Portsmouth Hospitals University NHS Trust

Portsmouth Pathology Service
Pathology Department

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QAH
QUEEN ALEXANDRA Hospital

PORTSMOUTH HOSPITALS UNIVERSITY NHS TRUST

PATHOLOGY USER HANDBOOK

for Patients | with Compassion | as One Team | Always Improving

The contents of this handbook are regularly reviewed and updated. Information regarding the version number and review date can be found in the document footer. The Pathology Handbook may be subject to changes within the stated review date. New versions will be uploaded onto the Pathology webpage as necessary; therefore printed copies may become obsolete at any time.

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USEFUL NUMBERS

Pathology	
Help Desk for Biochemistry or Haematology results	023 9228 **6271**
Pathology Reception	023 9228 **6081**
Pathology Stores	023 9228 **6564**
Blood Sciences	
General Enquiries – Biochemistry General Enquiries – Haematology	023 9228 **6348** 023 9228 **6077**
Anticoagulation Clinic	023 9228 **6752**
Blood Bank	023 9228 **6539** / Fax 6707
Coagulation	023 9228 **6396**
Downs Screening	023 9228 **6903**
Clinical Flow Cytometry	023 9228 **5765**
GTT/Sweat Test Appointments	023 9228 **1758**
Hormones (Endocrine) and Thyroid function	023 9228 **6345** / **6397**
Autoimmune Serology/Immunochemistry	023 9228 **6083**
Manual Lab / 24 hr Urine	023 9228 **1770**
Newborn bloodspot screening enquiries	023 9228 **6903**
The Cancer Laboratory	
Enquiries	023 9228 **5380** / **5355**
Clinical Haematology	
Clinic Reception	023 9228 **5473**
Consultant on Call	Bleep 1915 (working hours). Via switchboard out of hours.
Registrar	Ext 5774 or Bleep 1915 (daytime only)
Secretaries	023 9228 **6311**
Clinical Haematology Fax	023 9228 **6227**
Cytopathology	
Cytology Enquiries	023 9228 **6737**
Andrology	023 9228 **6799**
Histopathology	
Enquiries	023 9228 **6458** / **6788**
Registrars	023 9228 **6629**
Microbiology	
Enquiries (0900 – 1700 hrs)	023 9228 **6201**
Enquiries (1700 – 2000 hrs)	023 9228 **1715**
Pathology IT	
Advice	023 9228 **6470**
Phlebotomy	
Manager: Sandra Ponsford	023 9228 **6759** Bleep 1093

OUR LABORATORIES

Queen Alexandra Hospital
Pathology Centre
(Blood Sciences, Microbiology, Cellular Pathology and Mortuary)
Southwick Hill Road
Cosham
Hampshire
PO6 3LY
Tel: 023 9228 6081

The laboratories are open for visiting and for routine work during the hours:

0900 – 1700 hrs weekdays

Outside of "routine" hours

An emergency service operates at all other times and on public holidays and can be accessed via the following contacts at the Queen Alexandra Hospital laboratories.

Haematology	Ext **6492 / 6077**
Transfusion	Ext **6539 / 6472**
Transfusion Major Haemorrhage line	Ext **4444**
If necessary, please ask to speak to the Duty Consultant (0900–1700 hrs Monday–Friday on Bleep 1972, at other times via Switchboard - 023 9228 6000)	

Biochemistry	Ext **6348**
If necessary, please ask to speak to the Duty Biochemist (available 24 hours via Switchboard - 023 9228 6000)	

Histopathology	Ext **6458**
No formal consultant out of hours service however switchboard can provide contact details of Specialist Histopathologist to discuss on phone (via Switchboard - 023 9228 6000)	

Microbiology (Monday–Friday 0800–2000 hrs)	Ext **6201** or **1715**
Outside of these hours the Duty Microbiology Biomedical Scientist can be contacted via Switchboard - 023 9228 6000, as can the Duty Consultant Microbiologist and Virologist.	

KEY PERSONNEL

Clinical Director	TBC	023 9228
Quality, Risk & Governance Manager	Mr Alex Walster Alexander.walster@porthosp.nhs.uk	023 9228 **6784**

Pathology Support Services		
Support Services Manager	TBC	023 9228 **6057**
Pathology IT Department		
Pathology IT & Data Quality	Office	023 9228 **6747/6470**
Point of Care Testing (POCT)		
POCT co-ordinator for QAH	Marianne Munst-Welsh	Marianne.MunstWelsh @porthosp.nhs.uk

Blood Sciences		
Head of Department	Dr Laura Wainwright	023 9228 **6345**
Laboratory Manager	Nathan Hunt	023 9228 **6265**
Quality Lead	Victoria Hunt	023 9228 **6784**
Training Officer	Christina Goode	023 9228 **6816**
Transfusion Manager	Marie Judd	023 9228 **1760**
Biochemistry/Immunology		
Head of Blood Sciences & Consultant Clinical Scientist	Dr Laura Wainwright	023 9228 **6345**
Consultant Immunologist	Dr Alison Whitelegg	023 9228 **6812**
Consultant Clinical Scientist	Dr Sophy Smith	023 9228 **6397**
Clinical Scientist	Aimée Smith	023 9228 **6699**
Clinical Scientist	Dr Helen MacGregor	023 9228 **6397**
Clinical Scientist	Louise Duvall	023 9228 **6397**
Clinical Scientist	Dr Kirsty Russell	023 9228 **4847**
Clinical Scientist	Miguel Morales (Francisco Miguel Morales-David)	023 9228 **6699**
Haematology		
Clinical Lead for Laboratory Haematology	Dr Anna Babb	023 9228 **5736**
Consultant Haematologist	Dr D Rahman	023 9228 **6484**
Consultant Haematologist	Dr M Ganczakowski	023 9228 **6688**
Consultant Haematologist & Haemostasis lead	Dr I James	023 9228 **6484**
Consultant Haematologist	Dr T Cummins	023 9228 **5876**
Consultant Haematologist	Dr R Corser	023 9228 **5747**
Consultant Haematologist	Dr C Alderman	023 9228 **5746**
Consultant Haematologist	Dr E Belsham	023 9228 **5876**
Consultant Haematologist	Dr R Ayto	023 9228 **5746**
Speciality Doctor & Transfusion Lead	Dr G Matthias	023 9228 **6688**
Trainee Clinical Scientist	Jennifer Mills	023 9228 **5774**
Haematology Specialist Registrar	Bleep 0049 & Bleep 1915	**07775 800240**
Haematology Consultant Advice	Bleep 1915	

Phlebotomy		
Phlebotomy Manager	Sandra Ponsford	Bleep 1093
Deputy Phlebotomy Manager	Alison Weaver	Bleep 1857

Cellular Pathology		
Consultant	Dr L Bergin	023 9228 **1296**
Consultant	Dr N Brearley	023 9228 **6494**
Consultant	Dr P Gonda	023 9228 **1776**
Consultant	Dr N Agrawal	023 9228 **6476**
Consultant	Dr C Way	023 9228 **5390**
Consultant	Dr A V Spedding	023 9228 **6458**
Consultant	Dr D Tansey	023 9228 **1297**
Consultant	Dr D N Poller	023 9228 **6625**
Consultant	Dr D A McCormick	023 9228 **6841**
Consultant	Dr A Nagy	023 9228 **6426**
Consultant	Dr M Mason	023 9228 **5352**
Consultant	Dr Montserrat Giles-Lima	023 9228 **1757**
Consultant	Dr Jennifer Dhundee	023 9228 **6458**
Consultant	Dr Paulino Travado-Soria	023 9228 **6378**
Consultant	Dr Joanna Cooke	023 9228 **6701**
Consultant	Dr Nicholas Shepherd	023 9228 **6098**
Consultant	Dr Victoria Doyle	023 9228 **6419**
Consultant	Dr Hiranya Tennekoon	023 9228 **1777**
BMS Advanced Practitioner	Dr Katy McDermott	023 9228 **5741**
Laboratory Service Manager	Michelle Jackson	023 9228 **6718**
Histology Operational Manager	Priyen Patel	023 9228 **1775**
Cellular Pathology Quality Lead	Louise Bolton	023 9228 **5355**
Mortuary Manager	Wendy Ayling	023 9228 **6305**
Cell Path Admin Manager	Hildah Mapeta	023 9228 **6375**

Microbiology		
Clinical Lead for Microbiology/Infection Prevention & Control Doctor	Dr S A Wyllie	023 9228 **1713**
Consultant Microbiologist/Deputy Infection Prevention & Control Doctor	Dr H Chesterfield	023 9228 **1731**
Consultant Microbiologist	Dr A Flatt	023 9228 **1724**
Consultant Microbiologist	Dr R Simpson	023 9228 **6886**
Consultant Clinical Scientist	Kelly Bicknell	023 9228 **6872**
Laboratory Manager	Allyson Lloyd	023 9228 **6866**
Quality Lead	Dot Holubinka	023 9228 **1728**
Operational Manager	Tony Beddoes	023 9228 **1728**
Administration Manager	Michelle Hall	023 9228 **6873**

FOREWORD

This handbook is intended to help you get the best from our service. Portsmouth Pathology is one of the largest services in the country and reports on around two million requests per year with around 300 staff employed.

Our service is based in a purpose-built Pathology Centre at Queen Alexandra Hospital where we have invested heavily in automation and new technology.

We are determined to provide a responsive service to our patients and clinicians and are concentrating on improving our customer focus and in adding value to everything we do. We always welcome comments and suggestions and would be glad to discuss ways of improving our service to clinicians and patients.

Contact details for the individual specialties are contained in the following pages or you may contact me at the telephone number or email address below. The Pathology Quality, Risk & Governance Manager, Mr Alex Walster, is available to assist with any problems or complaints; tel 023 9228 6431 or email alexander.walster@porthosp.nhs.uk. We welcome visitors by arrangement.

We perform over 600 different tests on-site and can arrange for other specialised tests to be performed elsewhere. If in doubt then please contact the appropriate consultant for advice.

We hope you find this handbook useful – any suggestions to improve it would be welcomed.

REQUEST FORMS FOR PATHOLOGY

We deal with about 4,000 requests a day. So that we can send you an accurate report and contact you in an emergency, we ask for proper documentation.

Pathology request forms should clearly show the following information;

- The patient's surname, forename, date of birth and NHS number or hospital case number, (or the number beginning with A, W, Y or Z on any previous report). Initials are not considered to be patient identification.
- The patient's address including postcode.
- The identity of the requesting consultant, or GP.
- The ward, department, general practice or referring laboratory, to enable us to return the report(s) promptly and contact you if urgent communication is required.
- Clinical details of the patient, in particular those that are relevant to the investigations requested.
- The date and time of collection of the sample(s).
- The investigations required and where necessary, the sample type

Each request form is an agreement between us and our service users. All request forms must be completed and signed by the requesting doctor. The only exceptions to this are certain arrangements made between some users and the Clinical Director following full consultation and documentation; usually where nurses have delegated responsibility to make requests following an agreed protocol.

In the interests of patient safety, the Pathology department reserves the right to reject requests where the information provided is not sufficient to enable us to positively and unambiguously identify the request form and its associated specimen(s).

SPECIMENS FOR PATHOLOGY

Portsmouth Hospitals University NHS Trust's Blood Sampling (Adults) Policy provides instructions for the collection of adult blood samples. Portsmouth Hospitals University NHS Trust's Patient Identification Policy must be observed to ensure that the specimens are attributed to the correct patient. Both policies can be found on the PHT intranet. Samples that are misidentified represent a risk to the safety of patients; investigations will be missing for the patient who was sampled and incorrect results will have been reported for the patient whose identity was used.

For samples which are collected by external organisations, local policies on sample collection and patient identification should be observed along with the following;

- Specimen containers must be labelled at the time of collection, not before.
- Obtain the patients name and date of birth by asking the patient/parent carer to state it (do not merely get confirmation of a name you state).

Specimens must be labelled clearly and without amendments. Trust policy on sample requirements states that four points of identification are required;

- Surname
- Forename
- Hospital Number
- D.O.B

Samples must also have the date and time of collection and signature of person collecting the sample on bottle.

For Blood Transfusion sample labelling, see page 42, NHS number must be used as primary ID number. **Blood Transfusion cannot legally accept samples without the required information.**

For clarity, we follow the Trust's policy on sample requirements: unlabelled samples will be rejected and those samples that do not have sufficient points of ID, are illegible or have been amended will also be rejected. Clinical staff will not be permitted to label samples retrospectively and the responsibility for ensuring that patient's samples are labelled satisfactorily always lies with the requesting clinician. It is not the laboratory's problem if the sample is inadequately labelled.

Samples that are labelled using pre-printed stickers should also have the date, time and signature recorded by the individual undertaking the blood sampling. **Blood Transfusion cannot accept samples that have pre-printed labels, they must be hand written.** We hope that in the future, electronic systems that include mandatory positive patient identification and point of collection printing will allow us to accept printed labels with confidence.

The ICE request forms provide details of the sample tubes necessary for the tests requested. Where samples require examination in more than one pathology discipline, then it is the sender's responsibility to send a separate sample to each department with the appropriate request form.

PATHOLOGY TESTS AND REFERENCE RANGES

Information on the investigations provided by Pathology is available within the Pathology Test Database. The test database is available to internal and external users via the Pathology internet page. The table below explains what information is provided within the Test Database;
https://www.porthosp.nhs.uk/departments-and-services/pathology/96904

Column	Information
Discipline	The Pathology specialty that is responsible for the test
Investigation	The name of the test/investigation (APEX test code in capitals)
Specimen Type	The nature of the sample which is tested
Container/Tube	The blood collection tube or other container that should be used for sample collection
Biological Reference Interval	Values for the investigation that are typically found in the population at large
Clinical Decision Values	Values which trigger clinical decisions
Location of Laboratory	The location of a referral laboratory or the area with QAH Pathology responsible for testing
Estimated Turnaround Time	The typical time taken to issue results after receipt of the sample
Notes	Any additional, relevant information
Assay Frequency	How often the test is performed

Please Note: The information held within this database is for guidance only, it may change at any time and the database will be updated to reflect this although this might not be immediate. Appropriate reference ranges are provided on pathology reports. Assistance on the significance of patient reports is available from the laboratory. Please consult the Pathology Handbook for contact details.

PATHOLOGY REPORTS

Most Pathology reports are produced by the Apex computer system. Results are available on third party systems once they have been authorised and processed for release. Our department makes every effort to ensure reports are returned in a timely manner; we would advise that it is the requester's responsibility to ensure that a report has been received. Turnaround times are detailed in the Test Database.

AVAILABILITY OF PATHOLOGY RESULTS/REPORTS TO PATIENTS

In most circumstances Pathology cannot provide results or reports directly to patients. Results/reports are released to authorised healthcare professionals to interpret in conjunction with the wider clinical picture. Access to medical records can be sought from the Health Records Department as a subject access request. Details on this process is available on the Trusts intranet page here.

INVESTIGATIONS THAT ARE REFERRED FOR TESTING

Portsmouth Pathology prides itself of offering a broad range of investigations to meet the needs of clinicians. However, we refer some samples on behalf of our service users to specialist centres across the UK. Tests that are referred to other laboratories are highlighted in the test database as “referred” this information is also on the final report.

SPECIMEN PACKAGING, TRANSPORT AND HAZARDOUS SAMPLES

Request forms, specimen bags and specimen containers are available from Pathology Stores via email – pathology.stores@porthosp.nhs.uk or Tel: 023 9228 **6564**. Leak proof containers should be used for all diagnostic specimens. Please ensure patients securely tighten lids of specimen containers. Samples should be placed INDIVIDUALLY in plastic specimen bags, separate from the request form and properly sealed. Specimens should be placed in an approved transport bag for collection and stored away from public areas. **DO NOT STORE PATHOLOGY SAMPLES IN THE FRIDGE**, they should be kept in a cool (around 21ºC) dark place and sent to the laboratory at the earliest opportunity.

DO NOT send specimens in anything other than approved transport bags. The inner liner must contain absorbent material (to absorb spillages) and be sealed with a clip before it is collected by a driver. It is not the job of the drivers to pack and seal the transport bags. Transport vehicles are supplied with specimen transport bags compliant with current regulations (marked with a “Biological substance Category B” label).


Specimens sent by post must conform to the approved packaging instruction 'PI650'. Approved containers are available from the Royal Mail. DO NOT use envelopes or 'jiffy' bags for transport of specimens as these do not conform to regulations and are prone to spillage/leakage.

Portsmouth Hospitals University NHS Trust's Blood Sampling Policy (Adults) is a comprehensive guide to the collection of blood samples. This is available on the Trust intranet, under Infection control policies.

Please adhere to the following;

- Specimens from patients thought to be suffering from infections caused by Hazard group 4 pathogens e.g. Lassa Fever, Ebola etc must NOT be sent to the laboratory without prior discussion with the Infection Control Doctor or Consultant.
- Samples should be placed in plastic bags that are then sealed shut.
- Please do NOT put the request form into the plastic bag with the specimen nor attach it to the bag with staples or pins.
- When taking hazardous samples you should wear suitable personal protective equipment.
- The evacuated blood collection system should be used wherever possible, but the needle holder must be discarded after use.
- Do not use a syringe to collect and transfer blood into the specimen tube as this causes haemolysis and does not allow the evacuated tube to fill to the correct level – always use cannula luer adaptor.
- Sharp objects that are sent to the laboratory represent a serious risk to the safety of our staff. Any samples received with a "sharp" will be disposed of.

If in any doubt please telephone the Pathology Help Desk (023 9228 6271) for advice.

Additional information on specific sample requirements can be found in this Handbook and in the Test Database located on the Pathology webpage.

A QUALITY SERVICE

All of the laboratories within Pathology are committed to meet the international standard ISO 15189:2012 Medical Laboratories - Requirements for Quality and Competence.

This standard describes the management and technical expectations for medical laboratories and has been written with emphasis on meeting the needs of the service user. The current accreditation status (including the repertoire of

investigations that are within the scope) of the Pathology Laboratories is freely available on the UKAS website, (www.ukas.com) simply search for “Portsmouth Hospitals” under the “Who’s Accredited” section.

All of the laboratories participate in national external quality assurance schemes to monitor the accuracy of their analytical processes. Internal quality control is used to check the precision of results on a day-to-day basis.

Further relevant bodies that have authority and influence practice within Pathology include:
• Medicines and Healthcare Products Regulatory Agency (MHRA) – Blood Products
• Health and Safety Executive (HSE)
• Human Tissue Authority (HTA) – Post mortem facilities
• NHS Breast Screening Programme (NHSBSP)
• Other national screening programmes e.g. Neonatal & Antenatal
• NHS Blood and Transplant
• NHS Resolution (formerly the Litigation Authority, NHSLA)
• National External Quality Assessment Schemes

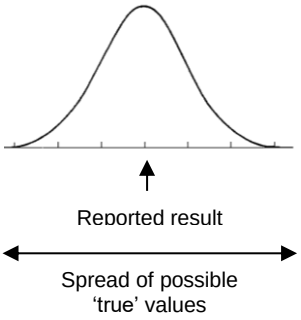
Each of the laboratories within Pathology runs a comprehensive quality management system that is fully described within the relevant Quality Manual. The laboratories run schedules of internal audits, report and investigate non-conformities and implement both corrective and preventive actions in order to continually improve.

Feedback from the users of the Pathology service is actively sought in order to ensure the best quality service. Feedback, suggestions and comments are welcomed by the Pathology Quality, Risk & Governance Lead who can be contacted by emailing; **alexander.walster@porthosp.nhs.uk**.

