Northampton General Hospital
NHS Trust

Pathology Department

User Handbook

Effective From: October 2024, version 2.1

Foreword

At Northampton General Hospital Pathology Department, “Quality is Paramount”. Results are reported within the shortest turnaround time commensurate with a quality result. A Quality Management System (QMS) with stringent procedural guidelines and standard operating procedures (SOPs), consistent with the requirements of ISO15189, Medicines & Healthcare products Regulatory Agency (MHRA) and Human Tissue Authority (HTA), is in operation.

The purpose of the handbook is to offer guidance to all users of Northampton General Hospital Pathology services. The department offers a range of tests and services in the following disciplines: Haematology, Blood Transfusion, Clinical Biochemistry, Immunology, Microbiology and Cellular Pathology. You will find details of the various clinical pathology services provided, including contact points, phlebotomy, transport arrangements, tests available and reporting of results.

Quality Control is an integral part of all investigations – using both internal and external schemes to continually monitor and improve performance.

The quality program includes regular training and continual professional development (CPD) for all scientific and clinical staff as required by Healthcare Professions Council (HCPC), Association of Clinical Biochemists (ACB), The Association of Anatomical Pathology Technologists (AAPT), and Royal College of Pathologists (RCPath), respectively.

All equipment and analysers undergo regular comprehensive preventive maintenance and service schedules which ensure quality results and continuity of service.

This handbook is an updated version of an earlier issue. Should you have queries with regard to any aspect of the service, please do not hesitate to contact the appropriate discipline.

We would also appreciate any suggestions and comments for consideration for the next edition.

This handbook is provided for general information purposes only and every effort has been made to ensure that the contents are accurate. If you have any queries please contact the Mrs Isabelle Brooker (Tel 01604 523809)

CONTENTS

INTRODUCTION

The Department of Pathology at Northampton General Hospital NHS Trust provides a high quality, cost-effective service to all its users within the Trust and in the surrounding area. The laboratory covers the following disciplines:

Blood Sciences: Clinical Biochemistry / Immunology / Haematology / Blood Transfusion
Microbiology
Cellular Pathology
Mortuary

The laboratory is A UKAS accredited medical laboratory No. 8115. For a list of the current accredited tests, please follow this link to our schedule of accreditation. The Blood Transfusion service is regulated by the MHRA and the department is also regulated for Post-Mortem Examinations by the HTA.

The department operates a comprehensive and effective quality management system, participating in all relevant National Quality Assessment Schemes.

The Pathology department is recognised for training by the Healthcare Professions Council (HCPC), the Royal College of Pathologists (RCPath), the Association of Clinical Biochemists (ACB), the Institute of Biomedical Sciences (IBMS) and the National School for Healthcare Science (NSHCS).

All work is performed with due care for the health and safety of staff and patients and with proper regard for the environment. The laboratories comply with comprehensive safety procedures and Control of Substances Hazardous to Health (COSHH) regulations.

Please note that for general security, safety and fire regulations all visitors to the laboratory must report to Reception before entering the area. Please adhere to the Model Rules for Porters, Couriers and Visitors to the Laboratory.

LIST OF CONTACTS

General Pathology	Contact	Telephone Number
Clinical Director	Dr H Lyall	01604 (54)8791
Head of Pathology	Mr K Jarvis	01604 (54)5020
Deputy Head of Pathology	Mrs I Brooker	06104 (52)3809
Pathology Quality and Training Manager	Mrs J Evans	01604 (54)5420
Pathology Systems Manager	Mr M Pendleton	01604 (54)4528
Pathology Quality Officer	Mrs C Duggan	01604 (54)5420

CLINICAL STAFF

DISCIPLINE	TITLE	NAME	TELEPHONE NUMBER
Biochemistry	Clinical Lead	Dr F Gidden	01604 (54)5003
Biochemistry	Clinical Scientists	Ms R Rawlinson Mrs A Lloyd	01604 (54)5404
Haematology	Clinical Lead	Dr A Bowen	01604 (54)5001
Haematology	Consultant	Dr S Mittal	01604 (54)4947
Haematology	Consultant	Dr M Joffe	01604 (54)4680
Haematology	Consultant	Dr A McGrann	01604 (54)4686
Haematology	Registrar		01604 (54)3915
Haematology	Medical Secretaries		01604 (54)5839 01604 (54)5145
Blood Transfusion	Clinical Lead	Dr A McGrann	01604 (54)4686
Blood Transfusion	Transfusion Practitioner	Ms R Bisa	01604 (54)3496
Microbiology	Clinical Lead	Dr B Alouanti	01604 (54)5138
Microbiology	Consultant	Dr C Herath	01604 (54)5401
Cellular Pathology	Clinical Lead	Dr A Saparamadu	01604 (54)5406

Please phone 01604 54 5021 for access to Cellular Pathology clinical enquiries

MANAGERIAL STAFF

DISCIPLINE	TITLE	NAME	TELEPHONE NUMBER
Pathology Support Unit (PSU)	Team Lead	Vacant	01604 (54)4014
Biochemistry	Operational Manager	Mr B Briggs	01604 (54)5007
Haematology/ Blood Transfusion	Operational Manager	Mrs K Spreckley	01604 (54)4011
Microbiology	Operational Manager	Mrs A O'Connell	01604 (54)5967
Cellular Pathology	Operational Manager	Mrs S Blachford	01604 (54)5408
Mortuary	Manager	Ms Lisa Cooney	01604 (54)4528

RESULTS ENQUIRIES – (09:00 – 17:30)

Outside these hours bleep duty BMS via switchboard for urgent queries

01604 (54)5402 for general result enquiries.

CONFIDENTIALITY POLICY

All employees working at Northampton General NHS Trust have an obligation to protect the confidentiality of personally identifiable information that they may come into contact with during their duties for the Trust. This is not just a requirement of their contractual responsibilities but also a legal obligation under the Data Protection Act 1998 and included in professional codes of conduct, including the NHS Standards of Business Conduct.

Employees are obliged to keep all personally identifiable information strictly confidential. This includes patient sample information and records.

By adhering to good practice on data protection and confidentiality, staff help to promote a secure environment where both patients and users of the service can feel confident that personally identifiable information is being handled professionally, appropriately and in accordance with the law.

Reference: **Data Protection and Confidentiality Policy NGH-PO-334**

COMPLAINTS AND FEEDBACK PROCEDURE

Compliments, comments, complaints, concerns and suggestions from patients, carers and the public are encouraged. Should any of our service users be dissatisfied with the care provided by this Trust they have a right to be heard and for their concerns to be dealt with promptly, efficiently and courteously. Under no circumstances should patients, relatives or carers be treated adversely as a result of raising concerns/complaints about any aspect of the service provided by this Trust.

The Trust welcomes all forms of feedback and information which is used to improve the service that is provided to the local community.

The PALS service has been developed at NGH according to local needs and to ensure that patients and their families/carers have an identifiable person that they can turn to if they have a problem or need information, advice or support whilst they or their relative/carer are accessing the services provided by this Trust. The PALS service is not a substitute for the Complaints Procedure but is an additional service that works closely with front line staff and the Complaints Team.

The Trust aims to provide a complaints service that meets the needs and objectives of the complainant, whilst at the same time complying with the requirements set out in the NHS and Social Care Complaints Regulations. The Trust recognises that the information derived from complaints and concerns provides an important source of data to help make improvements in hospital services. Complaints and concerns can act as an early warning of failings in systems and processes which need to be addressed.

Please see the Trust website for information on how to contact the Trust complaints and PALS teams. However, if you have any feedback that doesn't fall into this category and you would like to contact the laboratory directly, please see the relevant discipline contact or email the quality team.

Quality team - ngh-tr.pathqms@nhs.net

Reference: 4 'C's (Comments, Concerns, Complaints, Compliments), a joint policy incorporating PALs / Bereavement & Complaints Management NGH-PO-483

LABORATORY ACCESS

Pathology Opening Hours

08:00 – 17:00 Monday to Friday
08:00 – 12:30 Saturday

Results and General Enquiries: 01604 54(5402) 09:00 – 17:30

Hospital Switchboard: 01604 634700

Pathology operates a 24hr shift system in the following areas:
Haematology, Blood Transfusion, Biochemistry and **Microbiology (on-call)**
It is not necessary to bleep the Biomedical Scientist (BMS) for tests or blood products unless the request is urgently required.
This 24hr service is available to all users, both for test results and clinical advice. Biomedical Scientists and the Consultant Medical staff can be contacted via the switchboard at Northampton General Hospital: Telephone Number 01604 634700

CLINICAL SPECIMENS

HEALTH, SAFETY, SECURITY, STORAGE & TRANSPORT

Health and Safety

Whilst Pathology works closely with the Transport and Portering Managers to ensure that strategies and schedules agree with laboratory working arrangements, the laboratory is not responsible for the delivery of specimens.

There are safety and security implications at all stages of the collection process and the storage and transport of clinical specimens. All biological specimens should be handled as if their infectivity status is unknown, to protect yourself and others, even though the specimen may be contained in a specimen container.

Guard against the potential for transmission of infection by the accepted routes of transmission:

- Ingestion (avoid mouth and mucous membrane contact)
- Inhalation (avoid creating aerosols with clinical material)
- Inoculation (including exposure to cuts and grazes)
- Eyes (avoid splashes)

Standard precautions must be adhered to when harvesting any clinical material, with particular emphasis on hand hygiene and prevention of cross-contamination.

Needle-stick injuries are avoidable and can be prevented by understanding the risk of using ‘sharps’ and by following correct disposal procedures –
Sharps boxes with clear markings to signify contents as ‘sharps for incineration’ should be used for disposal. Containers should be the appropriate size for the materials being discarded. Sharps containers MUST comply with BS EN ISO23907:2012 and UN 3291.
No other containers should be used.
All needles and syringes used for blood samples must be disposed of in the appropriate sharps’ container at the point of use.

NOTE: Samples received in needles will be rejected.

Therefore, please adhere to the following guidelines:

- Always position a box at the point of use
- Do not walk with sharps in your hand
- Dispose of all needles and syringes used for injection as one unit
- Never re-sheath a needle or insert the needle into the barrel of syringe
- Place needle directly into sharps container

Aseptic Non-Touch Technique (ANTT)

Draw up your injectables, dispose of sharps and then take the injectables to the patient on the blue tray.

Remember: The responsibility for the correct disposal of sharps is that of the user; other staff may be put at risk if sharps are not correctly disposed.

When three quarters full the container must be sealed, tagged and labelled with the ward/clinic identification and the name of the person sealing the box.

Please Note:

Take care when wearing gloves to avoid the inadvertent cross-contamination of phones, door handles etc. Gloves should not be worn in public areas.

High-Risk Specimens

The Pathology Department follows universal precautions. If there is a suspicion or diagnosis of seriously infective agents e.g. lassa fever, CJD, the laboratory must be contacted for advice regarding the handling and transportation of these samples.

Security

Safety and security of patients' specimens is a priority. Patient confidentiality must not be breached. It is equally important to avoid an unnecessary invasive clinical procedure for the patient should a repeat specimen be required.

Model Rules and guidance for Porters, Drivers, Couriers and Laboratory Visitors are published by the laboratory and prominently displayed at Specimen Reception points.

Storage of Specimens

Prior to the transportation of samples to the laboratory it is critical that they are stored in optimum conditions.

Sample Type	Optimum Storage
Blood Samples *Exceptions: Please refer to A-Z Sample Requirements Guide*	Store at 2 – 8 ^{O}C
Urine Samples	Store at 2 – 8 ^{O}C
Urine Samples for Chlamydia	Room Temperature
Swabs	Room Temperature
Tissue in Formalin	Room Temperature
Sputum Samples	Store at 2 – 8 ^{O}C
Tissue/Fluid Samples for Microbiology Culture	Store at 2 – 8 ^{O}C

Please note:

For best results please ensure that samples are transported to the laboratory as soon as possible after collection.

The Airtube System must not be used for transporting Blood Cultures, CSFs, blood gases or samples on ice such as lactate and ammonia

Transport

Transport Regulations

UK Carriage regulations refer to the European Directives (ADR – road, RID – rail) updated regularly. Air Transport of dangerous goods is covered by the International Civil Aviation Organisation (ICAO) 'Technical Instructions for the Safe Transport of Dangerous Goods by Air'. These are similar but with a few minor differences.

For the purposes of transport by road, air or postal service, specimens of material (blood, tissue, excreta, secreta etc.) collected from humans or animals are counted as infectious material, that is, they are known, or reasonably expected to contain pathogens.

Under these regulations specimens must be:
Classified, packaged, labelled, and **transported** according to strict codes defined in the EU legislation. These are subject to change and ***relevant staff must ensure that transport of specimens by road air or post (including transport arrangements contracted out to a third party) conforms to the current legislation***.

Departments that engage in the transfer of diagnostic specimens should also ensure that there are auditable records of the relevant training of staff involved, covering the relevant Trust policies and any legal requirements governing the carriage of such goods appropriate to their duties and responsibilities.

Information relevant to transport of diagnostic specimens is given in the following sections; but **always** check for the most up-to-date guidance before proceeding.

Classification
Biological agents, or materials that may contain them, are allocated to UN Division 6.2 – Infectious Substances. Division 6.2 includes biological products, cultures, genetically modified microorganisms (GMMs) and genetically modified organisms (GMOs) and medical/clinical waste. Infectious substances are divided into the following categories:

Category A:
This includes any infectious substance which is carried in a form that, when exposure to it occurs, is capable of causing permanent disability, life threatening or fatal disease in otherwise healthy humans or animals. This definition is supplemented by an indicative list of pathogens, which include HIV and hepatitis B viruses (but not hepatitis C virus), when in the form of cultures but does not encompass specimens from patients suspected of having these infections.

Category B:
This includes any infectious substance that does not meet the criteria for inclusion in category A. These are assigned to UN 3373. This would include specimens from patients with known or suspected HIV, HBV or HCV infections. Diagnostic specimens are considered **as a minimum** to fall into this category. Substances in this category are assigned to UN3373 (except cultures which are UN2814 or UN2900)

NB: The Royal Mail will not carry *Category A* material. Special couriers are required.

NB: Blood or blood components for transfusion or transplant or tissues or organs for transplant are not subject to these regulations.

Packaging

For *Category A* substances please seek informed advice and ensure that you check the material against the 'Approved List of Biological Agents' (available from HSE at www.hse.gov.uk/) and ascertain the correct packaging requirements.

Substances assigned to UN3373 (i.e. most diagnostic specimens) should be packaged in accordance with P650.

Packaging should be of good quality and strong enough to withstand the shocks and loadings encountered under normal conditions, including minimum dimensions for the outer packaging and the capability to survive a drop-test. Check the regulations for details of these requirements if you are unfamiliar with them.

The packaging should consist of 3 components:

- A leakproof primary receptacle
- A leakproof secondary packaging containing the primary receptacles, individually wrapped and packed so that they cannot break, be punctured, or leak into this secondary packaging
- An outer packaging with suitable cushioning material (primary and secondary receptacles/packaging should ensure that the integrity of this material will not be compromised by any leakage of material)

To aid speed of transportation the outer packaging should be correctly labelled.

Transporting Samples within the Trust

Porters and other staff who transport specimens within the bounds of the Trust should conform to the requirements, advice and guidance issued by Trust Policies, Clinical Laboratory Services and the Infection Prevention and Control team.

Samples can be sent via the air tube system within the hospital.
Exceptions: - Samples on ice, Blood Cultures, Blood gases, CSFs

Porters transporting multiple histology samples should ensure they carry formalin controlled granules (FCG) to be used in the event of a formalin spillage.

A specimen box complying with current requirements (UN3373) is advised for the safe transportation of all specimens. The boxes and racks should be cleaned weekly with hot water/detergent and dried.

Specimens must not be transported by hand or in pockets

Transport beyond the Trust

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations apply to the carriage of dangerous goods by road & rail. It places special duties on **everyone** with a role in the carriage of dangerous goods, and specific duties on those in the transport chain. It is essential that these roles and responsibilities are understood and that the legal requirements are met.

Always check that your chosen carrier conforms to the requirements of the legislation. This may be discussed with the Northamptonshire Healthcare NHS Foundation Trust (NHFT) Transport Manager: Tel. **01604 685423**.

Vehicle Contamination / Decontamination

It is a requirement that if an infectious substance has leaked or been spilt in a vehicle or container, that vehicle or container may not be re-used until it has been thoroughly cleaned, disinfected or decontaminated. Any other articles carried in the vehicle may need to be examined for possible contamination. Please refer to **Accidental Breakage/Spillage** section.

Postal Regulations

With regard to sending specimens through the post the Microbiology laboratory (Tel. 01604 54(5417)) can advise on current requirements or an arrangement can be made with them to correctly package and send the material via courier.

References

- Further information regarding packaging is available via http://www.un3373.com/
- *Guidance on regulations for Transport of Infectious Substances*
- Please refer to the Department for Transport website (www.gov.uk/dft) for details relating to the health protection guidance – Specialist and reference microbiology: laboratory tests and services.

BREAKAGES/LEAKAGES/SPILLAGES

Breakages/Leakages

Gloves must be worn if an accident occurs or if the specimen container is broken or leaking. The container and contents must be disposed of safely - broken glass may be put into an approved plastic sharps box for safe disposal by incineration; non sharps such as swabs may go into a yellow clinical waste bag for incineration. The environment should be cleaned with hot water and detergent and then disinfected.

If a breakage, spillage or leakage occurs in transit, the reception staff or another member of Pathology staff should be informed on arrival and they will take the appropriate action. Gloves must be worn at all times when dealing with leaking or broken containers.

Hands must be washed as soon as possible after delivering the specimens to the reception area. Specimen boxes that have been contaminated by spillage/leakage should be washed in hot water and detergent, then disinfected, rinsed in clear water and dried. Gloves must be worn. The box must be labelled with a risk of infection notice and with the destination i.e. Northampton Pathology Department and the address from which the container has been sent.

If leakage should occur during transportation, the box should contain the leak. Personnel in vehicles involved in the transportation of specimens, including taxicabs and private vehicles, must have access to information regarding the cleaning and disinfection processes. Please ensure that the relevant people have the information required.

Advice is always available from:

Infection Prevention Nurse 01604 54(5785) **- available Mon-Fri: 08:00 -17:00**
Consultant Microbiologist 01604 54(5138) or via Hospital Switchboard
Director of Infection Prevention – Director of Nursing - via Hospital Switchboard

Spillage Procedure for Formalin

Formalin is a clear colourless fluid supplied by Cellular Pathology to wards, theatres and GP surgeries as 10% w/v buffered formalin. This fluid is used to preserve tissues prior to histological examination. The fluid is harmful even in small quantities and produces formalin vapour that can be severely irritating to eyes and mucus membranes.

To avoid injury to staff or patients Formalin spillages must be contained and neutralised as soon as possible

If there is a spillage in a confined area, ensure that you call for assistance before starting to clean it up. Should you become incapacitated or distressed by the vapour it is essential that someone else is on hand to help you out of the area.

It is advisable to wear a respirator in addition to standard personal protective equipment when clearing large spills.

Formalin spillage kits are held in main theatres and Cellular Pathology. Portering staff transporting specimens to the laboratory should ensure that they carry a container of formalin control granules that can be scattered onto any small spills immediately to neutralise the formalin.

Hazard

Please note that buffered formalin is harmful if ingested in quantity or if exposure to vapour is prolonged. It is irritating to skin and eyes.

First Aid

Eyes	Irrigate thoroughly with water for at least 10 minutes. Obtain medical attention.
Lungs	Remove from exposure, rest and keep warm. In severe cases obtain medical attention
Skin	Wash thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention
Mouth	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention

In the event of a formalin spillage contact Histology on 01604 54(5013) / 54(5408)

LABORATORY TESTS

REQUESTING, COLLECTING & LABELLING

To ensure accurate results are produced by the laboratory, it is paramount that from point of collection to reporting of results, all staff are aware of their responsibility with regard to safety, security, handling and storage of patient samples.

The competency of the practitioner to undertake specimen collection must be ensured by documentary evidence, thus adhering to current legislation with regard to medical devices (NHS Litigation Authority, Medicine & Healthcare Products Regulatory Agency etc).

The Laboratory provides comprehensive training for the Phlebotomists it employs. Nursing and other staff requiring training in phlebotomy should contact the Trust Clinical Skills Training Team.

CRITERIA FOR PRIORITISING TESTS

Urgent Requests

Telephone ext 5402 to request urgent attention for samples or to obtain results (reception staff will notify relevant disciplines).

All Other Times Bleep BMS (via switchboard) in relevant discipline(s)
Consultant advice is given on a Consultant-to-Consultant basis.

Use the pink ICE bags for urgent requests and stamp the form as **"Urgent"**

For patients with possible vasculitis or acute renal failure where a vasculitis is suspected please ring the Immunology laboratory during core hours (ext 5040) to inform them of the patient details and test required. This will enable the staff to prioritise the sample.

All Other Requests

All other requests will be processed routinely. Please use the blue ICE bags for routine requests. More complex tests will be processed in batches and/or when more staff are available according to existing work practices.

There is NO need to bleep the BMS.

Additional Tests on Samples Sent Previously

Although this facility is available, Pathology does not recommend its practice, as samples deteriorate and accuracy of results cannot be guaranteed.

If additional testing is required please send another request form identifying the patient with full supporting details, the additional test(s) required and clearly stating **"ADDITIONAL TEST – SAMPLE IN LABORATORY"**. Please ensure that a contact name and bleep number is written on the form in case there is insufficient sample to complete analysis. Failure to submit a request form will mean that the additional test(s) will not be performed.

Blood Sciences

Requests for additional tests will not be accepted for Electrolytes, PTH, Lactate, Ammonia, C-Peptide/Insulin, Growth Hormone, or TSH Receptor Antibodies. Bicarbonate requests will only be accepted in samples less than 1 hour old. Retrospective requests for haematinics will only be accepted on samples less than 24 hours old.

NB. Fresh samples must be sent for any coagulation tests if the sample is over 2 hours old.

Due to storage restrictions a sample retention period of 3 - 4 working days post receipt is operational within the Biochemistry Department.

Microbiology

Requests for additional tests will not be accepted on:

Urines:	over 24hrs old
Other samples (excl. bloods):	over 48hrs old

Request for additional tests on blood samples is not a problem provided that there is sufficient sample available.

REQUESTING PROCEDURE

The requesting of a clinical analysis to aid in diagnosis should only be undertaken by an authorised clinician (a competent and clinically trained individual). The procedure should not be undertaken lightly and care should be taken that the clinical intervention required and the actual analysis requested will yield clinically useful information.

Special arrangements and precautions relating to requests for Blood and Blood Products can be found in the NGH Trust Blood Transfusion Policy

"ICE" Electronic Requesting

This facility is available to GP surgeries and throughout the Trust and is mandatory for all patient requests with the following exceptions:

- Post-natal Kleihauer
- Non-red cell blood product request
- Specialist tests e.g. tissue typing
- Andrology

Manual requests are sometimes not completed fully or are difficult to read whereas electronic requesting will minimise the risk of incorrect data entry or missing test requests.

It is important to select the URGENT request status on ICE ONLY for urgent requests.

Please Comply With The Following:

PINK BAGS for URGENT REQUESTS

BLUE BAGS for ROUTINE REQUESTS

Training/Queries relating to ICE requesting / reporting: Contact IT Helpdesk ext 5999

Manual request forms are accepted if ICE is not operational – See below

Manual Requesting - Forms

DISCIPLINE	REQUEST FORM IN USE
Pathology Blood Tests (Biochem / Haem / Micro / Immuno)	Pathology Blood Request Form
Blood Transfusion	Pink Request Form
Downs Screening Test	Maternal Serum Screening Request Form
Antenatal Request	White Request Form
Pathology General Tests (non-blood tests in (Biochem / Haem / Micro / Immuno)	Pathology General Tests Request Form
Cellular Pathology – Non-Gynae Cytology	Yellow Non-Gynae Request Form
Cellular Pathology – Histology / Mortuary	White Histology Request Form Perinatal Death Request Form Hospital Post Mortem Examination Request Form Hospital Post Mortem Consent Form

Positive Patient Identification

Positive patient identification must be obtained prior to any blood samples being taken from a patient. For inpatients ask the patient to state their full name and date of birth. Ensure the information given matches the patient's wristband and the patient documentation/healthcare records and that the hospital number is identical on the wristband and patient documentation. For outpatients, ask the patient to state their full name, date of birth and address and compare this to the patient's healthcare records. Unconscious patients or those unable to provide verbal confirmation must have their wristband details (full name, date of birth, hospital number) checked against their healthcare records. Blood samples must be labelled at the patient's side as soon as they are taken and before leaving the patient.

