep 100

Dr Hana Beshti  
Bleep 941

**Blood Sciences Service Manager**  
Maxine Hambidge  
Telephone: 01246 512242  
e-mail: [maxine.hambidge@nhs.net](mailto:maxine.hambidge@nhs.net)

**Blood Bank Manager**  
Carly Lattimore  
Telephone: 01246 513235  
e-mail: [carly-jane.lattimore@nhs.net](mailto:carly-jane.lattimore@nhs.net)

**Matron, Transfusion Specialist**  
Janice Smith  
Telephone: 01246 512232  
e-mail: [janicesmith5@nhs.net](mailto:janicesmith5@nhs.net)

**BLOOD SCIENCES****General Information**

Requests from healthcare professionals for blood science, investigations must be made on the electronic ICE requesting system or by using the paper Chesterfield Royal pathology request forms. The appropriate sample types are described within the ICE system or can be found in the test section at the end of this document. The ICE user guide can be accessed on the link below:

[https://intranet.chesterfieldroyal.nhs.uk/facts\\_figures\\_forums/divisions/planning/it/userguides/ice\\_user\\_guide\\_2017\\_updated](https://intranet.chesterfieldroyal.nhs.uk/facts_figures_forums/divisions/planning/it/userguides/ice_user_guide_2017_updated)

When a valid specimen and request form have been received it is implied that suitable consent between the requestor and patients has been taken. The pathology department will keep all personal patient information private and confidential. To find out more use the link below:

<https://www.chesterfieldroyal.nhs.uk/video/about/personal-info>

Should patients or staff have any concerns regarding the Pathology service, they should contact the local PALS department for more information use the link below:

<https://www.chesterfieldroyal.nhs.uk/services/assistance-complaints/index>

**Rejection of Specimens**

The laboratory reserves the right to reject specimens in the following circumstances:

- **Inappropriate labelling of the request form or absence of a request form:** please ensure that the request form complies with the Labelling of Pathology Specimens policy
- All request forms should have a minimum of 4 patient identifiers, test required, time and date of collection, relevant clinical information and identification/contact details of the requestor.
- **Inappropriate sample labelling:** samples not labelled with a minimum of 3 patient identifiers will NOT be processed. Exceptions will only be made for unrepeatable specimens.
- **Inappropriate sample type or insufficient sample for test requested.**
- **Requested test not considered appropriate for clinical investigation.**
- **Requested test not available.**
- **Leaked specimens:** specimens that are leaked to any extent that may compromise the quality of the results obtained or pose a significant risk to laboratory staff will NOT be processed unless the specimen is unrepeatable.

**Unknown Patients**

The ED policy for dealing with unknown patients should be followed.

[https://intranet.chesterfieldroyal.nhs.uk/policies/local/medicine/emergency-care/booking\\_in\\_and\\_dealing\\_with\\_unknown\\_patients](https://intranet.chesterfieldroyal.nhs.uk/policies/local/medicine/emergency-care/booking_in_and_dealing_with_unknown_patients)

**PLEASE REMEMBER:**

**Inadequate information on your request form makes it impossible to issue a report or contact the doctor in the case of unexpected results. All requests must include the patients surname, forename, DOB and a unique ID (NHS, Hospital or ED number).**

**Urgent Requests and Results**

If you require an urgent test result, please ensure that this is clearly indicated on the request form and during routine hours contact the laboratory by telephone so that staff can prioritise the sample. Samples from ED, HDU, ITU, SCBU will be automatically prioritised by the department.

A limited number of tests are available for emergency requests and are processed on an urgent basis. 90% of these requests are processed within 1 hour of receipt (1.5 hours for immunoassay tests e.g. bHCG) for the Emergency Department.

These tests include:

- Ammonia (please contact lab before collecting sample)
- Amylase
- bHCG
- Bicarbonate
- Bilirubin
- Calcium
- Carboxyhaemoglobin
- CK
- Crossmatch/Group & Save
- CSF Glucose/Protein
- D-dimer
- Digoxin
- ESR
- FBC
- Gentamicin
- Glucose
- INR
- Iron (overdose only)
- APTT
- Lactate
- Lithium
- Liver Function Test (LFT)
- Magnesium
- Malaria screen
- Osmolality
- Paracetamol
- Phosphate
- Salicylate
- Sickie screen
- Theophylline
- Troponin T
- Urate
- Urea and Electrolytes (U&E)
- Xanthochromia

Non-urgent results will be available to view on the ICE results system or paper report once the specimen testing has been completed. Estimated turnaround times for each sample type are given in the Test Table Section 16. Please ensure that you have checked ICE before making an enquiry to the laboratory. If it is necessary to contact the laboratory for a result, please ensure that you have all the relevant patient details, including the test and the date requested.

## **Results and Enquiries**

Telephone the direct line number shown:

- Blood Bank 01246 512241
- Chemical Pathology 01246 513440
- Coagulation 01246 513440
- Haematology 01246 513440
- Pathology Reception 01246 512256

If Consultant Haematologist advice is required please consider if the enquiry is urgent or non-urgent:

For **non-urgent advice**, please wait until **after 14:00** then contact the main hospital switchboard on 01246 277271 and ask for the Haematology Daytime Consultant. This request can also be made by G.P.s via the Consultant Connect service. **Non-urgent** queries can also be sent to the following email address: [CRHFT.haematology@nhs.net](mailto:CRHFT.haematology@nhs.net)

For **urgent advice**, contact switchboard and ask for the Daytime Haematology Consultant between 09:00 and 17:00 or the On-Call Haematology Consultant at all other times.

## **Opening Hours**

The Blood Sciences Department operates a 24 hour 7 days a week service. The opening hours for routine work are:

Monday to Friday 8:30am - 8:00pm

Saturdays, Sundays and Public Holidays -  
9:00am - 1:00pm

## **Pathology Reception**

Monday to Friday 8:30am - 5:00pm  
Telephone 01246 512256

**\* Also see individual department details**

## **Out of Hours**

Outside these normal working hours individual departments can be contacted using the appropriate bleep or via the hospital switchboard.

- Chemical Pathology 364
- Haematology/Blood Bank 365

**\* A shift system is in operation for clinical emergencies at all other times.**

**\* Also see individual department details**

### **Accessing Clinical Advice**

24 hour clinical advice is provided by the Clinical Scientists who can be accessed as follows:

For clinical advice/enquiries between:

Monday to Friday 09:00am - 05:00pm

- Haematology: Call switchboard and ask to speak to the on call Haematology consultant.
- Biochemistry direct contact number – 01246 512212 or 01332 789383

Outside these hours, including weekends the Clinical Scientist can be reached via the main Hospital switchboard on – 01246 277271.

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**It is imperative that patient identification is checked and confirmed as correct at each stage of the transfusion process. All patients having a blood sample taken must be positively identified.**

These minimum labelling requirements apply to both **adult** and **paediatric/neonatal** blood samples.

### **Patient identification**

All patients must, whenever possible, be asked to **state** their full name (first and last name) (“What is your full name?” **NOT** “Are you John Smith?”) and date of birth. This must match exactly with the information on the patient’s identification band (in-patients) and the blood request form. For paediatric transfusions, it is acceptable to ask the child to positively identify themselves if the child is deemed able to respond competently. For patients who are unable to identify themselves, for example children who are unable to respond competently, unconscious or confused patients or where there is a language barrier, verification of the patient’s identification must be obtained from a parent or carer (if present at the bedside) and checked against the patient’s identification band.

If there is any discrepancy between these identification processes then the sample must not be taken until further steps have been taken to verify the true identity of the patient.

The collection of the blood sample from the patient and the subsequent labelling of the sample tubes must be performed as one continuous, uninterrupted event at the patient’s (bed)side, involving one patient and one member of staff only.

### **Request Forms**

Blood Bank request forms are available in clinical areas or requests may be made by ICE (not available for GP’s)

Antenatal Serology and Kleihauer request forms may be ordered via Pathology reception.

Anti-D Prophylaxis requests are made via Blood Bank supplied forms; contact Blood Bank directly for any queries.

Private Blood Groups – Please contact the laboratory directly.

GP requests for blood groups or other Blood Bank tests please contact the laboratory.

### **ICE request forms**

The patient demographics and requested test fields are filled out automatically however the ‘Patient ID’d’ box **MUST** be completed in full at the time of sampling.

### **Handwritten request forms**

The patient demographics **MUST** be completed in full along with the ‘Requested by’ section and the ‘patient ID’d’ box **MUST** be completed in full.

**Sample**

The following identifiers must be **handwritten** onto the sample tube label. Addressograph labels are not acceptable.

1. Forename
2. Surname
3. Date of Birth
4. Hospital Number / NHS Number
5. Signature of the person taking the sample.
6. Date and time sample taken from patient

These minimum labelling requirements apply to both adult and paediatric/neonatal blood samples:

- Sample tubes must be hand written at the time of sampling by the sampler before leaving the bedside
- Pre-printed labels (addressograph labels) must not be used to label pre-transfusion blood sample tubes for compatibility testing.
- Hand written sample labels must be completed legibly and accurately.

**\*Trust Labelling Policy can be accessed using the link below:**

[https://intranet.chesterfieldroyal.nhs.uk/policies/global/clinical\\_practices/labelling\\_of\\_pathology\\_specimens\\_request\\_forms](https://intranet.chesterfieldroyal.nhs.uk/policies/global/clinical_practices/labelling_of_pathology_specimens_request_forms)

**Private Blood Groups**

For GP patients requesting private blood groups, contact the Blood Bank laboratory on 01246 512241.

The patient is required to have the samples taken by hospital Phlebotomy and must contact the outpatients service 01246 512249 to arrange for the test.

A report will be supplied to the GP, not directly to the patient.

**12.2 Blood Sciences – Haematology and Coagulation****Routine Tests**

The following tests are performed by the Haematology and Coagulation Department on blood taken into BD Vacutainer EDTA (purple top) or citrate (blue top) anticoagulated samples (see Section 16 for tube type by test):

- FBC
- Nucleated RBC
- Peripheral Blood Smear Morphology
- Reticulocyte
- ESR
- Glandular Fever
- Abnormal Haemoglobin Screening
- Sickle Cell Screening
- PT
- APTT
- Clauss Fibrinogen
- INR
- Heparin Ratio



The correct pre- analytical storage of pathology specimens is essential for the production of valid test results. Please see **Section 16 – Tests** for specimen requirements.

Specimens should be transported to the laboratory as soon as possible, please refer to **Section 16 – Tests** for specific advice per test.

General Advice: specimens which have to be stored at room temperature, should be stored away from direct light or heat source e.g. radiator and extremes of temperature. Specimens that have to be refrigerated should be stored between 4°C and 8°C whilst awaiting collection.

If further information is required and not available in this handbook please contact the relevant department for advice or email.