UNCERTAINTY OF MEASUREMENT

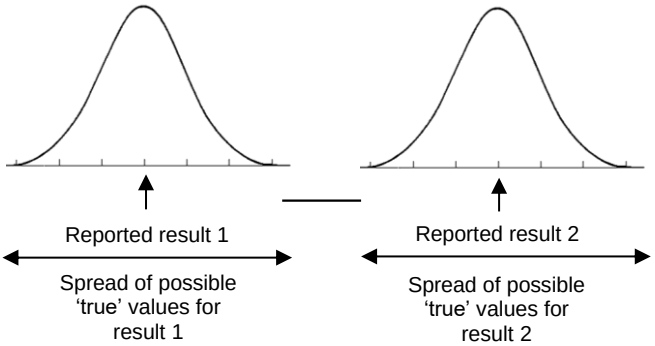
In brief, the uncertainty of measurement is an interval into which the *in vivo* concentration of an analyte is expected to fall based on the measured result and is particularly important for interpreting changes in results. A more detailed explanation is given below. Values for uncertainty of measurement for a range of analytes can be provided by the relevant laboratory on request. Staff members are available to discuss the practical implications of the information should you be interested.

In any analytical process which produces a numerical output, there is, statistically speaking, an error associated with the measurement. The errors are not mistakes, but simply a result of small variations within the many steps in the process from taking the blood to the result of the test being ready on the analyser. The result is that the ‘true’ value of the result, i.e. the actual concentration of analyte *in vivo*, is contained within a given interval about the measured result – see the diagram below:

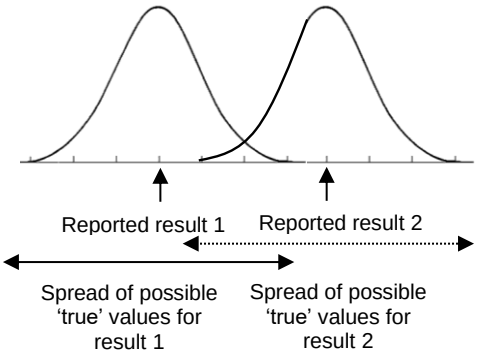


For example, if the lab reports a sodium result of 135 mmol/L, the *in vivo* sodium concentration may be 135.7 or 134.1 mmol/L. It is impossible to know what the true value is, but we can predict the interval into which it falls. This interval can be expressed as the **uncertainty of measurement** and can be calculated for each individual analyte. Knowledge of the uncertainty of measurement is practically important when making decisions about whether there has been a significant change in a result. Examples include the drop in any biomarker in response to treatment, or the increase in a marker in detecting relapse. The diagram below illustrates this:

Example 1



Example 2



In example 1, a genuine change has occurred as there is no overlap in the intervals. However in example 2, as there is an overlap, there may or may not have been a genuine change. It is of course intuitively true and widely appreciated that results that are closer together are less likely to represent a significant change, but knowledge of the uncertainty of measurement provides a greater degree of confidence in the interpretation and extra information in cases which aren't clear cut.

PATHOLOGY INVESTIGATIONS ON MEMBERS OF STAFF

Confidentiality of medical information of members of staff, in the same way as that of members of the public, relies on access to information being made only by those who have legitimate reasons to do so as part of that person's medical care. Breaches of confidentiality are contrary to the Data Protection Act and are considered disciplinary offences by the Trust.

Personal Investigations

Medical staff should avoid treating those close to them and should not treat themselves (GMC Good Medical Practice). It is similarly inappropriate for staff to send their own samples for pathological investigations. All such investigations should be ordered by their GP, Occupational Health staff or other attending clinician.

Staff Health Screening

Screening for employment purposes is undertaken by the Occupational Health Department. Copies of these results (eg; Hepatitis B antibody levels) required by new employers can be obtained from the Occupational Health Department. If later or additional tests are required for non-NHS employers or for emigration purposes, staff should arrange the tests through Occupational Health or their own GP, for which a charge will be levied to cover the costs to the NHS.

PATIENT CONSENT

Informed consent must be obtained from all patients who have capacity prior to any blood sampling procedure[1]. Consent may be given verbally or non-verbally and may be the act of the patient holding out their arm for the practitioner to carry out a procedure, providing the patient has received appropriate information prior to this[1].

The key principles of informed consent include:

1) The patient's right to consent voluntarily without pressure or coercion
2) The patient's right to withdraw consent at any time
3) The provision of sufficient information to allow informed consent. This includes:
    a. The reason for the procedure
    b. What the procedure involves
    c. Any significant potential complications
    d. Other relevant information, which may include when the blood results will be available and the potential consequences or treatments arising from the investigation

Similarly, consent may be given by patients who collect specimens themselves, (for instance urine and faeces) and provide them to the Pathology Service for investigation.

If the patient does not consent to the procedure this must be documented on the request form and in in-patient areas the team in charge of the patient's care should be informed.

Please note that some laboratory requests require the provision of clinical details pertinent to the investigation. Consent must be sought when family history and clinical information is provided to the laboratory.

1. Department of Health (2010). *Reference guide to consent for examination or treatment.* London: HMSO

CONFIDENTIALITY AND THE PROTECTION OF PERSONAL INFORMATION

Portsmouth Pathology has a responsibility for ensuring that confidential or personal patient or staff identifiable information is handled in a secure and confidential way. The access and use of all such personal information is governed by the Common Law Duty of Confidentiality, the Data Protection Act 2018, The NHS Code of Confidentiality 2003, The Computer Misuse Act 1990 and the Caldicott Principles.

The Pathology Department adheres to the Portsmouth Hospitals University NHS Trust Confidentiality and Data Protection policy and the Data Quality Policy which provide local guidance on its obligations; which it takes extremely seriously. Staff are taught about their personal obligation to the protection of personal information from their very first day in the laboratory and it forms part of their on-going mandatory training.

Alleged or suspected breaches of confidentiality will be reported and investigated in accordance with Portsmouth Hospitals University NHS Trust policy and the Law. Sanctions can include disciplinary action, ending a contract, dismissal, or bringing criminal charges.

COMPLAINTS

Staff work very hard to get the job right first time but mistakes can sometimes occur. If services can respond to user feedback quickly and effectively, problems and mistakes can be prevented from happening again. The Pathology department deals with complaints in accordance with the Portsmouth Hospitals University NHS Trust's Complaints, Concerns, Comments and Compliments Management Policy.

Incidents or errors that are internal to Portsmouth Hospitals University NHS Trust should be reported onto the DATIX system in line with the Safety Learning Event Policy, which is available on the Trust intranet.

We will advise and assist with verbal complaints to the best of our ability, in an open and honest manner. Please contact the any of the following; the appropriate Laboratory Manager or Quality Lead, the Clinical Director of Pathology or the Pathology Quality Manager. Contact numbers are at the front of the handbook.

Formal, written complaints will be passed to the Complaints Team, who can be contacted on 02392 286000 ext 6530 or by email: complaints@porthosp.nhs.uk. They will manage the handling of the complaint on behalf of the Trust and in line with Local Authority Social Services and National Health Service Complaints (England) Regulations 2009.

Complaints will be logged by the laboratory in the Datix system as a Safety Learning Event if there has been a failure in the service. A patient feedback record will be used if we are able to provide reassurance that there has not been a service delivery failure.

COMPLIMENTS

Receiving a compliments or plaudits is a rewarding and motivating experience for laboratory staff, many of whom rarely have the opportunity to witness the positive impact of their efforts.

The Pathology department welcomes any compliments or plaudits from its service users. If you feel that they deserve a special mention then please contact any of the following; the appropriate Laboratory Manager or Quality Lead, the Clinical Director of Pathology or the Pathology Quality Manager. Plaudits and staff excellence records are summarised in the Pathology Quality Report for review at the monthly laboratory management meeting.

THE BLOOD SCIENCES DEPARTMENT

Contact Information

Clinical Lead:	Dr Laura Wainwright	023 9228 **6345**
Laboratory Manager:	Nathan Hunt	023 9228 **6265**
Operational Managers:	Sue Colenutt	023 9228 **1759**
	Marie Judd	023 9228 **1760**
	Jen Wilkins	023 9228 **6265**
	Satbeer Singh	023 9228 **5765**
Quality Manager:	Victoria Hunt	023 9228 **6784**
Training Officer:	Christina Goode	023 9228 **6816**

Consultant advice: dedicated phone numbers and times for General Practitioners to call:

Haematology:

a) 0900 -1700 hrs contact Haematologist of the day on 07775 800240 or the Haematology Secretaries on Ext 6311
b) Out of hours, Duty Consultant Haematologist - contact through switchboard

Transfusion:

a) contact the laboratory using Ext 6539 any time of the day or night.
b) For Clinical transfusion related advice/incidents contact the Transfusion Practitioner using Ext 1793 or Bleep 0120.
c) The Duty Consultant Haematologist can be contacted on 07775 800240
d) Out of hours. The Duty Consultant Haematologist can be contacted through switchboard

Biochemistry:

a) During normal working hours contact the appropriate person, or;
b) 0900 - 2000 hrs contact Duty Biochemist via Helpdesk – 023 9228 6271/5994
c) Out of hours Duty Biochemist can be contacted on 07702 151646

Clinical Flow Cytometry:

a) During normal working hours contact Ext 5765, or;
b) Speak to the Duty Consultant (0900–1700 hrs Monday–Friday on 07775 800240)
c) At other times via Switchboard - 023 9228 6000

Location: Level E, Pathology Centre, Queen Alexandra Hospital

Accreditation Status

Biochemistry, Haematology, Immunology and Transfusion are registered with UKAS, (United Kingdom Accreditation Service) together as Blood Sciences.

Blood Sciences is a UKAS accredited testing laboratory, No. 8627, (International Standard ISO 15189;2012).

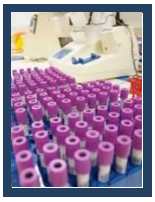
Specific details of the accreditation status of individual tests are available from the UKAS Schedule of Accreditation, on the UKAS website.
https://www.ukas.com/find-an-organisation/?q=portsmouth+hospitals

Laboratories providing antenatal and newborn screening services are also assessed by the United Kingdom Accreditation Service (UKAS).

Senior Clinical Staff
External Telephone 023 9228 6000 followed by the extension

Biochemistry		
Dr Laura Wainwright (Consultant Clinical Scientist)	Down Syndrome Screening, Endocrinology, Thyroid function, Neonatal Screening & General Biochemistry	**6345**
Dr Alison Whitelegg (Consultant Clinical Scientist)	Clinical Immunology	**6812**
Dr Sophy Smith (Consultant Clinical Scientist)	Down Syndrome Screening, Endocrinology, Thyroid function & General Biochemistry	**6397**
Dr Helen MacGregor (Prinicple Clinical Scientist)	General Biochemistry, Down Syndrome Screening & Endocrinology	**6397**
Aimée Smith (Clinical Scientist)	General Biochemistry, Down Syndrome Screening, Neonatal Screening & Immunology	**6699**
Dr Kirsty Russell (Clinical Scientist)	General Biochemistry	**4847**
Miguel Morales (Francisco Miguel Morales-David) (Clinical Scientist)	Clinical Immunology	**6812**
Haematology		
Dr Anna Babb	Clinical Lead for Laboratory Haematology	**5736**
Dr Gwynn Matthias	Speciality Doctor & Transfusion Lead	**6688**
Dr Izabela James	Laboratory Haematology and Coagulation	**6484**
Dr Deborah Rahman	Laboratory Haematology	**6484**
Dr Mary Ganczakowski	Haemoglobinopathies and Laboratory	**6688**
Dr Robert Corser	Laboratory Haematology	**5747**
Dr Charles Alderman	Laboratory Haematology	**6473**
Dr Ed Belsham	Laboratory Haematology	**5876**
Dr Robert Ayto	Laboratory Haematology	**5746**
Dr Thomas Cummin	Laboratory Haematology	**5876**
Jennifer Mills	Clinical Scientist for Haematology	**5774**

For Clinical Haematology and Anticoagulation Services see separate entries in the Clinical Services Directory.



BLOOD SCIENCES

The Service

The Department of Blood Sciences provides a comprehensive Haematology and Biochemistry service to the local population and a range of specialised services to a wider area. We aim to provide a user friendly, efficient and timely service to allow clinical decisions regarding the diagnosis, treatment and monitoring of disease to be made rapidly. We have a team of clinical staff with an extremely wide range of experience and knowledge readily available to provide interpretation of and advice on your patient's results. Turnaround times for most 'routine tests' (FBC, clotting studies, U/E, LFT, TFT, lipids) are usually well within 24 hours of receipt.

Specialist services provided by Blood Sciences include:

- Haemostasis
- Antenatal haemoglobinopathy screening
- Antenatal screening for Down Syndrome
- Neonatal screening (for hypothyroidism, PKU, haemoglobinopathy, cystic fibrosis and MCADD)
- Immunology – flow cytometry, autoimmunity, immunochemistry allergy, etc.
- Endocrinology – particular emphasis on reproductive endocrinology

Biochemistry, Haematology and Blood Transfusion

These departments are fully automated and manned on a shift basis at Queen Alexandra Hospital, 24 hours a day, 365 days a year. All samples received, both urgent and routine, are therefore processed as quickly as possible throughout the twenty-four hour period with priority given to hospital patients. Urgent requests are defined as those that only involve tests essential for the immediate management of critically ill patients.

The Future

We aim to continue our programme of service improvements – to improve efficiency, cost-effectiveness and turnaround times whilst maintaining accuracy of results.

Our vision is to be the premier provider of blood sciences in the South;

- wide repertoire of tests
- range of specialist services
- excellent Quality Assurance performance
- excellent performance c.f. peers on benchmarking
- latest technologies used (e.g. automation)
- number of nationally recognised experts

As always we strive to improve the service by adopting new technologies, introducing 'new' tests whilst regularly reviewing outdated or redundant tests/methods.

We participate in the Trust open day so that the public can meet us and view our laboratories in the Pathology building. Also, we are keen to present at GP events, visit surgeries and talk about the services we offer. Please contact one of the consultants listed on the key personnel page to discuss this further.

Urgent Requests

Some tests will always be processed urgently, either because we know that they are only collected from patients that need urgent assessment or because the samples are particularly labile; sometimes it is a combination of both e.g. lactate. These samples are processed as soon as possible with the results made available on the Apex computer system.

The Blood Sciences laboratory has set criteria to ensure the accurate prioritisation of pathology requests. Please contact the laboratory manager if you wish to discuss this.

Other arrangements for urgent samples include;

- **Blood Products**
  Urgent requests for any blood components required at Queen Alexandra Hospital must be accompanied by a request form and confirmed by a telephone call to the Queen Alexandra Hospital Transfusion Laboratory, Ext 7700 **6539** at all times. Requests forms should be marked 'Urgent' in the clinical details box.
- **Emergency Department**
  Requests from ED and AMU are aimed to be processed within one hour from receipt.
- **Department of Critical Care, Haem/ Oncology, Children's Assessment Unit, Medical Assessment Unit and Surgical Assessment Unit**
  These samples are prioritised ahead of other requests and processed urgently.
- **Other locations**
  Clearly mark the request form as urgent in the clinical details box. The tests will be performed as soon as possible, and the results will then be made available on the Apex computer system.

Abnormal results that require urgent attention

The laboratory has set appropriate action limits to identify critical results that are telephoned to the requesting location as soon as possible.

Additional/Add-on tests

Due to operational constraints, additional tests will normally only be added to requests within 24 hours of receipt.

It would be appreciated if GPs would telephone the laboratory to inform us of any urgent requests in order to fast track the sample on arrival. For any test required urgently that is not on the departmental list of emergency type procedures please contact the relevant laboratory for advice

Guidelines for Storage of Blood Samples for Biochemistry and Haematology in General Practice

1. Blood samples should not be stored in a refrigerator. See note below:
2. Blood samples should be stored at a temperature of 20-25°C.
3. Samples should be stored out of direct sunlight and away from any source of heat.
4. Blood samples should not be taken if they will not reach the laboratory on the same day. **Please do not keep blood samples overnight. They will deteriorate in quality, whether stored at room temperature or refrigerated.**
5. Please ensure that date and time of collection are written on all samples and request forms.
6. Blood samples should be delivered to the laboratory within four hours of patient collection to allow sufficient time for processing to ensure they are viable for testing.

For glucose assay, a separate blood sample in a fluoride/oxalate (grey top) tube is required, as serum glucose falls rapidly in blood samples collected into plain tubes or serum separator tubes and stored at room temperature, due to metabolism by the blood cells.

Note
Refrigeration is the recommended storage method for samples of urine and faeces.

Clinical Biochemistry Tests and Reference Ranges

Information on the Biochemistry investigations provided by the Blood Sciences laboratory is available within the Pathology Test Database. The test database is available to internal and external users via the internet page;
https://www.porthosp.nhs.uk/departments-and-services/pathology/96904

Blood Tube Guide

Portsmouth Pathology Service uses a pre-evacuated blood collection system. If you are unsure which tube should be used for a particular test, or any special requirements, please consult the 'Pathology Test Database' or contact the appropriate laboratory for advice.

Sample volume: The number of tubes required for testing is stated in the table below and on the ICE request forms. Please try to ensure the sample tubes are as full as possible to allow the laboratory to process all your requested investigations. Every effort is made to process every sample received.

Advice regarding the order of draw for blood samples can be obtained from the Phlebotomy Department on Ext **6759**.

TESTS	STOPPER COLOUR			TUBE ADDITIVE
Blood counts + ESR	Lilac			EDTA
Coagulation studies/ INR/APTT	Light Blue			Sodium citrate
Crossmatch/Group & Screen	1 x Pink			EDTA
Antenatal	1 x Lilac	AND	1 x Pink	EDTA
Fetomaternal Haemorrhage (FMH) / Kleihauer	1 x Pink (mother) AND 1 x Pink (cord)	OR	1 x Paediatric EDTA (baby)	EDTA
Chromosomes	Green			Heparin
HLA B27 10mls EDTA	2 x Lilac			EDTA
Biochemistry	1 x Gold			Separating gel
HbA1C or Immunosuppresant	1 x Lilac (additional to FBC)			EDTA
Down Syndrome Screening	1 x Gold			Separating gel
Glucose	Grey			Fluoride
Immunology	1 x Gold			Separating gel
Flow cytometry	1 x Lilac			EDTA
Virology	Red			None

Protocols for commonly performed dynamic function tests

1) Glucose Tolerance Test
2) Short Synacthen Test
3) Long Synacthen Test
4) Overnight Dexamethasone Suppression Test
5) High Dose Dexamethasone Suppression Test
6) Glucose Suppression Test for Growth Hormone Autonomy
7) LHRH Test
8) Renin/Aldosterone

Details of less commonly used dynamic tests are available on request.
Please telephone 023 9228 6345 / 6397 or QAH Ext 6345 / 6397 for further details

1. Glucose Tolerance Test

In June 2000 the World Health Organisation issued guidelines on the biochemical diagnosis of Diabetes Mellitus. These guidelines emphasised the use of a fasting glucose specimen for diagnosis with much less emphasis on an oral glucose tolerance test. The exception is in pregnancy when OGTT is still recommended.

This investigation will only be undertaken if a fasting or random serum/plasma glucose analysed in the laboratory has been shown to fall in the equivocal range or there are extenuating clinical circumstances.

All glucose tolerance tests must be arranged in advance. Outpatient appointments can be arranged by contacting Queen Alexandra Hospital Ext 1758. Tests for inpatients should be arranged by contacting the phlebotomy staff on Queen Alexandra Hospital Ext 6759 or St Mary's Hospital 023 9268 0275 Appointment Only.