LABELLING PATIENT REQUEST FORMS

INFORMATION REQUIRED ON PATHOLOGY REQUEST FORMS

- **NHS Number** (Use Hospital Number only if NHS Number not available)
- **Surname**
- **Forename**
- **Date of Birth** (necessary for correct reference ranges)
- **Sex of Patient** (necessary for correct reference ranges)
- **Full Address**
- **Post Code**
- **Category of Patient** **(**NHS, Private or Cat. II)
- **Consultant Code** (use correct iPM code)
- **Ward/Department Code**
- **Requesting Doctor** (write name clearly - we may need to contact you)
- **Date Taken**
- **Time Taken**
- **Specimen Type**
- **Indicate requests required**
- **Clinical Details** (should be clear, relevant and concise)
- **Fasting / Random** **(**Glucose)

Remember

Pathology request forms should be completed fully and legibly to ensure correct identification of patients. Where possible, the patient information should be supplied using a ***current*** addressograph label, affixed to both copies of the request form, where specified. Inadequately completed request forms will result in requests not being processed.

It is essential that sufficient information be supplied to enable the patient to be uniquely identified.

Current antibiotic therapy, time of last therapeutic drug dose and whether the patient was fasting may influence the tests done and the value of the results

Extra Copies - Please write full details and address clearly

***("Copy to GP"* in *Copy to* field is unacceptable and will not be actioned)**

Please Note*:*

Copies will not be sent unless Clinician's name and location are clearly written on the form as addressograph details relating to GP is not always current.

Failure to comply will result in the extra copy being withheld, in the interests of data protection.

LABELLING PATIENT SAMPLES

INFORMATION REQUIRED ON PATIENT SAMPLES

The person taking the sample must label the containers. Confirm details with the patient.

Do not label specimen containers in advance. Do not use containers previously labelled for another patient. Pathology will not accept them.

Lids of specimen containers must be secure. If contamination of the outside of a container occurs, clean the container with a sterile alcohol wipe (Gloves should be worn and hands washed after removal of the gloves)

Samples **must** have the following information:

- **Surname – MANDATORY**

  + 2 of the following

- **NHS Number -** (Use Hospital Number if NHS Number not available)
- **Forename**
- **Date of Birth**
  +
- **Date Taken –** (to assure accuracy of results)

Place the specimen container into a leak-proof plastic envelope/bag.

Samples with Addressograph labels will not be accepted for blood samples, as they are not compatible with the automated sample processing system.

ICE requested samples will have computer-generated labels, but these will not be accepted in Blood Transfusion.

Information on samples for Blood Transfusion **must always** be handwritten legibly and signed by person taking the blood and must contain the following information:

- **Surname + Forename + Date of Birth + NHS Number/Hospital Number**

Otherwise samples **will not** be accepted.

The Blood Transfusion laboratory will not process samples for cross match and/or group and screen (this includes antenatal requests) without a valid Hospital number or NHS number.

Please Note:

Urines must be in a separate bag from blood samples

Blood Cultures must be in a separate bag from all other samples

Specimens awaiting transportation must be placed in the designated transport container. This should be stored in a non-public area. (Some specimens will require refrigeration if there is a delay - a designated refrigerator must be used).

DATA REQUIRED ON REQUEST FORMS AND PATIENTS' SPECIMENS

Data on the request form and the specimen **must** be compatible. There is a clinical and medico-legal risk if insufficient information is supplied. All specimens **must** carry a minimum, legible and compatible dataset on both the request form **and** the specimen labels, ideally as shown in the following table: -

ACCEPTANCE CRITERIA

Patient Data Item	Specimen Container	Request Form
Surname	✓	✓
Forename	✓	✓
Date of Birth	✓	✓
Hospital ID and /or NHS number	✓	✓
Sex		✓
Full Address of Patient		**Desirable**
Requesting Clinician		✓
Consultant Code ***(if different from above)***		✓
Location Code ***(if known)***		✓
Report Destination ***(if different from above)***		✓
Clinical Details		✓
Date of Collection	✓	**Desirable**
Time of Collection		**Desirable**
Specimen type ***(& site if appropriate)***	✓ **(Microbiology/ Histology)**	✓
Investigations required		✓
Fasting/Random (lipids/glucose)		✓

This information is essential in order to maintain a clear audit trail from point of request to report delivery.

Where space is limited include as many key identifiers as possible. Indication of known or suspected biohazard of the specimen must be evident.

Time of collection is crucial in several circumstances:

- To assess the suitability of a sample for tests where cellular degradation over time (e.g. K+ leakage) may interfere or give an incorrect result.
- To assess suitability of sample collection timing in relation to symptoms, drug dose, etc
- For tests that are part of a timed series – Dynamic Function Tests, e.g. Glucose Tolerance Tests, Synacthen Tests, Mast cell tryptase
- For interpretation of drug levels
- To allow the laboratory to audit specimen turnaround times fully

To ensure full interpretation of clinical results please ensure that clinical details are clear on request form.

Please see link below from the HSE in relation to key clinical information on laboratory request forms.

http://www.hse.gov.uk/safetybulletins/clinicalinformation.htm

Where a laboratory sample or specimen is considered likely to contain a human pathogen, it is important that the appropriate level of laboratory containment is provided to ensure the effective control of the risk of exposure / infection.

If clinical details are inaccurate or incomplete or there is delay in disclosing new information to the laboratory, then this can result in specimens being processed under insufficient laboratory containment conditions.

Specimens should be supplied with relevant clinical details from requesting clinicians. This can be used to inform the assessment and further laboratory processing.
E.g., the types of organisms that might be present in specimens from a returning traveller or those associated with an outbreak scenario.

Known blood borne viruses.

Recent history of relevant foreign travel that may increase the likelihood of exotic agents being present. For example, risk of infection by hazard group 3 agents such as *Brucella spp.* and *Salmonella typhi*.

Ensure clinical details supplied on specimen request forms contain clear information regarding the nature of test being requested and sufficient detail to inform laboratory staff upon the safety precautions they need to take to process the specimen without risk of infection.

Any information that becomes available and has implications for the safety of laboratory staff should be communicated immediately.

Ensure key personnel involved in the collection of relevant clinical details and the completion of specimen request documentation receive appropriate training, including refresher training.

Failure to do this may result in samples being handled at the wrong biological containment level increasing risk of infection to laboratory staff.

IN THE INTEREST OF PATIENT SAFETY SAMPLES THAT DO NOT MEET THE MINIMUM ACCEPTANCE CRITERIA WILL BE REJECTED FOR ANALYSIS. A REPEAT SAMPLE WILL BE REQUESTED.

REJECTING PATIENTS' SAMPLES

The laboratory has the authority to refuse to analyse a sample that does not carry the minimum dataset to allow the unambiguous identification of the patient and the requesting clinician.

The laboratory does **not** have the authority to amend details on a specimen or request form if incorrectly given. An 'Unrepeatable'* but insufficiently identified specimen will only be accepted when the requesting doctor formally accepts responsibility for confirming its authenticity. In normal circumstances this will involve attending the laboratory to label the specimen. Changes to the request or specimen must be amended and **signed** by the requesting clinician who must take full responsibility for that particular request.

In exceptional circumstances where the minimum dataset is impossible to collect, for example, an unidentified patient attending A&E, the laboratory will process the request but it will be made clear on the report that necessary data are missing for the unambiguous matching of the patient with the sample received.

***Unrepeatable samples: Please contact relevant department**

Discipline	Telephone Number
Biochemistry	01604 54(5006)
Haematology	01604 54(4009)
Blood Transfusion	01604 54(5413)
Microbiology	01604 54(7769)
Cellular Pathology	01604 54(5596)

Please Note:

Histology samples from NGH locations

Specimen Book / Request Form / Sample must be checked against each other. If there are any discrepancies all will be returned to originating location.

COLLECTION OF CLINICAL SPECIMENS

Improper collection and/or handling of specimens can lead to a variety of problems, such as haemolysis in a blood specimen. Care should therefore be taken at every step to ensure the quality of the procedure and the specimen collected.

In an effort to prevent cross contamination, it is essential that blood samples collected using the evacuated system MUST be collected in the order shown in the guide overleaf.

PATHOLOGY PHLEBOTOMY SERVICE

Pathology provides a phlebotomy service for adult and paediatric patients.

Ward phlebotomy collections occur between 06:00hrs and 11.30hrs Monday – Friday and between 07:30hrs and 12:00hrs at the weekend. If the service cannot be provided the wards are contacted directly as soon as possible. Any queries should be directed to the Phlebotomy Supervisor or the Pathology Support Unit Team Lead on 01604 (54)4014.

Blood samples will not be taken from patients without a completed request form or from patients without the Trust Identity Band.

Please prepare forms by 08:00hrs – if request forms are not ready by 8am, this could result in a delay of the collection of samples.

Please note:

There is no Phlebotomy Service on Christmas Day

Blood Taking Unit

The Blood Collection Unit (BTU), situated in Area H, provides a service for the community and hospital clinics.

The unit operates an appointment only service:

Monday – Friday **08:00 - 16:00**

Saturday **08:00 - 12:30**

There is no service available on Sunday or Bank Holidays.

Paediatric Phlebotomy Clinic

The Paediatric Phlebotomy Clinic, situated in Area H within the Blood Taking Unit (BTU), provides an appointment only phlebotomy service for children (18 months – 14 years):

Monday – Friday **08:00 – 11:30**

.
Appointments (Adults and Paediatrics) can be booked via telephone on 01604 (52)3303 or via the following website: www.swiftqueue.co.uk/northampton.php

ADULT ORDER OF DRAW CHART

Tube Guide and
Recommended Order of Draw*

BD Vacutainer®
BD Life Sciences - Preanalytical Systems

Cap Colour	Cat. No.	Tube Type	Determinations	Special Instructions	
		Blood Cultures	Aerobic followed by Anaerobic - if insufficient blood for both culture bottles, use Aerobic bottle only		
	Cat. No. 363095 / KFK119 Draw Volume 2.7ml	Sodium Citrate	Clotting Studies, INR, APTT, Factor Assays	Tubes MUST be filled to AT LEAST the frosted line - Under/Overfilled samples will NOT be analysed	Mix 3-4 Times
	Cat. No. 367956 / KFK112 Draw Volume 3.5ml	SST™ II *Advance*	General Chemistry, Tumour Markers, Hormones, Antibiotic Assays, Most Bacterial and Viral Serology, CRP, Intrinsic Factor, General Immunology, Antenatal, Infectious Disease Screen	Separate form and specimen request for each discipline	Mix 6 Times
	Cat. No. 367883 / KFK281 Draw Volume 4ml	Lithium Heparin	T-Spot, most inherited metabolic disease investigations	Contact laboratory prior to collection	Mix 8-10 Times
	Cat. No. 367839 / KFK171 Draw Volume 4ml	EDTA	Ammonia*, Renin and Aldosterone, Reticulocytes, HbA1c, Viscosity, Haemoglobinopathy, Lead, FK506, TPMT, TBNK, HLA B27, Cyclosporin, PTH, ESR, Most PCR, Gut hormones**, FBC	*Contact lab (x5006) prior to sending **Rush to lab on ice Separate samples for Cyclosporin, TPMT, and PTH	Mix 8-10 Times
	Cat. No. 367941 /KFK277 Draw Volume 6ml	EDTA Crossmatch	Blood Group, Crossmatch, Antibody Screen, Cold Agglutinins, Antenatal Blood group + Screen, HLA Typing, DCT, Kleihauer Test, HIV Viral Load For other investigations contact Blood Transfusion (X5413)	Tubes MUST be labelled fully by hand - NO PRE-PRINTED LABELS ARE ACCEPTED IN BLOOD TRANSFUSION	Mix 8-10 Times
	Cat. No. 368920 / KFK250 Draw Volume 2ml	Fluoride Oxalate	Plasma Glucose, Lactate - Contact lab. (X5006) prior to collection	Tubes MUST be filled to the line	Mix 8-10 Times

Determinations and Special Instructions contained within this guide have been provided by the named institute and are not BD recommendations or instructions for the BD products described. Please consult your organisation's guidelines or contact BD should you have any questions.

*Clinical and Laboratory Standards Institute (CLSI) Guidelines GP41-Ed7 (formerly H3-A6, 6th Edition)

IMPORTANT MIXING GUIDELINES

All BD Vacutainer® tubes require immediate mixing following collection. Insufficient mixing can result in inaccurate test results and the need to re-draw. Correct mixing technique is to gently invert (180° and back) each tube the recommended number of times shown on the right hand side of the table.

PAEDIATRIC ORDER OF DRAW CHART

BD Vacutainer®

BD Life Sciences - Preanalytical Systems

Tube Guide & Recommended Order of Draw*

*Clinical and Laboratory Standards Institute (CLSI) Guidelines GP41-A6 (formerly H3-A6, 6th Edition)

Northampton General Hospital NHS Trust - Paediatric Tubes

Blood samples should be taken in the following order:

Cap Colour	Tube Type	Determinations
	Sodium Citrate	Coag: PTT, APTT (fill the microtainer tube to **1ml**). Mix 3-4 Times
	Serum Gel	Biochemistry: Routine tests (fill the microtainer to **1ml**). Mix 8-10 Times
	Lithium Heparin	Biochemistry: Routine tests (fill the microtainer to **2ml**). This is a blood tube, not a microtainer tube. Mix 8-10 Times
	EDTA	Haematology: FBC, Xmatch, Blood Group (fill the microtainer tube to **1ml**). Microbiology: Fill the microtainer tube to **1ml**. Biochemistry: PTH (fill the microtainer tube to **1ml**). ESR: Adult tube - refer to lab. Mix 20 Times
	Fluoride Oxalate	Biochemistry: Glucose, lactate. Fill the microtainer tube to **1ml**. Mix 8-10 Times

Please use a BD Vacutainer Blood Transfer Device with syringes when transferring blood into the BD Vacutainer Blood Collection Tubes.

Determinations and Special Instructions contained within this guide have been provided by the above named institute and are not BD recommendations or instructions for the BD products described. Please consult your organisation's guidelines or contact BD should you have any questions.

IMPORTANT MIXING GUIDELINES

All BD Vacutainer® tubes require immediate mixing following collection. Insufficient mixing can result in inaccurate test results and the need to re-draw. Correct mixing technique is to gently invert (180° and back) each tube the recommended number of times shown on the right hand side of the table.

For further copies of this guide and questions regarding specific tests, please contact the main Pathology Laboratory.

BD

BD Life Sciences - Preanalytical Systems
t: 01865 781529

NON BLOOD SAMPLE COLLECTIONS

To ensure accurate results are produced by the laboratory, it is paramount that from point of collection to reporting of results, all staff are aware of their responsibility with regard to safety, security, handling and storage of patient samples.

Urine (Random):

Refer to Appendix 1 for details in collecting random urine samples.

Microbiology:

For routine microscopy, culture and sensitivity testing, boric acid urine bottle (red top) should be used. For urine samples of less than 15ml volume white capped sterile universal container should be used, which should be sent to the laboratory as soon as possible. The minimum volume required is 1ml.

For CMV test a plain sterile universal container rather than a boric acid bottle should be used and taken to the laboratory immediately accompanied by a completed request form. Use either boric acid or plain universal for Legionella.

Contaminating bacteria from the external genitalia may give rise to misleading results. Therefore the laboratory only accepts the following specimens for routine culture:

- Catheter or cystoscopy specimens
- Mid-stream urine specimens
- Supra-pubic aspirates

Urinary catheter tips will not be processed as they do not provide helpful microbiological information.

Needles or sharps containing specimens will NOT be accepted.

Biochemistry:

Random urine sample must be collected into a plain universal container for microalbumin and random urine creatinine, protein etc. The minimum volume required is 1ml. Samples collected in a boric acid container are unsuitable for analysis.

Non-Gynae Cytology:

Random urine sample must be collected into a plain universal container, not a boric acid container.

CSF samples

Refer to Appendix 2 for collection information

Three samples clearly numbered 1, 2 and 3 should be sent to the Microbiology laboratory in sterile 30ml universal containers for microscopy, culture and sensitivity.

Sample collected into fluoride oxalate should be sent to Biochemistry for Glucose and Protein

If Xanthochromia is required a 4th sample protected from light is required and tested in Biochemistry

Urine - 24hr Urine Collections:

Information sheets are available at Pathology Reception. Full instructions are given when patients collect urine containers.

Faeces

Refer to Appendix 3 for information regarding collection of faeces.
Faeces are essential for all enteric examinations. Specimens in toilet paper, nappies, margarine tubs, etc., or rectal swabs are not acceptable.

It must be clear on the request form if the patient has been abroad, or is on antimicrobial therapy as the range of tests set up will be determined by the clinical information provided. It is essential to know if the patient is a food handler.

Formed stool samples and repeat samples from inpatients are not routinely examined.

Fluid and / unformed stool samples are routinely examined for the following:

- Salmonella spp.
- Shigella spp.
- Campylobacter spp.
- E. Coli 0157 – cause of haemorrhagic colitis/Haemolytic Uraemic Syndrome (HUS)

The above list is not exclusive: other pathogens such as Yersinia and Cryptosporidium oocysts may be looked for depending on clinical details.

Foreign Travel

If there is an appropriate history of foreign travel, culture for Vibrio (including V. cholerae and V. parahaemolyticus) will be performed.

A concentrate for ova, cysts and parasites will also be performed where there is history of foreign travel to Central or South America, Africa or Asia.

Clostridium difficile

Testing for C. difficile toxin is performed daily; on weekdays on specimens received before 15:00hrs, on weekends and Bank Holidays – on specimens received before 10:00hrs. Specimens received after these times will be tested the following day.

C. difficile testing: samples should be refrigerated unless they are tested within 2 hours of collection.

C. difficile will be tested on fluid/mucoid/ bloodstained stools from inpatients and community patients >2 yrs old.

C. difficile will not be tested:

- On non- fluid stools
- On patients <2 years old
- If two samples have been sent in the previous 10 days
- If positive within the last 28 days; if still symptomatic, discuss with the Consultant Medical Microbiologist

Samples tested early in a C difficile infection may test as toxin negative. If symptoms continue, and C. difficile remains a clinical possibility, please repeat after 48 hours.

Rotavirus

Rotavirus testing is routinely performed on all stools from children under 5 years old. Additional requests for rotavirus testing can be discussed with the Consultant Microbiologist.

Ova, Cysts & Parasites

A concentrate for ova, cysts and parasites is performed routinely on the following stool samples:

- Patients with chronic diarrhoea (i.e. 2 weeks minimum).
- Patients with eosinophilia

- Patients who have returned from Central / South America, Africa or Asia.
- Query worms seen in sample.

Other clinical conditions should been clearly visible on the request form.

Helicobacter Pylori

This is a stool antigen test which is currently performed weekly. It is a non-invasive enzyme immunoassay (EIA) test that has shown high sensitivity and specificity and the ability to confirm eradication. It detects the presence of H pylori and **cannot be performed within 2 weeks of taking a PPI (Protein Pump Inhibitor) or within 4 weeks of antibiotics** as both these suppress bacteria and can cause false negatives. A pea sized stool is required in a universal container.

Swabs

Refer to Appendix 4 for information for collection of swab samples

High Vaginal, Cervical and Urethral Swabs

Very little information can be expected from swabs which are contaminated with material from the lower vagina. Swabs should be taken using a speculum under direct vision where possible. Transport medium is provided by the laboratory.

Local routine process at NGH is for microscopy to be performed on High Vaginal Swabs for clue cells / bacterial vaginosis and the presence of yeasts, pus and trichomonas vaginalis.

Examination for Gonococci

An endocervical swab **MUST** be sent if GC is to be excluded.

Examination for Chlamydia

Lymphogranuloma venereum (LGV)In order to diagnose LGV, different samples from those listed may be indicated; please discuss with Consultant Microbiologist.

Eye swabs

All conjunctival swabs should be sent in transport medium. In neonates a sample should also be taken for examination for Chlamydia.

Throat Swabs

These should be taken with the aid of a good light and tongue depressor into transport medium and sent as soon as possible. Appropriate clinical details enable the laboratory to apply culture for the relevant organism(s) (e.g Neisseria meningitidis)

Nasal Swabs

Swabs for the isolation of Staphylococcus aureus and other pathogens should be taken from both anterior nares and nasal septum with a swab which has been pre-moistened with the transport medium.

Pernasal swabs for pertussis

Ordinary swabs in transport medium are not suitable. When required, the laboratory provides special fine flexible wire-mounted post nasal swabs and the necessary special transport medium. The yield of B. pertussis is increased by taking a postnasal swab.

Wound swabs and Pus swabs

If there is any volume of pus present it should be collected with a syringe into a sterile universal container rather than on to a swab. The site of origin of the material must be stated. Anaerobes and fastidious organisms die if subjected to delay or dehydration. Transport medium must always be used for swabs. Pus is always preferable to a wound swab, and essential if M. tuberculosis is to be identified. There is a better yield from wound swabs if the swab is pre-moistened with transport medium before it is taken

SARS-CoV-2 swabs

The recommended sample type for the SARS-CoV-2 Assay is a nasopharyngeal swab in Universal Transport Media (UTM) or Virus Transport Media (VTM).

Carbapenemase Producing Enterobacteriaceae (CPE) Screening

Any sample type can be used however rectal specimens (swabs with visible faecal material or discoloration) are the most sensitive for detecting CPE colonisation. If a rectal swab is not feasible or acceptable any clinical specimens such as blood, wound swab or urine is suitable.

Enterobius vermicularis

Perianal swab - cotton-wool swab in dry container or with a small amount of physiological saline.

Charcoal and Viral swabs are not appropriate specimens.
Stool specimens are unsuitable for **Enterobius vermicularis.**
Diagnosis of a Sellotape preparation by microscopy is no longer deemed suitable.

MRSA screening (Methicillin Resistant Staphylococcus Aureus)

A screen comprises a nose and groin swab using the liquid Amies with a double swab. The media tube may have a purple top or a white top depending on the type (single or double swab). The liquid media will be colourless. When taking samples for a nose/groin MRSA screen using the double swab system DO NOT put the red swab in the container with the white swab.

DO NOT use charcoal swabs for MRSA investigations.

- Nose
- Groin / Perineum
- Any wounds / i.v. sites
- Any skin lesions / eczema etc / leg ulcer swab

A catheter specimen of urine should also be sent if appropriate.

Skin scrapings, hair and nail clippings for the diagnosis of superficial fungal infections

Material should be sent in a DERMAPAK kit (available from the laboratory), in which full instructions are given. The pack is not sterile, so bacterial culture is not appropriate from the same specimen.

Refer to Appendix 5 for sample collections - skin, hair, nails

Blood Cultures

Refer to Appendix 6 for collection process.

Ensure clinical details supplied on specimen request forms contain clear information regarding the nature of test being requested and sufficient detail to inform laboratory staff upon the safety precautions they need to take to process the specimen without risk of infection.

The BACTEC system allows automatic monitoring of the blood cultures. All blood culture bottles are continuously monitored over a 5 day period (10 days for those with clinical details of infective endocarditis) and positive results are relayed to the appropriate requester as soon as identified. An interim negative report is sent after 48 hours incubation, but bottles will continue to be monitored until 5 days have passed.

Sampling of blood should be carried out according to Department of Health guidance. A blood culture set is defined as one aerobic and one anaerobic bottle; one with a grey flip-off cap and label and the other with a purple flip-off cap and label.

It is important the correct volume of blood is collected. Preferably, a volume of 8-10 mL for each blood culture set should be taken.

Note:

The order of bottle inoculation depends on the method of sampling i.e. needle & syringe, or winged method. Refer to appendix 6.

If the volume of blood is insufficient for two bottles, the aerobic bottle should be inoculated first and then the rest inoculated to an anaerobic bottle.

For infants and neonates, a single paediatric aerobic bottle may be requested: pink flip-off cap and label, is available which will hold 3 ml of blood. If only a small amount of blood can be obtained, such as in those with difficult venous access, it would be appropriate to use a paediatric bottle.

Prior to use, each vial should be checked for damage and evidence of contamination such as cloudiness, leakage, bulging or indented septum. Any vial showing signs of damage or contamination must not be used.

Generally, two sets of blood cultures are preferred as recommended by national guidelines if sepsis is suspected. This increases detection of pathogens and helps distinguish contaminants.

If infective endocarditis is considered, a TOTAL of 3 sets of blood cultures is required initially and these should be taken via different venepuncture sites.

Specimens should be transported and processed as soon as possible. Inoculated bottles should be loaded to continuous monitoring blood culture systems as soon as possible, and ideally within a maximum of 4 hours.

OPTHALMOLOGY SAMPLES for MICROBIOLOGY

The laboratory will not accept any samples in needles – these will be rejected
Samples such as vitreous fluid should be sent using Amies liquid media.

The media tube may have a purple top or a white top depending on the type. The liquid media will be colourless. The pack contains a sterile swab and a tube of media, for vitreous fluid samples you will not need the swab. When the sterile pack is opened the swab can be thrown away. Wash whatever the syringe contains (the 0.1/0.2 ml of the patient's specimen) with liquid media. Secure the lid, label the tube and send in a bag attached to a form with any appropriate clinical information, to the laboratory as soon as possible.

Histology Samples

All specimens requiring routine histological diagnosis should be sent to the laboratory in an adequately-sized, leak-proof container filled with a quantity of 10% Neutral Buffered Formalin, more than sufficient to cover the specimen completely (at least 10 times their volume of fixative).
Multiple specimens from a single patient must be clearly labelled and differentiated, and corresponding information provided on the request form.

