

NHS General

## Department of Haematology

# HAEMATOLOGY LABORATORY HANDBOOK

This SOP supersedes all previous versions

<b>REFERENCE &amp; VERSION No.</b>	LH-HAE-HAE-G-004 v11
<b>REPLACES DOCUMENT Nos.</b>	LH-HAE-GEN-G-004 v10
<b>LOCATION OF COPIES</b>	1.Q Pulse 2. Northumbria Healthcare NHS Trust Internet/intranet

## DEPARTMENT OF HAEMATOLOGY AND BLOOD TRANSFUSION

The Haematology Department is located on each of the three sites of Northumbria Healthcare NHS Foundation Trust; North Tyneside General Hospital, Wansbeck General Hospital and Northumbria Specialist Emergency Care Hospital (NSECH). Blood Transfusion Department is centralised on a single site at NSECH

**The Transfusion Handbook is dealt with as a separate document.**

### Overview

Our aim is to provide an accessible and comprehensive diagnostic support service to both hospital and primary care clinicians.

All laboratories are fully accredited by Clinical Pathology Accreditation (UK) Ltd. (CPA Registration Number: 1030) and compliant with the Blood Safety and Quality Regulations.

The Department is accredited by the Institute of Biomedical Science for the training of Biomedical Scientists.

In addition to analytical services, the Department provides an electronic result reporting service to General Practices, in accordance with National Pathology Messaging Guidelines.

The department also refers specialised tests by arrangement to relevant reference centres.

The quality of the service is continuously monitored by internal quality control procedures and participation in National External Quality Assessment Schemes for the range of analytes provided.

In addition the department regularly participates in clinical audit.

## Laboratory opening hours

### **The Northumbria Specialist Emergency Care Hospital (NSECH)**

The department is open 24/7 for the receipt and handling of specimens.

### **North Tyneside**

Open for the receipt and handling of specimens from 08:30 to 18:00 Monday to Friday for hospital generated work and 22:00 for GP samples. During these periods we assay most of the routinely available tests daily.

Reception is open between 08:30 to 12:15 on Saturday and Sunday for receipt of specimens only, these will be transferred to the Northumbria site for processing.

Between 18:00 and 08:30, Monday to Friday and all day at weekends point of care testing equipment is available for the analysis of Full Blood Count samples that are deemed too urgent to wait for transfer to the Northumbria site for processing.

### **Wansbeck**

The laboratory is open for receipt of samples between the hours of 08:30 and 17:00 Monday to Friday for receipt and processing work.

Specimen reception is open between 08:30 to 12:15 on Saturday and Sunday for receipt of specimens only. These will be transferred to the Northumbria site for processing.

Between 17:00 and 08:30, Monday to Friday and all day at weekends point of care testing equipment is available for the analysis of Full Blood Count samples that are deemed too urgent to wait for transfer to the Northumbria site for processing.

### **Hexham**

The laboratory is open for receipt of samples between the hours of 08:30 and 17:00 Monday to Friday. A range of urgent requests are available via point of care equipment on this site, otherwise samples are transferred off site for analysis.

NHS General

**Useful Telephone numbers**

<b>Consultant Haematologists:</b>			
Name	Location	Medical Secretary	Telephone
Dr Chris Tiplady	N. Tyneside	Mrs Joanne Appleby	0191 2934157
Dr Chris Williams	N. Tyneside		
Dr Rachel Wells	N. Tyneside	Mrs Kim Dodds	0191 2932535
Dr Mari Kilner	N. Tyneside	Fax	0191 2932796
Dr Charlotte Bomken	N. Tyneside		
Dr Ian Neilly	Wansbeck	Mrs Elaine Wylie	01670 529709
Dr Simon Lyons	Wansbeck	Mrs Maria McHugh	01670 529815
Dr George Holmes	Wansbeck	Fax	01670 529719
Dr Chris Williams	Hexham	Mrs Hilary Priestman	01434 655005
Dr Chris Tiplady	Hexham	Fax	01434 655017
Dr Rachel Wells	Hexham		