## **Full Blood Count**

Please ensure the sample is mixed by inversion, clotted samples are not suitable for analysis and will be rejected. Please note only EDTA 4ml purple top tubes and paediatric sized tubes are suitable for analysis. EDTA 7ml pink top tubes cannot be used.

Aged specimens (>24 hours old) produce poor results, particularly affecting MCV and WBC differential and will not be processed.

Platelet clumping in EDTA anticoagulant can occur and will produce an inaccurate platelet result, in which case the platelet count will not be reported. In such cases a comment will be added to the FBC report to suggest a citrate (blue top) sample to be sent for FBC analysis as well as an EDTA (purple) top sample. Using a different anticoagulant can stop the platelet clumping, but only the platelet parameter can be reported therefore it is essential that both purple and blue top samples are sent.

Included parameters are Hb, RBC, WBC, Differential, Platelet, Hct, MCV, MCH and MCHC. Other tests that can be included on the same sample if the volume allows are:

- **Blood Film/ Manual WBC differential.** This can be requested by the Clinician; however analyser flagging will prompt blood film review when necessary in most instances.
- **Malarial Parasites.** Please note Microbiology perform the diagnostic test, however haematology perform a preliminary blood film review.
- **Glandular Fever**
- **Reticulocyte count**
- **Sickle Cell Screen.** Screen results are confirmed by a referral laboratory. Please note family history may be helpful if available.
- **ESR.** Minimum of 2 ml sample needed, paediatric specimen not suitable for analysis. Please state if Temporal Arteritis (Giant Cell Arteritis) is suspected.

## **Coagulation Tests**

Please ensure the sample is mixed by inversion. Sample bottles **MUST** be filled to the volume indicator line and can be no older than 6 hours from draw to testing. Note: blood must be obtained by clean venepuncture without clotting or tissue-juice contamination. Accurate volume is critical otherwise sample will not be processed. Do not under fill or overfill.

The coagulation screen includes the following parameters:

- Prothrombin Time (PT)
- Activated Partial Thromboplastin Time (APTT)
- Clauss Fibrinogen

Other coagulation tests include:

- INR – the International Normalised Ratio is a standardised method of reporting the effects of the oral anticoagulant Warfarin
- APTT Ratio – used to monitor patients on unfractionated heparin
- D-Dimer – a fibrin degradation product, this test is requested when DVT or PE (venous thromboembolism) are suspected, as well as being useful in the diagnosis of disseminated intravascular coagulation (DIC). Note: if the patient is on anticoagulation, this can create a false negative result.

All other coagulation tests, such as Thrombophilia testing and Factor Assays are referred to the Royal Hallamshire Hospital (RHH) in Sheffield. Prior to being sent all special coagulation tests are scrutinised by a Haematology Consultant, who will decide if the test has been appropriately requested. Only tests approved by the Haematology Consultant are sent for testing. The Haematology Consultant may wish to discuss the request with the requesting clinician to help inform this decision.

### **12.3 Blood Sciences – Biochemistry**

The Biochemistry section of the Blood Sciences department provides numerous biochemical tests for various biological samples including blood, urine, faeces, and cerebral spinal fluid.

Common biochemical investigations include:

- Urea and Electrolytes
- Liver Function Tests
- Troponin T
- Lipid Profile
- Tumour Markers
- Therapeutic Drug Monitoring
- Endocrine Investigations

In some cases it is possible to add tests onto samples that have already been sent to the laboratory, although whether a test can be added on will depend on sample stability for the required test, tube type and time of sample collection.

**12.4 PHLEBOTOMY SERVICE****Phlebotomy Team Leader**

Anne Robinson-Cornall

Telephone: 01246 513175

e-mail: [anne.robinson-cornall@nhs.net](mailto:anne.robinson-cornall@nhs.net)

For CRHFT outpatient clinic patients the phlebotomy service in outpatient Suite Nine operates an appointment system.

**Chesterfield Royal Hospital - Out-patients Suite Nine**

Monday to Thursday 8:30am - 4:50pm

Friday 8:30am - 4:20pm

Telephone: 01246 512249

**Inpatient Services**

An inpatient service is operated for routine samples on all wards. Requests must be ready for 9:00 am. Phlebotomists will take urgent samples, but transport of the samples to the laboratory remains the responsibility of the doctor.

**\*Late requests may be taken if the phlebotomist is still on the ward - up to 10:00 am only.**

### **13 HISTOPATHOLOGY AND CYTOLOGY**

Histopathology and non-gyane cytology services at Chesterfield Royal Hospital are provided by EASY Path. Please use the link below to access the EASY Path user guide.

[EASY Path user guide](#)

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**13.2 CERVICAL CYTOLOGY**

There are no facilities at Chesterfield Royal Hospital to process and screen LBC samples. As of the October 2010 Cytology screening services for the region are provided by Derby City Hospital.

All the LBC samples taken from outpatient clinics and GP surgery's within the catchment area are received by Histology Reception and couriered to Derby City Hospital for processing and screening.

The relevant reports generated are returned to Histology Reception where they are distributed to the appropriate clinic or surgery.

**Derby City Hospital Contact Numbers**

Derby City Hospital Cytology Enquires: 01332 789307

Derby City Hospital Cytology Department: 01332 788233

**Specimen Containers**

Cervical cytology LBC specimens should be sent in an appropriate ThinPrep® vials.

Prefilled ThinPrep® vials containing 50ml PreservCyt solution are available from Histology Reception.

All samples must be accompanied by a completed request form. Vials must be placed into the clear plastic envelope attached to the request form.

**Submission of specimens****Hospital Sources**

All specimens for Hospital clinics should be delivered to Histology Reception.

**GP and Community Services**

From General Practice, Community and Company Health sources LBC samples should be sent by Pathology.

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**14 MICROBIOLOGY****Introduction**

The Medical Microbiology department deals with the investigation of micro-organisms including bacteria, fungi and parasites which are capable of causing disease in humans. The department offers a full analytical service with a comprehensive repertoire of diagnostic tests, including bacterial isolation, antimicrobial susceptibility testing, antibody/ antigen detection and Chlamydia screening. The laboratory also provides an andrology service for fertility investigations.

The laboratory is committed to providing quality, timely results that are easy to interpret. The laboratory welcomes feedback from all users. If you feel you have any issues to discuss regarding the service provided, please do not hesitate to contact the laboratory.

**Consultant Microbiologists**

Dr Naomi Thompson, MBChB, BSc (Hons) FRCPath

Telephone: 01246 512269

e-mail: [naomithompson@nhs.net](mailto:naomithompson@nhs.net)

Dr Faiha Kamal Eltayeb, MBBS, MRCP, MSc, FRCPath

Telephone: 01246 513025

e-mail: [f.eltayeb@nhs.net](mailto:f.eltayeb@nhs.net)

Dr Sawsan Awad MD, FRCPath, MSc, PhD

Telephone: 01246 512259

e-mail: [sawsan.awad@nhs.net](mailto:sawsan.awad@nhs.net)

**Technical Specialist Manager**

Michael Collins

Telephone: 01246 512271

e-mail: [michaelcollins3@nhs.net](mailto:michaelcollins3@nhs.net)

**Contacting the laboratory**

The department opening hours for routine testing are:

Monday to Friday 8.30am to 8.00 pm

Saturday/Sunday 9.00am to 5.00 pm

Public / holidays 9.00am to 1.00 pm

An "On-Call" service is available outside of these hours to provide 24 hour cover. This service is designed for the provision of urgent investigations that will have a direct effect on the immediate clinical management of the patient.

**General Enquiries:**

**Telephone:** 01246 512270

**On Call service**

**(Via Hospital Switchboard)** 01246 277271

**Bleep** 366

### **Accessing Clinical Advice**

24 hour clinical advice is provided by the Microbiology Consultants, this can be accessed as follows:

For clinical advice/ enquiries between 9.00am and 5.00pm Monday to Friday

1. Use the main laboratory number and ask to speak to a consultant
2. Direct contact numbers **01246 512268/9**
3. Bleep **512**

Outside these hours, including weekends the consultant can be reached via the main Hospital switchboard on **01246 277271**.

### **General Information**

Specimens for microbiological investigation should, wherever possible, be taken prior to the administration of antimicrobial agents. It is important to note on the request form if antibiotics have already been administered. Similarly, it is useful if antibiotics have been prescribed to note this on the request form. The laboratory can then ensure that these agents are tested against the bacteria isolated.

The quantity of material should always be adequate for the complete examination. Always send pus, rather than a swab of the pus, volume permitting. Any critical/ minimum volumes will be stated for each investigation type. The number and frequency of specimens taken is dependant largely on the clinical condition being investigated. Please contact the laboratory if additional advice is required.

Care must be taken to avoid contamination of the specimen by micro-organisms normally found on the skin and mucous membranes. The specimen selected should be representative of the disease process, i.e. wound swabs should be taken from the deepest part of the wound, rather than superficially. If there are any doubts regarding specimen suitability, please contact the laboratory to discuss. All guidance given in this guide should be supplemented with local guidelines and health and safety procedures.

Please ensure that adequate clinical information is given on the request form. This is essential to the laboratory, as clinical information may dictate the need for additional examinations and may determine how the results obtained are interpreted. It is also important to ensure that the site of the sample is clearly indicated and that the collection time and date is noted on the request.

Ensure that the appropriate CE marked, leak proof container is used to transport the specimen. The container should always be placed inside a sealed sample bag, with the request form either attached to the outside of the bag or placed in the separate compartment to avoid contamination. Samples should be transported to the laboratory as soon as possible. If transport is delayed for a significant length of time, samples should be refrigerated.

### **UKAS Accreditation**

The laboratory undergoes a rigorous accreditation inspection schedule as part of our quality commitment. Whilst the vast majority of our test repertoire is UKAS accredited, there may be tests that have yet to be assessed. Please visit the UKAS web site for a comprehensive, up to date list of our accredited services.

Please note: as previously communicated to our users our Andrology service is not an accredited process.



**Rejection of Specimens**

The laboratory reserves the right to reject specimens in the following circumstances:

- **Inappropriate labelling of the request form or absence of a request form:** please ensure that the request form complies with the Hospital Labelling Policy. All request forms should have a minimum of 4 patient identifiers, sample site, test required, time and date of collection, relevant clinical information and identification of the requestor. Where possible, the laboratory will attempt to contact the requestor for missing information. However, due to the number of specimens received, this is not always possible.
- **Inappropriate sample labelling:** samples not labelled with a minimum of 3 patient identifiers will NOT be processed. Exceptions will only be made for unrepeatable specimens.
- **Inappropriate sample type for test requested.**
- **Inappropriate specimen container used:** any containers that may compromise the quality of the specimen or pose a risk to the laboratory staff i.e. "push off" lids, will not be accepted. Ensure that tissues for microbiological investigations are sent in containers that do NOT contain formalin. Ensure that appropriate transport medium is used for swabs taken.
- **Leaked specimens:** specimens that are leaked to any extent that may compromise the quality of the results obtained or pose a significant risk to laboratory staff will NOT be processed unless the specimen is unrepeatable.