Frozen Sections

Frozen section requests should be booked in advance (at least 24hrs notice) with the laboratory. Please contact Histology on Ext 5013/5408 to make arrangements.
Histology request forms and specimen pots must be labelled according to the Acceptance Criteria detailed on page 26. A **theatre contact number** and **name of the person expecting the result** must be clearly shown on the request form.
The specimens must be delivered to Cellular Pathology Reception in sealed containers, **dry and unfixed**.

Muscle Biopsies

This is quite a specialised procedure so prior discussion is essential.

Please contact Histology on Ext 5408 / 5013 for further information.

AVAILABILITY OF TESTS

Blood Sciences – Biochemistry / Haematology / Blood Transfusion

A comprehensive Blood Sciences service is available 24/7. Some tests are processed in batches and will not be reportable out of hours – details of which can be found within the A-Z tests table below.

Microbiology Tests Availability

- Urgent samples dealt with as soon as they are received.
- Results required for immediate management need to be bleeped to the **duty BMS** by the **requesting clinician**.

A – Z ROUTINE TESTS, SAMPLES REQUIRED, AVERAGE TURNAROUND TIMES & REFERENCE RANGES

Samples are mainly analysed in Pathology at Northampton General NHS Trust
Tests that are referred to other laboratories are indicated with a "REFERRED CODE"
– See Appendix 1 for referral laboratories' details
One sample is required for each test unless otherwise specified

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Abacavir HLA Type hypersensitivity	ABATDM	EDTA x2	TAT – 14 Days Tested - BRIIMM
Acanthamoeba Investigation	ACAC	Contact lens	TAT – 14 Days Tested - HPAMAL
ACTH	ACTH	EDTA + Aprotinin tube	Tested – REFERRED-BIO Contact Pathology reception to arrange collection special tube type.
Acyl Carnitine	PCARN	See carnitines	REFERRED-BIO
Acetylcholine Receptor Antibodies	ACRABS	GOLD (gel)	TAT – 21 Days Tested - PLINK Test for Myaesthenia Gravis. Acetylcholine receptor antibodies occur in generalised myasthenia gravis, ocular myasthenia and myasthenic syndromes.
Actinomyces/ Allescheria	ACTC	Swab	TAT –12 Days Tested – NGH-MICRO
ADAMTS13	ADAMTS	CITRATE	TAT – URGENT TTP Pathway – 90 minutes, routine – 24 hours Tested – Oxford Haemophilila and Thrombosis Centre
Anti-diuretic hormone ADH / AVP			See COPEPTIN
Adenovirus PCR	ADEPCR	Whole Blood (EDTA) & Stool Respiratory	TAT –10 Days Tested - MICPATH
Adrenal Antibodies	ADABS	GOLD (gel)	TAT –21 Days Tested - PLINK Endocrinology only. Adrenal antibodies occur in Addison's Disease, autoimmune polyendocrinopathies and premature gonadal failure.
AFP - tumour marker	AFP	GOLD (gel)	Biochemistry in-house test
Alanine Transferase – ALT	ALT	GOLD (gel)	Biochemistry in-house test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Albumin	ALB	GOLD (gel)	Biochemistry in-house test
Alcohol	ETH	GOLD (gel)	TAT – 4Hrs Biochemistry in-house test
Aldosterone/PRA	ALDO	EDTA	TAT – 14 Days Tested – REFERRED-BIO Rush straight to lab
Alk. Phos Isoenzymes	APIE	GOLD (gel)	Tested – REFERRED-BIO For investigation of the source persistently elevated ALP. Must be discussed with Duty Biochemist prior to requesting. Test only available if source of ALP is still unclear after GGT and P1NP analysis has been performed.
Alk. Phosphatase	ALP	GOLD (gel)	Biochemistry in-house test
Alpha-1-acid glycoprotein	AGLY	GOLD (gel)	Biochemistry referred test
Alpha-1-antitrypsin	AAT	GOLD (gel)	Biochemistry in-house test
Alpha-1-Antitrypsin (Genotype)	AATG	EDTA – 2x5ml	Biochemistry referred test Rarely required. Performed if phenotype unclear
Alpha-1-Antitrypsin (phenotype)	AATP	GOLD (gel)	Biochemistry referred test Automatically cascaded if AAT concentration is borderline/low
Alpha-2-Antiplasmin	A2ANTI	CITRATE	TAT – 2 weeks Tested – Oxford Haemophilia and Thrombosis Centre
Aluminium	SALUM	GOLD (gel)	Biochemistry referred test
Amikacin levels	AMIK	GOLD (gel) Pre Dose + 1hr Post Dose	Biochemistry referred test
Amino Acid Chromatography Serum	SAAC	GOLD (gel)	Biochemistry referred test
Amino Acids (quantitative) serum/urine	PAAQ UAAQ	Lithium Heparin Random URINE (plain)	Biochemistry referred test
Aminophylline (Theophylline)	THEO	GOLD (gel)	Biochemistry in-house test
Amiodarone	AMIO	Dark Blue SERUM tube	Biochemistry referred test
Ammonia	AMM	EDTA (on ice) – contact pathology before taking sample	Biochemistry in-house test Rush to lab on ice
Amoebic Antibodies	AMAB	GOLD (gel)	TAT – 10 Days Tested – UCLHPAR

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Amprenavir	AMPTDM	GOLD (gel)	TAT – 10 Days Tested – PTUL
Amylase	AMY	GOLD (gel)	Biochemistry in-house test
Amylase - URINE	UAMC	Random URINE (plain)	Biochemistry in-house test
Androstenedione	ANDR	GOLD (gel)	Biochemistry referred test
Angiotensin Converting Enzyme	ACE	GOLD (gel)	Biochemistry in-house test
Antenatal BT Serology Screening		2 GOLD (gel) + 1 PINK BT EDTA	TAT – 7 Days Tested – NGH-BT
Antenatal Hb-opathy Screening	ANHBO	1 EDTA	TAT – 3 Days Tested – NGH-HAEM
Antenatal Infectious Diseases in pregnancy (IDPS) Screening – HBV, HIV and Syphilis	?	GOLD (gel)	TAT- 8 Days Tested – NGH-MICRO All initial screening tests for all three infections are performed in Northampton General Hospital NHS Trust Pathology. Any send away should be approved by IDPS Microbiology Clinical Lead. Microbiology Clinical Lead should be notified of any urgent request and make the arrangements. All confirmed positive results are communicated by the microbiology consultant to the antenatal team.
Anthrax Antibodies	ANAB	GOLD (gel)	TAT – 10 Days Tested – SALCAMR
Antibody Identification		1 PINK BT EDTA	TAT – 7 Days Tested – NGH-BT
Anti-Mullerian Hormone	AMH	GOLD (gel)	Biochemistry referred test
Anti MUSK antibodies	MUSAB	GOLD (gel)	TAT – 28 Days Tested – PLINK Neurology only. Second-line test for myasthenia gravis (MG). AChR should be performed first. Testing for Musk antibodies may be useful in patients with suspected MG who do not have detectable AchR antibodies
Anti-Neutrophil Cytoplasmic Antibodies (ANCA)	ANCA	GOLD (gel)	TAT – Routine - 7 Days Urgent – 1-2 Days Tested – PLINK A.N.C.A. screen with positives being tested for PR3 & MPO
Anti-Nuclear antibodies (ANA)	ANA	GOLD (gel)	TAT – 5-10 Days Tested – PLINK If the titre is low (1/80) and the ENA and dsDNA antibodies are negative then this is a non-specific result, and can be found in inflammation, infection and 3% of the population.

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Antithrombin III (See Thrombophilia Screen)		CITRATE	TAT – 28 Days Tested – NGH-HAEM
Anti TSH Receptor Antibodies	THAB	GOLD (gel)	TAT – 14 Days Biochemistry in-house test
APTT	APTT	CITRATE	TAT – 4Hrs Tested – NGH-HAEM RR – M/F 22 – 34 secs
Arsenic	ARS/UARS	EDTA and/or 20ml URINE (plain)	TAT – 21 Days (Blood) Tested – ARS TAT – 21 Days (Urine) Tested – BIOM
ASOT Profile (includes DNase B)	ASOT	GOLD (gel)	TAT –7 Days Tested – NGH-MICRO RR – ASOT < 200iu/ml
Aspartate Aminotransferase AST	AST	GOLD (gel)	Biochemistry in-house test
Aspirin (Salicylate)	SAL	GOLD (gel)	Biochemistry in-house test
Avian Antibodies (SIgG)	AVPPT	GOLD (gel)	TAT – 10 Days Tested – PLINK Helpful in diagnosing Bird-fancier's lung disease (antigens for poultry, budgies and pigeon tested) If another bird implicated please specify
Azathioprine-SEE TPMT	TPMT		
B12	B12	GOLD (gel)	Biochemistry in-house test
BCR-ABL	BCRABL	EDTA	TAT – 14 days Tested – Genomics Laboratory (East GLH)
Beta-2-Glycoprotein	B2G1A	Gold (gel)	Biochemistry referred test
Beta-2-Microglobulin	B2M	GOLD (gel)	Biochemistry in-house test
Beta-2-Transferrin	B2T	Fluid (plain) + paired serum (gel)	Biochemistry referred test Bring fluid to laboratory immediately to be frozen. Paired serum sample required on day of fluid collection.
Bartonella antibodies	BARREF	GOLD (gel)	TAT – 21 Days Tested – COLRESP Cat scratch fever
Bicarbonate (HCO3)	BIC	GOLD (gel)	Biochemistry in-house test Cannot be added retrospectively due to instability
Bile Acids	BILA	GOLD (gel)	Biochemistry in-house test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Bilharzia antibodies	BILAB	GOLD (gel)	TAT – 10 Days Tested – UCLHPAR
Bilirubin	BILI	GOLD (gel)	Biochemistry in-house test
Bilirubin – conjugated	DBIL	GOLD (gel)	Biochemistry in-house test
Biopterin	BIOP	20ml URINE (plain) + bloodspot	Biochemistry referred test
Biotinidase	BIOT	GOLD (gel)	Biochemistry referred test
Blood Cultures	BC	Blood Culture Bottles Adult: Pair of Bottles *(10ml in each)* Paediatric: Single Bottle *(1-2ml)*	TAT –6 Days Tested – NGH-MICRO Please ensure the bottles are not over or underfilled. For the diagnosis of endocarditis, send three sets of blood cultures taken from different sites within 24 hours. Culture extended to 10 days for infectious endocarditis
Blood Film	MF OR FILM	EDTA	TAT –1 Day Tested – NGH-HAEM
Blood Gas Analysis		Heparinised Blood in Syringe/Capillary	Biochemistry in-house test Mix thoroughly after sample is drawn. Ensure needle is removed. Rush to lab immediately. For capillary, please ensure sample is capped both ends.
Blood Group - Infant	ICG	EDTA	TAT –5Hrs Tested – NGH-BT
Bone Profile: Ca/ALP/Alb	B	GOLD (gel)	Biochemistry in-house test
Bordetella pertussis Antibodies/typing/ PCR	BPES	GOLD (gel)	TAT – 14 Days Tested – NGH-MICRO
Bordetella pertussis culture	BPC	Pernasal swab	TAT – 10 Days Tested – NGH-MICRO PCR for pertussis is available on nasopharyngeal aspirates from inpatients under 6 months old with a compatible clinical diagnosis. Call consultant microbiologist for advice.
Borrelia serology	BORREF	GOLD (gel)	TAT – 10 Days Tested – SALCAMR Lyme Disease - Please provide details of travel and exposure to tick bites
Bronchoscopy samples, broncheoalveolar lavage (BAL), suction catheter sample, bronchial washings	REC	Plain sterile container MINIMUM VOLUME REQUIRED 1.0ml	TAT – Microscopy – 2 Days Culture – 8-12 Weeks Tested – NGH-MICRO Routine cultures will be performed. If AFB culture is required please request separately and specifically. Requests for PCP will only be processed on BAL or induced sputum samples

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Brucella serology	BRUC	GOLD (gel)	**TAT – 14 Days** **Tested – LIVPHA** Please provide details of travel and exposure to unpasteurised dairy products
C1 inhibitor level and function	C1INH	GOLD (gel)	**TAT – 21 Days** **Tested – PLINK** Sample must be received in the lab within 5 hours of venesection Immunologist to review request for testing in cases where C1 esterase inhibitor deficiency is suspected
CA125	C125	GOLD (gel)	**Biochemistry in-house test**
CA153	C153	GOLD (gel)	**Biochemistry in-house test**
CA199	C199	GOLD (gel)	**Biochemistry in-house test**
Caeruloplasmin	CAER	GOLD (gel)	**Biochemistry in-house test**
Calcitonin	CALC	GOLD (gel)	**Biochemistry referred test**
Calcium	CA	GOLD (gel)	**Biochemistry in-house test**
Calcium / Calcium:creatinine ratio (Spot urine)	UCAC/ CACR	Plain spot urine	**Biochemistry in-house test**
Calcium excretion (24 hour urine)	24CA	24 hour acidifed urine	**Biochemistry in-house test**
Calprotectin - FAECAL	FCAP	FAECES collected in Universal	**Biochemistry in-house test**
Calreticulin	CALR	EDTA	**TAT – 2 weeks** **Tested – Genomics Laboratory (East GLH)**
Carbamazepine (Tegretol)	CAR	GOLD (gel)	**Biochemistry in-house test**
Cardiolipin antibodies	CLIP	GOLD (gel)	**TAT – 10 Days** **Tested – PLINK** Found in anti-phospholipid syndrome, but also seen in infection. Results should be positive on two occasions at least 6 weeks apart to support a clinical diagnosis of antiphospholipid syndrome
Carnitines (free and acyl)	PCARNP/ BCARNP	Lithium Heparin Bloodspots	**Biochemistry referred test**
CD4 – immune monitoring	CD4T	EDTA	**TAT – 5 Days** **Tested – PLINK** **Please send samples before 2pm Monday to Thursday. Requests cannot be accepted on a Friday.**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
C difficile antigen, toxin and PCR	CDS	FAECES collected in Universal MINIMUM VOLUME REQUIRED 1.0ml	**TAT – 1 Day** **Tested – NGH-MICRO** This test is performed on clinically relevant samples only Toxin degrades at room temperature, therefore send to laboratory as soon as possible or refrigerate until delivery to laboratory. **If a patient sample has tested positive in the previous four week period, do not send a further sample**
CEA	CEA	GOLD (gel)	**Biochemistry in-house test**
Cell Marker studies	CM	EDTA or Bone Marrow	**TAT – 10 Days** **Tested – LRI (HMDL)**
CH50/AP50	CH50	GOLD (gel)	**TAT – 14 Days** **Tested – PLINK** Must be separated within 2 hours of collection
Chloride	CHL	GOLD (gel)	**Biochemistry in-house test**
Chlamydia (Psittacosis)	CHLSER	GOLD (gel)	**TAT – 14 Days** **Tested – BRIPHA**
Chlamydia & Gonorrhoea NAAT	CHLAM	Chlamydia endocervical swab Or Urine collection Kit	**TAT – 4 Days** **Tested – NGH-MICRO** This specimen is usually from cervix or urethra (use chlamydia endocervical swabs). If chlamydia ophthalmia is suspected, use the male swabs and identify the specimen appropriately This automatically includes GC testing in the request.
Chloramphenicol	CHLOR	GOLD (gel)	**TAT – 7 Days** **Tested – ARLS**
Cholesterol	CHOL	GOLD (gel)	**Biochemistry in-house test**
Cholinesterase Phenotype/ Activity/ Genotype	CHP	EDTA	**Biochemistry referred test**
Chromium and Cobalt	CHCOB	Sodium heparin	**Biochemistry referred test**
Chromogranin A and/or B (tumour marker)	CHGRA CHGRB CRAB	EDTA delivered on ice within 10mins	**Biochemistry referred test** Samples must be separated and frozen immediately
Chromosome /Cytogenetic Investigations	CHROM	Lithium Heparin	**Refer to National Genomic Test Directory** **Results are sent straight to requesting clinician.** **Tested at Regional Genetics centre** **See also: DNA Studies (molecular genetics)**
Citrate (24hr urine)	24CIT	24hr urine acidified container	**Biochemistry referred test** **Also part of Stone Former Profile (USTON)**
Clotting Screen	CP	CITRATE	**TAT – Routine – 4 Hrs** **Urgent – 2 Hrs** **Tested – NGH-HAEM**
CMV Profile: 1. CMV IgG 2. CMV IgM	CMV	GOLD (gel)	**TAT – 7 Days** **Tested – NGH-MICRO**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
CMV PCR	CMVPCR	CSF	**TAT – 7 Days** **Tested – MICPATH** To exclude congenital CMV - this specimen should be sent as soon as the diagnosis is suspected - preferably within the first week of life
		EDTA	
		URINE	
Coeliac Screen (TTg)	COES	GOLD (gel)	**TAT – 5 Days** **Tested – PLINK** All sera are tested for tissue transglutaminase antibodies (TTg Antibodies) Positives will be also tested for endomysial antibodies. As the autoantibodies tested in coeliac disease are IgA, false negative results can occur in IgA deficiency. IgA is tested on all TTg samples. TTg IgG is tested on all IgA deficient samples.
Complement studies C3 + C4	C34S	GOLD (gel)	**Biochemistry in-house test**
Cold agglutinin titre		EDTA	**TAT – 10 Days** **Tested – NHSBT**
Copeptin (replaces ADH)	COPEP	GOLD (gel)	**Biochemistry referred test**
Copper – (plasma)	SCU	Sodium heparin	**Biochemistry referred test**
Copper – URINE	UCU	24hr URINE in plain contrainer	**Biochemistry referred test**
Cord Blood Group	Not currently available on ICE	EDTA	**TAT – 5 Hrs** **Tested – NGH-BT**
Cortisol – (serum)	CORT	GOLD (gel)	**Biochemistry in-house test** **For dexamethasone suppression test, please use Post Dex cortisol (DSTCOR)** **For Short Synacthen test, please use BSYN**
Cortisol (24hr urine)	24CORT	24hr URINE in plain container	**Biochemistry referred test**
C-Peptide	CPINS	GOLD (gel)	**See Insulin**
COVID-19 (SARS-CoV-2)	WCOV	Viral Transport Media Swab	**TAT – 24 hours** **To be sent in line with the current testing guidelines issued by the Consultant Microbiologist.**
C-Peptide – URINE	UCP	Urine in Boric Acid Universal	**Biochemistry referred test**
Creatine Kinase (CPK, CK)	CK	GOLD (gel)	**Biochemistry in-house test**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Creatinine	CRE	GOLD (gel)	Biochemistry in-house test eGFR automatically calculated in adults
Creatinine Clearance – URINE	CC	24hr URINE in plain container	Biochemistry in-house test Paired serum creatinine level essential to calculate clearance
C-reactive protein	CRP	GOLD (gel)	Biochemistry in-house test
Cross-match (non-urgent)	XM	PINK BT EDTA	TAT – 2 Hrs Tested – NGH-BT
Cryoglobulins	CRYOS	Contact Biochemistry x5404	Biochemistry referred test
Cryptococcal antigen	CRYNEO	GOLD (gel) CSF	TAT – 7 Days Tested – BRIHPA
Cryptosporidium/ Giardia screening	OCPEL	FAECES collected in Universal	TAT – 2 Days Tested – NGH-MICRO This test will be performed on clinically relevant samples This test will not be performed routinely on inpatients unless specifically requested
Crystal Analysis (Urine)		Plain Universal container x5417	TAT – 1 Day Tested – NGH-MICRO
CSF Bilirubin (Xanthochromia)	CXAN	Plain Universal container (protected from light/hand deliver)	Biochemistry in-house test See link on ICE for full sample collection guide. Test not available out of hours.
CSF Microscopy & Culture	CSFI	Plain Universal container 1.5-2.5ml in each bottle – usually 3 bottles. A larger amount will be needed if multiple investigations are required	TAT – 6 Hrs – Microscopy 2 Days – Culture Tested – NGH-MICRO Ideally a CSF specimen should be analysed within 2 hours of specimen collection otherwise an accurate cell count may not be obtained. If SAH is suspected a 4th sample will be required. Additional tests e.g. AFB, cryptococcal antigen or PCR for viral agents or meningococci must be discussed with a consultant microbiologist once the cell count and chemistry are available
CSF Cytospin	CYTOC	Plain Universal container	TAT – 1 Day Tested – NGH-HAEM
CSF Glucose	CGLU	Fluoride Oxalate	Biochemistry in-house test
CSF Glycine	CGLY	Plain Universal container + paired serum	Biochemistry referred test
CSF Lactate	CLAC	Fluoride Oxalate-on ice -contact lab first	Biochemistry in-house test
CSF Oligoclonal Bands	COLIG	Plain Universal container	Biochemistry referred test Paired serum required (SOLIG)
CSF Pipecolic Acid	CPIP	Plain Universal container	Biochemistry referred test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
CSF Protein	CPRO	Plain Universal container	Biochemistry in-house test
CSF Serine	CSER	Plain Universal container + paired serum	Biochemistry referred test
Cyclosporine	CSP	EDTA	Biochemistry in-house test SEPARATE SAMPLE ESSENTIAL
Cystine/ Homocystine	UHCYS	24 hr plain urine	Biochemistry referred test
2,8 Dihydroxyadenine (urine)	UDHA	Plain Universal container	Biochemistry referred test
11 Deoxycortisol	UDOC	GOLD (gel)	Biochemistry referred test
D-Dimer	DD	CITRATE	TAT – 2 Hrs Tested – NGH-HAEM
Dengue fever	DENG	GOLD (gel)	TAT – 14 Days Tested – SALVAC
DHEAS	DHAS	GOLD (gel)	Biochemistry referred test
Direct Antiglobulin Test (DAT)	DAT	EDTA	TAT – 2 Days Tested – NGH-BT
Dihyrotestosterone (DHT)	DHT	GOLD (gel)	Biochemistry referred test
Digoxin (6-10 hrs post dose)	DIG	GOLD (gel)	TAT – 1 Day Biochemistry in-house test RR – M/F 0.8 - 2.0 ug/L
DNA Studies (molecular genetics)	DNA	EDTA	Refer to National Genomic Test Directory Results are sent straight to requesting clinician. Tested at Regional Genetics centre See also: Chromosome /Cytogenetics
dsDNA antibodies (double stranded DNA antibodies)	DSDNA (Rheumatology only)	GOLD (gel)	TAT – 10 Days Tested – PLINK Only performed if ANA is positive - Match ANA and ANCA
Down's Syndrome Screen	Not requested on ICE	GOLD (gel)	TAT – 10 Days Tested – KGH Includes Trisomy 13 and 18 (1st Trimester) and Trisomy 21 (2nd Trimester)
Drugs of Abuse Screen (urine)	BDS	Plain Universal container	Biochemistry referred test Includes Amphetamines, Benzodiazepines, Cannabinoids, Cocaine, Methadone, Opiates, and commonly abused prescribed drugs.