**Key Personnel**

Name	Location	Telephone
<b>Technical Head of Service:</b>		
Mr Chris Leyland	North Tyneside	0191 2932591
<b>Technical Heads of Departments:</b>		
Haematology - Mr John Hewett	North Tyneside	0191 2932591
Transfusion - Ms Karen Ward	NSECH	0191 6072233
<b>Main Laboratories:</b>		
	North Tyneside	0191 2932591
	NSECH	0191 6072239 / 6072240
	Wansbeck	01670 529721
<b>Haematology Specialist Nurses:</b>		
Ms Susan Paskar	North Tyneside	0191 2934146 Bleep #5655
Mrs Melanie Freedman	Wansbeck	Ext 33816
<b>Anticoagulant Service Manager:</b>		
Mr Paul Barbieri	Wansbeck	01670 529729
<b>Anticoagulant Nurse Specialists:</b>		
Anticoagulant Team	North Tyneside	Ext 2393/4590 Bleep #6690
Anticoagulant enquiries/appointments	North Tyneside	Ext 2755
Anticoagulant Team	Wansbeck	Ext 33739 Bleep #3148
Anticoagulant Team	Hexham	Ext 5435 (Tues-Thurs only)
<b>Specialist Transfusion Practitioners</b>		
Ms Anna Bartholomew	Wansbeck	Ext 33817 Bleep #6965
		Mobile 07825078456
Mrs Debbie Sains	North Tyneside	Ext 2370
		Mobile 07747473413

## Protection of personal information

Northumbria health care Foundation Trust takes the security of personal information very seriously. Everyone working for the NHS has a legal duty to keep information about patients confidential. Patients' health information is protected through a number of measures; all Trust staff are required to:

- a. Record patient information accurately and consistently
- b. Keep patient information private
- c. Keep patient information physically secure
- d. Disclose and use information with appropriate care

Any breaches of security or incidents relating to Information Governance are investigated, actioned and reported via the Trust's Governance Structure.

In order to support our staff in ensuring personal information is kept securely the Trust have a number of policies which set out the requirements staff must fulfil when accessing or sharing personal information. Furthermore, all staff receive Information Governance Training which includes topics such as information security, confidentiality and data protection.

The Haematology department work to all Trust policies regarding the protection of personal information. These policies are available on the trust intranet under Data Governance and Information Governance.

These policies can be viewed via the trusts intranet at the following link.

<http://intranet2.northumbria.nhs.uk/home/policies-and-procedures/>

## Compliments, Concerns and Complaints

Haematology aims to provide a high quality of service to patients and users. We realise that there may be times when we do not always get things right. On these occasions we welcome your feedback as this helps us to improve the services we provide.

If you have any problems with any aspect of the Haematology Services, please tell us by contacting a member of senior Pathology staff team (refer to contacts list). You can also email any comments to the haematology manager at [Christopher.leyland@nhct.nhs.uk](mailto:Christopher.leyland@nhct.nhs.uk)

The trust has a Complaints Policy and Procedure for raising Concerns Policy (RMP14). Concerns and complaints can be raised verbally or in writing with the Pathology Services Coordinator, departmental manager or via the Patients Services/PALS. The department encourages users to raise any concerns to ensure the continued provision of the highest quality service possible. We endeavour to resolve any issues raised as quickly as possible. The contact details for patient services and PALS is shown below;

NHS General

## Patient services

Northumbria Healthcare NHS Foundation Trust  
Freepost PATIENT SERVICES  
Tel: 0191 203 1340  
Email: [patient.services@nhct.nhs.uk](mailto:patient.services@nhct.nhs.uk)

## PALS

Patient Advice & Liaison Service (PALS)  
Freepost RLTC-SCHH-EGXJ  
North of Tyne PALS  
The Old Stables  
Grey's Yard  
Morpeth  
Northumberland NE61 1QD  
Tel: 0800 032 0202  
Text: 01670 511 098  
Email: [northoftynepals@nhct.nhs.uk](mailto:northoftynepals@nhct.nhs.uk)