The patient should be asked to:

- Continue their normal diet during the 3 days prior to the test
- Fast for 12 hours before the test
- Only water, black tea or coffee with no sugar added to be drunk

Procedure for OGTT

1) Collect basal specimen for glucose (**Fluoride Oxalate** tube).
2) Measure113ml of polycal (from pharmacy) reconstitute to 200ml with water, to be consumed orally over 5 minutes followed by a further 100ml of water.
3) A blood sample (**Fluoride Oxalate** tube) is then collected 120 minutes following polycal administration (please label tubes appropriately)
4) Patient must remain fasted during the test.

2. Short Synacthen Test

To test the adrenal cortex responsiveness to ACTH. A normal response excludes primary adrenocortical insufficiency and makes secondary hypoadrenocorticism unlikely. The test should be performed at 0900 hrs. In suspected Addison's disease, a random screening cortisol should be performed as a first line test. A short synacthen test (SST) is indicated ONLY where the result of screening cortisol is lower than 400 nmol/L.

A laboratory audit, looking at three years worth of data from PHT, showed that every patient with a random cortisol result above 370 mmol/L had a normal response to synacthen (n=274)*. It is preferable to take samples for screening cortisol in the morning if possible as this will exclude adrenal insufficiency in a greater number of patients. Please note the sample and request form.

N.B. Patients from DIAB, NBU and DMSC were excluded for the audit.

How to Carry Out a Short Synacthen Test

If the patient is on any glucocorticoid treatment (including Hydrocortisone, steroid inhalers, creams) please phone Dr Laura Wainwright (Ext: 6345) for advice before carrying out an Short Synacthen Test.

1) The patient should be resting quietly and blood (**Plain SST**) is taken for basal cortisol measurement.
2) Synacthen (250µg) is given by injection.
3) 30 and 60 minutes later a blood sample is taken for serum cortisol measurement.

*It is very important to record the time taken on all samples for cortisol measurements. Samples should be labelled appropriately.

Interpretation

Normally the basal value is more than 200 nmol/l and there is a rise to a peak of 550 nmol/l (200 nmol/l above basal).

3. Long Synacthen Test

Please contact laboratory for details Dr Laura Wainwright (Ext 6345), or Dr Sophy Smith (Ext 6397).

4. Overnight Dexamethasone Suppression Test

This is a screening test for Cushing's Syndrome. Enzyme-inducing drugs including anticonvulsants, especially phenytoin, interfere with this test.

1) A single oral dose of dexamethasone (1 mg) is taken by the patient at 2300 hrs.
2) The following morning, a blood sample (**Plain SST**) is taken at 0800 - 1000 hrs or serum cortisol estimation.

Interpretation

A serum cortisol of less than 50 nmol/L excludes autonomous cortisol production of any aetiology.

5. High Dose Dexamethasone Suppression Test

This test is designed to verify the cause of Cushing's Syndrome.

1) A blood sample (**Plain SST**) is taken at 0900 hrs for basal serum cortisol estimation
2) Dexamethasone (2 mg) is given orally every 6 hours for two days, starting at 0900 hrs.
3) A blood sample is taken after the last dose (taken at 0300 hrs) at 0900 hrs for cortisol estimation.

Interpretation

Suppression is defined as levels less than 50% of the basal cortisol value. In pituitary dependent Cushing's Disease and in some cases of the ectopic ACTH syndrome, there is suppression of cortisol production, whilst in most cases of the ectopic ACTH syndrome and adrenal dependent Cushing's Syndrome, no such suppression takes place.

6. Glucose Suppression Test for Growth Hormone Autonomy

This test is used to investigate suspected acromegaly or gigantism in which basal GH levels may not be high enough to confirm the autonomous nature of GH secretion.

1) After a 12 hour fast, insert an in-dwelling IV cannula into a forearm vein; wait for 30 minutes and then take a blood sample for glucose and GH estimation (**Plain SST**).
2) Give 75 g glucose dissolved in 300 ml water orally or equivalent amount of carbohydrate in the form of “Polycal” (see OGTT).
3) Withdraw blood samples for glucose and GH estimation at 60 and 120 minutes after the glucose has been taken. (New area C.)

Interpretation

Normally GH levels suppress to less than 0.5 ug/L during the test – this excludes autonomous GH secretion. Failure of suppression occurs in acromegaly and gigantism. A paradoxical rise occurs in some acromegalics and has also been documented in diabetes mellitus, adolescence, hypothalamic tumours, anorexia/ malnutrition, thyrotoxicosis and in
severe renal and liver disease.

7. LHRH Test

This test is used to investigate pituitary gonadotroph function and to assess the maturation of the hypothalamic-pituitary-gonadal axis in pubarchal development.

1) Treatment with gonadal steroids including contraceptive pills should be withdrawn at least one month before the test.
2) Place an in-dwelling cannula into a forearm vein, wait for 30 minutes and take a blood sample (**Plain SST**) for basal LH and FSH estimation.
3) Inject 100 µg LHRH iv and take samples for LH and FSH at 30 and 60 minutes after LHRH injection.

Interpretation

A basal FSH will normally rise two-fold at 30 minutes and is frequently higher at 60 minutes. The basal LH should normally rise more than three-fold. The LH response is exaggerated in cases of polycystic ovary syndrome.

8. Renin/Aldosterone – THIS IS AN IN-PATIENT PROCEDURE

1) Requests should preferably be made after discussion with Dr Laura Wainwright, (**ext 6345**). Anti-hypertensive drugs may need to be stopped 1 - 3 weeks before testing*.
   *It is sometimes not possible to stop all drugs! In this case calcium channel blockers are the preferred agents to use. Beta blockers need to be stopped and replaced by other agents.
2) The patient is allowed a normal ward diet containing sodium (150 mmol per day) and potassium (50 mmol per day) for 3 - 5 days before testing.
3) After overnight recumbency, at 0900 hrs the following blood samples are taken (The patient must remain recumbent until after the blood samples have been drawn):
   a. 7 - 10ml in **EDTA** tube (for renin and aldosterone)
   b. 5 ml in **SST** tube (for cortisol)

   These are sent IMMEDIATELY to the laboratory. (Not on ice)

4) The patient should then remain ambulant for 4 hours before the following blood samples are taken at 1300 hours:
   a. 7 - 10ml in **EDTA** tube (for renin and aldosterone)
   b. 5 ml in **Plain SST** tube (for cortisol)

   These are sent IMMEDIATELY to the laboratory.

Interpretation

Normally, plasma aldosterone rises in response to upright posture. In cases of bilateral adrenal hyperplasia, aldosterone levels remain high or even increased in response to ambulation whereas in cases of adrenal adenoma or glucocorticoid-suppressible aldosteronism, levels fall (in concert with the circadian drop in ACTH levels.) The plasma renin, on the other hand is undetectable in all cases of primary aldosteronism. Cortisol is measured to show the normal circadian drop in levels.

An alternative, simplified outpatient protocol can be used. Discuss with senior Laboratory staff (Dr Laura Wainwright **ext. 6345**).

Details of less commonly used dynamic tests are available on request. Please telephone 023 9228 6345 or Queen Alexandra Hospital Ext 6345 for further details.

Clinical Immunology

For specific test information, please consult the Pathology Test Database.

Allergy and Hypersensitivity
(Total serum IgE)
(Normal adult range: 0- 81 KU/L

Measurement of total serum IgE is of value in the assessment of patients with allergic and some parasitic diseases. Levels may also be increased in some rare immunodeficiency disorders.

Allergen specific IgE
(Report range: - "Rast" score 0 - 6)

Allergen specific IgE testing is of value where skin testing is difficult to perform, unreliable, or contraindicated, i.e.:-

1) In very young children.
2) In patients with severe/extensive eczema or dermatographis.
3) In patients taking anti-histamines which cannot be stopped.
4) In patients in whom there is a significant risk of an anaphylactic response.

The use of RAST testing must be carefully considered and is not a substitute for careful clinical assessment. We will only process a **maximum of 4 RAST** requests per patient episode. Common RAST requests are assayed within the Blood Sciences Laboratory, infrequently requested RAST requests are referred to external laboratories.

The detection of allergen specific IgE in serum is not synonymous with clinical allergy, nor does the failure to detect allergen specific IgE exclude the diagnosis.

Bronchopulmonary eosinophilia

Total IgE, specific IgE to Aspergillus, and Aspergillus precipitins should identify cases due to hypersensitivity to the fungus. Total IgE may be raised in association with parasitic infestation. Positive ANCA may point to a vasculitic cause (Churg-Strauss).

Farmer's Lung

Hypersensitivity to the spores of thermophilic actinomyces may be the cause of acute disease 4-8 hours after exposure (cough, dyspnoea, malaise and fever) or chronic symptoms with progressive dyspnoea and fatigue.

Precipitins to thermophilic actinomyces (Farmer's lung) indicate exposure but are not invariably associated with disease. The diagnosis is made by a combination of clinical features, X-ray and lung function tests.

Bird Fancier's Disease

The symptoms are similar to farmer's lung but more commonly are of the chronic type. Precipitins to avian proteins provide good evidence of the cause of the symptoms. We can test for budgerigar, parrot and pigeon IgG antibodies. You need to specify the species so that we can direct the tests.

Serum Tryptase (Anaphylaxis)

Three serum samples should be taken at

1) 0-1 hours after the after the onset of the adverse reaction
2) 4-6 hours after the after the onset of the adverse reaction
3) 24 hours after the after the onset of the adverse reaction. This acts as a baseline sample and is important to ensure levels return to normal and to exclude mastocytosis.

Additional Notes

- Please specifiy the time of the reaction on the request form
- We are unable to accept RST samples
- This method is not UKAS accredited for post mortem samples

Autoimmunity

In this laboratory, we prefer to test specifically for the clinical condition you are investigating rather than use an “Autoimmune Screen” approach. Consequently, we cannot process any requests for an “autoimmune screen” if these are not accompanied by appropriate clinical data. If we consider that the clinical data given on the request form does not justify all the tests requested, we will modify your requests to test appropriately to the data you have supplied. This means that you may not get all the test results you request but equally, you may get ones you did not request.

We have introduced a series of autoimmune panels to guide you.

1) The Rheumatoid Panel

This consists of a Rheumatoid Factor (RhF) and an anti-nuclear antibody (ANA). The RhF that we test for is a polyvalent anti-IgG Fc and a value of 25 IU/ml is considered to be the top of the reference range. However, the incidence of rheumatoid factors in the elderly population is significant and an RhF of 25 IU/ml in an elderly patient may not be clinically relevant but the same titre in a child may be much more important. Titres of >100 IU/ml may be associated with more systemic and non-articular features such as rheumatoid nodules. **It is also important to remember that negative serology does not exclude rheumatoid arthritis; neither is positive serology diagnostic.** The number of diseases in which rheumatoid factor is found is very large indeed and includes virtually every condition associated with high levels of circulating immunoglobulins.

Anti-nuclear antibodies on their own, do not contribute much to the diagnosis of rheumatoid disease. We include ANA in the rheumatoid panel because of its usefulness in the diagnosis of other conditions that may present with similar symptoms to rheumatoid arthritis. The non-specific nature of ANA also means that it is found in a wide range of diseases. The table below gives further details on the sensitivity and clinical specificity for ANA.

We currently perform an initial “ANA ELISA” test which detects the presence of the most clinically relevant “ANA antigens”: RO, LA, SM, RNP, Jo-1, SCL-70, antibodies to double stranded DNA, histones, centromere, PMSCL-100 and nucleosomes.

We follow up any significant positive screens with a HEP-2 immunofluorescence ANA and, if necessary, quantitative DNA antibodies.

On request, we can assay for anti-keratin antibodies which are found almost exclusively in rheumatoid arthritis but in only 50% of cases.

2) The Lupus Panel

At its simplest level, this consists of a rheumatoid factor, an anti-nuclear antibody and antibodies to double stranded DNA (dsDNA). If these results are negative, this excludes >95% of SLE cases. As with rheumatoid factor, any level of ANA in a child may be significant.

a) Anti-nuclear Antibody

We use an ANA ELISA screen as a first line test as described above, this includes anti-DNA anitibodies. If we find a significantly raised screen, we automatically go on to do an ANA by immunofluorescence. The table below gives details of the various ANA immunofluorescence patterns routinely encountered.

The **homogenous** pattern of immunofluorescence is the most common and least disease specific ANA. It is associated with SLE, Sjögren's syndrome, rheumatoid arthritis, chronic active hepatitis, myasthenia gravis, anti-dsDNA negative SLE and, at high titres, can be drug induced. The drugs most commonly involved are hydralazine and procainamide although phenytoin, chlorpromazine and d-penicillamine have also been reported to have this effect. Much less common causes of a homogenous pattern are burns, pulmonary emboli, infectious mononucleosis and malignancy.

The **nucleolar** pattern is associated at high titres with scleroderma. A positive pattern should be investigated by looking for Scl-70, an extractable nuclear antigen (ENA) found in some patients with scleroderma. The CREST variant of scleroderma is tested for by looking for anti-centromere antibodies.

The **speckled** pattern indicates the presence of an ENA. We test for the most commonly encountered antigens (see table below) but it must be remembered that not all ENAs have been accurately characterised. It is unwise to place undue emphasis on their diagnostic significance because, for the most part, their specificity for any particular disease is not always high.

b) Double Stranded DNA (ds DNA)

Our assay for dsDNA is standardised against an International Standard preparation hence we report in IU/ml. When considered alongside complement levels, the anti-dsDNA can give useful information on the course of SLE. If the anti-dsDNA titre is rising with no change in C3 and C4 levels, this usually indicates disease activity, although these changes may pre-date any clinical signs by weeks or months. Similarly if complement falls without a change in anti-dsDNA titre, this too indicates disease activity. Renal involvement may be occurring if anti-dsDNA and complement levels fall. A rise in complement levels with or without a rise in anti-dsDNA level may indicate infection. CRP measurement should confirm this. Drug induced lupus cases usually do not have increased titres of dsDNA antibody but we have seen exceptions to this.

c) Anti-Cardiolipin Antibody Also known as anti-phospholipid antibody.

Antibody Value GPLU/ml	Interpretation
<9	Normal
9-15	Slightly raised
16-50	Raised
>50	High

Found in the Anti-phospholipid antibody syndrome (APS) which may be primary or occur as a secondary complication of SLE. The major features of APS are recurrent spontaneous abortion, recurrent thromboses (arterial or venous), typical skin rash (livedo reticularis) and thrombocytopaenia. Most commonly, stroke or DVT of the leg may occur but a variety of other sites have been described. Another major association is foetal loss. Certainly among lupus patients there is a strong correlation between the presence of raised anti-cardiolipin antibody and recurrent abortion but even in the general population 10-15% of cases of unexplained foetal loss are known to have raised anti-cardiolipin antibodies. The exact level at which a raised antibody is considered to be significant is open to question but few "normal" individuals will have anti-cardiolipin antibodies of >15 GPLU/ml with 90% of normal people having levels less than 10 GPLU/ml.

Some individuals with clotting disorders show no other features of SLE but have very high levels of anti-cardiolipin antibody which are thought to form an "anti-phospholipid syndrome" believed to be closely enough linked to SLE for some authorities to consider that a spectrum of diseases exists between them. Patients with APS may also have detectable lupus anticoagulant and all patients suspected of this condition should have a sample (as for coagulation studies) sent to Haematology.

All initial positive cardiolipin antibody results should be confirmed with a second sample taken not less than 12 weeks from the first sample.

3) The Gut Panel

The Gut Panel consists of antibodies to tissue transglutaminase (TTG) and is used primarily in the investigation of coeliac disease. At present, all TTG positive results are confirmed with IgA endomysium antibodies. It may also be useful in the work-up of patients with malabsorption syndromes, failure to thrive and chronic diarrhoea.

Anti endomysium and TTG antibodies of IgA class give the greatest sensitivity for coeliac disease. These gut related antibodies, if present at diagnosis, often disappear following a gluten free diet thus compliance monitoring may be possible using this panel. Many patients however are exquisitely sensitive to even trace amounts of gluten and antibodies may reappear following the slightest challenge.

We do not routinely offer gliadin antibodies because of their unacceptable sensitivity and specificity. We automatically test for IgA deficiency in all coeliac screens and will include IgG endomysium antibodies if necessary.

4) The Liver Panel

The liver panel consists of anti-nuclear antibody, anti-mitochondrial antibody, anti-smooth muscle antibody and liver-kidney microsomal antibody. Both chronic active hepatitis (CAH) and primary biliary cirrhosis (PBC) are associated with the presence of autoantibodies.

Antibody	Association	Sensitivity	Specificity
Anti-mitochondrial antibody	Primary Biliary Cirrhosis	95%	Also found in 25% CAH
Smooth muscle antibody	Chronic Active Hepatitis	70%	Found in <20% PBC at low titre

This panel, in addition to distinguishing between CAH and PBC, can also distinguish between autoimmune CAH and virus induced CAH. These antibodies play no part in the diagnosis of alcohol induced liver disease. Both of these antibodies can also be found at low titres (i.e. generally less than 1/40) in a “non-specific manner” following viral infection for example, so their usefulness will be tempered by the type of autoantibody detected, its titre, other clinical signs and other biochemical abnormalities. Primary biliary cirrhosis is often associated with a raised alkaline phosphatase and bilirubin along with non-specific increases in immunoglobulins (especially IgM) whereas chronic active hepatitis is often associated with raised transaminase enzymes and increased immunoglobulins (especially IgG).

Anti-liver kidney microsomal antibody identifies a sub-group of patients with autoimmune (hepatitis B negative) chronic active hepatitis (CAH type 2). This is the most common form of CAH in childhood and has a particularly poor prognosis. There may also be an association with hepatitis C infection.

5) The Thyroid Panel

This panel consists solely of autoantibodies to thyroid peroxidase antigen and has a limited usefulness in the diagnosis and monitoring of thyroid disease. We will not process a sample for thyroid autoantibodies if the most useful first line tests (i.e. measurement of T4 and TSH) have not been completed. On the basis of these tests, it is possible to determine whether thyroid antibodies will add anything useful to the management of the patient.

These antibodies are present in the majority of patients with Grave’s Disease, Hashimoto’s thyroiditis and primary myxoedema, but their lack of specificity is such that they are also found in many other autoimmune diseases as well as a significant proportion of “normal” individuals. They may have a useful predictive role to play in the “borderline hypothyroid” patient who may have a low T4 and borderline normal/raised TSH. Their presence in these patients may mean that there is more of a likelihood that hypothyroidism will develop. They will also help distinguish between an endocrine exophthalmus and other ocular lesions.

Antibody	Association & Sensitivity	Specificity
Thyroid peroxidase antibody	Grave's Disease 60-70% Hashimoto's 90%+ Thyroiditis Myxoedema 60-80%	Normal female 10% Normal male 5% Also found in pernicious anaemia (30%) Primary Biliary Cirrhosis (20%) Rheumatoid Arthritis (20%) SLE (12%) etc

6) The Renal Panel

This consists of antinuclear antibody and anti-neutrophil cytoplasmic antibody (both cytoplasmic and perinuclear ANCA) and complement C3 + C4 and is used in the investigation of Wegener's granulomatosis, polyarteritis nodosa and the nephritis of SLE.

ANCA is now accepted as a sensitive marker for Wegener's and microscopic polyarteritis. We routinely test for the two major antibody patterns which are either:

a. Cytoplasmic (cANCA) which is typically found in Wegener's or
b. Perinuclear (pANCA) which is also found in Wegener's but more commonly found in polyarteritis nodosa, vasculitis, SLE and segmental necrotising glomerulonephritis; i.e. not as a disease specific as the cytoplasmic ANCA pattern.