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
EBV Profile: **1.EBNA IgG** **2.VCA IgG** **3.VCA IgM**	**EBNA**	**GOLD (gel)**	**TAT – 10 Days** **Tested – PLINK** EBV/EBNA. Unless patient has lymphoma or nasopharyngeal carcinoma this test should be used only after a FBC & GF screening test. If negative they should be repeated in 7-10 days if clinically indicated. At this point a specimen requested as an acute phase serum save can be tested for full EBV serology by contacting the laboratory.
Efavirenz	**EFATDM**	**EDTA – PLASMA – SEE NOTE**	**TAT – 14 Days** **Tested – LAB21** Centrifuged and separated within 4 hours. If transport is later than 24hrs after collection sample should be frozen -20°C
Electrophoresis	**EP**	**GOLD (gel)**	**Biochemistry in-house test** Immunoglobulins automatically cascaded
EMA dye binding test (Hereditary spherocytosis screen)	**EMA**	**EDTA**	**TAT – 48 hours** **Tested – Birmingham Childrens**
ENA (antibodies to Extractible nuclear antigens)	**ENA**	**GOLD (gel)**	**TAT – 10 Days** **Tested – PLINK** SS-A/SS-B/Ro/La/Scl70/Jo1 Refer to Immunology section. Only performed if ANA is positive except when the clinical details suggest Sjogren's syndrome, SLE or polymyositis/dermatomyositis Match ANA and ANCA
Endocervical Swab	**GSC**	**Charcoal Swab**	**TAT – 2 Days** **Tested – NGH-MICRO** If this specimen is sent in addition to a vaginal swab, only GC culture result will be reported
Enterovirus serology	**EV**	**GOLD (gel)**	**TAT – 10 Days** **Tested – SURHPA** This test detects IgM to Coxsackie and ECHOvirus
Erythropoietin (EPO)	**EPO**	**GOLD (gel)**	**TAT – 14 Days** **Tested – BIOM**
ESR	**ESR**	**EDTA**	**TAT – Urgent – 2 Hrs** **Routine – 8 Hrs** **Tested – NGH-HAEM**
Ethylene Glycol	**EGLY**	**Fluoride Oxalate**	**Biochemistry referred test** **DO NOT delay treatment while waiting for result.**
Etravirine	**ETRTDM**	**EDTA – PLASMA – SEE NOTE**	**TAT – 14 Days** **Tested – LAB21** Centrifuged and separated within 4 hours. If transport is later than 24hrs after collection sample should be frozen -20°C
Fabry Disease Screen	**FABD**	**EDTA**	**Genetic consent for females may be required for confirmatory testing**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Factor II	FII	CITRATE	TAT – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor V Leiden (also part of Genetic Thrombophilia Screen)	FVL	EDTA	TAT – 21 Days Tested – NGH-HAEM
Factor V	FV	CITRATE	TAT – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor VII	FVII	CITRATE	TAT – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor VIII	FVIII	CITRATE	TAT – Urgent – 3 Hrs Routine – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
FACTOR VIII inhibitor	F8I	CITRATE	TAT – 1-2 weeks Tested – Oxford Haemophilia and Thrombosis Centre
Factor IX	FIX	CITRATE	TAT – Urgent – 3 Hrs Routine – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor X	FX	CITRATE	TAT – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor XI	FXI	CITRATE	TAT – Urgent – 3 Hrs Routine – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor XII	FXII	CITRATE	TAT – 7 Days Tested – NGH-HAEM RR – M/F 50 – 150%
Factor XIII	FXIII	CITRATE	TAT – 7 Days Tested – Oxford Haemophilia and Thrombosis Centre
Faecal PCR	APP	FAECES collected in a blue Universal MINIMUM VOLUME REQUIRED 5ml	TAT – 3 Days Tested – NGH-MICRO Formed stools will not be routinely processed. Culture will still be performed if screening for carriage (e.g. food handlers or case contact). **Indicate on request card and send as high risk if typhoid or E. coli O157 is suspected.** This test includes culture for salmonella, shigella, campylobacter and E.coli 0157. It is mandatory for all outpatients and patients admitted with acute diarrhoea and/or vomiting but unlikely to be of value in patients who have been hospitalised for 3 days or more. These patients should have a C. difficile toxin test. Please state if your patient has a history of bloody diarrhoea and indicate any associations with travel (state country of travel) or food consumption
Faecal Elastase	FELA	FAECES collected in Universal	Biochemistry referred test
Faecal Porphyrin	FPOR	FAECES collected in Universal – covered in foil	Biochemistry referred test Only request faecal testing if advised by Porphyin Service on basis of blood and urine results.

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Ferritin	FER	GOLD (gel)	Biochemistry in-house test
Fertility Profile: Hb surface antigen HIV HepB core HepC Rubella	HBSAG HIV AHBCT HCV RUBG	GOLD (gel)	TAT – 7 Days Tested – NGH-MICRO This profile is only for patients for referral to fertility services
Fibrinogen	FIB	CITRATE	TAT – 8 Hrs Urgent – 2 hrs Tested – NGH-HAEM RR – M/F 1.8 – 5.0 g/L
Fibrinogen Antigen	FIBANT	CITRATE	TAT – 1 weeks Tested – Oxford Haemophilia and Thrombosis Centre
FK506 – (see Tacrolimus)			
Flecainide	FLEC	Dark Blue Serum tube	Biochemistry referred test
Fluid Albumin	FLALB	Fluid in Universal Container	Biochemistry in-house test
Fluid Amylase	FLAMY	Fluid in Universal Container	Biochemistry in-house test
Fluid Glucose	FLG	Fluoride Oxalate	Biochemistry in-house test
Fluid LDH	FLLDH	Fluid in Universal Container	Biochemistry in-house test
Fluid Protein	FLTP	Fluid in Universal Container	Biochemistry in-house test
Fluid Triglyceride	FLTRI	Fluid in Universal Container	Biochemistry in-house test
Folate	FOL	GOLD (gel)	Biochemistry in-house test
Fragile X	FRAGX	EDTA Lithium Heparin	Results are sent straight to requesting clinician. Tested at Regional Genetics centre Both tube types required.
Free Fatty Acids	FFA	Fluoride Oxalate	Biochemistry referred test
Free T3	FT3	GOLD (gel)	Biochemistry in-house testCascaded depending on TSH and FT4 level and clinical details
Free T4	FT4	GOLD (gel)	Biochemistry in-house test Cascaded depending on TSH level and clinical details
Fructosamine	FRUC	GOLD (gel)	Biochemistry referred test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
FSH	FSH	GOLD (gel)	Biochemistry in-house test
Full Blood Count - FBC	FBC	EDTA	TAT – A&E – 1 hour Urgent – 2 Hrs Routine – 4 Hrs Tested – NGH-HAEM
Fungal antibodies (aspergillus - SIgG)	ASPPT	GOLD (gel)	TAT – 10 Days Tested – PLINK
Fungal microscopy and culture	FUNG	Sterile universal container	TAT – 14 Days Tested – NGH-MICRO Please ensure nail or skin scrapings are sent in a secure container and properly labelled. The edges of skin lesions yield the greatest quantities of viable fungus. Lesions should be scraped with a blunt sterile scalpel blade. Cut hairs are not suitable for direct examination as the infected area is usually close to the scalp surface.
G6PD Glucose-6-Phosphate Dehydrogenase	G6PD	EDTA	TAT – 28 Days Tested – MKFT RR – M/F 4.6 – 13.5IU/gHb
Gabapentin	GABA	Dark Blue Serum tube	Biochemistry referred test
GAD antibodies (Glutamic Acid Decarboxylase Abs)	GADAB	GOLD (gel)	TAT – 21 Days Tested – PLINK Endocrinology & Neurology only. GAD Abs. may be found in IDDM pts. at diagnosis & in Stiff Person's syndrome or diffuse myotonia
Galactosaemia screen	GPUT	Lithium Heparin	Biochemistry referred test
Galactosidase (alpha)			See Fabry disease screen
Gamma GT	GGT	GOLD (gel)	Biochemistry in-house test
Ganglioside Antibodies (anti GM1/GQ1b)	AGM1 GQ1BS	GOLD (gel)	TAT – 21 Days Tested – PLINK Neurology only. GM1 antibodies occur in motor neuropathies, GD1b antibodies occur in Guillain Barre syndrome and sensory neuropathies, GQ1b antibodies occur in Miller-Fischer syndrome and GT1a antibodies occur in acute neuropathies with bulbar dysfunction
Gastric Parietal Cell antibodies	ANAGPC	GOLD (gel)	TAT – 7 Days Tested – PLINK Non-specific marker of autoimmunity, particularly autoimmune gastritis & pernicious anaemia. Ig positive suggest check B12
Gastrin	GAST	EDTA	Biochemistry referred test Patient must be fasting and sample must be separated and frozen immediately – send to lab within 10 minutes

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
GBM antibodies (Glomerular basement antibodies)	GBMAB	GOLD (gel)	TAT – 7 Days Tested – PLINK URGENT REQUESTS Please phone laboratory when sending sample. Result will be available within 1-2 working days
Genetic Thrombophilia Screen Includes: Factor V Leiden Prothrombin Gene Mutation	GTS	EDTA X 2	TAT – 28 Days Tested – NGH-HAEM
Gentamicin level	GENL	GOLD (gel)	Biochemistry in-house test
Glandular Fever Test	GF	EDTA	TAT – 1.5 Days Tested – NGH-HAEM
Glucagon	GLUC	EDTA	Biochemistry referred test Patient must be fasting and sample must be separated and frozen immediately – must be sent to lab within 10 minutes
Glucose	PG	Fluoride Oxalate	Biochemistry in-house test
Glucose Tolerance Test	GTT	Fluoride Oxalate	Biochemistry in-house test Clearly indicate which is the basal and 120 minute sample and send both samples with single form
Glycosaminoglycans (GAGS)	GAGS	URINE –20ml (plain)	Biochemistry referred test
Group and Screen		PINK BT EDTA	TAT – 4 Hrs (Inpatient) 24 Hrs (Outpatient) Tested – NGH-BT
Growth Hormone	GH	GOLD (gel)	Biochemistry in-house test
Gut Hormone Profile	GUT	EDTA	Biochemistry referred test Patient must be fasting and sample must be separated and frozen immediately – must be sent to lab within 10 minutes
3-Hydroxybutyrate (beta)	3HB	Fluoride Oxalate	Biochemistry referred test
5 HIAA Excretion	24HIAA	24hr urine collected in acid container	Biochemistry referred test Container and patient information available at Pathology Reception NGH
17 Hydroxy-progesterone - serum	17HP	GOLD (gel)	Biochemistry referred test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
17 Hydroxy-progesterone - bloodspots	17HPS	Bloodspots – 4 hourly	Biochemistry referred test
Haemoglobin A2&F	HBF +HBA2	1 EDTA	TAT – 14 Days Tested – NGH-HAEM
Haemoglobinopathy (Routine)	HBO	1 EDTA	TAT – 7 Days Tested – NGH-HAEM
Antenatal Hb-opathy Screening	ANHBO	1 EDTA	TAT – 3 Days Tested – NGH-HAEM
HbA1c (Glycosylated Haemoglobin)	HBA1C	EDTA	Biochemistry in-house test
Haptoglobin	HAPT	GOLD (gel)	Biochemistry referred test
HCG	HCG	GOLD (gel)	Biochemistry in-house test Measures total +free beta hCG. Offered as tumour marker, not available for routine pregnancy testing.
HDL – Cholesterol	HDL	GOLD (gel)	Biochemistry in-house test
Heparin Assay	HEP	CITRATE	TAT – Urgent – 3 Hrs Routine – 7 Days Tested – NGH-HAEM RR – M/F 0.5 – 1.0 IU/dl
Hepatitis (Acute) Profile: 1.Hep A IgM 2.Hep B Surface Ag 3. Hep C Ab (screen)	HEPA	GOLD (gel)	TAT – 1-7 Days Tested – NGH-MICRO
Hepatitis A IgG	HEPAG	GOLD (gel)	TAT – 7 Days Tested – NGH-MICRO To confirm/exclude immunity to Hep A prior to travel / immunisation
Hepatitis A IgM	HEPAM	GOLD (gel)	TAT – 1-7 Days Tested – NGH-MICRO To confirm /exclude recent acute hepatitis A infection. Ensure LFTs are consistent with acute hep A infection & that there is reasonable risk of Hep A infection before requesting
Hepatitis B core antibody (HbcAb)	AHBCT	GOLD (gel)	TAT – 2 Days Tested – NGH-MICRO This test can be offered to non-responders to vaccination. Antibody level <10iu/ml
Hepatitis B DNA Quantitative	HBVQN	3x EDTA	TAT – 12 Days Tested – BIRHPA

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Hepatitis B surface antibody (HbsAb)	**AHBS**	**GOLD (gel)**	**TAT – 7 Days** **Tested – NGH-MICRO** To determine antibody response to Hep B vaccine. Please provide vaccination history. Protective value after course>100iu/L
Hepatitis B surface antigen (HbsAg)	**HBSAG**	**GOLD (gel)**	**TAT – 2 Days** **Tested – NGH-MICRO** To determine acute HepB infection and current carriage of HepB virus
Hepatitis C antibody	**HCV**	**GOLD (gel)**	**TAT – 14 Days** **Tested – NGH-MICRO** Test in patients with persistently raised levels of ALT or have clear risk factors for HCV. If HCV is considered a possibility please repeat 6 weeks post a negative result
Hepatitis C RNA Quantitative	**HCVQN**	**3x EDTA**	**TAT – 14 Days** **Tested – BIRHPA** Provide antiviral history - Viral Load
Hepatitis D	**HEPD**	**GOLD (gel)**	**TAT – 14 Days** **Tested – COLHPA**
Hepatitis E	**HEPE**	**GOLD (gel)**	**TAT – 14 Days** **Tested – COLHPA**
Herpes Simplex antibodies	**HSV**	**GOLD (gel)**	**TAT – 5 Days** **Tested – COLHPA** **HSV – IgG and IgM –** If muco-cutaneous herpes is suspected please send a swab for virus isolation
High Affinity Haemoglobin	**HAH**	**EDTA**	**TAT – Antenatal 2 weeks** **Other – up to 8 weeks** **Tested – OUH - Haemophilia**
Histology Requests		**Refer to Cellular Pathology section**	
HIV antibody & antigen detection	**HIV**	**GOLD (gel)**	**TAT – 2 Days** **Tested – NGH-MICRO** Ensure full informed consent has been obtained
HIV viral load	**VL**	**EDTA**	**TAT – 5 Days** **Tested – NGH-MICRO**
HLA B27	**HLAB27**	**EDTA**	**TAT – 2 weeks** **Tested – NGH-HAEM**
Homocysteine	**HCYSE**	**GOLD (gel)**	**Biochemistry in-house test** Must reach lab within 1 hour
H. pylori antigen	**HYPAN**	**FAECES collected in Universal**	**TAT – 5 Days** **Tested – NGH-MICRO**
HPV PCR	**HPVPCR**	**GOLD (gel) +** **EDTA**	**TAT – 2 Days** **Tested – MICPATH**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
HSV PCR – Herpes Simplex PCR (HSV I & II)	HSVPCR	Viral Swab in viral Transport Medium	TAT – 7 Days Tested – NGH-MICRO
HTLV 1 or 2	HTLV	2x GOLD (gel)	TAT – 14 Days Tested – COLHPA Provide appropriate clinical details
Hydatid Antibodies	HYDAB	GOLD (gel)	TAT – 21 Days Tested – LIVTROP
IgA/ IgG/ IgM			See Immunoglobulins
IgD	IGD	GOLD (gel)	Biochemistry referred test
IGF BP3 (binding protein)	BP3	GOLD (gel)	Biochemistry referred test
IGF1	IGF1	GOLD (gel)	Biochemistry in-house test
IgG Subclasses	GSUB	GOLD (gel)	TAT – 21 Days Tested - PLINK
IGRA – see T-SPOT / Quantiferon			
Immunoglobulins (IgG/ IgA/ IgM)	IGS	GOLD (gel)	Biochemistry in-house test
Influenza Virus PCR	FLU	Naso pharyngeal swab	TAT – 5 Days Tested – NGH-MICRO
Inhibin A (tumour marker)	INHB	GOLD (gel)	Biochemistry referred test
Inhibin B (tumour marker)	INHB	GOLD (gel)	Biochemistry referred test
INR	INR	CITRATE	TAT – 2 Hrs Tested – NGH-HAEM RR – M/F 0.8 – 1.2 ratio
Inorganic Phosphate	PHOS	GOLD (gel)	Biochemistry in-house test
Insulin	INS	GOLD (gel)	TAT – 7 Days Biochemistry in-house test For insulin + C-peptide, use [CPINS]
Intrinsic factor antibodies	INTF	GOLD (gel)	TAT – 10 Days Tested – PLINK
Iron	FE	GOLD (gel)	Biochemistry in-house test
Iron Binding Capacity-Total	TIBC	GOLD (gel)	Biochemistry in-house test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Iron- URINE	UFE	24hr URINE collected in plain container	Biochemistry referred test
Islet Cell Antibodies	ICA	GOLD (gel)	TAT – 28 Days Tested – PLINK Endocrinology only. Islet cell antibodies may be found in type 1 diabetics at the time of diagnosis
Itraconazole	ITRTDM	GOLD (gel)	TAT – 14 Days Tested – BRI
IUCD		IUCD	TAT – 10 Days Tested – NGH-MICRO These will be cultured for both common bacterial pathogens and actinomyces
Janus Kinase 2 (JAK2)	JAK2	EDTA	TAT – 14 Days Tested – Genomics Laboratory (East GLH)
Janus Kinase 2 – exon 12	JAK2ECON 12	EDTA	TAT – 14 Days Tested – Genomics Laboratory (East GLH)
Kleihauer test	Not currently available on ICE. Use manual request form	EDTA	TAT – Urgent – 2 Hrs Routine – 1-2 Days Tested – NGH-BT
Lactate (plasma/CSF)	LAC CLAC	Fluoride Oxalate-on ice -contact lab first	Biochemistry in-house test
Lamotrogine	LAM	Dark Blue Serum tube	Biochemistry referred test
Laxative Screen	ULAX	URINE 20ml (plain	Biochemistry referred test
LCHAD (Long Chain AcylCoA Dehydrogenase)	BLCHAD	EDTA Bloodspots	Biochemistry referred test
LDH	LDH	GOLD (gel)	Biochemistry in-house test
Lead	PB	Sodium Heparin	Biochemistry referred test
Legionella antigen	LEGAG	Urine in universal DO NOT USE RED TOP – BORIC ACID SAMPLES CANNOT BE TESTED MINIMUM VOLUME REQUIRED 10ml	TAT – 1 Day Tested – NGH-MICRO Discuss with Consultant Microbiologist ENSURE CLINICAL DETAILS INCLUDED

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Leptospira antibody	LEPAB	GOLD (gel)	TAT – 10 Days Tested – SALVAC Please ensure a second sample is taken 5-7 days into the illness
Levetiracetam	LEVE	Dark Blue Serum tube	Biochemistry referred test
LH	LH	GOLD (gel)	Biochemistry in-house test
Lipase	PLIP	GOLD (gel)	Biochemistry referred test
Lipoprotein (a)	LIPA	GOLD (gel)	Biochemistry referred test
Lipid Profile: Chol/Triglycerides	LIP	GOLD (gel)	Biochemistry in-house test
Lithium	LI	GOLD (gel)	Biochemistry in-house test
Liver Autoantibodies	ANALKM	GOLD (gel)	TAT – 5 Days Tested – PLINK Smooth muscle and LKM antibodies are associated with autoimmune hepatitis. Anti-mitochondrial antibodies (M2 specificity) are associated with primary biliary cirrhosis. Includes mitochondrial, smooth muscle & liver, kidney microsomal (LKM) antibodies
Liver Profile: Bili/ALP/ALT/TP/Alb	L	GOLD (gel)	Biochemistry in-house test
Lupus Anti-coagulant	LA	CITRATE (2)	TAT – 7 Days Tested – NGH-HAEM
Lupus Anti-coagulant (as part of Thrombophilia Screen)	LA	CITRATE (4) & EDTA (2)	TAT – 7 Days Tested – NGH-HAEM
Lymphocyte subsets / proliferation assay	LYMPRO	Lithium Heparin	TAT – 3-10 days Tested – IMSHEF
Magnesium	MG	GOLD (gel)	Biochemistry in-house test
Magnesium - URINE	UMGC	24hr URINE collected in acidified container	Biochemistry referred test
Magnesium (red cell)	RCMG	Lithium Heparin	Biochemistry referred test
Malaria Parasites	MP	EDTA	TAT – 1 Day Tested – NGH-HAEM
Malaria antibodies	MALAB	GOLD (gel)	TAT – 14 Days Tested – UCLHPAR

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Manganese	MAN	Sodium Heparin	**Biochemistry referred test**
Mast Cell Tryptase	TRYP	GOLD (gel)	**TAT – Urgent – 1-2 Days** **Routine – 7-10 Days** **Tested – PLINK** This rises immediately following an anaphylactic reaction. Timed samples taken at 0hr (or as soon as possible), 4-6 hours & 24 hours post-reaction are required. If the reaction was secondary to anaphylaxis or an anaphylactoid reaction the MCT level rise 3-4 fold above the baseline (24hr) level. The exact time and date of venesection post-reaction must be clearly written on each sample and on the form
Measles Antibodies IgG	MEASG	GOLD (gel)	**TAT – 5 Days** **Tested – NGH-MICRO** Please supply date of onset of rash and measles vaccination history
Measles Antibodies IgM	MEASM	GOLD (gel)	**TAT – 21 Days** **Tested – NGH-MICRO** Please supply date of onset of rash and measles vaccination history
Meningococcal PCR	MENPCR	EDTA CSF	**TAT – 10 Days** **Tested – MANREF** Please discuss with the microbiologist. Also can be done on CSF
Mercury	BHG UHG	Dark Blue – sodium heparin URINE 20ml (plain)	**Biochemistry referred test**
Metabolic Screen (Includes UAAs)	UMETSC	URINE 20ml (plain)	**Biochemistry referred test** Includes urine amino acid chromatography, GAGs, organic acids and spot tests
Metanephrines (URINE)	24MET	24hr Acidified Urine	**TAT – 14 Days** **Tested – BIOM**
Metapneumovirus PCR	META	NPA/Sputum/ BAL	**TAT – 5 Days** **Tested – NGH-MICRO**
Methotrexate	METR	GOLD (gel)	**Biochemistry referred test**
Methylmalonic Acid – BLOOD	PMMA	GOLD (gel)	**Biochemistry referred test**
Methylmalonic Acid - URINE	UMMA	URINE 20ml (plain)	**Biochemistry referred test**
Microalbumin	MALB	URINE 20ml (plain)	**Biochemistry in-house test**
Micronutrient Screen (TPN pts)	GMNS	2 Lith Heparin + Sodium heparin + EDTA	**Biochemistry referred test**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
MMR Screen: **1. Measles IgG** **2. Mumps IgG** **3. Rubella IgG**	MMR	GOLD (gel)	**TAT – 14 Days** **Tested – NGH-MICRO** Cat2 if non NHS occupational health
MPL	MPLX10	EDTA	**TAT – 2 Weeks** **Tested – Genomics Laboratory (East GLH)**
Mouth Swab for culture	CUL	Charcoal Swab	**TAT – 2 Days** **Tested – NGH-MICRO** These swabs will be cultured for candida and haemolytic streptococci only.
MRSA, neonatal or pre-admission screens	EMRS	Liquid Amies Swab	**TAT – 3 Days** **Tested – NGH-MICRO** Please ensure each site is clearly stated on form and specimen e.g. nose, groin/perineum, wound.
MRSA – Inpatient Screen	MRSS	Liquid Amies Double Swab	**TAT – 2 Days** **Tested – NGH-MICRO** Please ensure each site is clearly stated on form and specimen e.g. nose, groin/perineum, wound.
Mumps antibodies	MUMPG MUMPM	GOLD (gel)	**TAT – 14 Days** **Tested – NGH-MICRO** Please provide relevant history
Mycobacterium Microscopy & Culture	TB	Sputum/Urine/Fluid	**TAT – 2-8 Weeks** **Tested – NGH-MICRO**
Mycoplasma antibodies	MYCIGG MYCIGM	GOLD (gel)	**TAT – 14 Days** **Tested – NGH-MICRO**
Myelin associated glycoprotein (MAG) antibodies	AMAG	GOLD (gel)	**TAT – 21-42 Days** **Tested – PLINK** Neurology only. MAG antibodies occur in patients with IgM paraproteinaemia and peripheral neuropathy
Myeloma screen	EP	GOLD (gel)	**Biochemistry in-house test** Profile includes total protein, immunoglobulins, protein electrophoresis, creatinine, eGFR and serum free light chains..
Myoglobin	SMYO UMYO	GOLD (gel) + URINE 20ml (plain)	**Biochemistry referred test**
Nasopharyngeal aspirate	NPA	Plain Universal	**TAT – RSV – 1 Day** **Culture – 3 Days** **Tested – NGH-MICRO** NPA will be processed for RSV antigen and routine culture will be performed if requested.
Netilmicin	NETL	GOLD (gel)	**TAT – 14 Days** **Tested – JRHMIC**
Norovirus PCR	NOR2	Faeces in Universal (blue lid)	**TAT – 4 Days** **Tested – NGH-MICRO** **Consultant request**
NT-pro BNP	NTPRO	GOLD (gel)	**Biochemistry in-house test**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Neurone Specific Enolase	NSE	GOLD (gel) – received within 1hr of collection	Biochemistry referred test
Neuronal antibodies	NEUAB	GOLD (gel)	TAT – 21 Days Tested – PLINK Neurology only. Hu antibodies occur in small cell lung carcinoma with ataxia, sensory neuropathy or paraneoplastic encephalomyelitis. Yo antibodies occur in breast and ovarian carcinomas with paraneoplastic cerebellar degeneration
Non-specific Drug Screen	NSDS	URINE 20ml (plain)	Biochemistry referred test Details of drugs required must be provided. Discuss with Duty Biochemist. See also: Drugs of Abuse screen
Oestradiol	E2	GOLD (gel)	Biochemistry in-house test
Olanzapine	OLAN	Dark Blue Serum tube	Biochemistry referred test
Oligoclonal bands	SOLIG	GOLD (gel) serum + CSF (matched pair)	Biochemistry referred test
Organic Acids -URINE	UORGA	URINE 10ml (plain)	Biochemistry referred test
Osmolality (serum)	OSM	GOLD (gel)	Biochemistry in-house test
Osmolality (URINE)	UOSM	URINE 10ml (plain)	Biochemistry in-house test
Ova, Cysts & Parasites	OCP	Faeces in Universal (blue lid)	TAT – 5 Days Tested – NGH-MICRO Only request OCP if there is a history of prolonged diarrhoea greater than 2 weeks, or a history of travel to an area where e.g. Giardia is common or eosinophilia. Please specify the country of travel. All patients samples on outpatients, GP and immunosuppressed are screened for Giardia For the detection of Schistosoma haematobium ova in urine, the specimen should be the terminal part of the stream. The urine should be collected between 10-1400 hrs after light exercise
Oxycarbazepine	OXYC	Dark Blue Serum tube	Biochemistry referred test
Pancreatic Antibodies	PAB	GOLD (gel)	TAT – 21 Days Tested – PLINK
Paracetamol	PARA	GOLD (gel)	Biochemistry in-house test
Paraneoplastic antibodies	PARAB	GOLD (gel)	TAT – 21 Days Tested – PLINK Purkinje Cell, Hu; Yo; Ri