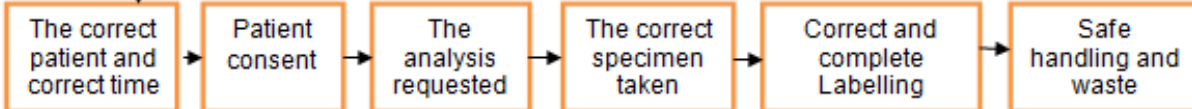
NHS General

Flow of responsibilities

Step 1. The requesting clinician ensures



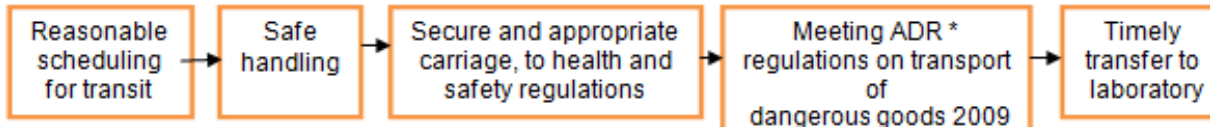
Step 2. The phlebotomist, nurse or clinician collecting the specimen checks and ensures (for example using the patient wrist band double checked against the request form and specimen label)



Step 3. The ward, theatre, department or surgery ensures



Step 4. The person undertaking the logistics stage (Transport, Courier)

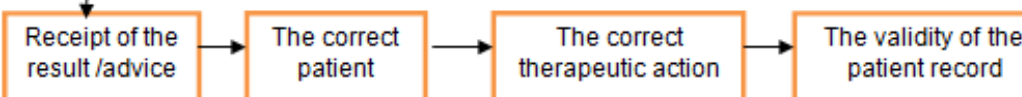


\*International Carriage of Dangerous Goods by Road (ADR)

Step 5. The laboratory checks and ensures



Step 6. The responsible clinician checks and ensures



## Preparation of the patient and patient collected samples

There is no specific patient preparation required for the taking of Samples for Haematology.

Patient collected samples is limited to urine samples for the Urinary Haemosiderin testing. Early morning urine should be taken into a plain universal with a minimum volume of 10mls.

## Request forms and specimen containers

Wherever possible we would ask that you give full clinical and drug therapy details – this helps us process your request accurately and efficiently as well as allowing us to add additional tests to facilitate patient management. The information helps us to deal with abnormal results which may need urgent transmission e.g. out-of-hours.

Full information is given on the specimen requirements for the common Haematology assays on the Vacutainer Tube Guide distributed to each ward and practice. The Sunquest ICE ordering system is in use within Northumbria Trust. This system will provide information on specimen tubes required based on the tests requested, on the generated request form.

## Blood and body fluid spillages procedure

Staff dealing with spillages must have received training in this procedure and must protect themselves by wearing gloves and a plastic apron. The effective management of blood and body fluid spillage is a crucial factor in the successful control of infection. Exposure to any such fluid presents a risk to the health of all persons involved. However, these risks are easily minimised by following the principles of standard precautions, in addition to maintaining a routine approach to simple cleaning and disinfection procedures. It is of course essential that all blood and body fluid spillages are cleaned and disinfected as soon as is practicable.

Refer to the procedures in your location for dealing with spillages and breakages or seek advice from a senior member of staff in your area.

If necessary contact the Laboratory for advice on any aspect of dealing with spillages and breakages of pathology specimens.

The Haematology department uses the Guest medical spill kit (Single use Biohazard Spill Pak) – **Do not use on Chemical Spills.**

Spill kits must contain:

Disposable gloves (1 pair)

Disposable apron

4 x Chlorine – releasing Tablets

2x paper towels

1x container 100ml NaDCC granules

Scoop/scrapper

Clinical waste bag



## Method of application (spill kit)

Appropriate items of PPE e.g. disposable gloves and apron should firstly be worn. Sprinkle the chlorine-releasing granules e.g. NaDCC directly over the spill. Leave for two minutes. The granules have been designed to disinfect blood and body fluids spills prior to cleaning whilst containing the spill rather than adding to it.