Antibody levels do appear to parallel disease activity and thus may be useful both in diagnosis and subsequent monitoring of treatment. We will confirm all positive ANCA patterns seen by immunofluorescence with an antigen specific test for anti-proteinase 3 antibodies, the most clinically relevant cytoplasmic ANCA antigen; and myeloperoxidase antibodies, the most clinically relevant perinuclear ANCA antigen.

ANCA of both patterns have also been described in rheumatoid arthritis (17% of cases: mostly pANCA) and HIV infection. Their significance in RA is not clear as levels do not appear to correlate with rheumatoid vasculitis.

7) Organ specific and other antibodies

a) Anti-acetylcholine receptor antibody

A primary antibody detectable in 80 - 90% of patients with myasthaenia gravis.

b) Anti-adrenal antibody

Positive in 60 - 70% of patients with idiopathic Addison's disease. Anti-steroid secreting cells Ab are also detectable in the same assay and are found in cases of autoimmune premature ovarian failure.

c) Anti-centromere antibody

Indicated in the investigation of unexplained Raynaud's phenomenon. Positive in 60 - 70% of patients with the CREST variant of scleroderma and 20% of patients with generalised scleroderma.

d) Anti-gastric parietal cell antibody

Are present in 95% of patients with pernicious anaemia but also occur in immune thyroid disease, up to 30% of patients with iron deficiency anaemia and 3% of the normal population (the incidence rising with increasing age).

e) Anti glomerular basement membrane (GBM) antibody

Diagnostic test for Goodpasture's syndrome (> 90% sensitivity)

f) Anti-intrinsic factor antibody

Present in two types and positive in only 30-60% of patients with pernicious anaemia (PA). Highly predictive of PA if detected in combination with anti-gastric parietal cell antibody.

g) Anti-islet cell antibody

Predictive of future insulin requirement in patients presenting with NIDDM and in relatives of IDDM patients.

h) Anti-myeloperoxidase antibody

Confirmatory test used when ANCA are detected. Myeloperoxidase (MPO) is the target antigen for the majority of pANCA associated with microscopic polyangiitis. The detection of anti-MPO Ab in association with an ANCA increases the positive predictive value for primary vasculitic disorders to approximately 66%.

i) Anti-neuronal antibodies

Anti-Voltage Gated Calcium Channel	Lambert Eaton Syndrome
Anti-Purkinje Cell screen (Hu, Yo, Ri)	Paraneoplastic Syndromes
Anti-GM-1	Acquired motor neuropathies (IgM)
	Guillain-Barré Syndrome (IgG)

j) Anti-phospholipid antibody

See anti-cardiolipin section of the Lupus panel above.

k) Anti-proteinase 3 antibody

Confirmatory test used when ANCA are detected. Proteinase 3 (PR3) is the major target antigen for cANCA. The detection of anti-PR3 in association with ANCA increases the positive predictive value of cANCA.

l) Anti-skeletal muscle antibody

Anti-skeletal muscle Ab is characteristically associated with thymomatous myasthenia gravis but also occur in some patients with hepatitis, acute viral infections and polymyositis. Low titres may occur in viral infections notably EBV and infectious hepatitis.

m) Anti-skin antibody
Two types are recognised:

- Anti-intercellular substance (anti-ICS) Ab are found in most patients with the blistering (bullous) skin disease pemphigus vulgaris.
- Anti-basement membrane zone (anti-BMZ) Ab are found in the serum of most patients with bullous pemphigoid.

Levels of anti-ICS vary with disease activity and may therefore be of use in monitoring pemphigus.

n) TSH receptor antibody
TSH receptor antibodies are only offered in pregnant patients. The assay does not distinguish between 'stimulating' and 'blocking' antibodies but is useful in predicting neonatal hyperthyroidism.

Complement Studies

C3 and C4
Single point determinations of C3 and C4 are of limited value and serial measurements are recommended. C3 and C4 measurements are useful in the investigation and monitoring of a wide range of inflammatory and autoimmune disorders, please contact the laboratory for advice on interpretation of results.

C1 esterase inhibitor (C1-Inh)
Low levels (< 0.14 g/L) are found in 85% of patients with hereditary angioedema (HAE). Recurrent abdominal pain and/or deep subcutaneous swellings, usually of the trunk and without urticaria, occurring after minor trauma may indicate HAE.

C1 esterase inhibitor (functional assay)
Used to establish C1 esterase inhibitor activity. Approximately 15% of patients with hereditary angioedema have normal antigenic levels of C1-Inh, but a non-functional molecule. Both types of hereditary angioedema are associated with low/absent serum C4 levels during an attack. The rarer acquired form of C1-Inh deficiency is associated with some lymphoproliferative disorders and SLE.

C1q
The sole indication for C1q measurement is the differentiation of hereditary angioedema (normal C1q levels) from acquired C1-Inh deficiency (reduced C1q levels). Levels are also decreased in conditions associated with immune complex mediated complement activation.

CH50
A functional complement test that tests the patency of the classical complement pathway. An alternate pathway functional assay (AP50) is available from specialist laboratories following discussion.

Immunochemistry

Immunoglobulin estimation
Polyclonal increases in immunoglobulins IgG, A and M may occur in a number of disorders including chronic infectious/inflammatory conditions, liver disease and autoimmune diseases.

Few conclusions can be drawn from these as individual responses vary widely but a few generalisations can be made. Increases in:

- IgG alone: autoimmune disorders (SLE, connective tissue disease, Hashimoto's etc.)
- IgA alone: acute respiratory/gastrointestinal infections, Crohn's, cirrhosis
- IgM alone: acute viral /neonatal and congenital infections, primary biliary cirrhosis
- IgG and IgA: Rheumatoid arthritis, chronic respiratory disease, portal cirrhosis
- IgG and IgM: SLE, chronic aggressive hepatitis
- IgG, IgA and IgM: chronic bacterial infections.

Serum protein electrophoresis
This test is performed on all specimens submitted for immunoglobulin quantitation to detect the presence of paraproteins. Malignant paraproteins are usually of high concentration, associated with low levels of the non-paraprotein immunoglobulin and the presence of free monoclonal light chains in the urine (Bence-Jones protein). They occur in multiple myeloma and other lymphoproliferative diseases e.g. Waldenstrom's macroglobulinaemia, chronic lymphocytic leukaemia and non-Hodgkin's lymphoma. Monoclonal gammopathies of uncertain significance (MGUS) are those paraproteins which are not associated with the typical clinical features of the conditions described above. They were previously known as benign paraproteins however long term follow up of patients has shown that up to 25% ultimately transform into malignant paraproteins - hence the change in nomenclature. Many of the conditions which cause a polyclonal increase in immunoglobulins may also cause an MGUS.

Immunofixation
This technique is used to type paraproteins detected by electrophoresis.

Paraprotein quantitation-densitometry
Paraprotein quantitation is used in monitoring disease progression and response to therapy. The technique used to quantitate paraproteins is different to that used to measure the total immunoglobulin level and results are not directly comparable.

Urinary free light chains (Bence - Jones protein)
Early morning specimens in a plain container are preferred. A urine sample should accompany all serum samples submitted in cases of suspected paraproteinaemia. For disease monitoring a 24 hour urine collection (no added preservative) is required.

Cryoglobulins
Cryoglobulins are proteins which precipitate and form complexes below 37°C/body temperature. Patients with cryoglobulinaemia may present with Raynaud's phenomenon, purpuric vasculitis, arthritis or nephritis. Detection of cryoglobulins is not possible on routinely submitted samples - a sample transported to the laboratory at 37°C with subsequent warm separation is required.

Contact the department on ext: 5761 before sample collection to obtain a pre-warmed sample collection tube and warm transportation container. Please do not send sample any later than 3pm Monday-Friday.

Cryoglobulins if detected are quantitated and classified. Advice will be provided regarding further investigation/follow up.

β-2 microglobulin

Primarily used as a prognostic indicator but is also indicated in the monitoring of patients with multiple myeloma whose paraprotein is light chain or poor/non secretory in nature. It has a very limited role in monitoring other patients.

C-reactive protein (CRP)

CRP is an acute phase protein which is elevated in infections and disorders associated with tissue damage and inflammation. It is of use in monitoring inflammatory disease activity and is particularly useful in monitoring response to therapy because of the short serum half life (t½ approx. 6 hours).

Expected ranges:
Mild inflammation/viral infection - < 40 mg/L
Active inflammation/bacterial infection – 40 – 200 mg/L
Severe inflammation/invasive bacterial infection/some malignancies, burns up to - 500mg/L

Serum free light chains

Useful in Bence Jones and non secretory myeloma and in myeloma in which therapy has resulted in the disappearance of the serum paraprotein as judged by electrophoresis.

Immunodeficiency

Investigation of immunodeficiency should only be undertaken after discussion with senior laboratory staff (either Dr Alison Whitelegg Ext 6271 or Dr Mary Ganczakowski Ext 6688). Severe, Prolonged, Unusual and Recurrent infections (SPUR) or poor response to standard therapies may be indicators of a primary immune defect. The appropriateness of testing and specimen requirements will be advised as any of the 4 arms of the immune response may be affected (humoral, cellular, functional antibody or complement). In general, a full blood count and differential, serum immunoglobulins, complement and Lymphocyte Subsets Immunophenotyping and enumeration should be included in an initial screen with other follow on tests to investigate Lymphocyte Function, including Memory B cell subsets if clinically indicated. A specific test for Neutrophil Function if CGD is suspected can also be offered after consultation with senior laboratory staff.

Humoral Immunology

a) Immunoglobulins: IgG IgA IgM

Essential in the investigation of suspected immunodeficiency.

b) IgG subclasses

We do not routinely offer these as the measurement of IgG subclasses is of limited value and should really only be considered in the context of identifying primary immune deficiency. Major utility is in ensuring patients who are IgA deficient do not have a concurrent IgG2 deficiency which may leave them more susceptible to bacterial infections with the capsid bacteria (*Haemophilus, Neisseria, Pneumococcus* etc.) Of no value at all if the total IgG is less than 3 g/l.

Cellular Immunology

Lymphocyte subsets immunophenotyping: THESE STUDIES MUST BE PRE-ARRANGED AS ABOVE.

Indicated in diagnosis and monitoring of immunodeficiency. Suspected cases of childhood T cell and combined T/B cell immunodeficiency (SCID) should be regarded as URGENT and the laboratory contacted as soon as possible.

Lymphocyte subsets immunophenotyping panel: CD3 (total T cell), CD4 (T helper), CD8 (T suppressor), CD19 (B cell), CD16/56/57 (NK cells); sIgKappa and sIgLambda. This is a standard Lymphoid subsets Immunophenotyping Panel, any further assays to be discussed after results interpretation by one of our Immunology specialists.

Lymphocyte Function

Indicated for further definition of cellular function and/or immunodeficiency. Proliferative response to mitogens and or specific antigens is available following discussion. Stimulants: Phytohaemagglutinin (PHA), Concanavalin A (ConA) Phorbol Myristate Acetate (PMA).

Neutrophil Function Tests

Indicated in investigation of suspected Chronic Granulomatous Disease, recurrent skin infections, recurrent deep seated bacterial and fungal infections in children. The Assay is a Flow Cytometric test for Neutrophil Oxidative Burst.

The following functional assays are available following discussion with senior staff:

- Chemotaxis
- Phagocytosis and Killing

Functional antibody immunology

The quantitative measurement of IgG to tetanus toxoid, HIB, pneumovax II are of value in the investigation of immunodeficiency. Functional antibody testing should only be requested after discussion with departmental staff. Results require specialist interpretation.

Clinical Flow Cytometry

Immmunology Specialists involved in Clinical Flow Cytometry;

Dr Alison Whitelegg	Consultant Immunologist	**6271**
Miss Aimee Smith	Immunologist	**6699**
Mr Satbeer Singh	Immunology Lead BMS	**5765**
Mr Miguel Morales (Francisco Miguel Morales-David)	Clinical Scientist	**6699**

BLOOD SCIENCES

A Specialist Immuno-haematology service within Blood Sciences laboratory for the investigation of Primary Cellular Immunodeficiency in children and associated cellular disorders.

The service also provides;

- Comprehensive Immunophenotyping and data interpretation for the diagnosis and monitoring of Haematological Malignancy and rare blood cell diseases like PNH.
- Therapeutic Drug Monitoring CD3 and CD19, CD20 for Renal and Rituximab patients.
- Routine Lymphoid cell subsets enumeration and CD4 count monitoring.
- Applications of service in Blood Transfusion for the Quantitation of Feto-Maternal Haemorrhage.

Advice on the service and results interpretation is available from the Immunology Specialist staff listed above.

There is currently no evening, overnight or weekend Flow Cytometry Service. Sample viability is critical for accurate results. Therefore samples >24hrs old cannot be processed.

Haematology

At the Queen Alexandra Hospital routine haematology, specialist coagulation, haemoglobinopathy, red cell enzyme work and specialist haematological oncology tests are performed.

Haematology Tests and Reference Ranges

All electronic reports have age and sex related ranges attached.

Please click on the following link to access the 'Test Database' for the following tests and reference ranges:

- Haematology
- Leukaemia Panel
- Coagulation tests
- Blood Transfusion tests and reference ranges

Additional Tests

Additional tests may be requested by the requesting clinician, within 48 hours of the required samples being collected, by telephoning the laboratory. A check will be made to ensure that the correct type and volume of sample is available to complete your request.

Haematology Clinics

Out-patient clinics accept referrals from GPs and hospital doctors.

Chromosomes

These samples are referred to another hospital (Salisbury) for testing and therefore, the samples should only be taken and sent to the laboratory by 1400 hrs Monday to Thursday only. Please do not send samples on a Friday as these will be rejected by Salisbury.

Anticoagulant Control

The department offers outpatient control of anticoagulation. In-patients should be referred by faxing a fully completed referral to the clinic nurses on Ext 7700 **6194**. Please give at least 24 hours notice before planned discharge. Failure to complete referral and give adequate notice is likely to delay discharge. The referral form is Appendix 3 of the Anticoagulant Guidelines available under Drug Therapy Guidelines on the intranet.

Clinical Advice and Interpretation – is available 0930 – 1700 hrs, Monday to Friday by phoning the Clinic Nurses on 023 9228 **1771** (dependent upon clinic commitments), and at all other times via the switchboard. The General Enquiries Office number is 023 9228 **6752**, open Monday to Friday, 0900 to 1700 hrs.

Patients from general practitioners are welcome; please fax a completed referral letter to 023 9228 6194, or send by post to:

The Anticoagulant Clinic
Level E
Pathology Building
Queen Alexandra Hospital
Portsmouth
PO6 3LY

Protocol for Coagulation Studies

Screening tests are performed for the following clinical conditions only. Other tests may be performed after discussion with the laboratory.

Amyloidosis	INR APTR
Arteriogram	INR APTR
Bronchoscopy/Gastroscopy	INR
Bronchial/fine needle biopsy	INR APTR
Cholecystitis	INR
Cirrhosis	INR
Epidurals	N/A – unless other indications
Epistaxis	INR APTR
ERCP	INR
Fem pop by-pass	INR APTR
Heparin (iv infusion only)	APTR
Heparin & Warfarin	APTR only until day 4 warfarin, then INR plus APTR on day 5
Liver biopsy	INR
Liver disease	INR
OGD	INR
Pancreatitis	INR
Paracetamol O/D	INR
Post streptokinase therapy	INR Fibrinogen level
Post transfusion Multi-transfusion	INR APTR only after 8 units, INR + APTR

Severe sepsis/?DIC	INR APTR initially and then monitor with INR and Fibrinogen
Spontaneous bruising or bleeding tendency	INR APTR
TLA/TFA	INR APTR
Warfarin (day 4/5)	INR
Warfarin (post day 5)	INR only
D-Dimer is a confirmatory test for DIC and other coagulopathies and is performed dependant on the clotting screen results and clinical details. If in doubt consult a Haematologist.	

Blood Transfusion
A Blood Transfusion Service is maintained and staffed 24 hours a day at Queen Alexandra Hospital and the laboratory can be contacted using Extension **6539**.

Callers with enquiries relating to transfusion advice or /incidents can contact the Transfusion Practitioner using Extension **1793** or bleep **0120**.

Outside of core operating hours the Duty Consultant Haematologist can be contacted through switchboard.

At all times **FOUR POINTS OF PATIENT ID (Surname, Forename, D.O.B., and NHS No), date and time of collection and signature of person collecting the blood are required on all samples and forms submitted to the Blood Transfusion Department**. If the patient does not have an NHS number, e.g. Non UK citizen, a case note number or hospital number (Q number) will be accepted.

We do not wish to reject any samples but if a minimum of four ID details, date, time and signature are not supplied on samples and forms then we are required by legal / mandatory protocols to reject them. The only exceptions are samples from unconscious patients in the ED, which must be appropriately labelled as per the emergency protocol, see Trust Blood Transfusion Policy (see Clinical Policies on the Intranet)

Massive Haemorrhage telephone line Ext 4444

Consider following the Massive Haemorrhage Guideline (see intranet /clinical guidelines)

Emergency Group O blood is available for immediate issue;
Stocks of O Rh Negative blood are held at Queen Alexandra Hospital in: E level Blood Fridge (adult) and Maternity Blood Fridge (adult and neonatal units) for extreme emergencies only.
Stocks of O Rh Positive blood are held in the Blood Transufsion Laboratory and may be issued instead of O Rh Negative for male patients, and female patients >55 years old.

Emergency Group O blood should be used only in the gravest of emergencies. If the Emergency Group O units are used for a patient **YOU MUST IMMEDIATELY INFORM THE BLOOD BANK.** Please take a cross-match sample prior to using the Emergency Group O blood. Group specific but not cross-matched blood can be provided within 15 minutes.

Since the introduction of Electronic Issue (EI) of red cells many patients do not require a full serological crossmatch. EI can be performed when the patient has a historical blood group on the LIMS system and a current valide G&S sample in the laboratory which was tested on the analyser with a negative antibody screen; and the patient has no history of red cell antibodies.

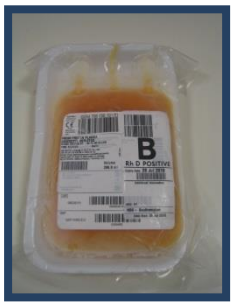
Red cells can be issued via EI rapidly, within 15 minutes of the request when suitable, and therefore red cells for these patients will not be supplied unless or until required for transfusion.

Patients with red cell antibodies, even those no longer detectable, will require a full serological crossmatch.

As per BSH Guidelines, only Group O blood will be issued to a patient who has only one ABO blood group result on the LIMS system. This is to prevent an ABO incompatible transfusion. **If blood is requested for a patient with only one blood group on the system the laboratory will request a second sample pre transfusion**. If the patient cannot wait for the results of this sample Group O blood will be issued.

If the patient has no previous blood transfusion history at PHU then two separate samples will be required for testing and confirmation. In certain circumstances the laboratory is using a unique blood tube for users to take the second sample. This ensures each are collected separately, reducing the risk of misidentification leading to a transfusion error.

It is policy to issue blood of the patient's group (or Group O as above), uncross-matched, for anyone who has already received 8 units of fully cross matched blood. If further units for transfusion are required, greater than 24 hours after blood has been transfused, a new sample for cross-match must be sent.



Portsmouth Hospitals University NHS Trust

THE CANCER LABORATORY

Contact Number: 023 9228 6000

Ext 5355

UKAS MEDICAL 8625

Cellular Pathology is a UKAS (United Kingdom Accreditation Service) accredited testing laboratory No. 8625, (International Standard ISO 15189;2012).