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Parathyroid Hormone (PTH)	PTH	EDTA	**Biochemistry in-house test** Measures intact PTH **SEPARATE SAMPLE ESSENTIAL**
Paroxymal Nocturnal Haemoglobinurea (PNH)	TST	EDTA	**TAT – 2 Weeks** **Tested – UHL-HAEM**
Partial Thromboplastin Time (aPTT) -see Clotting Screen	CP	CITRATE	**TAT – Urgent – 2 Hrs** **Routine – 4 Hrs** **Tested – NGH-HAEM**
Parvovirus antibodies (IgG/IgM)	PARVO	GOLD (gel)	**TAT – 14 Days** **Tested – NGH-MICRO** "Slap Cheek" - Provide dates of rash/contact & if patient is pregnant (estimate gest age). IgG or IgM as appropriate.
Pemphigus/ Pemphigoid antibodies	PEMAB	GOLD (gel)	**TAT – 10 Days** **Tested – PLINK** Direct immunofluorescence (skin biopsy) & indirect immunofluorescence (patient's serum) tests are performed. If direct immunofluorescence is required, phone X5040 to arrange a suitable time
Phenobarbitone	PHB	GOLD (gel)	**Biochemistry referred test**
Phenylalanine (>16yr old only)	PHEN	GOLD (gel)	**Biochemistry referred test**
Phenytoin	PHE	GOLD (gel)	**Biochemistry in-house test**
Phosphate, Inorganic	PHOS	GOLD (gel)	**Biochemistry in-house test**
Phosphate Concentration	24PO4	24hr URINE collected in acidified container	**Biochemistry in-house test**
Phytanic acid	BPHYT	Lithium Heparin	**Biochemistry referred test**
Pipecolic Acid	PIPE/ CPIP	Lithium Heparin CSF	**Biochemistry referred test**
Platelet Function Studies	PFT	CITRATE	**TAT – 1 Day** **Tested – Oxford Haemophilia and Thrombosis Centre**
Pleural Fluid Culture	PLF	Fluid in plain universal	**TAT – 3 Days** **Tested – NGH-MICRO** All pleural fluids will be processed for routine culture and cultured for AFB
Plasma Viscosity	PIPE	EDTA	**TAT – 1 Week (<1 hour if urgent)** **Tested – UHL-HAEM**
Plasminogen	PFT	CITRATE	**TAT – 4 Weeks** **Tested – Oxford Haemophilia and Thrombosis Centre**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Pneumococcal Antigen	PNAG	Urine in plain universal DO NOT USE RED TOP – BORIC ACID SAMPLES CANNOT BE TESTED MINIMUM VOLUME REQUIRED 10ml	TAT – 1 Day Tested – NGH-MICRO
Pneumocystis PCR	PCP	Respiratory Specimen	TAT – 10 Days Tested – MICPATH
Polio antibodies	POLI	GOLD (gel)	TAT – 10 Days Tested – COLHPA
Porphyria screen (Acute)	APORS	Urine (plain) 2x EDTA	Biochemistry referred test Send with completed Cardiff Porphyria form WRAP SAMPLES IN BROWN ENVELOPE/FOIL TO PROTECT FROM LIGHT
Porphyria screen (Bullous/ Cutaneous)	BPORS	Urine (plain) 2x EDTA	Biochemistry referred test Send with completed Cardiff Porphyria form WRAP SAMPLES IN BROWN ENVELOPE/FOIL TO PROTECT FROM LIGHT
Potassium	POT	GOLD (gel)	Biochemistry in-house test
Potassium excretion (24 hr urine)	24POT	24hr URINE collected in plain container	Biochemistry in-house test
Potassium concentration (spot urine)	UPOTC	Urine (plain)	Biochemistry in-house test
Prednisolone	PRED	GOLD (gel)	Biochemistry referred test MUST BE TAKEN 2-3HRS POST DOSE
Pregabalin (lyrica)	PGAB	GOLD (gel) Received within 4hrs of collection	Biochemistry referred test
P1NP - Procollagen Extension Peptide	P1NP	GOLD (gel)	Biochemistry in-house test
P3NP – Procollagen Extension Peptide	P3NP	GOLD (gel)	Biochemistry referred test
Progesterone	PROG	GOLD (gel)	Biochemistry in-house test
Prolactin	PRL	GOLD (gel)	Biochemistry in-house test Macroprolactin will be cascaded on in cases of persistent hyperprolactinaemia with no obvious cause.
Prostate Specific Antigen (PSA)	PSA	GOLD (gel)	Biochemistry in-house test
Protein concentration	UPRC	24hr URINE collected in plain container	Biochemistry in-house test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Protein creatinine ratio (urine)	PRCR	Urine (plain)	Biochemistry in-house test
Protein Electrophoresis	EP	GOLD (gel)	Biochemistry in-house test
Protein (CSF)	CPRO	CSF	Biochemistry in-house test
Protein C Activity (see Thrombophilia Screen)	PCA	CITRATE	TAT – 28 Days Tested – NGH-HAEM RR – M/F 70 – 143%
Protein S Activity (see Thrombophilia Screen)	PSF	CITRATE	TAT – 28 Days Tested – NGH-HAEM RR – M 70 – 148% / F 50 – 134%
Prothrombin Time (PT) -see Clotting Screen	CP	CITRATE	TAT – Urgent – 2 Hrs Routine – 4 Hrs Tested – NGH-HAEM
Prothrombin Gene Mutation (also part of Genetic Thrombophilia Screen)	PTM	EDTA	TAT – 28 Days Tested – NGH-HAEM
Pseudocholinesterase			See Cholinesterase
Pseudomonas Antibodies	PSEAB	GOLD (gel)	TAT – 10 Days Tested – COLHPA
Psittacosis serology	PSITT	GOLD (gel)	TAT – 14 Days Tested – BRIHPA
Purkinje cell antibodies	SAPCA	GOLD (gel)	TAT – 21-42 Days Tested – PLINK
Pus / Tissue Culture	CUL	Fluid in plain universal	TAT – 3 Days Tested – NGH-MICRO Please provide details of source and antibiotic therapy. Samples of pus and tissue are preferable to swabs
Pyruvate Kinase	PK	EDTA	TAT – 7 Days Tested – HAMHAEM
Q fever serology	CBUR	GOLD (gel)	TAT – 14 Days Tested – BRIHPA Coxiella Burnetti
Quantiferon TB Gold Plus	QFG	Requires 2 Lithium Heparin	TAT – 10 Days Tested – MICRO Please send before 2pm Monday-Thursday. Do not send on Friday.
Rabies Antibodies	RAB	GOLD (gel)	TAT – 14 Days Tested – SURVET
Rectal GC Culture	RGC	Rectal Swab	TAT – 4 Days Tested – NGH-MICRO
Red Cell Magnesium	RCMG	Lithium Heparin	Biochemistry referred test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Renal Profile: (Na/K/ Creatinine)	**E**	**GOLD (gel)**	**Biochemistry in-house test**
Renin	**REN**	**EDTA (Receive Within 4 Hours of collection)**	**Biochemistry referred test** **SEPARATE SAMPLE REQUIRED AND MUST BE RECEIVED WITHIN 4 HOURS**
Respiratory Culture	**APE**	**Sputum/ Aspirate**	**TAT – 3 Days** **Tested – NGH-MICRO**
Respiratory Virus Panel	**RV15**	**Nose and throat Viral Swabs collected in viral Transport Medium**	**TAT – 4 Days** **Tested – NGH-MICRO** A range of molecular assays are available for the investigation of respiratory viral infections. Please discuss with a consultant Microbiologist
Respiratory Syncytial Virus (RSV)	**RSV**	**NPA**	**TAT – 1 Day** **Tested – NGH-MICRO**
Reticulocytes	**RET**	**EDTA**	**TAT – Urgent – 2 Hrs** **Routine – 12 Hrs** **Tested – NGH-HAEM** **RR – M/F 10 – 100 x 10^9/L**
Rheumatoid Factor levels	**RF**	**GOLD (gel)**	**Biochemistry in-house test**
Rickettsia Antibodies	**RIAB**	**GOLD (gel)**	**TAT – 14 Days** **Tested – SALCAMR** Please provide a travel history Discuss with a microbiologist
Rifabutin	**RIFTDM**	**GOLD (gel)**	**TAT – 10 Days** **Tested – PTUL**
Rifampicin	**RIFL**	**GOLD (gel)**	**TAT – 14 Days** **Tested – ARLS**
Rotavirus	**ROTA**	**Faeces in universal (blue lid)**	**TAT – 1 Day** **Tested – NGH-MICRO** This test will be performed on all stool samples from children under 5 years with diarrhoea.
Rubella IgG antibodies	**RUBG**	**GOLD (gel)**	**TAT – 2 Days** **Tested – NGH-MICRO** Antenatal Screening Test/Immune Status **= IgG**
Rubella IgM antibodies	**RUBM**	**GOLD (gel)**	**TAT – 10 Days** **Tested – NGH-MICRO** Contact (or suspected contact) – Please provides dates of rash/contact and whether patient is pregnant (estimate gestational age).
Salicylate	**SAL**	**GOLD (gel)**	**Biochemistry in-house test**
Schistosomal serology	**SCHS**	**GOLD (gel)**	**TAT – 14 Days** **Tested – UCLHPAR**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Selenium	SEL	Sodium heparin	Biochemistry referred test
Serum Free Light Chains (SFLC)	SFLC	GOLD (gel)	Biochemistry in-house test REPLACES BJP. Only request for monitoring, for myeloma diagnosis select myeloma screen.
SHBG	SHBG	GOLD (gel)	Biochemistry in-house test
Sickle Cell Test	ST	EDTA	TAT – Urgent – 6 Hrs Routine – 3 Days Tested – NGH-HAEM
Sirolimus	SIRO	EDTA	Biochemistry referred test
Sodium	SOD	GOLD (gel)	Biochemistry in-house test
Sodium Excretion (24hr Urine)	24SOD	24hr URINE collected in plain container	Biochemistry in-house test
Sodium Concentration (spot urine)	USODC	Urine (plain)	Biochemistry in-house test
Specific Antibodies: Tetanus / Pneumococcal / HIB	Request individuall y	GOLD (gel)	TAT – 21 Days Tested – PLINK Detection of possible Immunodeficiencies or assessment of response to immunisation
Specific IgE (RAST tests)	RASTI	GOLD (gel)	TAT – 10 Days – common allergens 21 Days – unusual allergens Tested – PLINK Allergen specific IgE levels should only be requested when there is a strong clinical history of an acute reaction following contact with the suspected allergen. This must be written clearly on the request form. The presence of allergen specific IgE can be found without clinical reactions, especially in atopic individuals (those with eczema, hay fever, asthma), and so multiple allergen- testing or screening is discouraged. The presence of allergen-specific IgE is NOT proof of allergy and conversely, a negative result dose NOT excludes the presence of an allergy. Requests must include date of birth and a brief clinical history.
Sputum for Routine Culture	APE	SPUTUM in plain universal MIN VOL. REQD Approximately 1ml	TAT – 3 Days Tested – NGH-MICRO Collect specimen early in the course of the respiratory illness, before antibiotic therapy has been used. Interpret with care the presence of potential pathogens that may be mere colonisers e.g. pneumococcus in children, or MRSA, coliforms and P. aeruginosa in patients who have received antibiotics.
Steroid Profile	USTER	24hr URINE collected in plain container	TAT – 21 Days Tested – UCLH
Stones- (calculi)	STON	ALL STONES passed	Biochemistry referred test
Succinylacetone	BSUC USUC	Lithium Heparin +	Biochemistry referred test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
		URINE (plain)	
Sweat Test	SWEAT	Collection performed by lab	**Biochemistry in-house test** Send request to Biochemistry secretary who will make appointment with patient
Syphilis serology	SYPH	GOLD (gel)	**TAT – 2 Days** **Tested – NGH-MICRO**
Tacrolimus	FK506	EDTA	**Biochemistry in-house test** **SEPARATE SAMPLE ESSENTIAL**
TB - Microscopy (Auramine) and Culture	TB Urine Code = TBC	Nasopharyngeal Aspirate Bronchial Washing Pleural Fluid Sputum Urine Tissue	**TAT – Microscopy – 2 Days** **Culture – 8-12 Weeks** **Tested – NGH-MICRO** This can be requested for all relevant samples. For *sputum and urine please ensure 3 consecutive early morning samples* are taken. Cultures are made in continuously monitored fluid medium and kept for 8 weeks. Positive results are now commonly available within 2 - 4 weeks
TBNK	TBNK	EDTA	**TAT – 2 Days** **Tested – PLINK** **Please send before 2pm Monday to Thursday. Samples cannot be received on a Friday.** Detection of immunodeficiencies and monitoring of rituximab immunotherapy.
TB PCR	TBPCR	Nasopharyngeal Aspirate Bronchial Washing Pleural Fluid Sputum Urine Tissue	**TAT – 7 Days** **Tested – NGH-BIRHPA** PCR may be useful to determine the presence of the genetic determinants of rifampicin resistance directly on the specimen. Discuss with consultant Microbiologist prior to requesting
Teicoplanin levels	TEIC	GOLD (gel)	**Biochemistry referred test**
Testosterone	TEST	GOLD (gel)	**Biochemistry in-house test** Please state if patient is on testosterone replacement
Theophylline	THEO	GOLD (gel)	**Biochemistry in-house test**
Thiamine - (VIT B1)	VB1	EDTA – received within 4hrs of collection	**Biochemistry referred test** **PROTECT FROM LIGHT**
Throat Swab Culture	CUL	Charcoal Swab	**TAT – 4-5 Days** **Tested – NGH-MICRO** All throat swabs are cultured for haemolytic streptococci. C. diphtheriae will be cultured for, if specifically requested or suspected. Please indicate any history of travel
Thrombophilia Screen – refer to: Protein C Protein S Antithrombin III	TS	CITRATE (2) & EDTA	**TAT – 28 Days** **Tested – NGH-HAEM**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Thyroglobulin	THYG	GOLD (gel)	Biochemistry in-house test
Thyroid antibodies (thyroid peroxidase antibodies)	ATPO	GOLD (gel)	Biochemistry in-house test
TIBC	TIBC	GOLD (gel)	Biochemistry in-house test
Tips / Intravascular devices HEART VALVES, JOINT TISSUE, PLACENTA & MEMBRANES, WOUND TISSUE, LUNG, BRAIN, LIVER, SPLEEN	CUL	Sterile container	TAT – 2-7 Days Tested – NGH-MICRO When dealing with large prosthetic devices e.g. vascular grafts please ensure only a reasonable and appropriate sample is sent to the laboratory. In the context of diagnosing infection in prosthetic hips, please send separate multiple biopsies (up to 5) each taken with a separate set of instruments. If processing is delayed refrigeration is preferable to storage at ambient temperature. Delays of over 48 hours are undesirable.
Tissue / Pus Culture	GCUL	plain Sterile universal	TAT – 2-7 Days Tested – NGH-MICRO Please provide details of source and antibiotic therapy. Samples of pus and tissue are preferable to swabs Specimen should be transferred aseptically to a sterile universal Specimens should be transported and processed as soon as possible. If processing is delayed refrigeration is preferable to storage at ambient temperature. Delays of over 48 hours are undesirable.
Tobramycin levels	TOBR	GOLD (gel)	Biochemistry referred test
Topiramate (Topamax)	TOPI	GOLD (gel) – received within 4hrs of collection	Biochemistry referred test
Total Protein	TP	GOLD (gel)	Biochemistry in-house test
Total IgE	RASTI	GOLD (gel)	TAT – 2-10 Days Tested – PLINK
Toxocara antibodies	TOXOC	GOLD (gel)	TAT – 21 Days Tested – UCLHPAR
Toxoplasma antibodies (IgG/IgM)	TOXG TOXM	GOLD (gel)	TAT – 10 Days Tested – NGH-MICRO
TPMT (Thiopurine Methyl Transferase)	TPMT	EDTA	Biochemistry referred test SEPARATE SAMPLE ESSENTIAL
Beta –2 Transferrin	B2T	Fluid (white top) + Paired serum GOLD (gel)	Biochemistry referred test Discuss with Duty Biochemist
Transferrin	TRFN	GOLD (gel)	Biochemistry in-house test

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Transferrin Electrophoresis	**TRFNEP**	**GOLD (gel)**	**Biochemistry referred test**
Trichinella	**TRIC**	**GOLD (gel)**	**TAT – 14 Days** **Tested – UCLHPAR**
Triglycerides	**TRIG**	**GOLD (gel)**	**Biochemistry in-house test**
Troponin T	**TNT**	**GOLD (gel)**	**Biochemistry in-house test** **MUST BE ANALYSED WITHIN 12HRS**
Trypanosomes	**TRYPS**	**GOLD (gel)**	**TAT – 14 Days** **Tested – UCLHPAR**
TSH - Thyroid Stimulating Hormone	**TSH**	**GOLD (gel)**	**Biochemistry in-house test** FT4 and FT3 cascaded as appropriate – please provide clinical/treatment details.
TSH Receptor Antibodies	**THAB**	**GOLD (gel)**	**Biochemistry in-house test**
Thyroid Function tests (TFT)	**TSH**	**GOLD (gel)**	**Biochemistry in-house test** TSH used as first line test. Order FT4 if ?secondary hypothyroidism, otherwise FT4 and FT3 will be cascaded as appropriate based on levels and clinical/treatment details provided.
T. Spot – TB (IGRA)	**TSPO**	**2x Lithium Heparin**	**TAT – 2 Days** **Tested – NGH-MICRO** Please send to the laboratory by 2pm Please do not send on a Friday
Uric Acid/ Urate	**URIC**	**GOLD (gel)**	**Biochemistry in-house test**
Urate Excretion (24hr Urine)	**24UT**	**24hr URINE collected in plain container**	**Biochemistry in-house test**
Urea	**UR**	**GOLD (gel)**	**Biochemistry in-house test**
Urea Excretion (24 hr Urine)	**24UR**	**24hr URINE collected in plain container**	**Biochemistry in-house test**
Urine Microscopy & Culture	**UM**	**Urine in Boric Acid** Red top (boric acid) if transporting from outside the hospital or Significant delay expected. **Universal/Plain** - White top if minimal delay to lab or if small volume of urine <10ml	**TAT – Negative – 1 Day** **Positive – 2 Days** **Tested – NGH-MICRO** Please provide details of type of specimen (MSU/CSU) and current and proposed antibiotic therapy. Send specimen in red top container (boric acid). Catheter tips are of no microbiological value. 10ml - if using boric acid (red top) please make sure fill to line indicated. If insufficient urine use White top bottles.

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Vaginal Swab	HVM GSC	Charcoal Swab	**TAT – 3 Days** **Tested – NGH-MICRO** This includes microscopy for pus cells, trichomonas, yeast and clue cells (evidence of bacterial vaginosis) and screening culture for candida, gonococcus and haemolytic streptococci including group B. It will be performed when the clinical situation described on the request form is one of simple vaginal discharge.). Full culture will be performed in children <15 yrs, women over 50 yrs and where the clinical details report the possibility of more serious infection e.g. post-op, post-natal, bleeding etc.
Valproate (Valproic acid)	VAL	GOLD (gel)	**Biochemistry in-house test**
Vancomycin levels	VANC	GOLD (gel)	**Biochemistry in-house test**
Varicella Zoster antibodies IgG	VZG	GOLD (gel)	**TAT – 3 Days** **Tested – NGH-MICRO**
Varicella Zoster antibodies IgM	VZM	GOLD (gel)	**TAT – 10 Days** **Tested – COLHPA**
Varicella Zoster Virus PCR	VZPCR	CSF	**TAT – 10 Days** **Tested – MICPATH**
Very Long Chain Fatty Acids (VLCFA)	VLCFA	Lithium Heparin is preferable	**Biochemistry referred test** Can be done on a Gold gel
Vibrio Culture	VC	Faeces in universal (blue lid)	**TAT – 7 Days** **Tested – NGH-MICRO** Please give full clinical and travel history
Vincent's angina stain	VINC	Mouth - Charcoal Swab	**TAT – 1 Day** **Tested – NGH-MICRO** Collect a swab from the gingival crevice and request a Gram film specifically. Clinical details should specify ?Vincent's angina
Viral PCR ENTEROVIRUS VZV CMV HSV	VIRPCR	Sample collected in viral transport medium CSF	**TAT – 10 Days** **Tested – MICPATH** For skin lesions, please ensure the base of the lesion is sampled firmly. CSF will be tested for enterovirus, VZV, CMV and HSV – discuss with consultant Microbiologist. 1.5-2.5ml in each bottle – usually 3 bottles required for CSF investigations.
Viscosity	PV	EDTA	**TAT – Urgent – 6 Hrs** **Routine – 7 Days** **Tested – LRIHAEM** **RR – M/F 1.50 – 1.72cP**
Vitamin A	VITA	Lithium Heparin	**Biochemistry referred test** **MUST BE RECEIVED WITHIN 4HRS PROTECTED FROM LIGHT**
Vitamin B1 (Thiamine)	VITB1	EDTA	**Biochemistry referred test** **MUST BE RECEIVED WITHIN 4HRS PROTECTED FROM LIGHT**
Vitamin B2	VITB2	EDTA	**Biochemistry referred test** **MUST BE RECEIVED WITHIN 4HRS PROTECTED FROM LIGHT**
Vitamin B6	VITB6	EDTA	**Biochemistry referred test** **MUST BE RECEIVED WITHIN 4HRS PROTECTED FROM LIGHT**

Test Type	ICE Code (via search)	Tube Type	Reference Ranges (RR)/Referred Code/Notes (if no RR is given, check individual reports)
Vitamin B12			See B12
Vitamin C		Not routinely available	
Vitamin D	VITD25	GOLD (gel)	Biochemistry in-house test
1,25 Dihydroxycholecalciferol	VTD125	GOLD (gel)	Biochemistry referred test AKA 1,25-hydroxy vitamin D SEPARATE SAMPLE REQUIRED – RECEIVED WITHIN 4HRS OF COLLECTION
Vitamin E	VITE	Lithium Heparin	Biochemistry referred test SEPARATE SAMPLE REQUIRED – RECEIVED WITHIN 4HRS OF COLLECTION
Vitamin K		Not Routinely Available	
Voltage-Gated Calcium Channel Antibody	SVGCC	GOLD (gel)	TAT – 21 Days Tested – PLINK Neurology only. VGCC antibodies occur in Lambert-Eaton myasthenic syndrome
Voltage-Gated Potassium Channel Antibody	SVGKC	GOLD (gel)	TAT – 21 Days Tested – PLINK Neurology only. VGKC antibodies occur in acquired neuromyotonia
Von Willebrand Screen	VWS	CITRATE	TAT – 14 Days Tested – Oxford Haemophilia and Thrombosis Centre
White Cell Enzymes	WCLD	Lithium Heparin 8-10 mL	Biochemistry referred test Send with completed GOSH Enzyme lab clinical details request form – essential to ensure correct enzymes are testing
Wound Swab - cullture	CUL	Charcoal Swab	TAT – 2 Days Tested – NGH-MICRO State the site clearly so the correct plates can be inoculated, and appropriate antibiotics can be reported. Pus or exudate if present is preferable to a swab. If only minute amount of pus present a swab can be accepted.
Yellow fever antibodies	YEAB	GOLD (gel)	TAT – 14 Days Tested – SALCAMR
Yersinia Antibodies	YERAB	GOLD (gel)	TAT – 14 Days Tested – COLENT
Zinc	ZN	Sodium heparin	Biochemistry referred test

This comprehensive list is not exhaustive; if a test is not included – please contact the Pathology Enquires Line (ext. 5414) for further information

REFERENCE RANGES - PLEASE REFER TO INDIVIDUAL REPORT FOR CURRENT INFORMATION.

REPORTING LABORATORY RESULTS

DELIVERY OF RESULTS

Reports are sent electronically to Pathology Users via the ICE Reporting System throughout the day.

Hardcopy reports are issued to Users that do not have electronic access.

AVAILABILITY OF RESULTS

All results are available electronically:

- Trust Reporting System – ICE Reporting System – on the Intranet
- GP surgeries via ICE Reporting system

Results Enquiries: 01604 54(5402) – during core hours (09:00 – 17:30)

If you are working in a location that does not have access to electronic reports then please ask the switchboard to bleep the BMS if you have an urgent query outside these hours.

Please do not phone the laboratory for results unless absolutely essential

PATHOLOGY POLICY REGARDING TELEPHONING RESULTS

It is Pathology policy to telephone ***clinically significant results*** to the requester.
If the patient is **critically ill** and is in need of immediate treatment please alert Pathology to ensure that clinically significant abnormal results are phoned directly to requester.

For all A&E requests and ward requests marked ***"urgent"*** Blood Science will make every effort to ensure that these are fast tracked through the laboratory process and results available electronically within 1 hour.