Add the four small tablets to the empty granule container and carefully fill to the line. Set aside for two minutes to allow the tablets to dissolve.

Once the specified time has elapsed, the bulk of the spill can now be removed using the scoop and scraper. The contaminant, along with the scoop and the scraper must then be placed in the clinical waste bag provided.

The spillage site should then be cleaned using chlorine solution and paper towels. This and all the disposable items of PPE should then be placed into the clinical waste bag. Hands should then be decontaminated washed, cleaned.

## High Risk specimens

High risk groups can include patients suffering from, or thought to be suffering from, Hepatitis, HIV, TB, E coli 0157 and other notifiable diseases. Intra-venous drug users and patients who have had recent foreign travel with unexplained high pyrexia should also be treated as high risk.

Request forms and samples MUST be labelled with "Danger of Infection" labels, placed in a Bio-hazard bag and transported to the laboratory with care.

To protect all healthcare workers, requests for investigations on high risk samples should be the minimum required for diagnosis and good patient management.

Great care must be taken when obtaining specimens, and equipment such as needles and blades must be immediately disposed of safely, in approved sharps boxes. Should a spillage of blood, fluids or tissue occur, this should be made safe and disposed of appropriately.

## Specimen Ordering on ICE/Electronic Requesting

### Guidance for Use

There are comprehensive manuals built into ICE, available to all users. Shorter guides and demonstrations are also available on the Trust Intranet training pages.

External link: [http://intranet/it\\_training/icedesktop.htm](http://intranet/it_training/icedesktop.htm)

NHS General

## Contact Names for ICE

For pathology Trust wide: Please email [Application.Management@nhct.nhs.uk](mailto:Application.Management@nhct.nhs.uk) or phone the Application Management | Computer Services Tel: 0191 203 1327  
Or Contact Computer services help desk on ext. 1311

## Urgent and 'please phone' results

URGENT requests MUST be accompanied by a telephoned request from the clinician indicating the degree of urgency and the form marked as Urgent, unless there are agreed alternative arrangements in place e.g. Red Pouches in A/E

## Add on tests

Additional tests on blood samples will only be performed on receipt of an add-on test request form which can be created using the 'Add On' test option in ICE. The request form can then be sent to the department. Retrieval of samples already in the laboratory to add on additional requests may take some time, particularly if the sample is still being processed for the tests originally requested. They can therefore not be processed as urgent tests. If the further tests are urgent, please send a new request.

You will be advised if the sample is too old or unsuitable for the test you are requesting. If there is insufficient sample remaining for your additional request, this will be reported in the same way that a result would be (by paper report and electronically) – the person taking your call will not know at the time that there is insufficient sample.

## Packaging routine specimens for haematology

All specimens for Haematology should be placed into a green specimen bag and sealed. The request form should be folded and slotted into the back pocket and then sealed.



Place the labelled specimens in a green coloured ICE pouch and seal on the ward/dept. or surgery.

Slot the folded ICE request form into the back pocket and seal.

All specimens for Haematology **MUST** be placed into a GREEN transport bag, and sealed ready for transport to the laboratory.



Place all green pouches into a GREEN transport bag, ready for collection and transportation.

## Packaging urgent specimens for Haematology

All urgent specimens for Haematology **MUST** be placed into a RED ICE pouch, sealed, with the request form folded and slotted into the back pocket, and also sealed.



Place red pouch into green transport bag and take to collection point



## Specimen transport

Once appropriately sealed and packaged, samples for Haematology require safe transportation to the laboratory.

### At NTGH, NSECH, WGH and HGH

A pneumatic tube system is installed for the rapid transportation of samples to Pathology specimen reception. Samples **MUST** be secured and sealed in an ICE pouch and placed in the appropriate container for transport in the pneumatic tube pod.

Alternatively please arrange for a porter to collect and deliver samples.