**Sample Collection Information**

The following section provides pertinent information for users with regard to patient preparation, minimum volumes and containers to be used. This covers the majority of routine specimens received by the laboratory, but is not exhaustive. Additional information on Microbiology tests and turnaround times can be found in the Test Table at the end of this document. Information regarding blood tubes and serological testing can also be found in this table. Further advice and information can be obtained by contacting the laboratory.

**General Swab, fluids and Tissues****Sample container:**

- Blue top Amies swab unless stated.

**Ear:**

- Swab any pus or exudates. Scrapings of material from ear may be sent for fungal investigation. Use 60ml sample pot or Dermapak for this.

**Eye:**

- Any available pus should be sampled as well as the lesion of interest. Green viral swabs should be used for viral investigation. Corneal scrapes should be performed under the direction of the Ophthalmology Dept. Culture plates etc provided by laboratory on request.

**Mouth:**

- Ideally taken in the morning under fasting conditions, prior to brushing teeth or using mouth rinse.

**Nose:**

- Blue top swabs used for general bacterial culture.
- 60ml sterile pots should be used for washouts or secretions.
- Thin wire pernasal swabs should be used for Pertussis investigation or Nasopharyngeal secretions collected via a suction catheter.
- Culture for pertussis is only pertinent for 3 weeks post onset of symptoms. A blood test is required after this period.
- If PCR for pertussis is required the pernasal swab should be placed in a sterile container without transport medium as this can be inhibitory to the test.

**Throat:**

- Blue top swabs used for bacterial culture.
- Green tops swabs used for viral culture.
- 60 ml sterile pots should be used for pus or aspirates.

**Wound Swabs****Superficial, none surgical wounds:**

- Take a swab from a representative part of the lesion
- Remove debris from ulcers and clean with saline

**Deep seated wound infections:**

- Usually collected by medical practitioner.
- If pus present, send in 60 ml pot, ideal minimum volume 1ml or soak swab in pus if unable to collect.
- Avoid superficial debris.
- Take sample from deepest part of the wound.

**Tissues and biopsies:**

Ideally sufficient material for number of investigations required.

Small specimens may be placed in a small amount of sterile water to prevent desiccation. Send sample in 60ml pot **WITHOUT FORMALIN**

**Investigation of line infections:****Cannulae:**

- Disinfect area.
- Remove cannula using aseptic technique.
- Cut off approx 4cm of the tip using sterile scissors.
- Place in sterile pot.

**Swabs:**

- Sample inflamed area around catheter insertion site.

**Blood cultures:**

- take at least 2 sets of blood cultures. One of which should be from a peripheral line.

**N.B. Cannulae should only be sent where there is evidence of infection.**

**Contact Consultant for further advice.**

**CSF:**

- Collected under medical supervision. See local guidelines.
- Collect sequentially into three sterile 60 ml pots and number pots sequentially.
- Use fluoride tube for glucose estimation. Always collect the sample for glucose last to avoid contamination of specimens for culture.
- Ideally 1ml minimum fluid collected for each container.

**Always inform the laboratory that the specimen is coming.**

**N.B. Microscopy cannot be performed on specimens containing blood clots as this invalidates the result.**

**N.B. Examination for glucose and xanthochromia are performed by the Blood Sciences department.**

**Other Fluids from normally sterile sites:**

- Ideally 1ml minimum volume should be collected into a sterile 60ml pot **WITHOUT** formalin.

**Faecal Investigations****Sample container:**

- Sterile 60ml pot should be used for collection.

**Sample Collection:**

- Ensure that if you need to urinate, you do this prior to collection of the specimen.
- Position a potty/ clean plastic container or newspaper in the top of the toilet.
- Ensure the specimen does not come in to contact with the inside of the toilet bowl or any cleaning products as this may affect the quality of the results.
- Transfer the specimen into the sterile container.
- Wash hands thoroughly with soap and water.
- Label the specimen with your full name, date of birth, hospital or nhs number and date and time of collection.
- Transport to your medical practitioner or to the Pathology Department at the Hospital as soon as possible.
- Samples may be refrigerated at 4°C if there is a delay. Delays of >24 hours may compromise the quality of the results obtained, even if the specimen has been refrigerated.

**Additional Information:**

- Collect the specimen as soon as possible after the onset of symptoms.
- Ensure that all relevant clinical information is given as this will help to determine the range of tests performed.
- Samples for **Clostridium difficile** should be liquid or unformed.
- Minimal sample volume: approximately 1-2ml/ g of stool.

**Rotavirus:**

- Tests will generally only be performed on patients <5 years of age.

**Helicobacter pylori:**

- Tests should be clearly labelled as such and it should be noted that false negative results may be obtained where a patient has been prescribed Proton Pump Inhibitors within 2 weeks of the investigation. False negative results may also occur where antibiotics have been prescribed within 4 weeks of the investigation.

**Enterobius:**

- For investigation, use moistened cotton swab. Swab the anal area first thing in the morning prior to bathing.
- For suspected parasitic infection it may be necessary to send 3 stool samples taken on separate days over a maximum of no more than a 10 day period. Give details of any travel and date of return.
- "Hot stools" may be required for some ova/ cysts investigation. Contact the laboratory to discuss and transport the specimen to the laboratory within 1 hour.

**Schistosoma:**

- Urine specimens should be sent for investigation.
- Samples should be taken between 10am and 2pm.
- Minimum volume of 10ml required.

**Urinary Tract Infections****Sample Container:**

- 25ml Red top Boric acid container or 70ml yellow topped container for paediatrics and specimens <20ml.
- Please see further information on the appropriate use of Boric acid containers at the end of this section.

**Specimen Collection****Mid Stream Urine:**

- Clean the urethral area with soap and water.
- Female patients should hold the labia apart/ Male patients should retract the foreskin.
- Collect the specimen in to the sterile container provided once the initial flow of the urine has been voided (1-2 seconds).
- If using a collection pot containing Boric acid, ensure that you fill the pot to the line indicated to avoid compromising the quality of the result obtained.
- Wash hands thoroughly.
- Label the container with your full name, date of birth, hospital or nhs number if known and the date and time that the specimen was collected.
- Place the sample in the transport bag provided with the request form attached and return to your medical practitioner as soon as possible.
- Urine samples without Boric acid must be refrigerated if there is an unavoidable delay.

**Bag Urines:**

These are commonly collected in infants and young children. The nature of collection may result in artificially elevated cell counts. Negative cultures are useful, but positives should be confirmed by Supra pubic aspirates.

- Clean the genital area thoroughly with soap and water, dry with a sterile towel or allow to air dry.
- Attach the collection bag.
- Do NOT replace nappy.
- Once the infant has voided, transfer the urine into a sterile sample pot immediately.
- Discard the collection bag.
- Wash hands thoroughly.
- Label the sample pot with the infants name, date of birth, hospital or nhs number if known and the date and time that the specimen was collected.
- Place the specimen in the transport bag provided and attach the request form.
- Return the sample to your medical practitioner as soon as possible.
- Urine samples without Boric acid must be refrigerated if there is an unavoidable delay.

**Supra-pubic aspirate:**

- These are classed as the “Gold Standard” specimen, usually reserved for clarification of equivocal results in infants and small children.
- SPAs are only performed under medical supervision.
- It is preferable to use ultrasound guidance to ensure the presence of urine in the bladder prior to this procedure.

**Catheter specimens:**

- Refer to local guidance, depending on catheter type.
- Catheter specimens should only be sent if the patient is clinically unwell.
- Dip testing is not appropriate for catheter specimens.

**Additional Information:**

- Minimum volume: 1ml. (Culture only)
- Minimum volume required for Flow Cytometry: 4-8ml.
- Minimum volume required for the use of Boric acid containers: 20ml.

Urine specimens with any evidence of visible debris, pus or frank haematuria cannot be analysed by flow cytometry and will only be cultured. Urine samples that are identified as “High Risk” will also only be cultured.

Ensure that all relevant clinical information, including the type of urine specimen, is clearly stated as this is essential for selection of tests, interpretation of results and may determine the antimicrobials tested. Antibiotic sensitivities will only be released when sufficient clinical information is given, i.e. two or more clinically relevant symptoms, or where the patient is considered to belong to an “at Risk” group.

Ensure that where multiple urines are sent for one patient, they are all labelled and dated appropriately, including sites i.e. Right and Left nephrostomies.

Cell counts are reported with the appropriate reference ranges for interpretation.

**Guide to the interpretation of urine microscopy performed using the automated urine analyser UF1000i.**

The reference ranges for the automated analyser are chosen to balance the level of sensitivity and specificity required according to the local assessment of clinical need. After undertaking a full evaluation of the analyser for the local patient demographic the following reference ranges for cellular components have been implemented:

Results above the upper limit are highlighted in red with an asterix.

Example as below:

**Urine Flow Cytometry:**

White Blood Cells	54/ul	*	(0-40)
Red Blood Cells	12/ul		(0-120)
Epithelial Cells	60/ul	*	(0-55)
Urine Total Casts	3.3/ul	*	(0-1.0)
Cellular Casts	1.0/ul		(0-1.5)

Report comment: Cellular components in red fall above the documented reference range. Urine microscopy results must be interpreted taking into consideration patient age, sex and any predisposing conditions.

Current local algorithms for the investigation of patients with persistent non-macroscopic haematuria are based on positive dipstick analysis and not flow cytometry results.

### **Epithelial cells**

A high number of epithelial cells (>55) indicates contamination of the sample with cells from the distal urethra and / or perineum and are frequently associated with bacterial contamination. Culture results must be interpreted with caution and take into account any predisposing conditions and clinical presentation.


Transport specimens to the laboratory as soon as possible, this should be within two hours of production. Delays and storage at room temperature allow bacteria to multiply, generating results that do not accurately reflect the clinical picture. In an attempt to overcome the issues surrounding specimen transport, the laboratory is introducing the use of Boric acid containers for General Practice and Community based Hospitals. Specimens in containers with Boric acid should be transported to the laboratory within a maximum of 96 hours after collection. Additional User information is available for the appropriate use of Boric acid containers is available on the next page.

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## New Boric Acid Containers For Urine Culture and Microscopy

The specimen containers used for urine culture and microscopy are changing for all adult patients. The new specimen containers include a boric acid preservative. The decision to move to boric acid containers is based on improving the quality of the test results. The presence of boric acid helps to maintain the microbiological quality of the specimen and prevents overgrowth of organisms during transport to the laboratory. Boric acid containers are now used commonly in most microbiology laboratories in the UK. This will not affect the test results in any other way.