Please indicate appropriate telephone extension/bleep number on the request form.

These results will be telephoned to requester *only* if abnormal.

INTERPRETATION OF RESULTS

There is an open invitation to discuss results with our Consultant staff. Please refer to the List of Contacts at the beginning of this Handbook.

Uncertainty of Measurement

This information is available on request.

The following sections contain further information relating to the Pathology Service

CELLULAR PATHOLOGY

HISTOPATHOLOGY – MORTUARY – CYTOLOGY

HISTOPATHOLOGY

Clinical Information

As previously indicated correctly completed request forms must accompany all specimens. The department encourages electronic ICE requesting, where available, in line with the Trust's policy on increasing patient safety by using electronic systems.

Separate lesions or parts of a specimen must be submitted in separate pots appropriately labelled and identified on a single request form.

Adequate clinical information including the presenting complaint, clinical findings and the results of other investigations must be given to allow the pathologist the best chance of producing an accurate report.

A skin biopsy of a rash/dermatosis should be accompanied by a full clinical history including duration, distribution and a clinical differential diagnosis. The pathologist will rarely be able to give a specific diagnosis if a skin biopsy is submitted with a card saying merely 'rash for 3 months'. With a single lesion there should be an indication as to whether the biopsy is excisional or incisional. The duration and clinical size, site and whether there has been any change are important information.

It is helpful to the pathologist if previous relevant biopsy numbers are quoted.

Please remember that all but the smallest histology specimens require at least 24 hours fixation before we can start to process the tissue, and the work involved in complex specimens can be considerable and time consuming.

Do not slice or alter the specimen in any other way unless directed to do so by a pathologist. Material should not be removed from the specimens for research or other purposes without prior discussion with the pathologist. If material is required for microbiological investigation, do remember to take this before contact with formalin and please note it on the request form.

Specimens for histological examination should be submitted in a container large enough for an adequate (20x) volume of buffered formalin. The buffered formalin is supplied by the laboratory in labelled containers. Please do not use other fluids and do not dilute the formalin. The laboratory also supplies the specimen containers. It is essential that care is taken to match a correct lid to the specimen bucket and ensure that it is snapped closed to avoid spillage of formalin. Place samples in separate bags to avoid contamination.

Opening Hours: 08:30 – 17:00 Monday to Friday

Muscle Biopsies

This is quite a specialised procedure so prior discussion is essential. Please contact Histology on Ext 5408 for further information.

Frozen Sections

Frozen section requests should be booked in advance (at least 24hrs notice) with the laboratory. Please contact Histology on Ext 5013/5408 to make arrangements. The specimen should be delivered to Cellular Pathology reception by person and a contact telephone number and name of person expecting result should be given on the request form.

Referred Tests

Molecular markers are currently sent to Sarah Cannon Laboratories and HSL in London.

Turnaround Times

It is difficult to state a turnaround for histology samples due to the complexity and/or variation of some of the requests. Targets are set according to the Royal College of Pathologists (RCPATH) guidelines, as follows:

Urgent Requests: Turnaround Time Target = 7 Days
Routine Requests: Turnaround Time Target = 10 Days

Supplies

Please telephone your requirements for supplies to the Histopathology Laboratory on (01604) 545013.

Hazard

Please note that buffered formalin is harmful if ingested in quantity or if exposure to vapour is prolonged. It is irritating to skin and eyes.

First Aid

Eyes	Irrigate thoroughly with water for at least 10 minutes. Obtain medical attention
Lungs	Remove from exposure, rest and keep warm. In severe cases obtain medical attention
Skin	Wash thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention
Mouth	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention

Specimens should be transported in a designated secure transport box with a lid that can be sealed/fastened. The box must bear a warning label stating that the box must not be opened or tampered with by unauthorised persons, and show a telephone number to be contacted if the box is found unattended. The box must be capable of containing any leakage.

When leaving specimens in the laboratory, ensure that a member of the laboratory staff has checked all the forms and specimens for any discrepancies.

Specimens should be brought to Cellular Pathology and not left in Pathology Reception. No specimens should be left unfixed (fresh) overnight. If no formalin is available specimens should be refrigerated.

To facilitate a rapid response and to permit optimal assessment of the specimen it should be delivered to Cellular Pathology no later than 17:00hrs on the day of removal.

High Risk Specimens

Pathology has adopted universal precautions relating to sample management. However, It is important that full details are given on the request forms and that samples are suitably labelled with a HIGH RISK label.

The specimen container must be sealed within a clear plastic bag before transported to the laboratory. Do not place the request form inside the bag with the specimen. Plastic bags for large specimens may be obtained from the laboratory.

Clinical liaison with the Histopathologist

If there is a problem with a report issued by the laboratory please contact the office in Cellular Pathology on 01604 545021.

Whilst we recognise the need for second opinions we would appreciate having discussions on individual cases directed to the pathologist primarily involved in the first instance. Requests for second opinions will never be refused but slides and blocks will only be released on receipt of an official written request.

NON-GYNAECOLOGICAL CYTOLOGY

REQUESTS	TURNAROUND TIME
CSF for Cytology	2 Days
Fine Needle Aspirate (FNA)	7 Days (Urgent) 10 Days (Routine)
Serous and Cyst Fluids	7 Days (Urgent) 10 Days (Routine)
Bronchial/ Respiratory Sample	7 Days (Urgent) 10 Days (Routine)
Urine for Cytology	7 Days (Urgent) 10 Days (Routine)
Joint Fluids	7 Days (Urgent) 10 Days (Routine)
Gastric, Oesophageal and Biliary Brushings	7 Days (Urgent) 10 Days (Routine)

Cells deteriorate quickly when removed from their natural environment. Non-gynae specimens, including sputum, urine, serous fluids etc., should reach the laboratory as soon as possible and preferably within 2 hours. The ICE request or yellow Cytology request forms should be completed IN FULL quoting previous relevant Cytology and Histology report numbers.

CSFs

Samples should be sent in a plain white top universal and sent to the laboratory as soon as possible due to the urgent nature of this specimen.

Fine Needle Aspirates (FNA) – If unsure of process please Tel x4472 / 5541

In order to undertake ancillary testing and immunohistochemistry on FNA samples, please prepare samples using the following method:

1. Prepare 2-4 slides by direct smearing: 2 for air-drying; 2 for wet fixation. Label glass slides in pencil. Always provide at least one of each.

   1a: Air-dried
   Place a small drop of sample onto a glass slide and using another slide smear the sample exerting a light pressure to achieve a reasonably thin, even spread. Good cell preservation is dependent on rapid drying. When dry place in a slide container for transportation to laboratory.

   1b: Wet-fixed
   Label slide with a “W” or “Wet” to differentiate from air-dried slides. Prepare slides and immediately (while material is still wet) spray gently with the spray alcohol fixative provided. Make sure all the material is coated. Place slides on a flat surface until dry. Place in a slide container for transportation to the laboratory.

2. Wash any residual sample from the needle and syringe into a labelled universal bottle containing approximately 10ml preservcyt (available from lab, please phone to request) or physiological saline if no preservcyt available. (Please label)

3. Dispatch with completed request form including clinical and radiological findings to cytology laboratory as soon as possible.

   Technical advice on the preparation of the direct smears can be obtained by contacting the laboratory on x4472 / 5541

   Please Note: Immunohistochemistry cannot be performed on air dried, direct smears.

Serous Fluids and Cyst Fluids

Samples should be collected into a plain (white top) universal container.
With regard to Serous Fluids the laboratory does not have the facility to process large volume specimens, 1 or 2 universal containers is sufficient.
Samples should be submitted to the laboratory as soon as possible.

Bronchial/ Respiratory Samples

Label bronchial brushing slides in pencil and spray with the alcohol fixative which can be provided by the lab. Sputum and aspirates should be collected in plain universals. Send samples to the lab as soon as possible.

Urines

Urine cytology is unreliable if the cells in the specimen are damaged due to degeneration.

1. The patient should drink as much water as is safe and comfortable for 1-2 hours.
2. The bladder should then be emptied and the urine discarded.
3. The next voided sample should be collected and submitted to the laboratory as soon as possible (within 2 hours)

PLEASE DO NOT SEND 'EARLY MORNING' URINE SPECIMENS.
PLEASE USE PLAIN WHITE TOP UNIVERSALS.

If the patient is catherised or there has been recent instrumentation of the bladder, this must be made clear on the request form.

Joint Fluids

Samples should be sent in a plain white top universal and sent to the laboratory as soon as possible.

Gastric, Oesophageal and Biliary Brushings

Label brushing slides in pencil and spray fix with the alcohol fixative which can be provided by the lab. Send samples to the lab as soon as possible.

Important Information

The pathologist can only provide a reliably accurate report if full clinical details are provided with cytology specimens. In every case a clinician should complete the clinical details. If this task is delegated the accuracy and the completeness of the supplied information remains the responsibility of the clinician initiating the request.
The clinical details are particularly important with FNA specimens. Please supply full details regarding medical history, previous specimen numbers, and the precise nature of the lesion including site, tissue plane and relations. Plus comment if a histology sample has been taken from the site at the same time.

In order to allow us to give as rapid a turnaround time as possible all specimens should ideally be submitted directly to Cellular Pathology Reception. The use of request forms other than the correct ICE request or yellow non-gynae request cards may cause a delay in the specimen reaching the correct laboratory with consequent damage to the specimen or delay in the report.

If there is a delay in getting sample directly to Cellular Pathology please take to Pathology Main Reception or store in a fridge.

GYNAECOLOGICAL CYTOLOGY

Cervical Cytology

All cervical cytology is performed at the Cytology Department at University Hospital Derby. The method used is Thin Prep technology.

For any queries relating to cervical cytology please contact Cytology Department at University Hospital Derby – Telephone 01332 788411

For Sample Taker Training please contact:

Dawn Adkins-Smith
Tel: 01604 54 5541 or
Email: Dawn.adkins-smith@nhs.net

Cervical Screening Provider Lead (CSPL) is on site weekly.
For any queries, please contact Chris Henson:
Email: Chris.henson@nhs.net

Supplies

The laboratory will issue supplies of specimen vials, Cervex brooms and request cards and sample bags directly to the practice/clinic each month.

It is important that supplies of vials are rotated as they have an expiry date. If vials exceed their expiry date they cannot be processed.

The vials contain Methanol; therefore full health and safety data sheets are supplied.

Although methanol is a flammable solution because it is in small quantities and in individual vials, it does not constitute a fire risk and can be stored in normal cupboards at room temperature.

For queries relating to supplies please contact phone 01604 54 5541 or 01604 54 4472

NHS Recommendations for Cervical Screening

Age and Frequency of Screening

25 – 49 years

Women between the ages of 25 and 49 will be invited for testing at 3 yearly intervals.

50 – 64 years

Women between the ages of 50 and 64 will be invited for testing at 5 yearly intervals

Cessation of Screening

Women who have a full screening history and are on normal recall can cease screening after age 65 years.

Opportunistic Testing

Additional cervical screening is not justified in patients who have had a screening test within the previous 3 – 5 years in the following situations:

- On taking or starting on oral contraceptive
- On insertion of an intrauterine contraceptive device
- On taking or starting HRT
- In association with pregnancy- either antenatally or postnatally unless a previous screening test was abnormal
- In women with genital warts
- In women with vaginal discharge
- In women with infection
- In women who have had multiple sexual partners
- In women who are heavy cigarette smokers

Women under the age of 25 should not be screened in the context of the national programme.

Women born after 01.04.85 will not be invited to attend for screening until they are 25. Any samples received (including out of scope and unlabelled) will be returned to the sender unprocessed.

Any patient of any age who shows suspicious clinical symptoms should be referred directly to the Colposcopy Department.

SCREENING PROGRAMMES

Bowel Screening Programme

The aim of the NHSBCSP is to reduce mortality from bowel cancer. This will be achieved by delivering evidence-based, population-based screening programmes that:

- identify and invite those eligible for screening – (aged 60years until 75th birthday – once 75years old, participants can opt into the programme) at 2-year intervals
- are safe, effective, of a high quality, externally and independently monitored, and quality assured
- prevent cancer where possible, and lead to earlier detection, appropriate referral, and improved outcomes
- are delivered and supported by suitably trained, competent, and qualified staff
- have audit embedded in the service

NHS England and Public Health England (PHE) worked together to implement provision of bowel screening from aged 50 to 74 using Faecal Immunochemical Test (FIT), as recommended by the UK NSC.

Pathology reporting must be standardised within the Trust with clear pathways and protocols for the management of pathology specimens. Specimens should be reported as per the PHE guidance NHS Bowel Cancer Screening Programme: guidance on reporting lesions.
https://www.gov.uk/government/publications/bowel-cancer-screening-reporting-lesions

All reporting pathologists must be BCSP-accredited.

There is no current specified minimum number of BCSP-derived cases that a pathologist or advanced practitioner must report

Pathology results must be available to meet the NHSBCSP standards with regards to turn around times. All Histopathologists reporting pathology samples for the programme are required to participate in the EQA scheme and adhere to RCPath and NHSBCSP guidelines.

The Clinical Lead for Pathology at NGH is Dr A Samarakoon, who works closely with Kettering General Hospital to ensure compliance with the standards.

Breast Screening Programme

The major aim of the NHS breast screening programme is to reduce mortality from breast cancer by diagnosing cancer at an early stage when treatment is more successful. This is achieved by delivering an evidence-based, population-based screening programme. Continuous monitoring and evaluation by an expert quality assurance process ensures screening services meet standards and continuously improve the quality of their service.
All pathology laboratories dealing with screening programmes should be formally accredited by United Kingdom Accreditation Service (UKAS) or equivalent.
The breast screening programme depends on systematic, specified relationships between screening services and stakeholders (which include treatment services, histopathology, genetics services, external diagnostic services, primary care representatives). The provider will be expected to take the lead in ensuring that inter-organisational systems are in place to maintain the quality of the whole screening pathway.
All pathologists reporting breast specimens have to participate in the EQA scheme

The Clinical Lead for Pathology at NGH is Dr W Harmaneh, who works closely with the Breast Screening Team and Kettering General Hospital to ensure compliance with the standards.

Cervical Screening Programme

The aim of the NHS Cervical Screening Programme (NHSCSP) is to reduce the incident of and mortality from, cervical cancer by delivering a systematic, quality assured populations-based screening programme for eligible people aged 25 to 64 years of age.
A safe, effective and high-quality Cervical Histopathology Service is provided in compliance with the following guidance:
https://www.gov.uk/government/publications/cervical-screening-histopathology-reporting-handbook/cervical-screening-programme-histopathology-reporting-guidance
The Department will:

- Provide a diagnostic service for cancer, through the handling of cells and tissues removed from abnormal cervix.
- Identify the nature of the abnormality and, if malignant, provide information to the clinician about the type of cancer, its grade and, for some cancers, its responsiveness to certain treatments.
- Ensure that the lead histopathologist for cervical screening histology is a consultant cellular pathologist who is registered on the General Medical Council (GMC) specialist register.
- Ensure that the lead histopathologist meets programme standards for reporting cervical histology.
- Ensure that the lead histopathologist participates in histopathology EQA schemes.
- Ensure that the lead histopathologist works with the cervical screening provider lead and lead biomedical scientist to make sure the laboratory follows all national guidance related to cervical screening histology.
- Ensure that the lead histopathologist attends trust cervical screening business meetings (or makes sure that a deputy is present) where the performance of the local service will be monitored, and trust business issues are discussed.
- Ensure that the lead histopathologist is the primary medical contact within the department for cervical screening histology matters.
- Ensure that an appropriately experienced histopathologist undertakes a review of histological biopsies that are included in MDT meetings and invasive cancer audit.
- Ensure that for Histology a minimum of 150 Programme cervical histopathology samples are reported per year per pathologist in order to maintain competency.
- Ensure that for Histology the lead histopathologist advises on the implementation of new guidance or monitoring of new standards as published by the programme or RCPath when appropriate.
- Contribute to nationally-approved research into the screening, screening methodologies and diagnosis of cervical cancer, to inform screening practice and policy.

MORTUARY

Opening Hours & Contacts

Northampton University Hospital Mortuary, provides mortuary facilities and services to both The Trust, and Her Majesty's Coroner (HMC) of (West) Northamptonshire.

The Deceased patients of both Northampton University Hospital and West Northamptonshire are admitted to the mortuary by the portering team, and HMC Contracted Funeral Directors, respectively.
It is the responsibility of the ward/portering team, and Police/Funeral Directors/Ambulance to ensure all patients are conveyed to the mortuary in a timely fashion.

All adult and child patients that pass away in Northampton University Hospital, and its grounds, must be admitted to the mortuary within 4-6 hours of verification of death.

Please Note: The Mortuary is not staffed 24 hours per day

Opening Hours: **08:30 – 16:30** **Monday to Friday**

General Enquiries: 01604 54(5014) **In hours (voicemail facility)**

Hospital Switchboard: 01604 634700

The Mortuary operates a 24/7 on call rota, providing guidance and access, during evenings, weekends and bank holidays, for issues that are urgent and unable to wait for the following working day. This service is available by contacting Northampton University Hospital Switchboard and asking for the on call mortuary technician.

This is inclusive of, but not limited too:

- Providing access, assistance and admission of deceased patients that are conveyed to the hospital by ambulance or British Transport Police.
- Providing access & assistance to NHS Blood & Transplant teams for consented tissue retrieval from deceased patients.
- Signposting of urgent enquiries.
- Refrigeration temperature monitoring and management.
- Facilitating the urgent release of deceased patients where appropriate.

Viewing of Deceased Patients

Viewing is not currently offered at Northampton University Hospital.

Referral to Coroner

If a patient requires referral to the coroner, a 'Death Verification Report' (NGV2245 available on intranet) is to be completed for the patient, and accompany their notes, for the attention of the Medical Examiner's Office 01604 54(4518).
Please contact the Medical Examiner's Office to request post mortem results or reports.

If required, Her Majesty's Coroner's Office for Northamptonshire is contactable on the non-emergency police line - '111' (9111 internally). Following a short, automated message, ask to speak to the 'Northamptonshire Coroner's Office.'

Hospital Consented Post Mortems

A Hospital Consented Post Mortem Examination may only be considered if:

- The certifying doctor is able to provide an acceptable cause for the Medical Certificate of Cause of Death (MCCD), ensuring the case does not require referral to HMCoroner.
- A nominated representative/person of qualifying relationship voluntarily completes appropriate and valid consent. This paperwork is available from the Bereavement Office 01604 54(3454).
- Consent is completed alongside a competent consent taker, & in line with the “Protocol for the Undertaking of Consent for Hospital Post Mortems on Adults” – Available on the intranet/ Bereavement Office 01604 54(3454).

If consent is sought and completed, a covering letter from the Clinician will also be requested by the Consultant Histopathologist.

Release of Deceased Patients

All adult and child patients that pass away in Northampton University Hospital, and its grounds, must be admitted to the Mortuary prior to release to the funeral director or person of qualifying relationship.

No deceased adult or child patients are able to be released from the care of the mortuary without an appropriately completed MCCD, an independently completed ‘Request for Release of Deceased’ Form, provided by the appointed funeral director or person of qualifying relationship, nor while under the HMCoroner’s jurisdiction/care.

CLINICAL BIOCHEMISTRY

CONSULTANT ADVICE SERVICE: PLEASE REFER TO THE CONTACTS LIST AT THE BEGINNING OF THIS HANDBOOK

Sample Requirements: Please Refer to the A – Z Test List

CLINICAL BIOCHEMISTRY

Clinical Scientists are available to provide advice on individual patient matters and to discuss specialist investigations and dynamic tests including GTT, Synacthen Stimulation, Dexamethasone Suppression etc.

Dr F Gidden, Consultant Chemical Pathologist (01604) 545003

Clinical Scientists' Office (01604) 545404

Samples Assayed in Clinical Biochemistry

Blood Samples

Most tests require 4ml clotted blood but please telephone the laboratory if a large number of tests are requested or if in doubt.

Urine Samples

Two types of urine samples are collected for routine Clinical Biochemistry investigations:

1. **Random or Early Morning Urine –**

   These MUST be collected into a white-topped Universal container. These are required for microalbumin, Protein / Creatinine ratio, etc.

2. **24-hour urine collections** - these may require the use of specific preservatives

Urine urea and electrolytes	- no preservative required
Creatinine Clearance	- no preservative required
Total protein excretion	- no preservative required
Calcium excretion	- urine collected into acid container
Metanephrines	- urine collected into acid container
5 Hydroxyindole Acetic Acids (5HIAA)	- urine collected into acid container

Patients should be given the completed request form and instructed to collect the appropriate urine container from Pathology Reception, Hospital Street, Area H. Alternatively; the laboratory will send the urine container to the GP Practice via the normal transport following receipt of the request form.

Universals containing boric acid are unsuitable for all Biochemistry tests – *exception being Urine C-Peptide.*

Routine Clinical Biochemistry Investigations *- collect in GOLD 'Gel' tube*

A full Biochemical profile contains 12 tests
Mini profiles are also available including
"Electrolytes" - sodium, potassium and creatinine
Bone - calcium, albumin, and alkaline phosphatase
Liver - bilirubin, alkaline phosphatase, ALT, total protein and albumin

Samples should be sent to the laboratory on the day of collection to avoid spurious changes in some analytes.

Haemolysis, icterus and lipaemia indices will be measured on all samples and results will not be reported for any analytes known to be adversely affected by these interferences. The exception to this is potassium which, unless grossly haemolysed, will be reported with a haemolysis warning.

Other Biochemistry Investigations

Troponin T Measurement *- collect in GOLD 'Gel' tube*

When to request

- Suspicion of acute myocardial infarction (AMI) in the absence of classical ECG changes
- For the exclusion of acute coronary syndrome (ACS) in patients admitted with chest pain and with normal or equivocal ECG patterns
- For assessment of patients with unstable angina and assessing need for angiography in conjunction with stress testing

When not to request

- Confirmation of AMI in presence of classical ECG changes
- To assess requirement for thrombolytic therapy

Admission Assessments ONLY require 0hrs and 3hrs Troponin samples

ACS Interpretation of 3hr TnT results - *A/E only* – to admit or to refer to RACPAC in OPD

- **Tn >100ng/L** evidence of myocardial infarction
- **Tn0 53-100ng/L** and **Tn3 <20%** change suggest not ACS as cause (>20% change suggests ACS as cause)
- **Tn0 15-52ng/L** and **Tn3 <50%** change suggest not ACS as cause (>50% change suggest ACS as cause)
- **Tn0 <15ng/L** and **Tn3 15-100ng/L** with >50% change suggest ACS as cause
- **Tn0 and Tn3 both <15ng/L** no evidence of myocardial damage

Service availability

Routine measurement of troponin is available 24 hours a day.

Reference Range Information and Interpretation

Troponin levels will remain elevated for at least 5 days.

Borderline elevations should be reviewed with other clinical criteria for AMI, with advice being sought from cardiologists if required.

Lipids *- collect in GOLD 'Gel' tube*

- Patients no longer require fasting for initial lipid investigations however elevated triglycerides should be confirmed on a repeat fasting sample. Do not use a tourniquet.
- Following myocardial infarction, blood for cholesterol should be taken within 24 hours of the onset of chest pain. After this period, cholesterol values may be misleadingly depressed and triglyceride level elevated for up to 3 months.
- Where lipid levels are raised, secondary causes of hyperlipidaemia should also be considered e.g. renal, hepatic, diabetic, thyroid or alcohol.

Glucose *- 4ml fluoride oxalate - GREY tube*

All samples for glucose determinations should be collected into fluoride/ oxalate preservative (grey topped blood bottles). Glucose samples collected into fluoride/oxalate are stable for up to 4 hours at room temperature, after this time there is a gradual loss of glucose.

A fasting sample requires the patient not to eat or drink anything (except water) for 8-10 hours before the test is performed.

Thyroid Function *- collect in GOLD 'Gel' tube*

For patients with no history of thyroid disease, preliminary investigation of thyroid function is restricted to the measurement of TSH only. Where required, the presence of thyroid disease will be confirmed, at the discretion of the laboratory, by second line measurement of free T4 and free T3.
Please provide complete clinical details, including an indication of pregnancy, (abnormal plasma proteins) and current drug therapy, including thyroid replacement (drug and dosage), antithyroid treatment and steroids (including oral contraceptives).

Infertility Investigations *- collect in GOLD 'Gel' tube*

LH, FSH and testosterone should be measured on day 2-4 of the menstrual cycle. Prolactin should only be measured in patients with amenorrhoea or oligomenorrhoea.
A serum progesterone of 30 nmol/L or greater when measured 7 days before the next predicted menstruation (e.g. day 21 of a 28 day cycle) is good evidence of ovulation. Lower progesterone levels do not exclude the possibility of an ovulatory cycle.

Confirmation of the Menopause *- collect in GOLD 'Gel' tube*

The arrival of the menopause is frequently evident on clinical grounds alone and hormone confirmation is not usually recommended. Where circumstances require positive identifications of a peri- or post-menopausal state, biochemical investigations should be restricted to the measurement of FSH, the most sensitive indicator of the menopausal transition. LH measurement has limited value, except to exclude sampling during the LH surge in women with irregular cycle.