## Urgent courier samples

### Blood bikes:

Blood Bikes are available from 7pm to 7am Monday to Friday and at weekends on

**0191 228 6495**

If Blood Bikes are contacted; there is no necessity for a Taxi slip. Request a category 2 transport for an urgent request. Clearly state where to collect from and where to deliver to.

Samples may be sent to Pathology at NSECH or the collection point at WGH, NTGH and HGH for collection.

The driver will give you a completed collection/delivery receipt on arrival

### Life Line:

If Blood Bikes are not available, Lifeline may be contacted on

**03335 77 88 99**

Request urgent transport and clearly state where to collect from and where to deliver to. If using Lifeline, the samples should be sent to Pathology at NSECH or the collection point at WGH, NTGH and HGH for collection with an accompanying signed taxi slip. Complete a taxi booking form and give the blue copy to the driver with the transport box.

## GP surgeries

There are regular scheduled van runs to all GP surgeries through the day Monday to Friday, transporting samples to Northumbria Healthcare. Information is available on request from the Pathology Services Coordinator.

## Pathology supplies

All supplies including request forms, specimen containers and transport bags are issued by the local Pathology specimen reception departments at NTGH, WGH and HGH. It is important to ensure that requests for supplies are made between the hours of 9am - 4pm Monday to Friday.

### **Wansbeck General Hospital: Monday – Friday 9am - 4pm**

- By telephone: (01670) 521212 ext. 3758. If no one is available please leave a message on the answer-phone
- By completion of a laboratory supplies requisition form which may be posted.

### **Hexham General Hospital: Monday – Friday 9am - 4pm**

- By telephone (01434) 605001
- By completion of a laboratory supplies requisition form. This may be posted in or faxed to (01434) 655017

### **North Tyneside General Hospital: Monday – Friday 9am - 4pm**

- By Telephone : 0344 811 8111 ext. 2031 (Pathology Specimen Reception)
- By completion of a laboratory supplies requisition form. This may be posted in.

### **Northumbria Specialist Emergency Care Hospital: Monday - Friday 9am – 4pm**

- By telephone: (01670) 521212 ext. 3758. If no one is available please leave a message on the answer-phone.
- By completion of a laboratory supplies requisition form which may be posted

**\*\*Please note there is no local provision of supplies at NSECH, supplies are provided from the WGH site. If supplies are required outside of the ordering times, please contact specimen reception at NSECH as they may be able to provide limited supplies but this not guaranteed. Please ensure you have enough supplies in your ward and departmental areas.**

### **General Practitioners: Monday – Friday 9am – 4pm**

- By telephoning your local hospital Pathology Specimen reception
- By completion of a laboratory supplies requisition form which may be posted or faxed as appropriate to your local hospital Pathology Specimen reception.

## Telephoning of abnormal results

Results to be telephoned are shown below.

Values are the clinical decision values based on guidance from the Royal College of Pathologists

### Urgent out of hours outpatient/GP results

Hb < 60 g/L

Neutrophils <  $0.5 \times 10^9/L$

Platelets <  $30 \times 10^9/L$

INR > 6.0

### Urgent results – in-patient

#### GP (to be phoned during routine hours)

Any request marked urgent/telephone

Hb < 80 g/L or > 200 g/L

Neutrophils <  $1.0 \times 10^9/L$  or >  $25 \times 10^9/L$

Platelets <  $75 \times 10^9/L$  or >  $1000 \times 10^9/L$

INR > 5.0

PT > 20 seconds

APTT > 45 seconds

Fibrinogen < 1.5 g/L

Malaria screening results

G6PD requests

Sickle screen results

Positive IM screens

Any urgent unsuitable haematology request e.g. FBC from A&E, INR for dosing.

ESR where clinical details are “temporal arteritis/headache”

## Assuring the accuracy of results

All laboratory staff are trained and assessed as competent before using equipment/performing assays/interpreting results/releasing reports.

This training is updated and assessed regularly.

All equipment is calibrated/maintained/serviced/controlled to manufacturers recommendations. There is also a policy of internal quality control (QC) for all investigations offered in order to guarantee the accuracy of results.