The new containers are the standard 30ml universal size, with a red lid and a small amount of white boric acid powder in the bottom. Disposable sample collection cups will also be provided. These should be used to collect the urine and then the appropriate amount of specimen (20ml) should be poured into the red top container for processing. If the sample is insufficient the boric acid will compromise the quality of the result and a 70ml yellow topped pot should be used instead.



**The new boric acid containers will be supplied for routine urine culture and sensitivity only.**

They should not be used for any other type of urine test.

It is essential that the container is filled to the correct volume as indicated by the arrow on the side of the universal.

If it is not possible to collect 20ml of urine use a yellow topped sterile 70ml universal container (illustrated below)

**DO NOT** remove the boric acid powder and use as a sterile universal container as this may affect the test results.

**Plain Universal Containers (yellow topped)  
Should continue to be used for:**

- Urines for pregnancy testing
- Urines for Chlamydia / Gonorrhoea PCR testing
- Urines for Legionella / pneumococcal antigen testing
- Urines for microscopy and culture (if boric acid container is unavailable or volume is <20ml)
- Paediatric Urines
- Sterile fluids, pus, tissue specimens for culture
- Other pathology non microbiology tests where appropriate  
(Please refer to user guide for recommended containers)

Sample collection guidelines can be found in the Pathology user guide and relevant patient information leaflet available via the Trust website.

Supply: The new red topped boric acid containers and collection cups will be available to order from Pathology reception. Please ensure you make allowances for the new containers when pre-ordering the plain yellow topped universals. All supplies should be ordered using the correct order forms. These should be sent to Pathology Reception through the van collection service if possible. For information relating to the Pathology Transport, Portering and Reception Services, please contact the Assistant Performance Manager on 01246 512275.

**Blood Cultures****Sample containers:**

- Adult blood culture sets, Paediatric blood cultures.

**Additional Information:**

- Blood cultures are loaded onto a continuous monitoring analyser 24 hours a day.
- Always send blood cultures to the laboratory immediately.
  
- Adult blood culture bottles are plastic and can be transported internally by the air tube system.
- Paediatric blood culture bottles are glass, but carrier systems are available to allow transport via the air tube system. **DO NOT** send glass bottles through the air tube without a carrier.

**Minimising the time between collection and incubation on the analyser reduces the time for identification of positive results. This is hugely beneficial in terms of both patient management and outcome.**

**Collection of specimens:**

- follow DOH guidelines.

Generally 2 sets of blood cultures are recommended. Samples should be taken as soon as possible after a spike in temperature, prior to antibiotic therapy where possible or just before administration of next dose.

**Infective Endocarditis:**

- Timing of samples is not so critical for patients with a continuous bacteraemia.
- A minimum of 3 sets of blood cultures should be taken at intervals over a 24 hour period.

**Minimum Sample Volume:**

- 5-10ml of blood to be added to each adult bottle.
- Paediatrics: bottles designed for a lower volume of blood. No more than 1% of patients total blood volume.

**Please note on the request form any recent travel history which is may be indicative of Brucellosis or Enteric fever.**

**MRSA Screening****Sample containers:**

- Blue top swabs/ 60ml pots for fluids/urines.

**Additional Information:**

- Refer to local Infection Control guidelines.
- Generally Nose and Groin swabs are taken for routine screening, with the addition of any relevant wound sites or catheter urines.
- IC team will advise.



**CRE Screening****Sample containers:**

- Blue top swabs/ 60ml pots for fluids/urines/faeces.

**Additional Information:**

- Refer to local Infection Control guidelines.
- Generally a rectal swab is taken for routine screening; additional sites may be tested under the direction of Infection Control and the supervising clinician.
- Ensure that the rectal swab is visibly soiled with faeces when taken. Any samples not visibly soiled will be rejected by the laboratory.

**Respiratory Investigations****Specimen containers:**

- 60ml pots for most respiratory samples/ 30ml Universal for Naso-pharyngeal aspirates.

**Additional Information:****Sputum Samples**

- Minimum volume 1ml of sputum.
- Material should be obtained from the lowest part of the respiratory tract, expectorated by deep coughing. Physiotherapy can assist in this process.
- Early morning collections are preferable as these provide the greatest yield of organisms.
- Other respiratory samples such as Bronchial lavage or aspirate will be taken under medical direction and will follow local guidelines.
- Please ensure that all samples are labelled appropriately and that particular consideration is given to the possibility of infection with any Hazard group 3 organisms, including clinical information and recent travel history.
- Saliva and pernasal secretions are not suitable.

**Samples for Mycobacterial Investigation (TB)**

Ensure that all samples are placed in leak proof containers and are labelled appropriately as specimens that may contain Hazard Group 3 organisms. Ensure you follow local policy, including the relevant health and safety and COSHH guidelines.

Various samples may be sent for TB investigation.

Ideally 10ml of fluid, 5ml of sputum or the entire specimen of urine should be collected. (3 250ml pots will be provided for urine investigation.)

Where sputum is required, 3 samples should be sent, collected at least 8-24 hours apart. Early morning samples are preferable as they provide the biggest yield.

Where urine samples are required, 3 full early morning specimens should be sent, taken on consecutive days and kept refrigerated prior to transport to the laboratory.

Ensure entire specimen is collected and samples are labelled with date of collection.

If the patient is catheterised, samples should be collected by emptying the bag at 12pm, then collecting the volume passed between this time and approx 7am. 3 specimens are still required.

A patient information leaflet is available on the hospital web site.

**Please note: 250ml specimen pots should not be transported via the air tube system. Any leaked samples will NOT be processed.**

**Respiratory Syncytial Virus (RSV):**

- Preferred specimen is Naso-pharyngeal Aspirate.
- Ensure that any obvious mucus is removed.
- Please send sample to the laboratory before 3pm where possible.

**Influenza virus:**

- Green top Viral swab should be used for this investigation.

**In-Patients:**

- Nose and throat swabs to be taken as per local guidelines.
- Contact Infection Control or Consultant Microbiologist for additional information.

**Community based patients:**

- Contact Public Health England for further guidance.

**Fungal Investigation****Sample Container:**

- 60ml sterile pot or Dermapak collection kit should be used.

**Minimum Sample:**

- Sufficient specimen to cover a 5p piece.
- If there is insufficient material the sample will only be cultured.
- A repeat sample will be needed if microscopy is still required.

**Additional Information****Skin:**

- swab area with 70% alcohol.
- Scrape lesions with a sterile blunt scalpel blade.

**Nail:**

- Take material from areas of dystrophy or discolouration.
- Clip nails or scrape.
- If associated skin involvement, take skin scraping and send separately.

**Hair:**

- Should include hair stumps or skin scales. Cut hairs are not suitable.
- Samples should be stored at ambient temperature and kept dry in the event of a transport delay.

**Please note: Mycology culture results take a minimum of three weeks.**

**Genital Infections**

It is essential that all relevant clinical information is given as this will determine the range of examinations performed.

**Gonococcal culture:**

Specimens for should be transported to the laboratory without delay and kept at ambient temperature rather than refrigerated.

Use a speculum when taking genital tract swabs to avoid vulval contamination.

**Trichomonas investigation:**

- For ensure that the posterior fornix is swabbed.
- For suspected pelvic infections the cervical OS should be swabbed

**Please note:**

The preferred specimen for Gonococcal culture is a urethral swab for men and endo-cervical/ urethral for women. Other swabs may be processed, but do NOT exclude infection.

**Sample Containers:**

- Blue top swab for bacterial culture
- Orange top ENT swab for male urethral bacterial culture
- 60ml pot for fluids/IUCDs/pus
- Green top swab for viral culture
- Chlamydia collection pack

**Additional Information****High Vaginal swab:**

- Roll swab firmly over surface of vaginal vault.

**Endo-cervical swab:**

- Rotate swab inside the endo-cervix.

**Self taken HVS:**

- Wash hands using soap and water prior to collection.
- Label the container with your full name, date of birth, Hospital number or nhs number if known and the date and time the swab is being taken.
- Peel open the top of the swab packaging and remove the applicator.
- Do not touch the cotton tip of the applicator swab or lay it down as this may contaminate it.
- Hold the swab by the cap end with the tip pointing towards you.
- With your other hand, gently spread the skin outside the vagina.
- Insert the tip of the swab into the vaginal opening, pointing the tip towards your lower back and relax your muscles.
- Gently slide the swab no more than two inches into the vagina. If the slide does not slide easily, gently rotate as you push. **If it is still difficult, do not attempt to continue.**
- Make sure the swab touched the walls of the vagina so that moisture is absorbed by the swab. Rotate the swab for 10-15 seconds.
- Withdraw the swab without touching the outer skin.
- Remove the cap from the temporary cap from the swab tube in the packaging and insert the swab into the protective tube. Ensure the cap clicks firmly in place.
- Place the sealed swab into the transport bag with the request form.
- Wash hands with soap and water.
- Return the sample and request form to your medical practitioner as soon as possible.

**Urethral swab:**

- Avoid contamination from vulva or foreskin.
- Thinner, orange topped swabs are available for male patients.
- Patients should not have passed urine for at least 1 hour.
- For males with no apparent discharge attempts should be made to “milk” exudates from the penis.
- Pass the swab gently through the urethral meatus and rotate.

**IUCDs:**

- ONLY send when infection is suspected.
- Send the entire device in a sterile pot.

**Rectal swabs for gonorrhoeal investigation:**

- Take via a proctoscope.

**Throat swabs for gonorrhoeal investigation:**

- Swab tonsillar and/or posterior pharynx, avoiding the tongue and uvula.

**Chlamydia/GC NAAT Testing****Male Patients:**

- Preferred specimen is first void urine, but urethral swabs may also be tested.
- 10ml of urine should be collected into a universal and transferred by pipette into a NAATS tube for testing. (>10ml may lead to dilution of sample and reduced sensitivity.)

**Female Patients:**

- Preferred specimen is a vaginal swab, taken either by the clinician or self taken depending on the preference of the patient.
- Self taken specimens are only suitable for patients who do not require a pelvic examination as part of their clinical evaluation. Instruction on how to take this specimen will be given by your health care provider.

**Semen Analysis**

- Patient Information Leaflets are available on the Hospital website and Intranet.

**Fertility Investigations**

Due to the nature of these investigations, patients are required to make an appointment with the laboratory. Appointments can be made by ringing the main laboratory number, and are generally made for either a Tuesday or Wednesday morning, although exceptions may be made in extenuating circumstances. Specimens received without an appointment will NOT be processed. The patient will require a 60ml CE marked sterile pot and a request form from the requestor.

Samples should be produced at home; there are NO facilities on site. The specimen should be produced by masturbation only and it is recommended that the patient abstains from sexual intercourse for 3 days prior to the test.

The entire specimen should be collected directly into the container; the use of condoms is inadvisable as they tend to have a spermicidal effect. The specimen should then be brought to Pathology Reception (Pink corridor) between 08.30 and 09.30 on the morning of the appointment, within one hour of production. It is important to keep the specimen warm in transit, i.e. in an inside pocket, particularly in cold weather conditions.