Dedicated phone number and times for General Practitioners to call for Consultant advice:

Telephone: 023 9228 6458, Monday - Friday 0900 – 1700 hrs
Fax number: 023 9228 6493

Location: Level F, Pathology Centre, Queen Alexandra Hospital

Office Hours: Monday – Friday, 0900 – 1700 hrs

Laboratory Hours: Monday – Friday, 0830 - 1700 hrs
(NB There is no Out of Hours Service)

Emergencies:
If any emergency arises during normal Laboratory Hours (0830 – 1700 hrs) please contact the Histopathology Office (Ext 6458).

Out of Hours please contact Switchboard who has the Histopathology Out of Hours contact details.

THE CANCER LABORATORY

The Service

The Cancer Laboratory, Cytopathology, Andrology, Histopathology and the Mortuary form the Department of Cellular Pathology here at Queen Alexandra Hospital, Portsmouth Hospitals University NHS Trust. The department is UKAS accredited.

The Cancer Laboratory opened in August 2007, thanks to an amazing effort from the people of Portsmouth to raise £2 million to build and equip it through the Portsmouth Hospitals University NHS Trust 'Rocky' Appeal. The laboratory was part of the redevelopment of Queen Alexandra Hospital, the laboratory is sited in the Pathology Centre. It incorporated the existing Translational Oncology Research Centre (TORC) which has produced many scientific papers detailing the results of its projects.

Services provided by the department

For specific test information, please consult the Pathology Test Database and refer to the Cellular Pathology tab.

Request form

Requests are made via MDT to the Pathologist attending meeting they will issue laboratory with internal extra work request form on return from meeting.

Queries can be directed to the consultant Pathologist or the Cellular Pathology Molecular group mailbox: SDL16CPM@porthosp.nhs.uk

For all specimens submitted to The Cancer Laboratory, the specimen container and form must be clearly labelled with sufficient information to allow unequivocal identification of the patient. With reference to the guidelines given in the Portsmouth Hospitals University NHS Trust 'Patient Identification Policy' (Ref no: 3.46) this department will accept 3 separate points of identification.

Our mandatory protocols require us to reject any specimens that do not comply with the above and we will send them back to source for re-labelling.

Sample Transport

Breast Lymph Node (BLN)

This service ceased on 12th June 2019.

ER / PR / Her2

Transport not applicable for these requests as the blocks and slides are stored at QAH.These tests are conducted in the Histology laboratory.

Consent

Applicable to BLN assay only: The clinicians will be responsible for providing patient information and obtaining informed consent for the BLN assay. A copy of the consent will be kept with the patient notes.

Sample Volumes

ER / PR / Her2

A representative FFPE tissue block is required for testing. For Her2 samples that require ISH testing, a 4µm unstained section is sent to a referral laboratory (please see Pathology test database, Cellular Pathology tab).

Molecular tests

A representative FFPE tissue block is required for testing.

Reference Ranges

Molecular tests & BLN

Data is interpreted for individual cases in conjunction with the current user manual following the completion of an appropriate molecular test.

Limitations of the Tests

Molecular tests

Details of the limitations of the tests are described in the relevant user manuals. If further information is required please contact the laboratory.

High Risk Specimens

Specimens known or suspected to be infected with high risk organisms, such as tuberculosis, hepatitis B and HIV cannot be handled unfixed by the department.

CYTOLOGY
CYTOLOGY DEPARTMENT

Clinical lead for Diagnostic Cytology Dr David Poller
Contact Number: Ext. 6625
david.poller@porthosp.nhs.uk

UKAS MEDICAL 8625

Cellular Pathology is a UKAS (United Kingdom Accreditation Service) accredited testing laboratory No. 8625, (International Standard ISO 15189;2012).

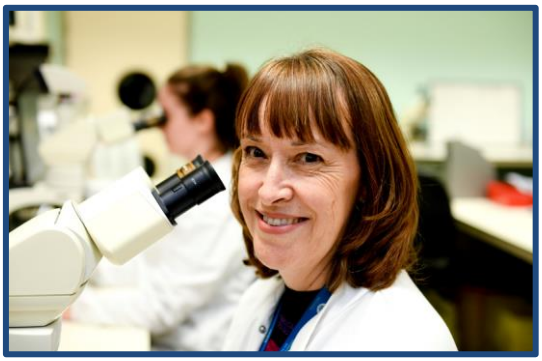
Dedicated phone number and times for General Practitioners to call for consultant advice:

Telephone: 023 9228 **6737**, Monday - Friday 0900 – 1700 hrs

If your request is urgent ensure the form is marked "**Urgent**" in red and provide contact name and phone number for report.

Location: Level E, Pathology Centre, Queen Alexandra Hospital

The department employs approximately eighteen members of medical, scientific and technical staff. Specialist areas include respiratory, head and neck and breast cytology.



Contact Information

Staff – Cytopathlogy		
Dr Neerja Agrawal	Consultant Histo/Cytopathologist	023 9228 **6476**
Dr Joanna Cooke	Consultant Histo/Cytopathologist	023 9228 **6701**
Dr Peter Gonda	Consultant Histo/Cytopathologist	023 9228 **1776**
Dr David Poller	Consultant Histo/Cytopathologist	023 9228 **6625**
Dr Marianne Mason	Consultant Histo/Cytopathologist	023 9228 **5352**
Dr Andras Nagy	Consultant Histo/Cytopathologist	023 9228 **6426**
Dr Nicholas Shepherd	Consultant Histo/Cytopathologist	023 9228 **6098**
Dr Anne Spedding	Consultant Histo/Cytopathologist	023 9228 **6495**
Dr Donall Tansey	Consultant Histo/Cytopathologist	023 9228 **1297**
Dr Claire Way	Consultant Histo/Cytopathologist	023 9228 **5390**
Dr David Sinclair	Consultant for Andrology	023 9228 **6799**
Cally Buckell	Cervical Screening Provider Lead	023 9228 **6737**
Elaine Allsworth	Lead Biomedical Scientist for Diagnostic Cytology and Andrology	023 9228 **6737**
Dr Katy McDermott	Deputy for the Cervical Screening Provider Lead	023 9228 **5741**

Consultant Advisory Service:

Office:	Monday - Friday	0900 – 1700hrs
Medical advice and case discussion:	Monday-Friday	0900 – 1700 hrs
Laboratory Opening Hours		
Technical/Scientific:	Monday-Friday	0900 – 1700 hrs

The Service

Cytopathology, Histopathology, the Cancer Laboratory and the Mortuary form the Department of Cellular Pathology here at Queen Alexandra Hospital, Portsmouth Hospitals University NHS Trust. The department is UKAS accredited under ISO 15189:2012. The Cytology Laboratory provides a comprehensive range of diagnostic services. The department is committed to providing a high-quality service to all our users.

Services and Specialist Clinics provided by the department

The cytology service incorporates both diagnosis and consultation advice for clinicians managing both in-patients and outpatients.

NHS Cervical Screening Programme (NHSCSP)

In November 2019, after 30 years of service to the local population, this service transferred to a new provider; Berkshire and Surrey Pathology Services, (BSPS) in Chertsey. Between 2008 and 2018 the service screened half a million women and at least 2300 were prevented from developing cancer due to early detection.

Specimens for the NHSCSP taken in the surrounding area are received in our main sample reception and then couriered to BSPS each weekday.

CYTOLOGY

Diagnostic Cytology

A wide variety of specimen types are received, predominately from within theTrust. These include fine needle aspirations (FNA) from head and neck, thyroid and breast, as well as directly obtained samples for example: bronchial brushings, synovial fluid and urine. Samples from abnormal body cavity collections such as pleural effusions and ascites are examined for diagnosis or as an adjunct of staging in malignant disease. Approximately 3,000 samples are received each year.

The laboratory's repertoire, its sample, request form and transport requirements are detailed below:

Laboratory repertoire;

1. Body fluids, cyst fluids and/or serous effusions

A representative sample (ideally taken towards the end of the aspiration if draining an effusion to extinction) up to 20mL – without fixative or anticoagulant – in a plain universal container labelled with patient surname plus a minimum of two other points of ID from forename, DOB, hospital number or NHS number

2. Urines

A representative sample of freshly voided urine (as an aliquot of the entire sample), or catheter/ileal conduit samples, or bladder/ureteric/renal pelvis washings, up to 20 mL – without fixative or anticoagulant – in a plain universal container labelled with patient surname plus a minimum of two other points of ID from forename, DOB, hospital number.or NHS number **Please note:** early morning or mid-stream urines are not suitable for cytology

3. Joint fluids

The entire fluid or a representative sample up to 20 mL – without fixative or anticoagulant – in a plain universal container labelled with patient surname plus a minimum oftwo other points of ID from forename, DOB, hospital number or NHS number. Microbiology and/or biochemistry requests should be collected separately at the same time and be accompanied by an appropriate second and/or third request form

4. Bronchial brushings

Detach the brush head in up to 15mL of CytoLyt in a plain universal container labelled with the surname and a minimum of two other points of ID from forename, DOB, hospital number or NHS number

5. Bile duct / biliary / pancreatic brushings

Detach the brush head in up to 15 mL of CytoRich Red collection fluid labelled with the surname and a minimum of two other points of ID from forename, DOB, hospital number or NHS number

6. Endoscopic and endobronchial ultrasound guided needle aspirations in CytoLyt (EBUS) or Cytorich Red (EUS)

Place the entire sample (including any solid material) into approximately 10 mL of the appropriate collection fluid in a plain universal container (EBUS) or CytoRich Red vial (EUS) labelled with the patient surname plus a minimum of two other points of ID from forename, DOB, hospital number or NHS number.

Submit the sample to Cytopathology and any tissue identified will be sent to Histopathology for processing.

7. Fine needle aspirations - FNA

Two to four slides should be prepared and labelled with the patient surname and forename in full plus either the DOB, hospital number or NHS number. At least 1 spread must be labelled as F (alcohol fixed) and at least 1 other spread must be labelled A (air-dried). Any associated fluids should be submitted as described in point 1 above

Please note:

- For thyroid FNAs only 1 spread must be fixed, with the remainder air-dried regardless of the numbers of slides made
- For all other FNAs, 50% of the spreads must be fixed and 50% air-dried. If an odd number of slides is made, then air-dry the extra spread
- If only 1 slide can be made this must be air-dried

8. Bronchial washings and lavages

A sample up to 20 mL – without fixative or anticoagulant – in a plain universal container labelled with patient surname plus a minimum of two other points of ID from forename, DOB, hospital number or NHS number

9. Cerebrospinal Fluids – CSF

The entire fluid – without fixative or anticoagulant – in a plain universal container labelled with patient surname plus a minimum of two other points of ID from forename, DOB, hospital number or NHS number. Microbiology and/or biochemistry requests must be collected separately at the same time and be accompanied by an appropriate second and/or third request form.

CSF fluids must be delivered to the cytology department within two hours of being taken and between the laboratory opening hours of 9am and 5pm.

If the sample is arriving after 4pm please inform the laboratory in advance.

10. Nipple discharge

Clinician prepared alcohol fixed and air-dried direct smears labelled with patient surname plus a minimum of two other points of ID from forename, DOB, hospital number or NHS number and also labelled as F (alcohol fixed) or A (air-dried) as necessary. If a large volume of fluid, a representative sample up to 20 mL – without fixative or anticoagulant – in a plain universal container labelled with the appropriate patient identification data

11. Intraocular samples – vitreous/aqueous humour

Only to be submitted following a case discussion prior to sampling. Please contact the laboratory to arrange this discussion or for advice – extension 6737.

Out of hours intraocular samples must be fixed by the Ophthalmology department:

If ≤1mL of sample is received:

- Using a pipette, withdraw the sample fluid to estimate the total fluid volume
- Expel the fluid back into the original sample vial
- Withdraw an equal volume of 10% formalin, add this to the sample and mix gently
- On the lid and side of the vial write 'formalin fixed'
- Note on the request form that due to the small sample size it has not been possible to send an alcohol fixed sample

If >1mL of sample is received:

- Label two universal vials with the patient's surname, forename, and date of birth. On the lid and side of one vial write 'formalin fixed' and on the other vial write 'alcohol fixed'
- Fix up to 0.5mL with an equal volume of 99% IDA ensuring that at least 1mL is remaining for formalin fixation (see examples below), mix gently and place this in the 'alcohol fixed' vial
- Fix the remaining sample with an equal volume of 10% formalin, mix gently and place this in the 'formalin fixed' vial

For example:

- *If 2mL of sample is received. Fix 1.5mL in formalin and fix 0.5mL in alcohol*
- *If 1.25mL of sample is received. Fix 1mL in formalin and fix 0.25mL in alcohol*

Record the volume of sample and volume of fixative that is in each vial being sent onto the Institute of Ophthalmology's vitreous form. Seal the sample vials securely. Once fixed, the samples may be stored at ambient temperatures and submitted to the cytology department the following (working) day, who will arrange dispatch to the Institute of Ophthalmology.

12. Other samples

Please contact the laboratory for discussion or for advice – extension 6737

Special notes for clinician prepared slides

The slides must be labelled legibly using a lead pencil (ink will dissolve during processing), taking care not to contaminate the clear portion of the slide and before any fixative is used to ensure the labelling does not get smudged subsequently.

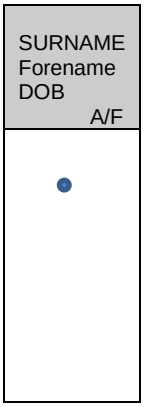
Only a small drop of material is required to make spreads. The drop should be placed at the top of slide, just below the frosted end. Spreads should then be made by gently

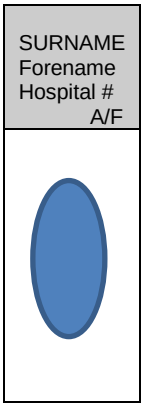
pressing and drawing the drop of material along the slide using a second plain slide, to produce a thin layer of cells. Alcohol fixed spreads must be fixed promptly to minimise air-drying artefact. Air-dried spreads must be thin enough to ensure the rapid and complete air-drying of the spread. All spreads must not extend to the side or end margins of the slide to ensure all the material is covered by the coverslip in the final preparation.

The diagrams below show the appropriate labelling format/s, the position of the small drop and the finished spread.

Frosted end of slide

Clear portion of slide to show the correct amount and positioning of a sample to produce accurate spreading





For samples that have fixed spreads, the fixative must be allowed to dry thoroughly before being placed in a slide mailer to ensure that air-dried spreads are not contaminated with any excess fixative.

Viability

The viability of samples sent for cytology is as follows:

- **Unfixed samples excluding CSFs**; up to 72 hours if stored at 2 – 8 °C.
- **CSFs**; up to 2 hours if stored at 2 – 8 °C.
- **Fixed samples in CytoLyt or Cyto Rich Red**; up to 7 days and may be stored at ambient temperatures.
- **Clinician prepared slides both fixed and air-dried**; up to 7 days and may be stored at ambient temperatures.

Samples received after the viable period as above will be reported with the following statement:
"The viability of samples for cytology is described in the Pathology Handbook. Unfortunately, this sample has been received after the viability cut-off and clinical correlation with report is advised in this case."

Transport

Prepared slides must be placed in fully labelled slide mailers separating as appropriate, any alcohol fixed and air-dried slides into separate slide mailers. Sample transport bags are available with 2 pouches. Each transport bag must only contain slide mailer/s from a single case and the associated request form – the mailer/s being sealed in the sealable pouch and the request form placed in the open pouch.

All samples must be transported to the laboratory as soon as possible (as above) to minimise the risk of cellular degradation. **Please note:** CSF samples require immediate transportation to the laboratory, as cellular degradation is rapid in these samples.

If there is any delay in transportation, fluid samples must be stored in a refrigerator until such time they are sent to the laboratory. Clinician prepared slides may be safely stored at ambient temperatures before transportation.

Clinics
A weekly fast-track Head and Neck Clinic is currently operated at the Queen Alexandra Hospital site. This service is consultant led and supported by scientific and technical staff. Its purpose is to provide rapid diagnosis thereby enabling earlier commencement of treatment for the patient. Samples must be couriered to the Pathology reception who will contact the Cytology department. The sample must then be handed directly to a member of the cytology staff by the courier. Samples must not be left in sample reception.

Cytology supplies
Laboratory request forms (for Diagnostic Cytology only) are available from the Pathology Stores at Queen Alexandra Hospital

For specific test information, please consult the Pathology Test Database.

Acceptance criteria
All specimens must be delivered to the laboratory **as soon as possible** and must be accompanied by the appropriate laboratory request form containing matching PID. With reference to the guidelines given in the Portsmouth Hospitals University NHS Trust 'Patient Identification Policy' (Ref no: 3.46) this department will accept 3 separate points of identification. All relevant clinical details including site of sample or type of sample must be written legibly in ink or printed, together with the name (legibly printed and signed) plus the contact details (bleep or extension number) of the requestor.

For further information, help or support regarding sample requirements, laboratory procedures, or ancillary testing, please contact us either by telephone or by a visit to the laboratory.

Turn Around Times

The department monitors turn around times and the target is 80% of diagnostic cytology samples to be reported within seven days and 90% to be reported within ten days.

Time Limits for Requesting Additional Examinations
Please contact the laboratory regarding individual specimens.

Referral Centres

All vitreous fluid samples are referred to;
Department of Eye pathology
UCL Institute of Opthalmology
11 – 43 Bath Street
London
EC1V 9EL
If a second opinion is required cervical cases are referred to:
First review;
Mr Geogy Thomas
MDT Coordinator
Invasive Cancer Audit
Cytology Department
St. Peter's Hospital
Guildford Road
Chertsey
KT16 0PZ

Second review
Ms Mary Madigan
London Regional Cytology Training Centre
Room 6X 006, St Marks Building
London North Hospitals NHS Trust
Northwick Park Hospital
Watford Road
Middlesex
HA1 3UJ

Andrology

Contact Number: 023 9228 **6799**
Laboratory Hours: Monday – Friday, 0900 - 1700 hrs
(NB There is no out of hours service)

Please note; the Andrology service is not accredited to ISO 15189 Medical laboratories — Requirements for quality and competence.

The Andrology section provides a diagnostic fertility semen analysis, post vasectomy semen analysis and retrograde ejaculation semen and/or urine analysis service. An assessment of the teratozoospermic index is available on request. This can be accessed by all GP's in the Trust's catchment area, all HM forces medical centres in the south and a range of hospital based clinics. Provision is also made for patients from the private sector.

Patients are seen on an appointment only basis and bookings can be made after the receipt of a referral from a relevant clinician. To book an appointment patients must telephone the laboratory on the number above. Full instructions will be provided by telephone and followed up by email.

Please note that there is a mandatory 48 hour to 7-day abstention period prior to the test.

To maintain sample viability and integrity all patients are asked to produce their sample on site in the private room in the Pathology department. All consumables pertaining to the test will be provided at the time of the appointment.

Portsmouth Hospitals University NHS Trust

HISTOPATHOLOGY DEPARTMENT

UKAS MEDICAL 8625

Clinical Lead:	Vacant
Contact Number:	
Laboratory Manager:	Michelle Jackson
Contact Number:	023 9228 **6718**
Histopathology Operational Manager	Priyen Patel 023 9228 6000 x1775
Cellular Pathology Office Contact Number:	023 9228 **6458**

Cellular Pathology is a UKAS (United Kingdom Accreditation Service) accredited testing laboratory No. 8625, (International Standard ISO 15189;2012).