Measurement of oestradiol provides no additional information to that of FSH for confirmation of the menopause. In addition, interpretation of a single measurement is difficult because of the cyclical variation in the concentration of oestradiol.

Monitoring Hormone Replacement Therapy (HRT) *- collect in GOLD 'Gel' tube*

LH/FSH do not necessarily return to pre-menopausal levels during HRT therapy and should, therefore, not be used to monitor therapy. Oestradiol measurements in patients on HRT are of only limited value and should be restricted to:

a) Basal monitoring prior to implant replacement to prevent tachyphylaxis
b) If poor trans-dermal absorption is suspected when using patches

Oestradiol measurements may produce misleading results if used to monitor oral supplements.

If patient is on testosterone supplementation, please make this clear in the request.

Requests should be accompanied with information on the mode, dosage and duration of HRT and reason for monitoring.

Diagnosis of Diabetes Mellitus *- 4ml fluoride oxalate - GREY tube*

Unless clearly symptomatic, a diagnosis of diabetes should only made after any of the following are obtained on two occasions.

- A random venous plasma glucose concentration ≥ 11.1 mmol/l ***or***
- A fasting plasma glucose concentration ≥ 7.0 mmol/l ***or***
- Two hour plasma glucose concentration ≥ 11.1 mmol/l two hours after 75g anhydrous glucose in an oral glucose tolerance test (OGTT)

The diagnosis of Diabetes Mellitus should never be made on a result obtained from a blood glucose meter. Patients with fasting plasma glucose between 5.8-7.0 mmol/L should undergo a full Glucose Tolerance Test.

Gestational diabetes

The criteria for diagnosing gestational diabetes is different. Gestational diabetes should be diagnosed if the woman has either:

- A fasting plasma glucose level of 5.6mmol/l or above

or

- A 2-hour plasma glucose level of 7.8mmol/l or above

Haemoglobin A1c (HbA1c) testing to diagnose diabetes

An HbA1c of 48mmol/mol is recommended as the cut off point for diagnosing diabetes. A value of less than 48mmol/mol does not exclude diabetes diagnosed using glucose tests.

Finger-prick HbA1c should not be used unless the methodology and the healthcare staff and facility using it can demonstrate within the national quality assurance scheme that they match the quality assurance results found in laboratories. Finger prick tests must be confirmed by laboratory venous HbA1c in all patients.

In patients without symptoms of diabetes the laboratory venous HbA1c should be repeated. If the second sample is <48mmol/mol the person should be treated as at high risk of diabetes and the test should be repeated in 6 months or sooner if symptoms develop.

Situations where HbA1c is not appropriate for diagnosis of diabetes:
- ALL children and young people
- Patients of any age suspected of having Type 1 diabetes
- Patients with symptoms of diabetes for less than 2 months
- Patients at high risk who are acutely ill (e.g. those requiring hospital admission)

• Patients taking medication that may cause rapid glucose rise e.g. steroids, antipsychotics
• Patients with acute pancreatic damage, including pancreatic surgery
• In pregnancy
• Factors affecting red cell turnover (see below)

Factors affecting HbA1c levels in both diagnosis and monitoring:
The HbA1c level reflects the average blood glucose concentration over the last 3 months, however patients who have an altered red blood cell life-span may have misleading HbA1c results. This includes:
• Anaemia and its treatment
• Chronic liver disease
• Drugs, e.g. antiretrovirals, ribavirin, dapsone.
• Haemoglobinopathies

Patients whose HbA1c is under 48 mmol/mol:
• These patients may still fulfill WHO glucose criteria for the diagnosis of diabetes
• Use WHO glucose testing in patients who have symptoms of diabetes or clinically are at very high risk of diabetes. The use of such glucose tests is not recommended routinely in this situation.

Investigations of diabetes, diabetic control or hypoglycaemia require samples collected into fluoride/oxalate and assayed specifically for glucose. Request cards should be marked for glucose determinations.

Drugs of Abuse Screening – Urine Samples Only

A comprehensive drug screening profile covering commonly abused recreational and prescribed drugs is performed at our reference laboratory.
If a drug is required that is not in any screening group then request NSDS and give details of the drug in question. These requests should be discussed with the Duty Biochemist.

Tumour Markers *- collect in GOLD 'Gel' tube*

Services are available for tumour markers of proven clinical value. However, these assays are not diagnostic and are of most use in monitoring response to treatment and detection of relapse. Normal values do NOT exclude malignancy, nor are elevated levels pathognomonic for malignancy. Results will be available within 2 days following receipt of sample by the laboratory.

Protein Electrophoresis and Immunoglobulins

Immunoglobulin analysis comprises quantitation of IgG, IgA and IgM. Qualitative analysis of protein electrophoresis will also be performed on adult requests. For patients in whom multiple myeloma or other lymphoproliferative disorders are known or suspected, a 'myeloma screen' should be requested which also includes serum free light chains. Note that serum free light chains have replaced urine Bence Jones proteins for the investigation of myeloma. Technical analysis of protein electrophoresis is provided by Biochemistry however note that clinical advice should be sought from the Haematology Consultant team.

NT-pro BNP Testing (B-Type Natriuretic Peptide) *- collect in GOLD 'Gel' tube*

Requests for NT-pro BNP measurement should be based on the NICE guidelines for the investigation and management of heart failure.

Results will generally be available within 1 working day following receipt of sample by the laboratory.

Immunosuppressants –*collect in PURPLE EDATA tube*

Tacrolimus and cyclosporine are performed in-house three times a week. Sirolimus and MPA are referred away.

Fluids (excluding CSF)

Due to the nature of the samples, biochemistry assays are not specifically validated on fluids and therefore cannot be UKAS accredited. Analysis is performed on the understanding that results give a guide to diagnosis and there should be specific clinical question to be answered. In most cases, reference ranges are not given as results should be interpreted through comparison with the serum concentration. Tests that we offer on fluid are available on ICE and the test name is prefixed with "Fluid" – do not try to order a serum test on a fluid.

Blood Gas Analysis

Blood gas analysis should be reserved for sick patients in whom knowledge of pO_2/pCO_2 and acid-base balance will influence patient management. It should not be used for a "quick electrolyte profile" except in emergency situations to confirm severe laboratory-reported hyperkalaemia. Example indications for blood gas analysis are as follows:

- Critically ill patients
- Severe metabolic disturbance
- Respiratory failure
- Unexpected deterioration
- Smoke inhalation

Pathology offers blood gas analysis **24 hours/day 7 days/week**, for wards other than those who already have their own blood gas analyser. It may be quicker to take a blood gas sample, for analysis, to a ward already hosting a blood gas machine. That can be located, ED, PED, Walter Tull, Becket Ward, Theatres, Paddington HDU and Sturtridge. Please ensure the person transporting the sample to another blood gas machine has barcoded access to run the sample. For training, please contact ngh-tr.poct@nhs.net.

Sample requirements

Samples must be collected either into a heparinised blood gas syringe with air expelled, **needle removed** and syringe capped, or into a heparinised capillary capped at both ends. Samples should be mixed thoroughly by inversion to avoid clotting.

Sample (syringe) must be labelled with correct and complete patient identifiers (minimum of 3 to include: surname, hospital number plus one other) accompanied by a blood gas request form labelled with correct and complete patient identifiers (minimum of 3 to include: surname, hospital number plus one other). The use of the POCT patient identifier barcode is strongly recommended as this contains a barcoded hospital number and all the relevant minimum identifiers.

Samples should be delivered by hand to the laboratory immediately. Results on samples collected more than 15 minutes after collection may not be valid. Sample will be processed 'while you wait'. Please ring bell and wait for result. You will be given a printout of results from the analyser containing Surname, Forename, Hospital ID number and ward location as identifiers. Results will also be uploaded to ICE.

Unlabelled samples

Pathology accepts that on occasion a sample may be unlabelled but this represents poor and unsafe practice and is strongly discouraged in the interests of best care. For patients in cardiac or peri-arrest unlabelled samples will be accepted from medical and nursing staff only, provided they complete and sign a waiver form.

Pathology always recommends that FBC and U/E are tested by standard laboratory methods.
Mainline laboratory tests undergo stricter performance management and additional sample integrity checks. For example, blood gas analysers cannot identify haemolysis, a common cause of a spuriously elevated potassium level.

Measurement of Renin/Aldosterone

Patient Preparation

Ideally, all medication should be discontinued for 2 weeks before samples are collected.

If a patient is on treatment with aldosterone antagonists (e.g. spironolactone) or oestrogens, the therapy **must** be discontinued for at least 6 weeks before the aldosterone-renin system is assessed.

If the patient's hypertension is such that all drug therapy cannot be withdrawn safely, the alpha-blocker, prazosin, has little effect on the aldosterone-renin system. Beta-blockers and diuretics have predictable effects but calcium channel blockers and ACE inhibitors must be avoided. Interpretation is particularly difficult when the patient is on a mixed-drug regime.

The patient must be receiving an adequate intake of sodium (100-150 mmol/day) and potassium (50-100 mmol/day).

It is recommended to have a recent electrolyte panel done so it's advisable to take serum for electrolytes at the same time.

C3, C4

Low C4 + Normal C3	Normal C4 + Low C3	Low C4 + Low C3
Genetic deficiency	Post-streptococcal glomeruonephritis	Sepsis
Active SLE	C3-nephritic factor	Active SLE
C1 inhibitor deficiency (hereditary or acquired)	Gram negative sepsis	Rheumatoid Arthritis (rare)
Cryoglobulinemia	Subacute infective endorcaditis	

Adapted from Immunology Handbook, G Spickett

Rheumatoid Factor

RF occurs in a range of autoimmune and inflammatory conditions such as Rheumatoid Arthritis (approximately 70% of RA patients are seropositive), Sjogren's, SLE and Juvenile Idiopathic Arthritis. RF may also occur in other conditions including infections and lymphoproliferative disorders, and in healthy elderly individuals.
RF is tested in the laboratory using turbidimetry.

CRP/ESR are more useful than RF IgM for monitoring RA. Repeat RF testing within 6 months is *not* recommended.

Additional Tests on Samples sent previously

As stated earlier in this Handbook, this practice is not recommended, as accuracy of results cannot be guaranteed. If unable to easily obtain a repeat sample, please follow the protocol outlined in the beginning of the Handbook.

Due to storage restrictions a sample retention period of 3 - 4 working days post receipt is operational within the Clinical Biochemistry Department of Pathology.

The A – Z Test List in this Handbook give details of bottle type and special requirements for certain assays where the collection of a fresh repeat sample is essential due to collection / assay time limit restrictions.

Minimum repeat intervals

As recommended by the RCPath, ACB and IBMS *(National minimum retesting intervals in pathology, March 2021)*, the department is rolling out automatic rejection of requests for certain tests that are repeated within that test's minimum repeat interval. These intervals are set with the aim of avoiding wastage of NHS money and resources without affecting patient care.

Requests are rejected at the point of booking the sample into the laboratory, therefore it is good practice to check existing and pending patient results prior to making a new request as this may avoid rebleeding a patient unnecessarily. If your request has been rejected, please check the patient's ICE record to view the previous result and bear in mind it may have been requested by a different department.

Rejected requests may be processed if there is a justified clinical need to do so, following discussion with the Duty/On-call Biochemist.

As this initiative is in the process of being rolled out, we are not able to publish a list of tests and their repeat intervals in this version of the Handbook, however you are welcome to contact the Duty Biochemist for up-to-date information.

IMMUNOLOGY

Sample Requirements: Please Refer to the A – Z Test List

Introduction

A comprehensive Immunology testing service is provided by partners within the PathLinks Pathology Network. All requests for Immunology must be made electronically using the Trust's ICE requesting system; it is not possible to send manual request forms for Immunology tests.

Queries regarding Immunology testing should be direct to Scunthorpe's Immunology laboratory:

nlg-tr.plimmunolab@nhs.net
03033 303716

Urgent ANCA/GBM Tests

Requests for these must be telephone to the Scunthorpe laboratory in advance (03033 303716) for discussion with a senior member of staff who will assess the urgency of the test with you, and will discuss sample transport arrangements. You will need to take the sample to the NGH Pathology department **by hand** and they will arrange for urgent transportation.

Clinical History

It is essential that a relevant clinical history is given for all specimens. The information provided may influence the tests performed. As autoantibodies are usually not diagnostic for a particular disease, the presenting clinical features need to be documented in order to perform the correct tests and to assist in interpretation of the results

Please refer to the Path Links Blood Science User Guide for further information relating to Immunology:

Blood sciences user guide (nlg.nhs.uk)

HAEMATOLOGY

If in doubt as to the appropriate investigation, please consult with the Consultant Haematologist.
CONSULTANT ADVICE SERVICE: PLEASE REFER TO THE CONTACTS LIST AT THE BEGINNING OF THIS HANDBOOK

Sickle Cell and Thalassaemia (SCT) Screening

The Haematology Laboratory will follow guidance from the national screening programmes as detailed in the standards and policies and shall meet NHS England Service Specification 18 NHS Sickle Cell and Thalassaemia Screening Programme to provide a consistent and equitable approach to the provision and monitoring of NHS Sickle Cell and Thalassaemia (SCT) Screening Programme across England.

Northampton General Hospital has been designated a High prevalence Trust for SCT screening, because ≥2% of the booking bloods received by the laboratory are screen positive.

The Haematology laboratory has a quality management system in place that incorporate all requirements for the monitoring and management of screening specimens, including:

- Distinguishing antenatal specimens from other specimens
- Receiving and processing specimens to enable their matching against the cohort of women who have accepted screening
- Identifying and recording unlabelled or mislabelled specimens, and specimens that are unsuitable for analysis, and requesting and receiving repeat specimens
- Reporting results

The standard operating procedure **Beta Thalassaemia and Haemoglobinopathy Screening** identifies responsibilities and failsafe arrangements. The team has a close working relationship with the Pre-natal Diagnosis Team at NGH. The Pre-natal Diagnosis Team is responsible for initial requests for screening at booking appointment and taking of samples, obtaining consent for testing and completion of FOQ (electronically or paper), contacting patients with requests for partner / further testing and referral of patients to senior clinical staff where counselling is required.

The Haematology laboratory issues reports in accordance with the model frameworks set out in: *Sickle Cell and Thalassaemia: Screening handbook for laboratories* and ensures there is an agreed process in place for the laboratory to directly alert the Maternity Unit/Antenatal Screening Team if a result is inconclusive and a repeat sample is needed.

All screening laboratories should:

- Be accredited by UKAS to ISO 15189
- Participate in EQA schemes accredited to ISO 17024 Conformity assessment General requirements for proficiency testing schemes
- Meet the screening programme quality assurance requirements mapped to ISO 15189
- Use ISO 15189-accredited reference laboratories

SCT Team in Haematology Department

The different staff groups involved in the Screening pathway and how they relate to each other can be found in the Sickle Cell and Thalassaemia Screening NGH – Haematology Organogram.

Haematology Clinical Lead -

- Responsible for providing clinical advice

Haematology Operational Manager

- Responsible for providing sufficient and appropriate resource to provide the service
- Attends Antenatal Screening Programme Board Meetings
- *Communicates operational issues to stakeholders
- *Leads incident investigation for laboratory
- *Reports on Antenatal Screening aspects within Pathology structure

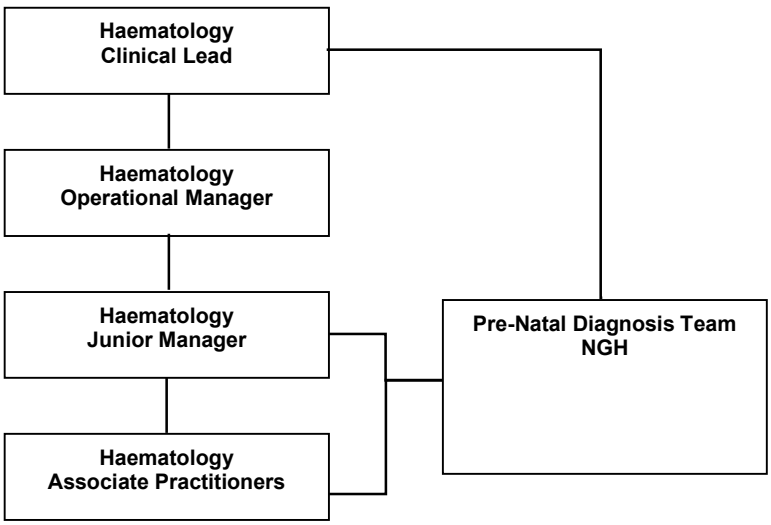
Haematology Junior Manager

- *Assists Operational Manager in incident investigation
- *Leads data collection for submission to PHE
- *Leads on training of lab staff
- *Primary technical contact for the lab for PND team

Associate Practitioners

- Running of patient samples
- *Collection of raw data
- *Communication with PND about screen positives, further samples, sample rejection

The team has a close working relationship with the Pre-natal Diagnosis Team at NGH



Having acquired informed consent midwives must collect 2 EDTA samples (purple tube) and 1 gold gel tube (required for serology tests). A Pathology blood request form and the Ethnicity Questionnaire must be completed. Both the forms and samples must be delivered to Pathology within 24hrs of collection. Antenatal screening can also be requested on ICE.

Reporting

National guidelines give a required turnaround time of 3 working days. The monthly turnaround time report, generated for the quality report, includes data for antenatal Haemoglobinopathy screening; this is given as "Haemoglobinopathy Interpretation". This therefore does include a small number of non-antenatal samples but this is not significant compared to the number of antenatal ones and so TATs are assessed as one. The Pathology computer system is not able to distinguish between working/ weekend days when producing turnaround time figures so it is not possible to simply produce this data. In order to monitor the TAT for these samples a 5 day and 3 day figure is obtained and compared; the lab has set a target of 95% of samples resulted within 5 days as a way of monitoring performance. National guidelines do not give any indication of percentages with respect to the number of samples processed within 3 working days and the figures provided quarterly to the antenatal office are for 5 days to allow for weekends; the antenatal clinical team are aware of this. PHE also ask for TAT data on an annual basis, we do not give this information to them and instead explain that our LIMS is not able to give this data, PHE have accepted this as a response.

Malaria Parasite Screen

Information required for Malaria Screen:

- Any travel history (where and when)
- Any prophylaxis (What type, dosage and when)

For advice on Malaria treatment and dosage please contact -

HPA Malaria Reference Laboratory
London School of Tropical Medicine
Keppel Street (Gower Street)
London WC1E 7HT

Tel.no:	Laboratory	020 7927 2427
	Fax	020 7637 0248

Information

A **ferritin** assay (Gold gel tube) is advisable in thalassaemia screening
Separate blood films are not required for Malaria investigations

Guidance for Thrombophilia Testing

Patients who require screening for a prothrombotic tendency, either on the basis of a history of thrombotic events at an early age or because there is a strong family history of such events, can access this facility from the Haematology Consultant or SpRs on request. Many of these tests cannot be done while the patient is taking anticoagulant therapy and they may not be accurate in the presence of other disease states. Guidelines are available via the ICE system. Current profiles are:

Thrombophilia Screen –
Antithrombin III
Protein C
Protein S

Genetic Thrombophilia Screen –
Factor V Leiden
Prothrombin Gene Mutation

Clotting Profile –
INR
APTT

Sample Requirements

INR – blue citrate tube

The tube should be filled to the line, as tests cannot be performed on partly filled or overfilled tubes.

Clotting Profile – blue citrate tube

The tube should be filled to the line, as tests cannot be performed on partly filled or overfilled tubes. Samples more than 8 hours old are unsuitable for clotting screens.

D-Dimer – blue citrate tube

The tube must be filled to the line, as tests cannot be performed on partly filled or overfilled tubes. Samples more than two hours old are not suitable for D-Dimers.

Thrombophilia Screen – *2 blue citrate tubes*

The tube must be filled to the line, as tests cannot be performed on partly filled or overfilled tubes.

Genetic Thrombophilia Screen – *1 EDTA tubes*

Remember: Unlabelled Samples will not be processed

BLOOD TRANSFUSION

Refer to the Trust Blood Transfusion Policy – available on the Intranet

Blood Transfusion Tests

Blood Grouping and / or Cross-matching - ***6ml EDTA required (pink cap)***

SPECIMENS MUST BE HANDWRITTEN, LABELLED WITH HOSPITAL NUMBER, SURNAME AND FORENAME, DATE OF BIRTH AND MUST BE SIGNED BY THE PERSON TAKING THE BLOOD.

Request form must be filled in fully indicating the reason for Transfusion and any previous Transfusion history. Blood grouping and red cell requests can also be made on ICE.

Remember:

Samples that do not meet the minimum labelling criteria will not be processed

Alterations to samples cannot be permitted once they have reached the laboratory

Addressograph or similar labels are NOT acceptable on specimens

No clinical details = No Cross-match

Antenatal Blood Grouping - 6ml EDTA required (pink cap)

Complete NGH antenatal request form to accompany the samples. Antenatal screening can also be requested on ICE.

PLEASE NOTE

If the patient has received prophylactic anti-D during the pregnancy this must be recorded on the request.

Sample requirements for antenatal patients with antibodies are stated on the report.

Direct Antiglobulin (Coombs) Testing - 6ml EDTA required (pink cap)/ EDTA (lavender)

This can be performed with blood grouping if required.

Kleihauer testing - 6ml EDTA required (pink cap)/ EDTA (lavender)

This test is not available to request on ICE. Please use a manual request form.

PLEASE NOTE

All requests for tissue typing and other miscellaneous serology must be referred to Blood Transfusion for advice (X5413).

Paediatric requests for special investigations must be discussed with Blood Transfusion in advance.

Routine requests for blood grouping/compatibility testing

Routine blood group specimens are kept for 6 days after testing.

Blood will be cross-matched for the day of the planned operation and held for 48 hours only. It is vital that the laboratory is informed if a patient's operation is cancelled or postponed.

Urgent requests for blood products

The blood transfusion laboratory must always be contacted if blood products are required urgently. Telephone extension 5413 during the day or contact the duty BMS via switchboard after 5pm and at weekends.

Products available:

Red cells

Issued as required for appropriate clinical use. There is an agreed maximum blood-ordering schedule (MSBOS) within this hospital for most types of surgery. If in doubt contact the blood bank.
Approximate timescales for urgent red cell issue:

1. **Emergency Stock** – adult emergency stock is held in the issue fridge in Pathology and is available immediately. Please call the laboratory with the identity of the patient, before taking from this stock. Adult and neonatal emergency stock is available in Sturtridge

2. **Major Haemorrhage Packs** – see intranet for detailed Trust Policy.
.
3. **Fully Crossmatched Blood** – (no atypical red cell antibodies) available within 1hr of a sample arriving in the laboratory.

In non-urgent situations, red cells will be ready within 2hrs of a sample arriving in the laboratory during routine hours.

Providing red cells for patients with atypical red cell antibodies can take much longer. These cases will be discussed with the patient’s doctor by a member of the laboratory staff.

Fresh frozen plasma FFP

FFP is only issued if there is evidence of abnormal clotting or for massive blood loss. This product has to be thawed prior to issue and takes approximately 30mins to thaw.

Platelets

We do not hold stocks of platelets so there may be a delay of several hours in providing this product. Platelets will only be given in line with NGH Trust policy unless approved by a Consultant Haematologist.

Cryoprecipitate

It is available for treating massive blood loss or some specific coagulation abnormalities on the instruction of a Consultant Haematologist

4.5% and 20% albumin

It is available in various sizes - consult blood bank - only issued on a named patient basis.

Prothrombin Complex Concentrate

A prothrombin complex concentrate will only be issued for the rapid reversal of over anticoagulation in life-threatening haemorrhage if approved by a Consultant Haematologist or Stroke Physician.

MICROBIOLOGY

CONSULTANT ADVICE SERVICE: PLEASE REFER TO THE CONTACTS LIST AT THE BEGINNING OF THIS HANDBOOK

Sample Requirements: Please Refer to the A – Z Test List

The laboratory offers a comprehensive range of tests for the investigation of bacterial, viral and fungal infections. Tests for faecal parasites, viral serology and antibiotic assays are also offered. Clinical advice from the consultant Microbiologists is available, when required.

Most investigations are carried out daily and results available in 24-48 hours. Some non-urgent investigations are carried out on a weekly basis for reasons of efficiency. Some that are submitted to reference laboratories are usually reported on in approximately 10 days. If further information or advice regarding a particular investigation is required, please contact the laboratory.

The laboratory will contact the requester when significant or unexpected findings are made e.g. all blood cultures found positive are immediately notified to the clinician concerned.

Useful Telephone Numbers

Hospital Switchboard			(01604) 634700
Dr B Alouanti	Consultant Microbiologist	Direct line	(01604) 545138 / 545164
Dr C Herath	Consultant Microbiologist	Direct line	(01604) 545041 / 545164
Main Microbiology Laboratory			(01604) 547769
Out of hours contact via Hospital Switchboard			(01604) 634700
Infection Prevention & Control			(01604) 545785
Out of Hours contact via Hospital Switchboard			(01604) 634700
Health protection and public health - Out of hours			(01159) 675099
During Working Hours			0844 225 4524
If a request is urgent, please contact the laboratory on			(01604) 547769
At weekends, please leave a contact number.			