Ensure that the sample is correctly labelled. It is also very important to note the time of production either on the sample pot or the request form. The specimen can then be given to reception staff. Results will be sent back to the requester within a 3 week turnaround period, with qualifying reference ranges where appropriate.

**Post-vasectomy Checks**

All paperwork and specimen containers should be provided by the clinician. Current British Andrology Association guidelines suggest that semen samples should be submitted for examination 16 weeks after the procedure, after a minimum of 24 ejaculates.

Specimens are accepted Monday to Friday 9.00am – 4.00pm. No appointment is necessary for these investigations.

**7 Month Post Vasectomy checks**

If Spermatozoa are still present in initial investigations, it may be necessary for the patient to have a more in depth analysis. These are usually done 7 months after the procedure.

Appointments must be made for these investigations by contacting the laboratory. These samples are tested on Monday mornings.

Sample collection and transport details are the same as those for fertility investigations.

Providing a timed specimen enables the laboratory to determine the motility of any Spermatozoa present. This can indicate whether further action is required.

**Vasectomy Reversal Samples**

These tests are to indicate whether a reversal procedure has been successful.

Follow the instructions for fertility investigations.

Specimens must be timed to identify whether any Spermatozoa present are motile.

**Requesting of Additional Tests**

Additional test requests for specimens already received can generally be made by contacting the laboratory, however, the following factors should be considered:

- The specimen has been stored under appropriate conditions to avoid compromising the quality of any results.
- There is sufficient sample remaining to perform the additional test.
- The sample quality has not been compromised by the initial investigations.
- The sample type is appropriate for the test.

In general the additional test may be added to the original request form, however, it may be necessary on occasion to submit an additional signed request or provide additional clinical information depending on the type of investigation requested. You will be informed of this when you contact the laboratory. The time constraints for ordering additional tests are as follows:

<b>Specimen Type</b>	<b>Time for additional requests</b>
Urine and Faecal specimens	48 hours
Serum	2 years
CSF	1 month
All other specimens inc. culture plates	1 week

## **Urgent Requests and Results**

Results requiring urgent action by the requesting clinician will be telephoned as soon as possible, either by a member of laboratory staff or by a microbiology consultant, if clinical advice is required. Outside of normal surgery opening hours urgent results will be given to Derbyshire Health United for action.

If you require an urgent test result, please ensure that this is clearly indicated on the request form. It is also advisable to contact the laboratory during normal working hours so that staff can locate and process the sample as soon as possible. Outside of normal working hours it is essential that the "on-call" biomedical scientist is contacted for any urgent specimens as they are off site and need to come in to process the sample.

Non urgent results will be available to view on the ICE results system or paper report once the specimen has been completed. Estimated turnaround times for each sample type are given in the Test Table. Please ensure that you have checked ICE before making an enquiry to the laboratory. If it is necessary to contact the laboratory for a result, please ensure that you have all the relevant patient details, including the test and the date requested.

Any unexpected delays in processing by the laboratory that may affect the clinical management of the patient will be communicated to the requestor as soon as possible. This may be by telephone, blanket letter or Email to users. The laboratory has a comprehensive contingency plan in place to avoid delays wherever possible.

## **Uncertainty and Traceability of Results**

The laboratory endeavours to limit the uncertainty of the results it produces and ensure the traceability of any critical measurements in the examination process. This is achieved by a robust internal and external control regime, the appropriate purchase, maintenance and storage of all equipment and test kits, the production of comprehensive Standard Operating Procedures and the training and competency assessment of all staff members.

## **Referred Tests**

The laboratory utilises a range of reference facilities for tests that cannot be performed in-house. This may be due to the requirement of specialist equipment, containment facilities, expert knowledge or simply that the test is unusual or infrequently requested.

The choice of facilities is largely historical, however, most are specialist centres and reference laboratories and all are audited on a yearly basis to ensure their accreditation status and EQA performance is up to standard. If a test has been performed by a reference laboratory this will be indicated on the report, together with any clinical advice given and identification of the centre at which the test has been performed. If you need to contact a Reference laboratory regarding a patient result it is advisable to first contact the Microbiology department.

**List of Reference Laboratories**

<b>Reference Centre</b>	<b>Tests referred</b>
Liverpool of Tropical Medicine 0151 7053220	Amoebic serology Hydatid disease antibody Schistosomiasis/ Bilharzia
Kettering PHE 01536 492675	Aspergillus PPTNs Avian PPTNs
Respiratory & Systemic Infection Laboratory PHE Colindale 020 8327 7331	Bordetella pertussis Abs Cat Scratch Fever Diphtheria antibody Legionella urine Ag confirmation Diphtheria sp toxin testing Streptococcal culture referrals
Laboratory of Healthcare Associated Infection Colindale 020 83277241	Rabies Abs Yersinia Abs
PHE Southampton General 02380 796408	Borrelia burgdoferi/ Lymes
Northern General Hospital Sheffield 0114 243 4343 (main Swichboard)	Brucella Abs Cytomegalovirus Abs Cytomegalovirus PCR Epstein Barr Virus Ab Epstein Barr virus PCR Hep C genotype Hep C PCR Herpes Simplex Abs Herpes simplex PCR HIV viral load Quantiferon test Measles IgM Mumps IgM Mycoplasma Parvovirus RubellaIgM Tobramycin Level TORCH screen Toxoplasma Vancomycin levels Varicella zoster IgM Viral serology
Mycology Regional Reference Unit Cardiff 029 2074 4515	Candida Antigen
Epsom General Hospital 01372 734200	Coxsackie IgM Enterovirus
Antimicrobial Reference Laboratory North Bristol 0117 232 5698/5654	Teicoplanin level
Mycology Laboratory HPA South West 0177 9285028	Cryptococcus
Porton Down	Dengue Fever

Salisbury 01980 612348	Rickettsia
Leeds Teaching Hospital NHS Trust 0113 3928720	Farmers Lung Hay Histoplasmosis Abs
Manchester Medical Microbiology 0161 2765698	H influenzae type B Meningococcal serology N.meningitidis PCR Tetanus Abs
West Midlands Public Health Laboratory Birmingham Heartlands Hospital Tel. 0121 4242244	Legionella culture (urine) Pneumococcal Abs HIV Viral resistance
Hereford County Hospital 01432 277707	Leptospirosis
Glasgow Royal Infirmary 0141 2013029	Toxocara
Food Safety Microbiology Laboratory PHE Colindale 020 8327 7539/7116	Bacillus sp, C botulinum, C.perfirngens, C.tetani, S.aureus and Listeria sp.
Virus Reference Unit PHE Colindale 020 8327 6017/6266	Enteric Virus investigation

**\*Additional laboratories may be used for confirmation or clarification of results obtained through routine examinations performed in the laboratory, or for epidemiological purposes.**



**15 MORTUARY****Key Contacts**

	<b>Direct dial</b>	<b>Internal</b>
Main Office (enquiries)	01246 512215	2215
Fax -(safe haven)	01246 512218	2218

**Service Manager**

Michael Conway	01246 512217	2217
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e-mail: [michael.conway@nhs.net](mailto:michael.conway@nhs.net)

**Staffing times**

The Mortuary is staffed from:

8: 00am - 4:00pm Monday to Friday(excluding bank holidays)

**Out of Hours**

An out of hours service is available for cases under investigation by the Police/Home Office, special preparation of bodies for identification purposes and tissue retrievals.

Contact is via the main hospital switchboard on: 01246 277271.

**Opening Times**

8:30 am – 3:30 pm for body removals and identification of deceased by doctors for pre-cremation certification.

11:00 am - 3:00 pm for viewing of deceased by relatives via an appointment system (dependent on workload)

The mortuary is accessible 24hrs a day for body deliveries (via Porter staff).

The Porter staff can facilitate out of hours viewings if necessary.

**Post Mortem Examinations**

Hospital (consented) Post mortem examinations - to clarify the cause of death and extent of a known disease.

A Medical Certificate of the Cause of Death (MCCD) must be completed and handed to the relatives prior to the request for consent for examination. A fully completed hospital post mortem examination consent form must be signed by the relative/next-of-kin in the presence of the doctor requesting the examination. The doctor must complete a clinical summary; the signed consent form, clinical summary together with the medical records must be forwarded to the mortuary without delay. The examination will be carried out as soon as it is practicable and the requesting clinical team will be informed of the date and time and called down afterwards to see the results.

**Coroner's Cases**

The medical records along with all relevant information should be forwarded to the mortuary without delay.

The authorisation to carry out the examination and a brief account of the circumstances leading to the death is obtained from the Coroner's office by the mortuary staff.

Further information regarding death certification, cremation certification and any other general enquiry relating to death can be sought from the main mortuary office staff (2215), Service Manager (2217) or the duty Consultant Histopathologist (via Histopathology Laboratory on 2262)

Information booklets are available for relatives from wards or the bereavement office, titled 'Examining the body after death' and 'Bereavement'.

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**16 TEST TABLES**

For ease of use pathology tests / investigations are listed in alphabetical order rather than Pathology speciality.

In the table below, for each pathology investigation the specimen container is indicated along with the approximate turnaround time. The notes section gives additional information regarding the particular test and the code for the department performing the test is included to assist in directing users to the correct department for specific enquiries.

- Type of tube/container
- Turnaround time (TT)
- Speciality / Department (D)
- Relevant notes.

For details of any tests not listed please contact the appropriate laboratory or reception.

**Pathology Speciality / Department codes**

<b>B</b>	Blood Bank
<b>C</b>	Chemical Pathology
<b>H</b>	Haematology
<b>Hi</b>	Histology/Cytology
<b>M</b>	Microbiology

**Key****Turnaround Times**

Turnaround times (TAT) are taken from time of receipt of sample to results availability in the laboratory.

The table below indicates the TAT as number of days or

<b>S</b>	Statutory (90% of requests within 4 hours)
<b>R</b>	Referred to another laboratory (please ring for advice)

**Referral Laboratories**

Some tests may have to be referred to specialist laboratories; a list of these is kept within the Pathology department. If you require this information please contact the relevant service manager of the pathology discipline (Refer to CRHQPU-LP-QP026).

**Sample volumes**

The laboratory uses a vacutainer system for blood tests. These tubes automatically fill to an appropriate volume, which should be enough for the investigations in the test list below. (Paediatric blood collection bottles are also available) Please contact the laboratory for information on minimum volumes if unsure.