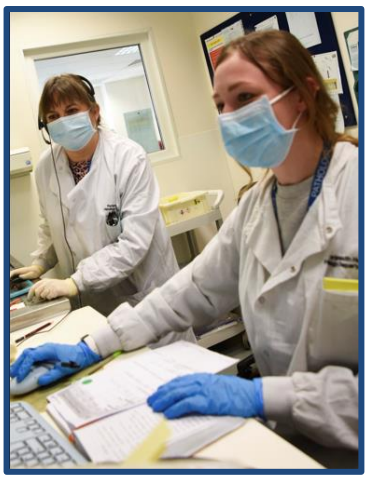
Dedicated phone number and times for General Practitioners to call for consultant advice:

Telephone: 023 9228 6375, Monday - Friday 0800 – 1730 hrs

Email address: CellularPathology.Office@porthosp.nhs.uk,
pho-tr.histosecqah@nhs.net

If your request is urgent, ensure the form is marked "**Urgent**" in red and provide contact name and phone number for report.

Location: Level F, Pathology Centre, Queen Alexandra Hospital



HISTOPATHOLOGY
Senior Staff Members

Name	Position	Telephone Number
Dr Neerja Agrawal	Consultant in histopathology. Lead for breast pathology. Additional areas of special interest: urology and lower gastrointestinal (GI) pathology.	023 9228 **6476**
Dr Surya Bera	Specialist Doctor. Area of special interest – LGI, UGI, liver and dermatopathology.	023 9228 6458
Dr Piyali Biswas	Specialist Doctor. Area of special interest – breast, gynaecological and urology pathology.	023 9228 6458
Dr Natalie Brearley	Consultant in histopathology. Lead for Renal Pathology. Additional areas of special interest: dermatopathology.	023 9228 **6000 ext. 1296**
Dr Joanna Cooke	Consultant in histopathology and diagnostic Cytology and Lead for skin pathology and soft tissue pathology. Areas of specialist interest: dermatopathology, soft tissue pathology, breast pathology and respiratory pathology.	023 9228 **6701**
Dr Victoria Doyle	Consultant inhistopathology. Lead for gynaecological pathology. Areas of specialist interest: urology and gynaecological pathology.	023 9228 **6419**
Dr Jennifer Dhundee	Consultant in histopathology and diagnostic cytology. Areas of specialist interest: respiratory and gynaecological pathology.	023 9228 6458
Dr Monserrat Giles	Consultant in histopathology. Lead for lymphoreticular pathology. Additional areas of special interest: head and neck, upper and lower GI pathology. Consultant IT lead.	023 9228 **1757**
Dr Peter Gonda	Consultant in histopathology and diagnostic cytology. Lead for perinatal pathology. Additional areas of specialist interest: dermatopathology and gynaecological pathology	023 9228 6000 ext. **1776**
Dr Marianne Mason	Consultant in histopathology and diagnostic Cytology. Areas of special interest: urological and gynaecological pathology. Lead for the Cervical Screening Programme and lead educational supervisor (specialty tutor).	023 9228 **5352**
Dr Deirdre McCormick	Consultant in histopathology. Additional areas of specialist interest: breast, dermatopathology and soft tissue pathology.	023 9228 **6841**

HISTOPATHOLOGY

Name	Position	Telephone Number
Dr Andras Nagy	Consultant in Histopathology and Diagnostic Cytology. Lead for Lower GI Pathology. Additional areas of special interest upper GI pathology, respiratory and dermatopathology. Lead for the Bowel Cancer Screening Programme. Clinical Governance Lead.	023 9228 **6426**
Dr David N Poller	Consultant in histopathology and diagnostic cytology. Lead for non-gynaecological cytology, upper GI and endocrine pathology. Reader in pathology at The University of Portsmouth. Additional areas of specialist interest: breast pathology and gastrointestinal pathology.	023 9228 **6625**
Dr Nicholas Shepherd	Consultant in histopathology and diagnostic cytology. Lead in head and neck pathology. Areas of specialist interest: breast, thyroid, upper & lower GI pathology and surgical liver cases. Consultant lead for Digital Pathology.	023 9228 **6098**
Dr Anne V Spedding	Consultant in histopathology and diagnostic cytology. Additional areas of specialist interest: head and neck pathology, GI pathology, breast, endocrine and diagnostic cytology.	023 9228 **6495**
Dr Donall Tansey	Consultant in histopathology and diagnostic cytology. Lead in respiratory and uropathology. Additional areas of specialist interest: gynaecological, breast pathology.	023 9228 **1297**
Dr Hiranya Tennekoon	Consultant in histopathology and diagnostic cytology. Areas of specialist interest: dermatopathology and renal pathology.	023 9228 **6628**
Dr Paulino Travado-Soria	Consultant in histopathology. Areas of special interest: dermatopathology, head & neck pathology, breast pathology and ocular pathology.	023 9228 **6378**
Dr Claire Way	Consultant in histopathology and diagnostic cytology. Areas of specialist interest: uropathology, lymphoma and head and neck pathology.	023 9228 **5390**
Rebecca Renouf	Clinical Scientist. Area of specialist interest: UGI, LGI.	023 9228 **6458**
Dr Katy McDermott	Consultant Biomedical Scientist.Area of specialist interest: gynaecological pathology.	023 9228 **5741**
Dr Brett Lockyer	Consultant forensic pathologist. HTA designated individual from April 2020.	023 9228 **6305**
Michelle Jackson	Cellular Pathology Laboratory Service Manager	023 9228 **6718**

HISTOPATHOLOGY

Name	Position	Telephone Number
Priyen Patel	Histopathology Operational Manager	023 9228 6000 Ext **1775**
Louise Bolton	Cellular Pathology Quality, Risk and Governance Manager	023 9228 6000 Ext **5355**

Availability

Telephone enquiries QAH: Ext 6458, Ext 6788, Ext 6628, Ext 6375
(During office hours)
Office hours: Monday – Friday 0800 – 1730 hrs
Laboratory hours: Monday – Friday 0800 – 1700 hrs
Medical Consultants: Monday – Friday 0900 – 1700 hrs
(for clinical advice & interpretation)
Technical Staff: Monday - Friday 0800 – 1700 hrs
Please note: There is a limited technical out of hours service, please see notes below.

There is no out of hours Histology reception. All specimens in formalin filled containers to be taken to Pathology Level E sample reception in a leakproof transport bag as detailed in specimens for Pathology section.

The Service

Histopathology, Cytopathology, Andrology, the Cancer Laboratory and the Mortuary form the department of Cellular Pathology here at Queen Alexandra Hospital, Portsmouth Hospitals University NHS Trust. The department is UKAS accredited under ISO 15189:2012.

The Histopathology laboratory provides a comprehensive range of diagnostic services. The medical, technical and administrative staff are all committed to offering a timely service of the highest quality to our community.

Surgical Pathology

We report a comprehensive range of diagnostic and resection specimens. All consultants take part in the Regional General Histopathology EQA scheme and specialist EQA schemes within their areas of expertise.

The areas that are reported include:

- Head & Neck Ophthalmics
- ENT
- Dental
- Upper & Lower GI
- Endocrine
- Skin
- Liver & other core biopsies
- Gall Bladders
- Appendices
- Gynae
- Bone (e.g. Hips)
- Bronchial/Lung
- Renal (including Transplant & Diagnostic Biopsies)
- Breast specimens (including Core Biopsies & Sentinel Node procedures)
- Genito-urinary (including testicular tumours & prostate)
- Plus a wide range of other specimens, e.g. Lymphomas, Haematological malignancies, etc

HISTOPATHOLOGY

We are fully committed to partaking in multidisciplinary working and the reporting staff attend MDT's within their specialist areas.

Turnaround Times

The department monitors turnaround times. The following table shows our turnaround time targets alongside the actual figure achieved over 12 months.

	Target	% reported in 7 days*
Cancer Wait Time Diagnostic [CWT-DX]	90% reported in 7 days	**76.6%**

	Target	% reported in 14 days*
Cancer Wait Time Diagnostic [CWT-TR]	90% reported in 7 days	**60.7%**
Urgent	90% reported in 7 days	**87.2%**

	Target	% reported in 42 days*
Routine [non-specialist]	98 % reported in 42 days	**87.7%**

**12-month average turnaround time August 2022 to July 2023 inclusive*

CWT cases taken for treatment purposes (CWT-TR) are frequently resection specimens and as these are more complex for example when a specimen contains bone or it is calcified, the specimen will require a period of decalcification which is likely to result in an unavoidable longer reporting turnaround time this can affect both CWT-DX and CWT-TR cases.

Currently the department is working towards improving the turnaround times for all other routine non-specialist specimens and are aiming to report them in less than 6 weeks. The current target is for 98% of all routine non-specialist specimens to be reported in 42 days.

We will be aligning our turnaround time targets to the new national standard in March 2024.

Routine Specimens

Routine specimens should be sent in the 10% formalin-filled specimen containers supplied (see below). The containers should be clearly labelled and accompanied by a completed request form giving full details of the patient's identity, reasons for the request and all relevant clinical details – also see below. Specimens are kept report has been authorised before disposal.

Specimen Labelling & Request Forms

For all specimens submitted to Histopathology the specimen container and appropriate form must be clearly labelled with sufficient information to allow unequivocal identification of the patient. With reference to the guidelines given in the Portsmouth Hospitals University NHS Trust 'Patient Identification Policy' (Ref no: 3.46) this department will accept 3 separate points of identification.

Our mandatory protocols require us to reject any specimens that do not comply with the above and we will send them back to source for re-labelling.

The identity of the consultant or GP looking after the patient and the hospital, ward, department or general practice to which the report should be sent must also be included on the form. Failure to provide these details could lead to incorrect identification and delay in delivery of the report(s) or return of the specimen if required.

Specimen Containers
A selection of formalin-filled containers are available –
60 ml, 120 ml, 250 ml, 500 ml, 1l, 2.5l& 5l.

GPs
Order forms for formalin-filled containers are available from Pathology Support Services at QAH (023 9228 6564) and the completed forms should be returned to them. Arrangements for delivery or collection are made on an individual basis.

QAH Wards
Requests to Pathology Support Services for delivery during their rounds.

QAH Maternity
When specimens are brought to the department in the appropriate black transport bag, for each specimen deposited in the laboratory a new fresh container will be supplied as a replacement – to be transported back to Maternity in the black transport bag. A stock of small formalin-filled containers can be obtained directly from Pathology Support Services, QAH Ext 6564.

QAH Theatres
Large formalin-filled containers (1l, 2.5l & 5l) should be ordered in advance from the laboratory by sending the appropriate order form by Tuesday each week. The laboratory will then prepare the order and as each delivery of specimens arrives at Histology Specimen Reception as many of the fresh containers as possible will be re-loaded into the transport bags each day until the entire order has been completed. A stock of small formalin-filled containers (60 ml & 120 ml) can be obtained directly from Pathology Support Services, Queen Alexandra Hospital Ext 6564.

High Risk Specimens
Specimens known or suspected to be infected with high-risk organisms, such as tuberculosis, hepatitis B and HIV cannot be handled unfixed by the department.

Fresh Specimens Unfixed
Prior consultation is ***essential***.

Specimens known or suspected to be infected with high-risk organisms, such as tuberculosis, hepatitis B and HIV cannot be handled unfixed by the department. During normal laboratory hours the specimen should be immediately brought to Histopathology for processing.

If a specimen is taken after 16:30 hrs, it is safer to place it in formalin, because if left without appropriate attention autolysis will occur and could be detrimental to the examination and subsequent diagnosis.

Special Fixation
Muscle biopsies – The Neuropathology Department at University Hospital Southampton must be contacted by the relevant clinic/theatre on 023 8079 4882.

Renal biopsies – During normal laboratory hours, renal biopsies should be taken immediately to the Histopathology laboratory. We endeavour to provide a same day renal service but unfortunately, we cannot guarantee it. Guidelines for delivery of these specimens are available from the laboratory. There is a specialist Renal Biopsy Request Form available within the Renal Unit, which must be fully completed.

Outside of normal laboratory hours the relevant Renal Pathologist should be contacted, and they will evaluate whether or not they require a member of the BMS staff to come into the laboratory for an emergency.

Light microscopy, immunoperoxidase techniques are undertaken at Queen Alexandra Hospital. Semi-thin resins and Electron Microscopy examination are carried out at University Hospital Southampton.

Skin biopsies for immunofluorescence – should be put in Michel's Medium - containers of Michel's Medium can be obtained in advance by ringing the Histopathology laboratory, QAH Ext 5741.

Immunofluorescence **cannot** be performed on any case where there is the possibility of tuberculosis, hepatitis or HIV.

Please do not use out of date Michel's medium. Check that the Michel's Medium is in date before use. If out of date contact the laboratory for new Michel's medium containers.

Please send the specimen to the laboratory within 2 days of putting into Michel's medium fixative.

Specimens for Cytogenetics - Lymph nodes requiring Cytogenetics should be sent to the Histopathology laboratory as soon as possible after removal in a sterile container, with **no** fixative, between 08:00 and 14:30 hrs Monday to Friday..Samples requiring Cytogenetics analysis are sent to the Cytogenetics Unit at Salisbury District Hospital.

Frozen Sections
These should be booked at least 24 hours in advance and must arrive during normal laboratory working hours except for circumstances that have had prior agreement. A medical opinion **cannot** be guaranteed without this.

The specimen must be delivered immediately to the Histopathology laboratory, in a designated 'frozen section' box, by the theatre staff.

The tissue should be in a sterile container, with **no** fixative and should be accompanied by a fully completed request form giving details of the reasons for the request and a **contact telephone number** in Theatres for the report to be issued via.

Frozen sections **cannot** be performed on any specimens known or suspected to be infected with high risk organisms, such as tuberculosis, hepatitis B and HIV.

Specimens Requiring Special Attention

Any specimen requiring special attention, e.g. preservation of fresh tissue for hormone assay, should be discussed with the medical staff. In any case where there is doubt about the handling of a specimen the laboratory should be contacted.

Urgent Requests and Cancer Wait Specimens (CWT)

These should be **clearly** identified and a medical contact given for a telephoned result. Please see the section on Turnaround times above.

If the situation is critical the case should be discussed with a member of the laboratory medical staff. Specimens from patients on the CWT pathway should be clearly marked by using the CWT stickers. Please do not use CWT stickers for any other samples as this can lead to delays in reporting true CWT cases.

Radioactive Specimens

The radioactive specimens processed in the Cellular Pathology service are a low risk of harm to human health. However, to ensure the risk is minimised we ask that radioactive specimens are identified with a radioactive hazard warning sticker applied to the specimen container and the transport box or bag. The staff member delivering the specimen must take the most direct route to Pathology and wash their hands before leaving the laboratory.
Gloves and aprons must be used to clear spillages without risking personal radioactive contamination. The laboratory must be informed if a radioactive specimen has been spilled or leaked as soon as possible. Contact the laboratory for safe disposal of the waste.

Transport / Delivery

Please refer to the "Specimen Packaging, Transport & Hazardous Samples" section at the beginning of this handbook.

Referral Laboratories

Some tests are not performed within the laboratory and specimens are sent away to referral laboratories. There will also be occasions when cases will require a second opinion from a pathologist at another centre. There may be occasions where the unavailability of a specialist reporting Histopathologist requires us to refer specimens to another laboratory for investigation.

Please **do not** contact these departments directly.For referral test information, please consult the Pathology Test Database and go to the Cell Path – Send away tests tab.

The Future

As one of the largest NHS trusts in the country, we provide acute and specialist services for almost a million people throughout Portsmouth and South East Hampshire with roughly 40,000 specimens processed a year. We continue to build our reputation for innovation and excellence, consistently delivering outstanding performance, whilst developing the skills and abilities of our staff as we go.

The Histopathology Department is committed to delivering the highest quality service to patients. We are continuing to develop our Digital Pathology into 2024 and also are working towards a replacement laboratory information management system, (LIMS). Both of which will bring benefits to the effectiveness of the service.

MORTUARY SERVICES

8625

Post Mortems

Mortuary Telephone: 023 9228 **6305**
Mortuary Email pho-tr.pathologymortuary@nhs.net

Location Level D Pathology building

Cellular Pathology is a UKAS (United Kingdom Accreditation Service) accredited testing laboratory No. 8625, (International Standard ISO 15189;2012).

Opening hours Monday – Friday 08.00 – 16.00
We undertake over 1400 post-mortems a year within our state of the art post-mortem suite, the vast majority of which are for HM Coroner. A small number of hospital consent cases are also undertaken. We aim to complete all standard Post Mortems within 5 working days.

Consultants who undertake Perinatal Post Mortems:-

Consultant Histopathologist	Dr P Gonda	0239228 1776

Dr Peter Gonda is a Perinatal Pathologist and undertakes Perinatal Post Mortems. Any requests or enquiries regarding these should be directed to the office on 023 9228 **6458**. Whenever Dr Gonda is unable to undertake these, arrangements will be made for cases to be referred appropriately.

Adult Post Mortems are also undertaken by the following external Pathologists:
Dr A Al-Badri
Dr J O'Higgins
Dr B Lockyer

Dr B Lockyer is the Designated Individual under the Human Tissue Authority requirements.

Issuing a Death Certificate

A death certificate should normally be issued by the Medical Officer looking after the patient during their terminal illness. The Bereavement Officer will assist in the completion of these.

Post Mortems

In some circumstances a death certificate cannot be issued and the death has to be referred to HM Coroner, via the Coroner's Officer, who may decide that a Post Mortem is necessary. Some examples of these include:

- In all cases where death is not considered to be due to natural causes, including all violent deaths, deaths due to injury at work or at home, deaths following road traffic accidents, poisoning (accidental or deliberate), including deaths due to drugs of addiction.
- Deaths due to alcohol.
- Suicide.
- If doubt exists as to the cause of death.
- If death is thought to be due to an industrial disease, e.g. exposure to asbestos.
- Deaths occurring during or within one year of receiving a general anaesthetic before an operation.
- Deaths which have occurred 14 days or more since having been seen by a medical practitioner.
- Deaths occurring as a result of neglect by self or others.
- Those cases where the standard of medical care is questioned should also be referred.
- Any baby dying in the first month of life.
- Sudden infant death.
- Deaths in prison or in any place of detention.
- Deaths the recurrence of which would be prejudicial to the community, e.g. Weil's disease, anthrax.
- Death of someone in receipt of a war or industrial benefit pension.

Value of a Post Mortem

Clinical (hospital) Post Mortems may not be performed without the permission of the relatives. It is important that the person requesting the Post Mortem should themselves be aware of its value.

Despite sophisticated diagnostic techniques significant discrepancies between clinical and Post Mortem diagnoses still remain.

Post Mortems are necessary to ensure accuracy of death certification. Policies for future health care are based on statistics derived from death certificates.

Post Mortems provide a good index of medical care. An overall rate of about 35% of hospital deaths has been suggested as necessary to allow such analysis.**

** The Autopsy and Audit, Report of Joint Working Party of the Royal Colleges of Pathologists, Physicians and Surgeons, 1991.
https://www.rcpath.org/profession/guidelines/autopsy-guidelines-series.html

Asking for Permission for a Post Mortem (consented Post Mortem)
The decision to ask for a Post Mortem should come from the senior members of staff caring for the patient and permission should be sought from the relatives by a senior doctor who has been involved in this care. The reason for the investigation should be explained and the relatives given the information leaflet on Post Mortem examination. The consent form must be completed fully and a copy given to the relatives. The next of kin may also request a hospital post mortem.

The design of the consent form allows the relatives to agree to a full examination or to decline some aspects, e.g. removal of some tissue for examination. If a limited Post Mortem is requested, the limitations must be stated. A supplementary page is available at the end of the consent form to allow additional requests such as who should receive a copy of the report. Limited Post Mortems may, in some circumstances, frustrate any attempt at performing a useful examination.