GP Users - Antibiotic Guidelines

"Management of Infection - Guidance for Primary Care"
Available on the Primary Care Intranet under prescribing – Infection Control

Trust Users – Infection Guidance Page

Access to Trust Antimicrobial Guidelines, Microbiology e-Referral Form, Antimicrobial Stewardship e-learning package and Infections Newsletters.

Clinical History

It is essential that a relevant clinical history is given for all specimens. For example, for vaginal swabs the history will influence the organisms that will be looked for and the interpretation of results. Information as to whether the patient is ante or postnatal would be useful.

In addition, any Virology performed will depend on the clinical details given.

Reports

All reports are necessarily edited to some extent before being issued, so that as far as possible significant isolates and sensitivities are provided e.g. not all commensal organisms are reported. An appropriate range of antibiotic sensitivities is tested from which a selected few are reported. Others may be requested in special circumstances.

Specimens

Please ensure that all specimens are in the correct container. Remember to note on the request form if patients are on antibacterial therapy.

For viral load investigations (HIV, HBV, HCV), three PURPLE-topped EDTA tubes are required for each virus.

HVS Microscopy

Please Note: An evaluation of diagnostic methods for the detection of *Trichomonas vaginalis* was undertaken comparing wet-preparation microscopy with Acridine orange stain, broth culture and Nucleic acid amplification test (NAAT) in a comparison of 224 High Vaginal Swab (HVS) specimens. Wet preparation microscopy was found to yield a sensitivity of 88.9% demonstrating greater sensitivity than the standard method. Therefore, this is the method in use in our laboratory.

Infectious Diseases In Pregnancy Screening

The UK National Screening Committee (UK NSC) has responsibility for setting screening policy. It recommends systematic population screening in pregnancy for HIV, hepatitis B and syphilis. The Infectious Diseases in Pregnancy Screening Programme (IDPS) is responsible for implementing this policy ensuring that women with hepatitis B, HIV and syphilis infection are identified in early pregnancy. The programme is an essential component of strategies to prevent mother to child transmission of hepatitis B, HIV and syphilis.

TAKING SAMPLES
If the offer of screening is accepted, the laboratory should receive a fit for purpose antenatal blood sample within one working day of the sample being taken. A record of the date and time the specimen was taken should be kept. It is necessary to indicate the tests being requested and, if relevant, those declined. Antenatal screening samples for Infectious Diseases in pregnancy (IDPS) must be sent using the specific Antenatal request form. Must also include the name of the person taking the specimen.

UNACCEPTABLE SAMPLES / INCONCLUSIVE RESULTS
The requestor will be contacted and informed that a repeat sample is required by the laboratory. The requestor is responsible for informing the woman and sending a repeat sample to the laboratory within 10 working days of the request being received by the maternity unit. The laboratory will monitor the turnaround of these requests.

WOMEN WHO BOOK LATE FOR ANTENATAL CARE

Women who have not had any antenatal care or have come from out-of-area, and have no antenatal notes with them, are to be offered screening for all three conditions as soon as possible. Specimens taken at 24 weeks of gestation or later should be marked “urgent” and the laboratory informed. The result will be available within 24 hours of receipt by the laboratory. If positive, the woman should be referred immediately to the relevant specialist service for further assessment.

WOMEN PRESENTING IN LABOUR WITH NO AVAILABLE RESULTS

Women who have not had any antenatal care or have come from out-of-area and have no antenatal notes with them need to be offered screening for all three conditions as soon as possible. They should be marked “urgent”, the laboratory informed and a result should be received by the requestor within 24 hours of the sample being received by the laboratory.

PATHWAY FOR ALL WOMEN WITH HEPATITIS B POSITIVE RESULT

- The lead microbiologist informs GP by phone and Screening Midwives by email
- The Screening team will arrange a face to face appointment with the women within 10 days, additionally make referrals to gastroenterology and Obstetrics consultant care
- The lead microbiologist generates the advice for neonatal vaccination and immunoglobulin administration

PATHWAY FOR ALL WOMEN WITH HIV POSITIVE RESULT

The lead microbiologist will inform the screening team by email as agreed.
After a confirmed positive result the Screening Team will arrange an appointment for the woman with a specialist in the sexual health clinic (Summers Unit) within 10 working days and refer to a consultant obstetrician.

PATHWAY FOR ALL WOMEN WITH POSITIVE RESULT FOR SYPHILIS

The lead microbiologist emails the antenatal team who will alert GUM. The Screening Midwives will contact the Community Midwife to give the results to the woman. The Screening Team will organise an appointment with specialist GUM consultant within 10 working days, and refer to a Consultant Obstetrician. In accordance with the British Association for Sexual Health and HIV (BASHH) guidelines the need for further assessment to provide diagnostic evaluation and evaluate maternal treatment needs will be explained as not all positive screening test results will be confirmed as a syphilis diagnosis or as an infection requiring treatment. The Microbiology Clinical Lead generates an Interpretation of the results.

PRINCIPLES OF THE IDPS SERVICE IN MICROBIOLOGY

- The initial screening tests for all three infections must be performed in Northampton General Hospital NHS Trust Pathology.
- Any send away should be approved by IDPS Microbiology Clinical Lead.
- In cases of equipment failure; Microbiology clinical Lead should be informed and plan/organise the send away. Any positive results from the send away screening laboratory should be communicated to the Clinical Lead. The send away laboratory should have all contact details of the Microbiology Clinical Lead.
- Microbiology Clinical Lead should be notified of any urgent request and make the arrangements.
- Test turnaround time (HIV, hepatitis B, syphilis) - 8 working days of sample receipt.
  Acceptable: ≥ 95.0% Achievable: ≥ 97.0%
- Any positive HBV and/or HIV and/or Syphilis should be confirmed before communicating to the antenatal team.
- All confirmation samples should go *only* to PHE Colindale.

IDPS TEAM IN MICROBIOLOGY DEPARTMENT

Clinical Lead:	Dr Basel Alouanti	email**:** Basel.Alouanti@ngh.nhs.uk
Operational Manager:	Andrea O'Connell	email**:** Andrea.O'Connell@ngh.nhs.uk
Junior Manager:	Edina Chiriseri	email: Edina.Chiriseri@ngh.nhs.uk

MICROBIOLOGY CLINICAL LEAD

- Communicates all results to Antenatal Screening Team. Agreed with the team to send results to the Antenatal Team Generic email.
- Supervise the quality of the reports.
- Monitor the quality indicators.
- Participates in the quarterly Internal Antenatal Newborn Screening Leads Meetings.
- Investigate incidents (DATIX handler) and provide feedback to the Antenatal Newborn Screening Team.

MICROBIOLOGY OPERATIONAL MANAGER AND JUNIOR MANAGER

- Communicate all positive and indeterminate results to the Clinical Lead
- Provide the clinical lead with the quality indicators.
- Communicate all operational failures/malfunctions.
- Provides the Clinical lead with the turnaround times

APPENDIX 1

Mid-Stream Urine specimens are collected as follows:

Females:

If the patient is able to collect urine without assistance from the nursing staff they should be instructed as follows:

- Separate the labia and with cotton wool or a sponge moistened with water, wipe the vulva from the front to the back. Disinfectant **MUST NOT** be used.
- With the labia still separated allow some urine to pass into the toilet, then, without stopping, allow urine to pass into a sterile borate container and fill to the line.
- Pass the remaining urine into the toilet.

Males:

Clean the glans penis with soap and water. Commence micturition, and when a few millilitres of urine have been passed introduce a sterile borate container into the stream and fill the container to the line.

In elderly or very ill patients nursing assistance may be required.

Send to the laboratory. The specimen can be preserved in a refrigerator at 4°C prior to transport.

Specimens showing signs of contamination, e.g. with faecal material, are of no value and will not be cultured.

Investigation for Chlamydia from male urine specimens (see under examination for chlamydia

Clean Catch - Children

Catch some urine in the specimen bottle whilst the child is passing urine. This is called the clean catch method. Just be ready with the open bottle as the child passes urine. Take care not to touch the open rim of the bottle with your fingers, as this may contaminate the specimen with germs (bacteria) from your fingers.

Collection of Catheter Specimens of Urines (CSUs)

The specimen should not be collected from the drainage bag, only from the sampling port. Clean the sampling port with an alcoholic 2% chlorhexidine swab. Insert the syringe into the sampling port and aspirate urine. Transfer 15ml urine to a red topped sterile boric acid bottle.

Urine for culture for Mycobacterium tuberculosis

Culture for Mycobacterium tuberculosis is only performed when white cells are present in the urine. Submit a MSU specimen in a boric acid container, indicating that Mycobacterium tuberculosis culture is required. This will be examined as a normal MSU. If white cells are present, 3 x 600ml urine containers will be issued so that three consecutive early morning specimens can be collected for examination for TB. If there are no white cells present in the MSU, Mycobacterium tuberculosis culture is not indicated.

Urine for microscopy for Schistosomiasis

Collect a urine specimen between 1000 & 1400 hrs, as this is when the highest concentration of eggs is found. It is also recommended that a little light exercise should be taken before the specimen is collected (e.g. 20 rapid knee bends, or running up & down a flight of stairs). Always record the volume of urine passed, since the number of eggs in a known volume can indicate the severity of the infection.

APPENDIX 2

Collection of CSF Specimens – (Five specimens required in total)

Label 4 white-topped universal containers and one grey-topped fluoride/EDTA tube with the patient's name, NHS number (or hospital number), ward, date of birth, time that CSF was obtained **AND** the sequence order of sampling.

Collect the **first** specimen (0.5 mL) into the grey-topped fluoride tube for glucose and protein estimations and send to Clinical Biochemistry. Obvious blood stained samples will not be analysed.

Collect the next sterile universal containers numbered 1- 3 (aim for a total of 2 mL) and send with the Microbiology request form,

If Xanthochromia test is required collect the 4th universal container containing a **minimum of 1 ml** CSF.

Protect this sample from the light, and send with the CSF fluoride sample and a gold-top blood sample together Biochemistry request form.

APPENDIX 3

Collection of Faeces

Faeces are essential for all enteric examinations. Specimens in toilet paper, nappies, margarine tubs, etc., or rectal swabs are not acceptable. Please state if the patient has been abroad, or is on antimicrobial therapy as the range of tests set up will be determined by the clinical information provided. Also state if the patient is a food handler.

- Do not mix urine with the stool sample; patient should be encouraged to urinate first.
- Place a wide mouth container (potty, empty plastic food container (e.g. 1 litre ice cream carton) in the bowl, or put clean newspaper or plastic wrap over the toilet seat bowl (to prevent the specimen from falling into the toilet bowl).
- Pass the stool onto the potty, plastic container, newspaper or plastic wrap.
- Using a spatula, half-fill a faeces container. Do not fill more than a third full if the specimen is liquid. (Minimum sample volume is approx. 2ml).
- Flush the remainder of the stool sample down the toilet.

APPENDIX 4

Collection of Swabs/Tips

Endocervical Swabs

Endocervical or self-taken vaginal swab: An endocervical swab is the specimen of choice for diagnosing Chlamydia trachomatis as it has a higher sensitivity than a urine sample or a self-taken vaginal swab. White cells and blood can produce either an invalid or false negative result and thus excess mucus/pus should be removed from the endocervix with the accompanying swab prior to taking the sample.

NB. Only one swab is required for a self-taken vaginal swab; the cleaning swab must not be used and should be discarded.

Eye swabs

Apply a local anaesthetic. Remove excess exudate using one of the swabs from a female PCR sample kit; discard the cleaning swab. Using the remaining swab, firmly swab the inner surface of upper and lower eyelids to collect epithelial cells. Do NOT pre-moisten the swab in the transport medium. Place swab in sample tube, snap off at the score line and replace cap.

Collection of Throat Swabs

Take these with the aid of a good light and tongue depressor. Use transport medium and send to Pathology as soon as possible.

Collection of Nose Swabs

Swabs should be taken from both anterior nares and nasal septum with a swab which has been pre-moistened with the transport medium.

Collections of Pernasal swabs

Ordinary swabs in transport medium are not suitable. Special fine flexible wire-mounted post nasal swabs are available from the laboratory together with the necessary special transport medium. The yield of B. pertussis is increased by taking a postnasal swab.

Wound swabs and Pus swabs

If there is any volume of pus present it should be collected with a syringe into a sterile universal container rather than on to a swab. Transport medium must always be used for swabs. Pus is always preferable to a wound swab, and essential if M. tuberculosis is to be identified. There is a better yield from wound swabs if the swab is pre-moistened with transport medium before it is taken.

Collection of Intravascular line tips

The skin in the region of the intravascular catheter should be cleaned with alcohol and the catheter withdrawn with sterile forceps. The terminal 5 cm of the catheter tip should be cut off with sterile scissors and placed in a dry sterile container to transport to the laboratory in a labelled container. If the line has been used in total parenteral nutrition please indicate on request form.

APPENDIX 5

Collection of skin scrapings, hair and nail clippings for the diagnosis of superficial fungal infections

Material should be sent in a DERMAPAK kit available from the laboratory, in which full instructions are given. The pack is not sterile, so bacterial culture is not appropriate from the same specimen.

Skin

Material from skin lesions is collected by gently scraping off material from the outer edges of the lesion, usually with the edge of a glass microscope slide or a scalpel blade. The edge is most likely to contain viable fungus.

Hair

Scalp scrapings are obtained as above but should include hair stubs. Hairs may be plucked from the scalp with forceps, but cut hairs are unsatisfactory as infection is usually below the surface near the scalp. The material should be transported to the laboratory as for skin scrapings.

Nails

Clippings should be taken from the discoloured or brittle parts of the nail and cut back as far as possible from the free edge as some fungi are restricted to the lower parts. Scrapings can also be taken from under the nail to supplement the clippings. Nail clippings often fail to grow fungi even if present. Whole nails can be sent to the Laboratory in a sterile Universal container.

APPENDIX 6

Collection of Blood Cultures

Kit preparation

Label bottles with surname, forename, date of birth and hospital number in space on bottles provided.
If using printed labels, ensure they do not cover barcodes; **do not remove bottle barcode labels.**

Remove flip-off caps from bottles and swab the tops with a 2% chlorhexidine in 70% isopropyl alcohol swab (if not available, use alcohol swab – iodine is not recommended) and allow to dry.

Skin preparation

- Wash your hands with soap & water or use alcohol hand rub.
- Clean any visibly soiled skin on the patient with soap & water and then dry.
- Apply a tourniquet and palpate to identify vein.
- Clean skin with a 2% chlorhexidine in 70% isopropyl alcohol impregnated swab (if not available, use an alcohol swab) and allow to dry.

If a culture is being collected from a central venous catheter, disinfect the access port with a 2% chlorhexidine in 70% isopropyl alcohol impregnated swab and allow to dry (if not available, use alcohol swab).

Sample collection – Needle and syringe method.

1. Wash & dry your hands again or use alcohol hand rub and apply clean examination gloves (sterile gloves are not necessary).
2. Insert needle. **Do not palpate again after cleaning.**
3. Collect 16 – 20 ml of blood (1-3 ml for paediatric bottle) and release tourniquet.
4. Cover the puncture site with an appropriate dressing.
5. If blood is being collected for other tests, always inoculate the blood cultures first.

Adult set: Inoculate 8-10 ml of blood into each bottle starting with the **purple** capped bottle (anaerobic): do not change the needle between sample collection & inoculation. It is essential that bottles are not overfilled; use the 5 ml graduation marks on the side of the vial to monitor the volume collected.

Paediatric bottle: Inoculate 1-3 ml of blood into the bottle.

6. Discard needle and syringe in a sharps container.
7. Wash hands after removing gloves.

Sample collection – winged blood collection method.

It is IMPORTANT to use the correct kit if this method is used, i.e. a BD Vacutainer® Push Button Blood Collection Set with Pre-Attached Holder.

It is IMPORTANT that the bottle being inoculated is held at a position below the patient's arm with the bottle in an upright position (stopper uppermost). This will prevent any potential back flow of media from the blood culture bottle. Monitor the draw process closely at all times during collection to assure proper flow is obtained and to avoid flow of the bottle contents into the adapter tubing.

Due to the presence of chemical additives in the culture bottle, it is important to prevent possible back flow and subsequent adverse reactions.

1. Wash and dry your hands again or use alcohol hand rub and apply clean examination gloves (sterile gloves are not necessary).
2. Attach winged blood collection set to blood collection adapter cap.
3. Insert needle into prepared site. **Do not palpate again after cleaning.**
4. If blood is being collected for other tests, always collect the blood culture first.
5. Place adapter cap over the vial and pierce the septum. Hold the bottle upright and use the 5 ml graduation marks on the side of the vial to monitor the volume collected.

Adult set: Starting with the **blue** capped (aerobic) bottle, inoculate 8-10 ml of blood into each bottle. It is essential that bottles are not overfilled; use the 5 ml graduation marks on the side of the vial to monitor the volume collected.

Paediatric bottle: Inoculate 1-3 ml of blood into the bottle.

6. When the desired volume has been drawn, other blood samples can then be collected as required.
7. Remove the tubing set from the vial.
8. After collection and while the needle is still in the vein, place gauze pad or cotton ball on the venepuncture site allowing it to cover the front barrel of the winged push-button device. Grasp the body of the device with the thumb and middle finger and activate the push button with the tip of the index finger to withdraw the needle from the patient.
9. To ensure complete and immediate retraction of device, make sure to keep fingers and hands away from the end of the blood collection set during retraction. Do not impede retraction. Make sure that the needle is fully retracted and is in the shielded position.
10. Apply pressure to the venepuncture site.
11. Cover the puncture site with an appropriate dressing.
12. Discard winged blood collection set in a sharps container.
13. Wash hands after removing gloves.

Record procedure and send samples to laboratory

Record the procedure with indication for culture, time, site of venepuncture and any complications in the patient's record.

Ensure the bottles are correctly labelled, *specimen form completed fully and in addition on the form print the name and designation of the person who took the sample*, and send to the laboratory in plastic specimen bag as soon as possible.

Hand the bottles in to the Pathology Reception staff.

APPENDIX 7 – REFERRAL LABORATORIES

REFERRAL LABORATORIES – Contact Details
Further information can be obtained from Pathology Dept. Ext 5414

Ref. Code	Hospital Name	Address Line 1	Line 2	Line 3	Post Code	Telephone
ARLS	Antimicrobial Reference Laboratory	Southmead Hospital	Bristol			01179595653
BCH	Biopterin Screening Service,	Birmingham Children's Hospital	Steel House Lane	Birmingham	B46 N71	0121 333 9938
BIRCITY	City Hospital	City Hospital	Dudley Road	Birmingham	B18 7QH	0121 507 5353
BIRM	The Regional Laboratory for Toxicology	City Hospital	Dudley Road	Birmingham	B18 7QH	0121 507 4135
BIRHPA	Birmingham HPA DX 6780100			Birmingham		0121 766 6611
BRI	Bristol Royal Infirmary	Marlborough Street	Bristol	Avon	BS2 8HW	0117 923 0000
BRIHPA	Bristol HPA DX 6120200		Bristol			0117 929 1326
BRIIMM	Bristol HPA DX 6121302	Mr P Vigo Immunology department	Southmead Hospital	Bristol		
BROM	Royal Brompton Hospital	Sydney Street	London		SW3 6NP	0207 3528121
CHU	Cytogenetics Lab., Churchill Hospital	Old Road	Headington	Oxford	OX3 7LJ	01865 226001/023
COLENT	Enterics Lab Colindale	DX 6530008	Colindale			020 8327 6111 020 8327 6142
COLHPA	Colindale HPA DX 6530000		Colindale			020 8200 4400
COLRESP	Respiratory Laboratory, Colindale	DX 6530000	Colindale			020 8200 4400
DEV	Royal Devon and Exeter	Barrack Road	Exeter		EX2 5DW	01392 402935
GRI	Glasgow Royal Infirmary	Castle Street	Glasgow	SCOTLAND	G4 0SF	0141 211 4494
HAM	Biochemistry Dept., Hammersmith Hospital	Du Cane Road	London		W12 0HS	020 8383 3949
HAR	Transplant Immunology Harefield Hospital	Harefield	90 UB			01895 825507
HPAMAL	HPA Malarial Reference Laboratory London School of Tropical Medicine	Keppel St (Gower St)	London		WC1E 7HT	020 7927 2427
ICH	Institute of Child Health	30 Guilford Street	London		WC1N 1EH	020 74059200 x2509
IMOUH	Immunology, Churchill Hospital (part of Oxford University Hosps)	Old Road	Headington	Oxford	OX3 7LJ	01865 741166
IMNEWC	SAS Laboratory Newcastle General Hospital	Westgate Road	Newcastle		NE4 6BE	0191 2336161
IMRLH	Immunology Dept, Royal London Hosp.	2nd Floor, Path&Pharmacy Building	80 Newark St	Whitechapel Lon	E1 2ES	0203 2460279
IMSHEF	Department of Immunology	PO Box 894	Sheffield			01142 715552
JRHCOAG	Coagulation Lab., John Radcliffe Hospital	Headington	Oxford		OX3 9DU	01865 220360
JRHMIC	Microbiology, John Radcliffe Hospital	Headington	Oxford		OX3 9DU	
KCH	King's College Hospital	123 Coldharbour Lane	London	Greater London	SE5 9NU	0207 346 3856
KGH	Biochemistry Dept, Kettering General Hospital		Kettering			

REFERRAL LABORATORIES – Contact Details
Further information can be obtained from Pathology Dept. Ext 5414

Ref. Code	Hospital Name	Address Line 1	Line 2	Line 3	Post Code	Telephone
LAB21	DX 6055300		Cambridge			01223395450
LIVHPA	Liverpool HPA, DX 6960300		Liverpool			0151 529 4900
LRIBIO	Biochemistry Dept. Leicester Royal Infirmary	Infirmary Square	Leicester		LE15WW	0300 303 1573
LRIHAEM	Haematology Dept, Leicester Royal Infirmary	Infirmary Square	Leicester		LE1 5WW	
MANREF	Meningococcal Reference Unit, Manchester	DX 6962419	Manchester			0161 276 6757
MCH	Manchester Children's Hospital	Hospital Road	Pendlebury	Manchester	M27 4HA	0161 794 4696
MICPATH	Micropathology Ltd	DX 6784501				02476 323222
MTOX	MedTox Lab, Guys & St Thomas' Hospital	Avonley Road	London	Greater London	SE14 5ER	0207 955 5095
NHSBT H&I	NHSBT Filton	500 North Bristol Park	Bristol		BS34 7QH	
NHSBT RCI	NHSBT Birmingham	Vincent Drive	Birmingham		B15 2SG	
NHN	Biochemistry Dept. National Hospital for Neurology	Queens Square	London		WC1 3BG	0207 8373611
PLINK	Blood Sciences, Pathology, Scunthorpe General Hospital	Cliff Gardens	Scunthorpe		DN15 7BH	03033 303716
PTUL	Pharmacology & Therapeutics, University of Liverpool	DX 6966700	Liverpool			0151 795 4158
RHH	Royal Hallamshire Hospital	Glossop Road	Sheffield	South Yorkshire	S10 2JF	0114 271 1900
RVI	Royal Victoria Infirmary	Victoria Road	Newcastle		NE1 4LP	0191 282 9719
SALCAMR	Special Pathogens Lab. CAMR	PortonDown	Salisbury	DX 6930402		01980 612 591
SALVAC	Rare and imported pathogens laboratory (RIPL)	Porton Down	Salisbury	Wiltshire	SP4 0JG	01980 612 348
SCH	Clinical Chemistry, Sheffield Childrens Hospital	Western Bank	Sheffield		S10 2TH	0114 271 7000
SGH	SAS Trace Element Unit, Southampton General Hospital	Tremona Road	Southampton	Hampshire	SO16 6YD	023 8079 6419
SMEAD	Biochemistry Dept, Southmead Hospital Bristol	Southmead Road	Westbury–on-Trym	Bristol	BS10 5NB	
SPHL	Dr O Connell, Southampton PHL	DX 6880300	Southampton			01703 796408
STHHAEM	Special Haematology, St Thomas Hospital	Lambeth Place Rd	London		SE1 7EH	0207 188 3421/2712
SURHPA	HPA South East	Epsom Collab Centre	DX 6730100	Epsom	KT19 8PB	01372 734700
SURVET	Rabies Diagnostic Unit (VLA)	Rabies Diagnostic Unit (VLA)	Weybridge	DX 6730603	KT15 3NB	01932 357335
UCLH	Biochemistry Dept., University College London Hospitals	60 Whitfield St	London	Greater London	W1T 4EU	0845 155 5000
UCLHPAR	Parasitology	Hospital for Tropical Diseases	3rd Floor Mortimer Market Centre	London	WC1E 6JB	020 3447 5418
UHW	Cardiff Porphyria Service, University Hospital Wales	Heath Park	Cardiff	WALES	CF14 4XW	0292 074 3565

APPENDIX 8 – NORTHAMPTON GENERAL HOSPITAL MAP