**18 TESTS**

<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
17 Hydroxyprogesterone	Plain/Yellow	C	R	Not clinically useful in babies less than 2 days old
5 Hydroxy indole-acetic acid	Spe	C	R	Acid preserve
Anti-nuclear antibody (ANA) screen	Plain	M	R	Referred to Immunology STH (TT 7-10 days)
Adrenocorticotrophic hormone A.C.T.H	EDTA	C	R	On ice to lab ASAP, inform laboratory before sending
Acetylcholine receptor antibodies	Plain	C	R	
Adrenaline	Spe	C	R	See catecholamines
Adenovirus antibody titre	Plain	M	R	Date of onset and clinical details required TT 7-10 DAYS
Adrenal antibody	Plain	C	R	
Alpha Feta Protein (AFP)	Plain	C	R	
AFP/Downs	Plain	C	R	
Albumin	Plain/Yellow	C	S	
Alcohol	Fl	C	R	Send to Lab ASAP
Aldosterone/Renin	4x Lith Hep	C	R	Contact laboratory
Alpha 1 antitrypsin	Plain/Yellow	C	7	Weekly in house
Alpha 2 macroglobulin	Plain/Yellow	C	R	
Acid 1 glycoprotein	Plain/Yellow	C	R	
Amino acids & chromatography	Plain and univ	C	R	Send both serum and urine samples
Aminophylline	Plain	C	S	(Theophylline measured)
Ammonia	EDTA	C	S	Contact laboratory, on ice to lab within 30mins
Amoebic Serology	Plain	M	R	TT 7-10 DAYS
Amylase	Plain/Yellow	C	S	
P-ANCA / C-ANCA	Plain	C	R	
Androgen Profile	Plain/Yellow	M	R	
Androstenedione	Plain/Yellow	C	R	
Autoantibody Screening	Plain	M	R	TT 7-10 days
Angiotensin converting enzyme (ACE)	Plain/Yellow	C	R	
Anti Acetylcholine antibodies	Plain	C	R	
Anti B2 Glycoprotein antibody	Plain	H	R	
Anti basement membrane antibody	Plain	C	R	
Anti cardiolipin	5 citrate + 1 plain	H	R	
Anti centromere	Plain	M	R	
Anti dsDNA	Plain	M	R	
Anti endomysial antibody	Plain	M	R	
Anti gad antibody	Plain	M	R	
Anti gliadin antibodies	Plain	M	R	
Anti jo-1	Plain	M	R	
Anti-IgA	EDTA	B	R	Referred to NHSBT
Anti phospholipids antibody	Plain	M	R	
Anti reticulon antibody	Plain	M	R	
Anti ro antibody	Plain	M	R	

Investigation	Tube	D	TT	Notes
Anti Ia antibody	Plain	M	R	
Anti SCL 70	Plain	M	R	
Anti sperm antibody	Plain	M	R	
Anti sputum antibody	Plain	M	R	
Anti streptolysin O	Plain	M	R	TT 2-3 days
Anticonvulsants	Plain/Yellow	C	7	State drugs/dose/time of last dose
Anti mitochondrial antibody	Plain	M	R	TT 7-10 days
Antithrombin III	2x Citrate	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
APC resistance	5 citrate + 1 plain	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
APO lipoprotein	Plain/Yellow	C	R	Contact laboratory prior to requesting
Partial thromboplastin time (APTT)	Citrate	H	S	Ensure tube is FULL. Sample must be <6 hours old when tested.
Ascitic Fluid Culture	WM	M	S	TT 2-3 days ( <i>Specimen retained 3 days post analysis</i> )
Ascitic Fluid Cytology	Hi	H	R	TT 7-10 days
ASO titre	Plain	M	R	TT 2-3 days
Aspergillus P.P.T.	Plain	M	R	TT 7-10 DAYS
Aspartate transaminase (AST)	Plain/Yellow	C	S	
Auto Immune Haemolytic Anaemia	EDTA	B	R	Referred to NHSBT
Avian precipitins	Plain	M	R	TT 7-10 DAYS
B19 parvovirus	Plain	M	R	Date of onset and clinical details required TT 7-10 days
Barbiturates	Univ	C	R	Contact laboratory
Bartonella (cat scratch)	Plain	M	R	Date of onset and clinical details required TT 7-10 days
Bence Jones Protein	WM	C	4	Fresh early morning urine
Beta 2 Microglobulin	Plain	C	R	
Beta Thalassaemia Screen	EDTA	C	R	
BHCG	Plain/Yellow/ Hep	C	S	
Bicarbonate	Plain/Yellow	C	S	
Blood Culture		M	S	By appointment (Negative cultures usually 48 hrs.) Sets for paediatric and adult. Multiple sets taken at different times are required if SBE suspected. <b>Minimum of 5-10mls required for adult bottles.</b>
Blood Gases	ART gas syringe	C	S	On ice within 30 mins to lab. Inform lab before sending and ensure tube completely filled.
Blood Group & Antibody Screen (Group and Screen)	Cross	B	S	One hour for urgent requests, one day for routine tests.
Blood Group & Antibody Screen (Antenatal)	Cross	B	1	
- Antibody titration	Cross	B	R	
- Antibody				

<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
quantitation	Cross	B	R	
Blood Group – Red cell genotyping	Cross	B	1	
Brain Nautreic peptide (BNP)	Plain/Yellow	C	7	
Bone biochemistry	Plain/Yellow	C	S	
Bone screen/profile	Plain/Yellow	C	S	
Bordetella Pertussis Ab	Plain	M	R	TT 7-10 DAYS
Borrellia Burgdorferi	Plain	M	R	TT 7-10 DAYS
Brucella agglutins	Plain	M	R	TT 7-10 days
Brucella Antibody Confirm	Plain	M	R	TT 7-10 DAYS
C Peptide & Insulin	1 plain + 1 FI	C	R	Contact laboratory
C1 Esterase Inhibitor	Plain and EDTA	C	R	To laboratory within 30 mins.
C282Y/HD63D	2 cross	C	R	
C3 / C4 (complement)	Plain/Yellow	C	7	
CA 199	Plain/Yellow	C	R	
CA 125	Plain/Yellow	C	4	
Caeruloplasmin	Plain/Yellow	C	7	In house weekly
Caffeine	Plain	C	R	
Calcitonin	Plain	C	R	Send sample to laboratory urgently
Calcium (Ca <sup>+</sup> ) profile	Plain/Yellow	C	S	Assay can be falsely decreased by EDTA tube contaminating a red or yellow tube by transferring blood from one tube to another
Calcium excretion index	Plain/Yellow and Univ	C	1	Fasting morning sample for both urine and serum
Candida Antigen	Plain	M	R	TT 7-10 DAYS
Carbamazepine (CBZ)	Plain	C	7	
Carbon Monoxide	Hep	C	S	Ensure tube is completely filled with no air at top of the tube
Cardiac Enzymes / CE (muscle enzymes)	Plain/Yellow	C	S	
Catecholamnines	24hr U and Spe	C	R	State all drugs Dietary restrictions Contact laboratory, acid sample.
CD4 Count	EDTA	M	R	TT 7-10 DAYS
CEA	Plain/Yellow	C	4	
Cell Surface Markers	2x EDTA	H	R	
Cervical Smear	Fixed	Hi	28	Transport by post or Slide Pathology van
Cystic Fibrosis genotype	Cross	H	R	
CHAD	EDTA / Plain	B	R	Refereed to NHSBT
Chlamydia / N.gonorrhoeae	Cham swab or urine	M	4	Swab sample must be taken from epithelium. Minimum 10mls of urine required. Negative samples discarded after 48hours. Positives frozen and kept for 3 months.
N.gonorrhoeae confirmation of PCR results	Cham swab or urine	M	1	Second site target confirmation of N.gonorrhoeae by in house PCR
Chloride	Plain/Yellow	C	S	
Cholesterol	Plain/Yellow	C	S	Fasting not necessary unless trigs also required

<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
Cholinesterase phenotype	Plain	C	R	Please give family history
Chromogranin A	Plain	H	R	
Chromosome Studies	Hep	H	R	
Chymotrypsin faeces	WM	C	R	
Clotting investigations	3x citrate	H	R	Ensure tubes are completely full
Clotting screen	Citrate	H	S	State if on Heparin/Warfarin. Ensure tube is FULL
Cytomegalovirus (CMV)	Plain	M	R	Date of onset and clinical details required TT 7-10 days
Coeliac antibodies/screen	Plain	C	R	
Cold Agglutinins		B	2	Contact laboratory
Campylobacter serology	Plain	M	R	Clinical details required TT 7-10 days
Conjugated Bilirubin (infants)	Hep/Plain	C	S	
Coombs test (DAT)	EDTA	H	S	
Copper	Plain or 24hr U	C	R	
Cortisol	Plain/Yellow	C	3	Available as a stat request.
Coxsackie B serology	Plain	M	R	Date of onset and clinical details required TT 7-10 days
Coxsackie Igm/Enterovirus	Plain	M	R	Date of onset and clinical details required TT 7-10 DAYS
Creatinine clearance	Plain +24HrU	C	1	Blood sample taken during 24hr urine collection
Crithidia dsDNA	Plain	C	R	
Crossmatch	Cross	B	1	
C-Reactive protein (C-RP)	Plain/Yellow	C	S	
Cryoglobulin	12 plain + 2 EDTA	C	R	Transport to lab in heated box. Contact Laboratory
Cryptococcus antigen	Plain/CSF	M	R	TT 7-10 DAYS
CSF Culture	WM	M	2	Cell count and gram film urgent. Culture may take up to 5 days. Specimen stored for 2 weeks. Please contact laboratory for further testing.
CSF Cytology	Univ	Hi	S	* see comments after table
CSF Glucose	FI	C	S	
CSF Oligoclonal band	Univ and Plain	C	R	
CSF xanthochromia	Univ	C	S	See supported SAH protocol
Cyclosporin	EDTA	C	R	Whole blood
Cyst Fluid	WM	Hi	R	* see comments after table
Cytomegalovirus Ab	Plain	M	R	TT 7-10 DAYS
Cytomegalovirus PCR	EDTA	M	R	TT 7-10 DAYS
Cytogenetics	Hep	H	R	Ensure all clinical details are filled out on request form
D-dimer	Citrate	C	S	Ensure tube is FULL. Sample must be <6 hours old when tested.
Dehydroepiandrosterone (DHEA)	Plain	C	R	
Dengue Fever	Plain	M	R	Date of onset and clinical details required Detail of recent foreign travel required TT 7-10 DAYS