If the Clinician has not been formally trained in taking post mortem consent then they must have a trained consent taker present.

It is essential that any risk of infection, e.g. tuberculosis, hepatitis, HIV and Creutzfeldt Jacob/prion disease is identified either on the Post Mortem consent form or to the Coroner's Officer.

Where a post mortem has taken place a copy of the post mortem report will be sent to the consultant in charge of the case and to the GP of the deceased.

Viewings
The Mortuary offers a viewing service for relatives or next of kin. This service is by appointment only. This can be arranged by the relative or next of kin telephoning the Mortuary direct.

There is an emergency on call service for outside of normal working hours. This service can be accessed by contacting the hospital switchboard on 02392 286000 and asking for the duty Mortuary technician.

Important information regarding Implantable Cardioverter Defibrillators (ICDs)
Non-deactivated ICDs pose an electrocution risk to colleagues carrying out Post-Mortems.

Please remember that it is the responsibility of the Clinician completing the Portsmouth Hospitals University NHS Trust Device Removal Form to contact the Cardiac Investigation Unit (CIU; Ext 6253/3682) in order to have the device inactivated.

Toxicology Samples
Toxicology samples are taken on the instruction of the Pathologist and can include blood, urine, stomach contents, vitreous fluid or samples of the liver.

The samples are referred to the laboratory below for testing;

Hampshire Scientific Services
Universal Services
Hampshire County Council
Hyde Park Road
Southsea
Hampshire
PO5 4LL

Organs referred following Post Mortem
Organs may be referred for special analysis following a post mortem (adults and perinatal). The organs will be sent to the appropriate centre listed below.

St George's University hospital
Cranmer Terrace
London
SW17 0RE

University Hospital Southampton
Tremona Road
Southampton
SO16 6YD

Information for Funeral Directors
Further details on the Portsmouth Hospitals University NHS Trust terms of storage and collection of the deceased are available on request from the Cellular Pathology Laboratory Manager.

CLINICAL MICROBIOLOGY

Clinical Lead: Dr Sarah Wyllie
Contact Number: 023 9228 **1713**

Laboratory Manager: Allyson Lloyd
Contact number: 023 9228 **6866**

Operational Managers: Tony Beddoes
Contact number: 023 9228 **1728**

Quality Lead: Dot Holubinka
Contact number: 023 9228 **1728**

UKAS MEDICAL
8660

Speciality e-mail address: allyson.lloyd@porthosp.nhs.uk

Microbiology is a UKAS (United Kingdom Accreditation Service) accredited testing laboratory No. 8660, (International Standard ISO 15189;2012).

Routine laboratory opening hours:

Monday – Friday	0800 – 2000 hrs
Saturday/Sunday/Bank Holiday	0900 – 1700 hrs

Telephone: 023 9228 **6201**
Fax number: 023 9238 **8395**
Location: F Level, Pathology Centre, Queen Alexandra Hospital, Cosham

Senior clinical staff in Clinical Microbiology
Telephone 023 9228 6000 then extension:

Dr Sarah Wyllie – Microbiology Clinical Lead, Consultant Medical Microbiologist and Infection Prevention & Control Doctor	Ext:**1713**
Dr Helen Chesterfield – Consultant Medical Microbiologist and Deputy Infection Prevention and Control Doctor	Ext: **1731**
Dr Andrew Flatt – Consultant Medical Microbiologist & Clinical Director of Clinical Support Care Group	Ext: **1724**
Dr Ruan Simpson – Consultant Medical Microbiologist & Deputy Clinical Director of Southern Counties Pathology network	Ext: **6886**
Kelly Bicknell – Consultant Clinical Scientist, Virology	Ext: **6872**

Laboratory opening hours:
Monday – Friday: 0800 – 2000 hrs
Saturday/Sunday/Bank Holiday: 0900 – 1700 hrs

The Service
The Department of Clinical Microbiology is situated in a state-of-the-art purpose-built Pathology Centre at the Queen Alexandra Hospital in Cosham. The Laboratory is a Collaborating Laboratory with the Health Protection Agency (HPA) and provides a comprehensive range of diagnostic and clinical microbiology services including:

- Bacteriology culture and sensitivity
- Mycology
- Parasitology
- TB diagnostic service
- Hepatitis and other diagnostic serology
- Antenatal serology
- Chlamydia screening using molecular techniques
- Virus and bacterial rapid antigen detection
- Molecular testing for other viruses
- Clinical advice on diagnosis, interpretation of results and treatment of bacterial and viral infections
- Infection control advice
- Public Health investigations and advice on management including outbreaks
- Education/training on all aspects of microbiology

The Department of Clinical Microbiology is committed to providing a high-quality professional service at all times. To achieve this, the laboratory ensures compliance with relevant standards and requirements for accreditation.

The service is led by Consultant Microbiologists and has highly trained and experienced Biomedical Scientists. The Department is continually auditing all aspects of the service and participates in national external quality assurance programmes. The overall performance of the laboratory in the national programme is above average when compared with other laboratories.

The laboratory is committed to improving the service provided to its users and welcomes any suggestions or requests for service development and improvement. Views and requirements of uses are sought through the Pathology user survey (annually) and the complaints, patient experience, plaudits and staff excellence reporting processes within the Trusts Datix system.

Clinical Advice

Consultation and advice are always available, but essential in the investigation of an outbreak, or admission of patient with probable highly infectious disease.

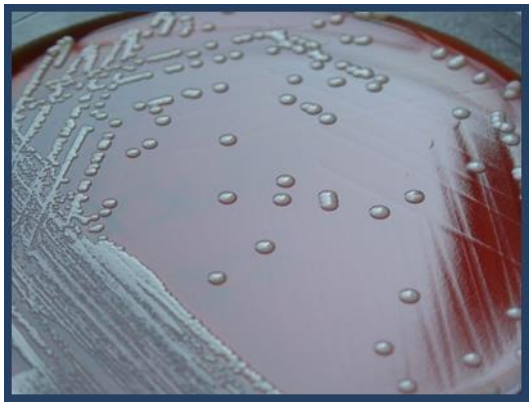
Receipt of Specimens

Bacteriology specimens should arrive in the laboratory before 1930 hrs on weekdays and 1630 hrs on Saturday/Sunday and Bank Holidays if they are to be processed the same day. Some samples for molecular diagnosis, (plasma samples for CMV & EBV viral loads) have a maximum time delay between collection and testing. For specific test information, please consult the Pathology Test Database.

During routine opening hours, **Urgent** requests should be advised by telephone Ext 6201 or 1715 at Queen Alexandra Hospital and the request form marked **Urgent.**

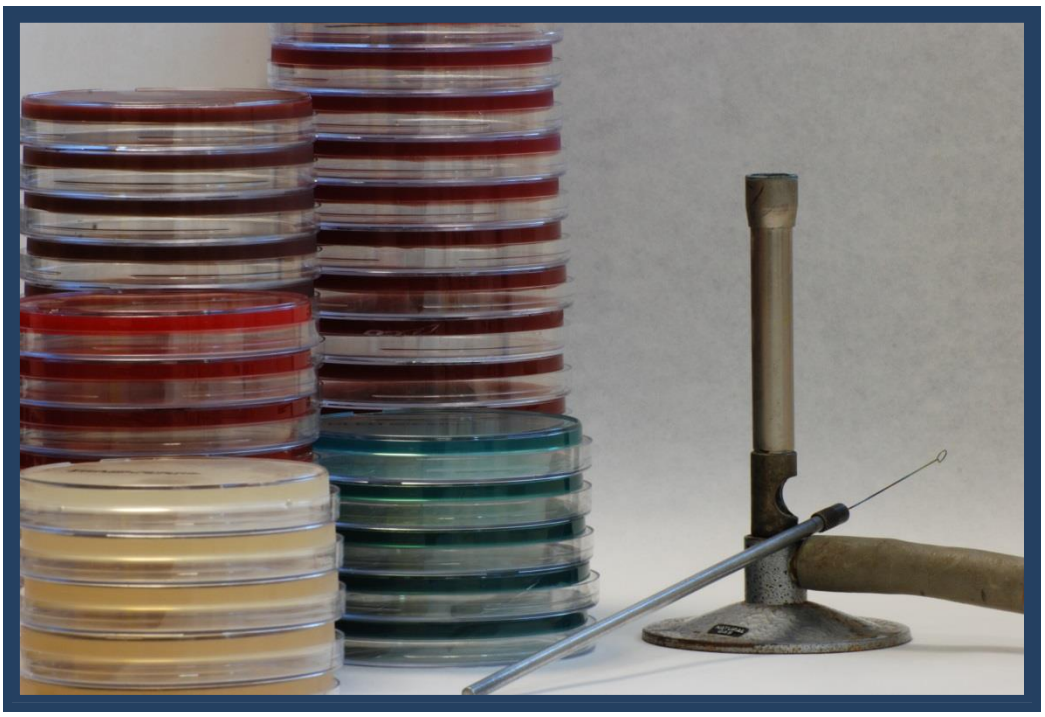
Requests marked urgent for which the laboratory has not been contacted will be treated as routine

An emergency service is provided at all other times for urgent diagnostic testing and medical advice.



Request Forms

All specimens must be in an appropriate container, properly labelled and accompanied by an adequately completed yellow Microbiology request form (or OCM form if electronically requested); include clinical details, recent travel and current/proposed antibiotic therapy. Both Specimens and request forms need 3 points of patient identification, out of patient Surname, Forename, Hospital / NHS Number or Date of Birth, otherwise it is likely they will be rejected. Do not forget to give your name (legibly) and the ward/department/practice, in case we need to contact you urgently; also so that the reports can be returned to the correct requesting location.



Outside Normal Working Hours

Technical Support

Urgent specimens will be handled by the Biomedical Scientist (BMS) on duty who must be contacted directly via the hospital switchboard telephone: 023 9228 6000.

The following specimens are considered urgent and are examined by the departmental On Call technical staff:

1) Urines for microscopy and culture (urgent NOT pre-operation screens)
2) CSF for microscopy, culture & sensitivity
3) Corneal scrapes / vitreous taps for microscopy, culture & sensitivity
4) Wound swab / tissue (excluding examinations for mycobacteria)
5) Joint aspirates / tissue for microscopy, culture & sensitivity
6) Ascitic fluid & CAPD fluid for cell count and culture
7) NBL's for culture (after agreement with a Consultant Microbiologist)
8) Blood from patients requiring dialysis for viral serology
9) Blood from potential cadaveric organ donors for viral serology
10) Blood from potential renal graft recipients for viral serology

11) Blood for HIV antibody / antigen testing for GuMed (needle stick checks)
12) Blood for Antenatal screening if considered a Fast-Track screen. E.g. Unbooked patient in labour.
13) Blood for VZV IgG antibody testing (after agreement with Consultant Microbiologist)
14) Issue of immunoglobulins for Hepatitis B and ZIG (after agreement with Consultant Microbiologist)
15) NPA's for RSV antigen testing (after agreement with Consultant Microbiologist)

The duty BMS is not authorised to deal with specimens which should properly be submitted during the working day.

Clinical advice outside normal working hours
Medical advice can be obtained by contacting the duty doctor through the hospital switchboard.

Specimen information
For specific test information on the following investigations, please consult the Microbiology page of the Pathology Test Database. The Pathology Test Database provides details on specimen requirements for specific tests including primary volumes and special precautions, however 'biological reference ranges' and 'clinical decision values' are not routinely provided as the significance of a result is dependent upon the clinical context. Any potentially significant finding will be reviewed by a member of the Clinical Microbiology team and an appropriate interpretive comment added if required. In order to facilitate interpretation it is vital that relevant clinical details are included on the request form.

- **Bacteriology Specimens**
- **Virology Specimens**
- **Culture / Antigen Detection**
- **Nucleic Acid Detection / Antigen Detection**
- **Serology (Antibody Detection)**
- **Antibiotic Assays**

Guidance for Mycology specimens is available at the end of this section.

For tests not performed by the Department of Clinical Microbiology, but referred to external Reference laboratory's, please consult the "Microbiology send aways" page of the Pathology Test Database.

Microbiology test selection
Below is a suggested list of tests to guide the investigation of infection causing common syndromes, this list is not exhaustive and further syndromes as well as guidance upon empirical antibiotic use can be found on the Microguide application (available on the trust intranet and can be downloaded to mobile devices).

Sepsis;

Neutropenic sepsis

- Blood cultures
    - If patient has a long line, paired blood cultures should be sent.
- Full blood count, U&Es, lactate, CRP, and LFTs
- Urine for MC+S
- If symptoms of sore throat send throat swabs for fungal/bacterial culture as well as a virocult swab for Herpes PCR
- If diarrhoea send stool for full enteric screen and C.diff
- If lower respiratory tract symptoms send sputum for MC+S and viral respiratory screen (or combined nose/throat virocult swab for PCR if not productive), and urine for Legionella and Pneumococcal antigen testing.
- Drain fluid if present
- Wound swabs as appropriate

Sepsis of unknown origin

- Blood cultures before giving antibiotics
    - If patient has a long line, paired blood cultures should be sent.
- Urine, sputum, drain fluid, wound swabs as appropriate

Invasive Fungal Infection (IFI)

This is most commonly seen in the setting of immunocompromised patients and the initial site of infection is most commonly chest. All cases should be discussed with Microbiology. The following tests should be sent as part of the routine work up.

- Blood cultures
- Serum for CMV IgG/M and CMV PCR if IgG positive (CMV pneumonitis can mimic IFI)
- If respiratory infection, sputum (or ideally BAL) for M,C+S, fungal culture, respiratory viral PCR, CMV PCR (if IgG pos), PCP, AFBs, galactomannan
- Serum for beta-glucan/galactomannan
- If infection is not pulmonary tissues samples (either diagnostic biopsy or intra-operative samples) should be sent for M,C+S **and** histology.

Respiratory tract infections;

- Sputum for MC&S
- Send blood cultures in severe pneumonia as a screen for associated bacteraemia.
- Consider pneumococcal urinary antigen. If specific risk factors for Legionella infection send urine for legionella urinary antigen (consultant Microbiologist approval only)
- HIV test for patients with confirmed pneumococcal pneumonia
- If pleural effusion tapped/drained, please send sample for M,C+S
- If atypical/viral infection suspected send respiratory specimen for respiratory PCR, or throat virocult swab if patient is not productive of sputum.
- If influenza suspected please ensure that patient is isolated and use full respiratory precautions whilst waiting for results.
- TB T Spot. This is an IGRA (Interferon Gamma Release Assay), which detects exposure of effector T cells to Mycobacterium tuberculosis. This test is controlled by the TB team- all requests should be discussed with them directly.

  Samples should be collected in lithium heparin or sodium heparin tubes (Green top tubes)

- Typically, in immunocompetent patients, sufficient peripheral blood mononuclear cells (PBMCs) to perform the T-SPOT.*TB* test can be obtained with the following age-dependent guidelines:
  - Adults and children ≥ 10 years of age: 6 mL
  - Children ≥2 to <10 years of age: 4 mL
  - Children <2 years of age: 2 mL

Please note: The above guidelines may be insufficient in immunocompromised patients with low numbers of PBMCs. Therefore, it may be advisable to collect double the recommended blood volume for immunocompromised patients.

Genitourinary system;

Urinary Tract Infection

- Urine sample for M,C+S
  - Please ensure type of sample is accurately recorded (ie MSU, CSU, CCU, SPA, Nephrostomy urine) as this will impact on how the sample is processed in the laboratory. Please also state if there is prosthetic material in the renal tract (stents, etc).
  - Do not routinely send Bag urines for investigation of suspected UTIs.
- Send blood cultures if patient is systemically unwell

Epididymo-orchitis

- MSU for MC&S
- Urethral swab (Charcoal swab) for M,C &S (for gonococcus)
- First pass urine or urethral swab (Apitma Hologic swab) for Chlamydia & Gonococcus PCR (if in STI risk group)
- Consider HIV test

Prostatitis

- Urine for M,C+S
- Blood cultures is systemically unwell
- Consider screening for Chlamydia/Gonorrhoea if patient has risk factors (Aptima swab/urine kit)

Renal & perinephric abscess

- Urine for M,C+S
- Blood cultures
- Ensure pus is sent for M,C+S if abscess is drained/aspirated
- If TB is a possibility, send 3 Early morning urines for AFB culture

Genital ulcers

- Wound swab for M,C+S
- Virocult wound swab for PCR (HSV1+2 and syphilis)
- Serum for HIV and syphilis serology
- Aptima Hologic swab for Chlamydia/Gonococcal NAATs

Gastrointestinal;

Intra-abdominal infection

- Blood cultures (paired if patient has a long line in situ)
- If diarrhoea – please send a stool sample for MC&S +/- C.diff testing.
- At operation or insertion of drain ensure **intra-abdominal fluid or pus is sent in a sterile universal container** (preferred to a swab) **for microscopy, culture & sensitivities (M,C&S)**

- Wound swab only if tissue/pus/fluid sample can not be obtained from this site

Liver abscess

- Blood cultures
- Abscess aspirate / pus sent for M,C&S (specify parasitology if risk of parasitic infection)
- If risk factors (travel/ occupational): send Amoebic & Echinococcal serology (red-topped bottle) which may help differentiate between parasitic and bacterial aetiology in a non-endemic area. Note: serology cannot necessarily distinguish between active and prior infection.

Spontaneous Bacterial Peritonitis

- Blood cultures
- Ascitic fluid. This sample should be processed urgently, please inform the lab when the sample has been taken. The sample should be inoculated into:
    - Blood culture bottles ***and***
    - A sterile universal container (at least 1ml) and sent to microbiology for cell count and culture.

Diarrhoea

- Community acquired
    - Stool for full enteric screen
    - If relevant travel history request faecal parasite screen and vibrio culture
    - Paediatric samples will also routinely be tested for viral gastroenteritis
- Hospital acquired
    - Routinely only screened for C diff. If concern re other infective causes of diarrhoea in an inpatient please discuss with Microbiology.

Hepatitis

- Serum for viral hepatitis screen
    - Hepatitis B and Hepatitis C serology
    - If acute hepatitis (ALT >300) or immunosuppressed consider Hepatitis A and Hepatitis E serology
    - Consider EBV/CMV serology
- Viral loads
    - Hepatitis C serology does not differentiate between current and past infection- please send 2 EDTA samples to Microbiology for viral load testing to clarify if the infection is on going. These must arrive in the lab within 24 hours of being taken.
    - Hepatitis B viral load testing can also be performed where required on 2 EDTA samples (serology can differentiate between current and past infection so mainly used by Hepatology to monitor patients)
    - Qualitative hepatitis E viral load testing can be carried out on serum and will be added on by the laboratory when clinically indicated. If quantitative testing is required please ensure an EDTA sample is sent. Serology is not sufficient to exclude hepatitis E in immunosuppressed individuals and PCR should be performed- please ensure adequate clinical details are provided to ensure appropriate testing.

Skin and soft tissue infections;

Cellulitis

- Blood cultures if systemically unwell
- Wound swabs where possible
- MRSA screen

Diabetic foot infection

- Blood cultures if systemically unwell
- A deep specimen obtained by curettage from the base of the ulcer or wound after thorough cleaning and debridement.
    - **Deep tissue samples or pus taken at operation are most useful.**
    - Superficial wound swabs will be contaminated.
- MRSA screen

Necrotising Fasciitis

- Blood cultures
- Tissue/pus/fluid taken at time of debridement (preferable to wound swabs)
- MRSA screen

Rashes

Consider sending serum for any patient presenting with a rash- ensure correct clinical details are provided and the laboratory will undertake appropriate testing. If HIV is considered in the differential please ensure this is requested on the form.

Vesicular rash

- Virocult swab of vesicle fluid for PCR
- Wound swab for M,C+S (exclude secondary infection)
- Blood cultures if systemically unwell
- If clinical concern regarding disseminated HSV/Varicella, consider sending EDTA for PCR

Possible Measles

This is highly contagious. Please ensure patient is isolated with respiratory precautions and notify Microbiology as soon as possible.

- Viral throat swab for Measles PCR
- Serum for measles IgM and IgG

Central Nervous System;

Encephalitis

- Blood cultures
- CSF **(ideally pre-antibiotics, do not delay antibiotic administration >30 minutes)**
    - M,C+S
    - Viral PCR
    - Listeria PCR if risk factors (extremes of age and immunosuppression)
    - Other tests may be required depending on patient's risk factors, please discuss with Microbiology
- Viral throat swab
- Vesicle swab (if present) with virocult swab
- HIV test
- Please check patient's travel history and discuss with Microbiology

Meningitis

- Blood cultures
- CSF (ideally pre-antibiotics, do not delay antibiotic administration >30 minutes)
    - M,C+S
    - PCR as appropriate
- Bacterial throat swab
- Viral throat swab
- EDTA for meningococcal PCR
- If post neurosurgical patient, consider sampling from drains/shunts if present- please discuss with Wessex Neuro

CJD/Prion disease

If a prion disease is suspected, please discuss with Microbiology before taking any samples.

Cardiovascular;

Implanted prosthetic device infection

- At least 2 sets of blood cultures prior to antibiotics
- Wound swab from box site if wound has dehisced
- If device is explanted, please send the device +/- debrided tissue for M,C+S

Endocarditis

- Send at least 3 sets of blood cultures taken from different sites, at least 6 hours apart prior to staring antibiotics unless patient is acutely unwell
    - If acutely unwell, take ≥2 sets of blood cultures in the first hour then start antibiotics
- Serology for culture negative endocarditis
- If a cardiac device is explanted in a patient with Endocarditis please ensure this is sent for culture

Sternotomy wound infection

- Blood cultures if systemically unwell
- Wound swab for M,C+S
- Pus if drainable collection present

Bone and Joint

Native septic arthritis

- Blood cultures
- Joint aspirate (prior to antibiotics if possible)
- Intra-operative tissue/fluid samples if relevant
- MRSA screen

Osteomyelitis

- Blood cultures
- Deep bone biopsy if possible (either diagnostic or during surgical debridement)
- Superficial wound swabs if applicable and unable to get deep sample (caution when interpreting result as likely to grow colonising flora, however if a classical pathogen is isolated, eg Staph aureus, it may help guide treatment)

Prosthetic device infection

- Unless patient is systemically unwell, please avoid prescribing antibiotics until intra-operative samples have been obtained. If patient is already on antibiotics and is stable, consider stopping these prior for several days prior to going to theatre.
    - A minimum of 5 deep intra-operative tissue samples should be obtained
    - If patient is systemically unwell and requires antibiotics prior to being taken to theatre, ensure blood cultures are taken before antibiotics and consider joint aspirate if possible.
    - Culture negative samples can be sent for 16S PCR if high index of suspicion of infection and/or antibiotics given prior to sampling; however it should be noted that PCR is only capable of providing identification, it can not give sensitivity data.

Obstetric and Gynaecological infections;

Pelvic Inflammatory Disease

- Vaginal swabs to test for gonorrhoea and chlamydia in the low vaginal tract.
    - Endocervical swab (Aptima swab) for gonorrhoea and chlamydia NAATS
    - Endocervical swab (Charcoal) for MC&S
    - High vaginal swab (Charcoal) for MC&S
- Blood tests: an elevated CRP will support the diagnosis, but is non-specific
- Pregnancy test
- Urine dipstick
- Serology screening for sexually transmitted infections including HIV
- Blood cultures if febrile or systemically unwell
- Fluid if a collection if drained/washed out surgically

Post operative infections;

- **Superficial wound infections**
    - Wound swab
    - Blood cultures if systemically unwell
    - Drain fluid if present
- **Deep infection**
    - Intra-abdominal pus or fluid (obtained at drainage): please send in a sterile universal container. Please do not send wound swabs if pus/fluid is available.
    - Blood cultures is systemically unwell

Bacterial vaginosis, Trichomonas vaginalis and vulvovaginal candidiasis;

- High vaginal swab from the anterior fornix

Chlamydia and Gonorrhoea

Please send one or more of the following using **Aptima Hologic** kits:

- Vulvo- vaginal (Vulvo-vaginal swabs are the specimen of choice as they have a higher sensitivity than cervical swabs)
- Endocervical
- Rectal swab (if clinically indicated)
- Throat swab (if clinically indicated

- First void urine (patients should hold urine for 1-2hrs, collect the first 20ml of the urinary stream) samples may also be used to detect Chlamydia infection, but have a lower sensitivity.
- **Conjunctivitis**
- Please send **virocult** swab if Chlamydia infection is suspected.
- Please send a charcoal swab for culture is Gonococcal infection is suspected.

Head and neck;

Tonsillitis/Quinsy

- Throat swab for M,C+S
- Pus if collection aspirated
- Blood cultures if systemically unwell

Epiglottitis/Supraglottitis

- Blood cultures
- Throat swab for M,C+S
- Viral throat swab

Mastoiditis

- Blood cultures
- Ear swab for M,C+S

Parotitis (usually unilateral if bacterial, bilateral if viral)

- Blood cultures if systemically unwell
- Serum sample for mumps serology (please send acute and convalescent sera)
- Salivary test kit (request from PHE)

Otitis Media/Externa (including MOE)

- Ear swab for M,C+S

Opthalmology;

Conjunctivitis

- Eye swab for M,C+S
- Virocult eye swab if concern over Chlamydia infection

Corneal ulcers

- Eye swab for M,C+S
- Viral swab if concern over HSV
- If patient is contact lens wearer, please send lenses and pot

Endopthalmitis

- Blood cultures
- Aspirate for M,C+S
- Superficial swab for M,C+S if unable to aspirate

Travel-Related Infection;

Please discuss infections in returning travellers with Microbiology to guide investigations and empiric treatment (if required). Please ensure that you have taken a detailed travel history including dates of travel; reason for travel; itinerary of trip; immunisation history and malaria prophylaxis use (if relevant); and history of exposure to animals, fresh water and local population.

Malaria

- EDTA sample for Microscopy (thick and thin films) and antigen test
    - To exclude malaria please send 3 samples collected on different days (preferably taken whilst patient is febrile)

Suspected viral haemorrhagic fever

- Please ensure patient is isolated and discuss case with duty/on call Microbiology Consultant prior to taking any samples

Zika virus

- Please review latest guidance which can be found at https://www.gov.uk/guidance/zika-virus-sample-testing-advice
- If testing is indicated please send serum (and EDTA and or urine if recommended) along with a completed RIPL request form (https://www.gov.uk/government/publications/rare-and-imported-pathogens-testing-form-to-submit-sample)

Please discuss with Microbiology if advice is required.

Guidance on the collection of Mycology specimens.

Skin Mycology

Patients' skin and nails can be swabbed with 70% alcohol prior to collection of the specimen, this is especially important if creams, lotions or powders have been applied. The edges of skin lesions yield the greatest quantities of viable fungus. Lesions should be scraped with a blunt scalpel blade. If insufficient material can be obtained by scraping and being placed in a container, then a swab or sticky tape can be pressed on the lesion and transferred to a clean glass slide for transport to the laboratory ('stripping'). Samples in containers achieve the optimum results. Skin stripping's-Transparent waterproof adhesive tape is applied to the infected area, peeled off and stuck to a sterile microscope slide for examination.

Nail Mycology

Good nail samples are difficult to obtain. It should be specified whether the sample is from the fingernails or toenails. Material should be taken from any discoloured, dystrophic or brittle parts of the nail. The affected nail should be cut as far back as possible through the entire thickness and should include any crumbly material. Nail drills, scalpels and nail elevators may be helpful but must be sterilized between patients. When there is superficial involvement (as in white superficial onychomycosis) nail scrapings may be taken with a curette. If associated skin lesions are present samples from these are likely to be infected with the same organism and are more likely to give a positive culture. Sample from associated sites should be sent in separate packets.

Hair Mycology

Samples from the scalp should include skin scales and hair stumps. Cut hairs are not suitable for direct examination as the infected area is usually close to the scalp surface. Scraping for direct examination is the preferable sample collection method, however plastic hairbrushes, scalp massage pads, swabs or plastic toothbrushes may be used to sample scalps for culture where there is little obvious scaling. If

sufficiently long, hairs should be plucked with forceps and wrapped in black paper or commercial transport packs together with flakes of skin. Collect specimens other than swabs into appropriate CE marked leak-proof containers and place in sealed plastic bags.

Type of Mycology container and additives

Specimens should be collected into folded paper squares secured and placed in a plastic bag, in commercially available packets designed specifically for the collection and transport of skin, nail and hair samples or in appropriate CE marked leak-proof containers placed in a sealed plastic bag. Skin scrapings may be received between two glass microscope slides sealed together with sticky tape.

Adequate quantity and appropriate number of Mycology specimens

Numbers and frequency of Myclogy specimen collection are dependent on clinical condition of patient. The minimum amount that is acceptable should be enough to cover a five pence piece.

Optimal time and method of collection for Mycology specimens

Collect specimens before antifungal therapy where possible. Specimens should be kept at room temperature and transported and processed as soon as possible although, provided the samples are kept dry, the fungus will remain viable for several months. Samples should be allowed to dry out and kept at room temperature.

Specimen transport of Mycology specimens

There are several proprietary brands of transport package available for the collection and transport of skin, nail and hair samples. Skin and hair samples are usually received in this type of packet or between two glass slides which have been taped together. Nail samples are usually received in a screw capped polycarbonate universal container.

Sample types

Blood cultures Please **DO NOT** remove barcode stickers- these are for laboratory use not to be put in medical notes. Note- paediatric samples see below. Instructions for collection are available here.	
Paediatric Blood Cultures "PFP" Plus bottles (Yellow cap) Note: Paediatric samples use only one PFP Plus bottle. *For guidance on optimal blood volume of paediactirc blood culture bottles, see table on page 90.	
Swab for M,C+S	
Pernasal swab (for pertussis culture)	

Viral swab (virocult)	
Aptima Hologic swabs /urine kits For Chlamydia/ Gonococcal PCR (for eye swabs please use virocult swab)	 Unisex swab for: Male urethra Female cervical Vaginal swab for: Vaginal collection (usually self-taken) Urine container for: First Catch Urine (male or female)
Universal container (for any fluid or tissue sample)	
Stool specimen containers	
Universal container with boric acid (for urine samples)	
EDTA (Purple top) For Meningococcal and viral PCR (please send 2 tubes for all viral load testing)	

Serum (Red or Gold) Serology can be performed on samples sent using either tube. **Please note, antifungal assays can only be sent in plain clotted tubes (red top).**	
TB T Spot test (Green top Lithium Heparin tube) *This test is controlled by the TB team- please discuss all cases with the TB team before performing this test	

*Recommendations for optimal blood volume of paediatric blood culture bottles based on self-defined age or weight classes.

Adapted from Huber *et al*. The correct blood volume for paediatric blood cultures: a conundrum? *Clin Microbiol Infect*. 2020;26(2):168-173. Reproduced with permission.

Patient weight (kg)	Total blood volume[a] (mL)
≤2.0	1.0 - 4.5
>2.0 - 5.0	1.0 - 6.0
>5.0 - 10.0	1.5 - 10.0
>10.0 - 20.0	6.0 - 23.0
>20.0 - 30.0	≥10.0
Patient age	**Total blood volume[a] (mL)**
<1 y	>0.5 - 3.0
≥1 - 3 y	1.0 - 4.0
>3 - 10 y	3.0 - 8.0
≥10 y	20.0

PHLEBOTOMY

Manager:	Sandra Ponsford
Contact Number:	023 9228 **6759**, or Bleep 1093
Deputy Manager:	Alison Weaver
Contact Number:	023 9228 **6759**
Phlebotomy Coordinator:	Claire Searle
Contact Number:	023 9228 **6759**

Sandra Ponsford

Speciality e-mail address: Sandra.ponsford@porthosp.nhs.uk

Location: Blood Taking Level C, Queen Alexandra Hospital

The Service
Portsmouth Hospitals University NHS Trust has a dedicated team of Phlebotomists.

Services and Specialist Clinics provided by the department
The Phlebotomists cover the following areas during the times listed:

All wards at QAH:	Monday – Friday	0800 – 1200 hrs
	Saturday	0700 – 1100 hrs
	Sunday C Level / E Level	0700 – 0930 hrs

Phlebotomy Outpatient Blood Taking Clinics
Portsmouth Hospitals University NHS Trust provides phlebotomy clinics for patients who have requests for blood specimens from hospital clinics and consultants (see the table below). Requests from General Practitioners are now collected at clinics that are organised and run by GPs/CCGs, often at the surgery or one close by.

Portsmouth Hospital's University NHS Trust support a number of blood taking clinics in peripheral sites, these are closed on Bank Holidays. All patients attending these clinics must bring with them their blood request form and attend at their allotted time slot. With the exception Queen Alexandra Clinic all clinics are appointment only. The clinic at Queen Alexandra can be contacted on 023 9228 6759 for advice.

PHLEBOTOMY

Clinic	Availability	Time	Telephone Number
Walk in:			
Queen Alexandra Hospital (C Level)	Monday – Friday	0745 – 1645 hrs	Appointments on 07546 760609
Appointment Only:			
Fareham Community Hospital	Monday Wednesday Friday	0800 – 1230 hrs 0800 – 1230hrs 0800 – 1230hrs	02392 681755 Appt. only
Gosport War Memorial	Monday Tuesday Wednesday Friday	0800 – 1415 hrs 0800 – 1415 hrs 0800 – 1415 hrs 0800 – 1200hrs	02392 681755 Appt. only
Petersfield Hospital	Monday Tuesday	0700 – 1215 hrs 0700 – 1215 hrs	02392 681755 Appt. only
St Mary's Hospital Campus	Monday Tuesday Wednesday Thursday Friday	0700 – 1415 hrs 0700 – 1315 hrs 0700 – 1415 hrs 0700 – 1315 hrs 0700 – 1315 hrs	No appointment necessary

Any complaints or concerns related to the PHT Phlebotomy Service please contact PALS (Patient Advice & Liaison service) on 02392 286309 or 0800 9176039

Patients attending Out Patient Clinics at St Mary's Hospital should visit the phlebotomy facilities at SMH – by appointment only. For appointments, please telephone 023 9268 0275.

Patients attending Out Patient Clinics at QAH should visit the phlebotomy facilities at QAH.

GP patients requiring phlebotomy should attend the phlebotomy service nearest their Surgery, Health Centre or Medical Centre. Alternatively, patients can telephone 023 9228 6587 for up to date information on clinics available. We regret that we are unable to see GP patients on the QAH site.

There are no clinics providing a GP or outpatient phlebotomy service on Saturdays, Sundays or Bank Holidays.

SUPPORT SERVICES
SUPPORT SERVICES DEPARTMENT

Manager:	Tania Forder
Contact Number:	023 9228 **6057**

Speciality e-mail address: Pathologysupport@porthosp.nhs.uk

Location: Level E, Pathology Centre, Queen Alexandra Hospital

The Service

The main functions of the department are:

- Distribution of Pathology reports to wards and departments within Portsmouth Hospitals, GP surgeries and other external sources.
- Visitor and patient reception.
- Help desk facilities for handling result and general enquiries.
- The receipt and distribution of stores and consumables.
- Invoicing.

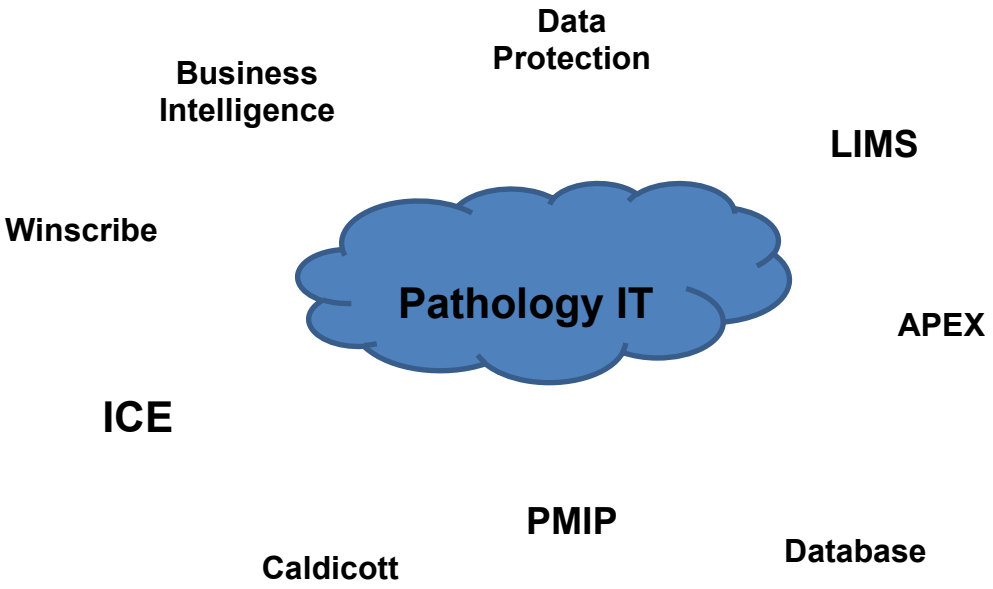
PATHOLOGY IT

Computer Department Section Leader:	Damian Thompson 023 9228 **6747**
Speciality e-mail address:	pathology.it@porthosp.nhs.uk

Dedicated phone number for Pathology IT systems advice: 023 9228 **6470**
Fax number: 023 9228 **6475**

Location: Level E, Pathology Centre, Queen Alexandra Hospital

Emergencies
If any emergency arises with the Pathology Computer System, Apex, please contact the Pathology IT on-call mobile, telephone number: 0788 050 1088.



The Service
The Pathology IT Department provides IT support for the Pathology Laboratory Information System, Apex and in addition hardware and software support for PCs and peripherals within the Pathology Department.

Pathology IT extracts information data for financial, contract and workload monitoring purposes.

The department maintains a 24/7 on-call service for urgent Apex related problems.

Services provided by the department
Pathology results are available on the Apex computer system via ward and departmental PCs and thin clients 24 hours a day. As soon as a result is authorised

for issue by Pathology it is available to be viewed by users. If the test is not complete REQ will be displayed on screen next to the test code.

Results are available as follows:-

Histopathology	from March 1997
Cytology	from March 1997
Microbiology	from January 1997
Haematology	from September 1996
Biochemistry	from September 1996
Transfusion	from November 1996

Histopathology and Cytology reports 1984 – 1996 are available from the Cellular Pathology office.

Hard copy Histopathology results, pre 1984, are available from the department upon request.

Biochemistry, Haematology and Microbiology results prior to the dates shown in the above table are not available.

APEX

Access to the Pathology Apex Computer system is by individual user accounts. An account is only set up on the system after the user has completed a short training session with the ICT trainers. If you need to book a training session please telephone the trainers on Tel no **7700 5867**.

DO NOT divulge your password to a third party as this is a breach of the **Data Protection Act**. Accessing data that you do not require to carry out your duties is a disciplinary offence and could lead to dismissal.

It is very important that you log out from the Apex system before leaving the PC or thin client to prevent unauthorised users from gaining access to confidential data.
Pathology IT Apex Help Desk: Telephone No: 023 9228 6470