Investigation	Tube	D	TT	Notes
Digoxin	Plain/Yellow	C	S	Sample 5-7 hrs post dose
Diphtheria Antibody	Plain	M	R	TT 7-10 DAYS
Direct Antiglobulin Test (DCT)	EDTA	B	S	Also known as Direct Coombes or DCT
Downs Screen	Plain	C	R	Ensure Down's form filled in completely
Drug Induced Auto Immune Haemolytic Anaemia	EDTA	B	R	Referred to NHSBT
Drug Screen	WM	C	R	State all drugs prescribed
EAA screen (farmers lung)	Plain	M	R	TT 5-7 DAYS
Epstein-Barr virus (EBV)	Plain	M	R	Date of onset and clinical details required TT 7-10 days
Electrolytes serum	Plain/Yellow	C	S	Part of U&E profile
Electrophoresis (serum)	Plain/Yellow	C	7	
Extractable nuclear antigens (ENA)	Plain	C	R	
Endocervical Swab	Trans	M	3	See genital culture
Endomysial antibodies	Plain	C	R	
Enterovirus	Plain	M	R	TT 7-10 DAYS
Epanutin (phenytoin)	Plain	C	7	
Epilim (Valporate)	Plain	C	7	
Epstein Barr Ab	Plain	M	R	TT 7-10 DAYS
Epstein Barr PCR	EDTA	M	R	TT 7-10 DAYS
Erythropoietin (EPO)	Plain/Yellow	H	R	Transport to laboratory ASAP
ESR	EDTA	H	S	4ml EDTA tube (minimum blood volume 2.0ml) full sized tube only. Samples should preferably be processed within 4 hours of being drawn. Samples can be stored at 4°C for up to a maximum of 24 hours before testing.
Factor V Leiden	5 citrate + 1 plain	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
Factor X	3 citrate	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
Factor XII + XI	3 citrate	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
Faecal pH and sugars	WM	C	R	To laboratory immediately
Faeces Culture/Parasites	WM	M	4	If enterobius suspected use moistened cotton swab. <i>C difficile</i> antigen tested on all stools with Bristol stool chart appearance 5,6 & 7. Samples retained for 48 hours post analysis. Positive <i>C difficile</i> samples stored 6 months at -20°C.
Free foetal DNA testing	Cross	B	R	
Free androgen Index	Plain	M	R	
Farmers Lung Precipitins	Plain	M	R	TT 7-10 DAYS
Fasting Gastrin	2xPlain	M C	R	Send to Lab within 30mins. Also request serum calcium
Fasting Gut Hormones	Spe	C	R	Contact laboratory
Fasting Lipids	Plain/Yellow	C	1	Patient must be fasted prior to sampling
Full blood count (FBC)	EDTA	H	S	Sample must be <24 hours old



<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
Ferritin	Plain/Yellow	H	2	
Fibrinogen	Citrate	H	S	Ensure tube is FULL. Sample must be <6 hours old when tested.
Fluid Protein	WM	C	S	5 hours
Folate	Plain/Yellow	C	2	
Follicle Stimulating Hormone (FSH)	Plain/Yellow	C	7	
Fragile X test	1 EDTA + 2 hep	H	R	
G6PD Screen	EDTA	H	7	Contact Consultant Haematologist
Galactosaemia Screen	Hep	C	R	Contact laboratory
Galactose 1 phosphate uridyl transferase	Hep	C	R	Contact laboratory
Gamma Glutamyl transferase (GGT)	Plain/Yellow	C	S	
Gastric parietal cell antibody	Plain	M	R	TT 7-10 DAYS
Genetic testing for lesions H optic neuropathy	2 cross	H	R	
Genital Swab for culture ie HVS, CX Urethral (especially Gonorrhoea)	Trans	M	3	Specimens should be transported to the laboratory asap, but if not, HVS swabs should be stored in fridge at 2-4°C and CX swabs at room temperature. Specimens retained for 1 week post analysis.
Gentamicin	Plain	C	1	Trough=Pre dose Peak =1hr post dose
Glandular Fever Test	EDTA	H	1	Also request FBC
Glucagon		C	R	Contact laboratory
Glucose	FI	C	S	Assay can be falsely increased by taking sample from dextrose drip arm
Glucose tolerance test/GTT	2 FI	C	S	Protocol available on request from laboratory
Granulocyte Immunology	Contact lab	B	R	Referred to NHSBT
Growth Hormone	Plain	C	R	
H Influenza type B antibodies	Plain	M	R	TT 7-10 DAYS
Haemoglobin Electrophoresis	EDTA	H	14	
Haematinics (including B12, ferritin, folate)	Plain/Yellow	C	1	
Haematocrit	EDTA	H	S	Part of FBC
Haemochromatosis genetics	Cross	H	R	
Haemolysis screen, (FBC, LFT, Haptoglobin, LDH, retics)	1 plain/yellow + 2 EDTA	C	7	
Haptoglobin	Plain/Yellow	C	7	
Hepatitis A	Plain	M	4	
HBA1C	EDTA	C	3	
Hbs Ag (HBV)	Plain	M	4	High risk
HBSA (surface antigen)	Plain	M	4	High risk
HCG	Plain/Yellow	C	S	
Hepatitis C	Plain	M	4	High Risk
Herpes Simplex Virus Ab	Plain	M	R	TT 7-10 DAYS
Herpes Simplex Virus	EDTA/CSF	M	R	TT 1-2 DAYS

Investigation	Tube	D	TT	Notes
PCR				
HDL (high density lipids)	Plain/Yellow	C	S	
Heinz Bodies	EDTA	H	S	Inform laboratory
Hepatitis B Antigen	Plain	M	4	High Risk
Hepatitis B Markers	Plain	M	R	High Risk TT 7-10 days
Heparin Induced Thrombocytopenia (HIT)	Plain	B	R	Referred to NHSBT
Histology Specimen Biopsy	FORM	Hi	S	* see comments after table
Histology Specimen Small/Medium	FORM	Hi	S	* see comments after table
Histology Specimen Large	FORM	Hi	S	* see comments after table
Histology Specimen Frozen Section including Immunofluorescence	WM	Hi	S	* see comments after table Fresh sample without fixative required Deliver to laboratory by hand ASAP
Histology Specimen Radioactive Isotope Tc-99m	FORM	Hi	S	* see comments after table Deliver in red sealed box with radioactive labels
Histoplasmosis Ab	Plain	M	R	Date of onset and clinical details required Detail of recent foreign travel required
HIV	Plain	M	4	High risk
HIV Viral load/CD4	EDTAx3	M	R	High Risk - to be sent to Lab by 12:00 TT 7-10 days
HLA type (all antigens)	2 plain + 2 cross	B	R	Referred to NHSBT
HLA antibody screen	2 plain + 2 cross	B	R	Referred to NHSBT
Homocysteine test	Hep	C	R	Contact laboratory. Patient must have fasted. Transport to laboratory ASAP
HSV serology	Plain	M	R	TT 7-10 days
Huntingtons chorea	EDTA	C	R	
IgA Deficiency	EDTA	B	R	Referred to NHSBT
IgE	Plain/Yellow	C	R	
Insulin like growth factor-1 (IGFI)	Plain	C	R	
IGG subclasses	Plain	C	R	
Immunoglobulins (IgG, IgA, IgM)	Plain/Yellow	C	7	
Infertility Testing		M	R	TT 2-3 weeks Please contact laboratory for appointment
INR (for Warfarin control)	Citrate	H	S	Ensure tube is FULL. Sample must be <6 hours old when tested.
Insulin	1 plain + 1 FI	C	R	Contact laboratory. Increase if coagulation tube is under-filled, no coagulation tube required
Iron studies	Plain/Yellow	C	7	
Islet cell antibodies	Plain	C	R	
Joint fluid culture	WM	M	3	Including microscopy for crystals. Microscopy available same day. Enrichment culture may take up to 10 days.
Karyotype	3 Hep	H	R	
KCCT	Citrate	H	R	Ensure tube is full
Kleihauer screen for FMH	EDTA	B	S	Done daily. Contact blood Bank if

Investigation	Tube	D	TT	Notes
				urgent.
Kleihauer Delivery (Mother)	1 Cross + 1 EDTA	B	S	Cord blood sample
Kleihauer Delivery (Baby)	EDTA	B	S	
Lactate	FI	C	S	Send to laboratory immediately
Lactate Dehydrogenase	Plain or Yellow	C	S	Assay can be falsely increased by haemolysis or delay in separation of plasma
Lead	EDTA	C	R	
Legionella antibodies	Plain	M	R	TT 7-10 DAYS
Legionella Culture	Sputum/BAL	M	R	TT 5-7 DAYS
Legionella Urine agn	Urine	M	R	TT same day
Leptospiral serology	Plain	M	R	TT 7-10 days
Liver Function Test (LFT)	Plain/Yellow	C	S	
Lutenising Hormone (LH)	Plain/Yellow	C	7	State LMP
Lithium	Plain	C	1	Sample taken at least 12 hrs after evening dose
Lupus anticoagulant factor/screen	1 plain + 5 citrate	H	R	Contact Consultant Haematologist Ensure tube is FULL. Sample must be <6 hours old when tested.
Lymes disease	Plain	M	R	TT 7-10 days
Lymphocyte Markers	EDTA	H	R	
Lymphocyte subsets	2 EDTA	H	R	
Magnesium	Plain/Yellow	C	S	Assay can be falsely decreased by EDTA tube contaminating a red or yellow tube by transferring blood from one tube to another
Malaria	2 EDTA	M		State country visited 3 negative results are needed to exclude malaria
Measles IgG	Plain	M		TT 4-5 days
Measles IgM	Plain	M	R	TT 7-10 DAYS
Meningococcal Serology	Plain	M	R	TT 7-10 DAYS
Meningococcal PCR	EDTA	M	R	TT 7-10 DAYS
Mercury Urine	WM	C	R	Contact laboratory
Microalbumin	UM/WM	C	1	TT 1 day
Microplasma titres	Plain	M	R	2-10 days
Monospot	EDTA	H	S	
MRSA Screens	Trans	M	3	Refer to MRSA protocol
MSB (baby)	Plain/Hep	C	S	
Mumps	Plain	M	2	
Mumps IgG	Plain	M		TT 4-5 days
Mumps IgM	Plain	M	R	TT 7-10 DAYS
Mutation screen	2 cross + 1 hep	C	R	
Mycoplasma	Plain	M	R	TT 7-10 DAYS
Myeloma screen	Plain/Yellow and Univ	C	7	Early morning urine
Myoglobin	Univ	C	R	Send to laboratory ASAP
Nasal swab	Trans	M	3	
Nasopharyngeal swab	Spec	M	7	Contact lab for whooping cough special swabs
Neutrophill count	EDTA	H	S	
New AL bruising viral	Plain	B	R	
Non-gynaecological	UNIV/WM	Hi	S	* see comments after table

Investigation	Tube	D	TT	Notes
Cytology				FNA's sent in cytospin collection fluid supplied by Histology TT 2-12 WORKING DAYS
Noradrenaline	Spec	C	R	See catecholamines
Nucleated red blood cell count	EDTA	H	S	Part of FBC
Nucleotidase	Plain	M	R	Contact micro laboratory
Oestradiol	Plain/Yellow	C	7	
Osmolality	WM + Plain/Yellow	C	S	Send both serum and urine samples
Osmotic fragility studies		H	R	Contact haematology laboratory
Oxalate – urine	Spec	C	R	
Paracetamol	Plain/Yellow	C	S	State time of ingestion
Parathyroid hormone	Plain/Yellow and EDTA	C	4	Send to lab ASAP
Parvovirus	Plain	M	R	TT 7-10 DAYS
Paul Burnell (Glandular fever)	EDTA	H	S	Also request FBC
Pharyngeal swab	Trans	M	3	
Phenobarbitone	Plain/Yellow	C	7	
Phenytoin	Plain/Yellow	C	7	Immediate pre-dose sample
Phosphate	Plain/Yellow	C	S	Assay can be falsely increased by: Delay in separation of plasma Storage before transportation to the Lab Haemolysis
Pigeon precipitins	Plain	M	R	
Pituitary function tests	Plain/Yellow	C	7	Contact laboratory
Renin/Aldosterone	4 hep	C	R	Contact Laboratory
Plasma viscosity	2 EDTA	H	R	
Platelet aggregation		H	R	By appointment
Platelet antibodies	1 plain + 4 EDTA	B	R	Referred to NHSBT
Platelet membrane glycoprotein estimation	Citrate	B	R	Referred to NHSBT
Platelet refractoriness	2 plain + 1 cross	B	R	Referred to NHSBT
Platelet disorder neonatal alloimmune thrombocytopenic	<b>Mother:</b> 1 cross + 2 plain <b>Father:</b> 1 cross <b>Baby:</b> 1 EDTA	H	R	Contact blood bank
Platelet genotype	Cross	H	R	
Platelets	EDTA	H	S	Part of FBC
Pleural Fluid Culture	WM	M	3	
Pneumococcal	Plain	M	R	TT 7-10 days
Pneumococcal Ag	Urine	M	S	Same day
Porphobilinogen	WM	C	R	Very fresh – keep in the dark
Porphyryns – urine	WM	C	R	Very fresh – keep in the dark
Potassium	Plain or Yellow	C	S	Assay may be falsely increased by: Delay in separation of plasma Storage before transportation to Lab Haemolysis Contamination of Red/Yellow tube with EDTA Anticoagulant

Investigation	Tube	D	TT	Notes
				Use green topped tube if patient has increased white cells or platelets. Sample retained 3 days
Pregnancy test – urine	WM	M	1	Preferably early morning urine. Please state LMP. If urgent, result available in 1 hr
Procollagen III - NP	Plain	C	R	
Progesterone	Plain	C	7	Day 21-24 of menstrual cycle
Prolactin	Plain/Yellow	C	7	
Red cell Porphyrin	2x EDTA	C	R	Keep in dark. Send directly to laboratory in foil or brown envelope. Send with stool + urine
Protein – urine	Spe	C	1	
Protein C	1 plain + 5 citrate	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
Protein S	1 plain +5 citrate	H	R	Ensure tube is FULL. Sample must be <6 hours old when tested.
Prothrombin time, INR, BCR, PT	Citrate	H	S	Ensure tube is FULL. Sample must be <6 hours old when tested.
Prostate specific antigen (PSA)	Plain/Yellow	C	1	
Pus for culture	WM	M	3	Please provide minimum 1ml pus. Culture may take up to 5 days depending on site of infection. Specimen retained for one week post analysis.
Quantiferon TB Gold Test	See notes	M	2 wks	Specialised blood tube must be obtained from microbiology prior to test. Only accepted on Mondays, Tuesday and Wednesday.
Rabies Antibody	Plain	M	R	Please contact laboratory TT 7-10 days
RAST	Plain	C	R	State allergens to be investigated
Red cell antibody Titration/Quantification	EDTA	B	R	Referred to NHSBT
Red cell auto antibody investigation	EDTA	B	R	Referred to NHSBT
Red cell eluate	EDTA	B	R	Referred to NHSBT
Red cell genotype	EDTA	B	R	For new heamoglobinopathy patients
Red cell markers	4 EDTA	H	R	Contact Consultant Haematologist
Red cell phenotyping	EDTA	B	1	
Reducing substances	WM	C	1	Needs to be sent to lab ASAP
Renin	4 hep	C	R	Contact Laboratory
Reticulocytes	EDTA	H	S	
Rheumatoid arthritis screening	Plain	M	2-3 days	Positive results referred to reference lab. TAT increased to 7-10 days for these.
Rubella antibody	Plain	M	7	
Rubella IgG	Plain	M	4	
Rubella IgM	Plain	M	R	TT 7-10 DAYS
Salicylate	Plain/Yellow	C	S	
Schistosomiasis/Bilharzia	Plain/Urine	M	R	TT 7-10 DAYS Antibody may take up to 3 months even in parasitological proven cases

<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
Semen analysis Infertility	WM	M	2-3w ks	Contact laboratory for appointment. Tests performed Tues/Wed Only. Patient information leaflet available.
Semen analysis Reversal of vasectomy	WM	M	2-3w ks	Contact laboratory for appointment. Tests performed Tues/Wed only.
Semen analysis Routine Post-Vasectomy	WM	M	1	No appointment needed. Patient information leaflet available.
Semen analysis 7 month Post-vasectomy	WM	M	1	Contact the laboratory for appointment. Tests performed Mondays only.
Serology for coxackie B	Plain	M	R	TT 7-10 days Date of onset and clinical details required
Serum Osmolality		C	1	
Sex hormone binding globulin (SHBG)	Plain/Yellow	C	7	
Sezary cells	EDTA	H	R	
Short synacthen test	2xPlain/Yello w	C	5	Contact Laboratory for protocol
Sickle cell screen	2 EDTA	H	7	State reason for request and ethnic origin
Skin/Nails for Mycology	Derma Pack	M	R	Culture 3 weeks Micro 2-3 days
SLE screen	1 plain + 2EDTA	C	R	Transport to laboratory ASAP
Smooth muscle antibodies	Plain	M	7	TT 7-10 days
Stem Cell Chimerism Analysis	EDTA	B	R	Referred to NHSBT
Sputum Bact culture	WM	M	3	Sample retained for 1 week if further testing required
Streptomycin	Plain	M	R	Contact laboratory
Swabs, ear, eye, screen etc	Trans	M	3	Sample retained for one week post analysis
Sweat test	Univ	C	1	By appointment, Contact Laboratory
Syphilis screen	Plain	M	4	
Syphilis confirmation	Plain	M	R	TT 7-10 DAYS
T- activation of red cells	EDTA	B	R	Referred to NHSBT
Tacrolimus levels	EDTA	C	R	
Tegretol (Carbamazepine)	Plain/Yellow	C	7	
Testosterone	Plain/Yellow	C	7	
Tetanus Ab	Plain	M	R	TT 7-10 DAYS
Thyroglobulin (Tg)	Plain	C	R	
Theophylline	Plain/Yellow	C	S	State dose and all drugs given
Thiamine	EDTA	C	R	Contact laboratory
Thiopurine methyl transferase (TPMT)	EDTA	C	R	
Throat swab	Plain	M	3	Sample retained for one week post analysis
Thrombophillia screen	5 citrate + 1 plain	H	R	Contact Consultant Haematologist Ensure tube is FULL. Sample must be <6 hours old when tested.
Thyroid peroxide antibodies	Plain/Yellow	C	7	
Thyroid Function test	Plain/Yellow	C	2	If on thyroxine/carbimazole/PTU state medication and dose
Tissue typing HLA	EDTA	B	R	Contact Blood bank laboratory

<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
Tobramycin level	Plain	M	R	TT 7-10 DAYS
Torch screen	Plain	M	R	TT 7-10 days Date of onset and clinical details required
Toxocara	Plain	M	R	TT 7-10 DAYS Date of onset and clinical details required
Toxoplasma serology	Plain	M	R	TT 7-10 days Date of onset and clinical details required
Transferrin saturation	Plain/Yellow	C	7	
Transfusion reaction	2 plain + 1 cross + 2 EDTA + MSU sample	B		Contact Blood bank laboratory and return all transfused units. Urine sample must be taken within 24 hours of reaction.
Trichinella antibodies	Plain	M	R	Date of onset and clinical details required
Triglyceride	Plain/Yellow	C	S	
Troponin T	Plain/Yellow	C	S	Put time of event and time of sampling on request form, see cardiac guidelines.
Tubercle Bacilli a) urines b) Sputum c) Pleural Fluid	EMU WM WM	M M M		Microscopy within 24 hours. High risk stickers required. Culture up to 6 weeks. 3 complete EMU samples required to exclude renal TB can be fridged and then sent together. For sputum, three sputum taken in the morning on separate days.
Ulcer swabs	Trans	M	3	Clean surface with sterile saline and swab ulcer base
Urate	Plain/Yellow	C	S	
Urea and Electrolytes (U & E)	Plain	C	S	
Urethral swab	Trans	M	3	See genital swab
Urine Flow Cytometry, culture and sensitivity	WM/ Red top Boric acid container	M	1	Minimum 4ml needed for flow cytometry testing. Boric acid containers for community based patients. Ensure that at least 20ml of urine for Boric acid or use WM. Sample stored for 48 hours post analysis. Negative urine reported the same day and positive cultures within 3 days.
V – Zoster	Plain	M	2	Date of onset and clinical details required
Vaginal swab	Trans	M	3	See genital swab
Valproate	Plain/Yellow	C	R	TT 7 days
Vancomycin level	Plain	M	1	TT 7-10 days
Varricella Zoster IgG	Plain	M	R	TT 4 days
Varricella Zoster IgM	Plain	M	R	TT 7-10 days
Vasointestinal peptide (VIP)		C	R	Contact laboratory
Viral Culture		M	R	User viral transport media
Viral serology convalescent	Plain	M	R	TT 7-10 days

<b>Investigation</b>	<b>Tube</b>	<b>D</b>	<b>TT</b>	<b>Notes</b>
Viral Serology screen	Plain	M	R	Serum samples 10 days apart required (to detect rising titre) supply relevant clinical details including date of onset.
Vitamin A	Plain/Yellow	C	R	Protect sample from light
Vitamin B12	Plain/Yellow	C	2	
Vitamin D	Plain/Yellow	C	1	Monday – Friday only
Vitamin E	Plain/Yellow	C	R	Protect sample for light
VMA urine	Spe	C	R	Acid preservative
Von Willebrand Factor	3x citrate	H	R	Ensure tube is FULL
WBC	EDTA	H	S	Part of FBC
WBC and platelet antibodies	Spe	B	2	Contact laboratory
White cell enzymes	EDTA	C	R	Contact laboratory, MUST arrive in the lab in the morning but not Friday or weekends
Wound, pus swab	Trans	M	3	Sample stored one week post analysis.
Yersinia serology	Plain	M	R	TT 7-10 days
Zinc	Plain	C	R	
Zinc Protoporphyrin (ZPP)	EDTA	H	R	Contact Consultant Haematologist

**\* 95% of all Histology specimens will be turned around within 14 days**