The laboratory participates in an accredited external assessment scheme (e.g. NEQAS) for all tests available.

Reagents and control material are stored as per manufacturer's instructions and all storage areas are temperature monitored with alarms where necessary to alert of any deviations from expected limits.

Each standard operating procedure (SOP) includes details of any limiting factors/sensitivities/specificities which may affect results included in the documentation

The laboratory ensures that any external reference laboratories used for referred investigations are UKAS/CPA (UK) Ltd registered laboratories only.

Reports contain the patient identifiable data as well as the results(s) of the investigations and applicable reference ranges. Appropriate comments, applicable to the results, will be added if necessary.

Clinical/technical advice is available by contacting any of the appropriate staff



## Routine investigations and factors affecting analysis

In order to maximise the accuracy of results produced by the department the following is essential:

The requesting clinician must:

- Identify the correct patient.
- Request appropriate analysis.

The Phlebotomist (or person taking the sample) must:

- Be trained and assessed as competent to take the sample.
- Identify the patient correctly.
- Take the correct specimens for the required analysis.
- Ensure that the correct draw order/fill level and mixing guidelines are followed. Ensure minimum labelling requirements are met.
- Ensure sample handling is in line with laboratory requirements.

**Samples must be transported to the laboratory in line with the requirements for testing so analysis can begin within a defined timeframe.**

Laboratory staff will:

- Check that the above requirements have been met.
- Ensure that the correct/accurate result/report is transmitted back to the requesting clinician within agreed timescales

The age of the sample and inadequately stored samples can affect results – note also that severely haemolysed or lipaemic samples can adversely affect some results and make clinical interpretation more difficult.

In the case of Full Blood Counts and Coagulation Assays, if the venepuncture is difficult, or if the sample has not been mixed quickly and thoroughly, microclots may occur which can affect platelet and coagulation results.

Samples for most investigations should be received into the department within 24 hours of being taken – provided they have been stored at 2 - 8°C.

Exceptions to this rule are;

- ESR's should be analysed within 6 hours of collection
- Coagulation screens and D Dimer requests should be analysed within 9 hours of collection
- INR's should be analysed within 12 hours of collection.
- [Anti-Xa samples should be analysed within 4 hours of collection](#)
- Haematinic samples should be analysed within 72 hours of collection.

## Acceptance Criteria for Coagulation Samples

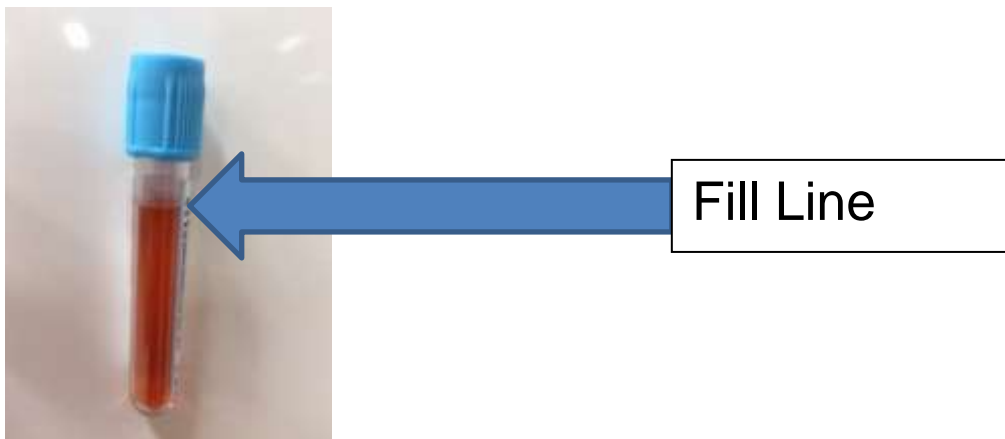
Venous blood samples collected into 0.109M Tri-sodium citrate at a ratio of 9:1 (Blue top).

### What do the lines mean on BD Vacutainer® Plus sodium citrate tubes?

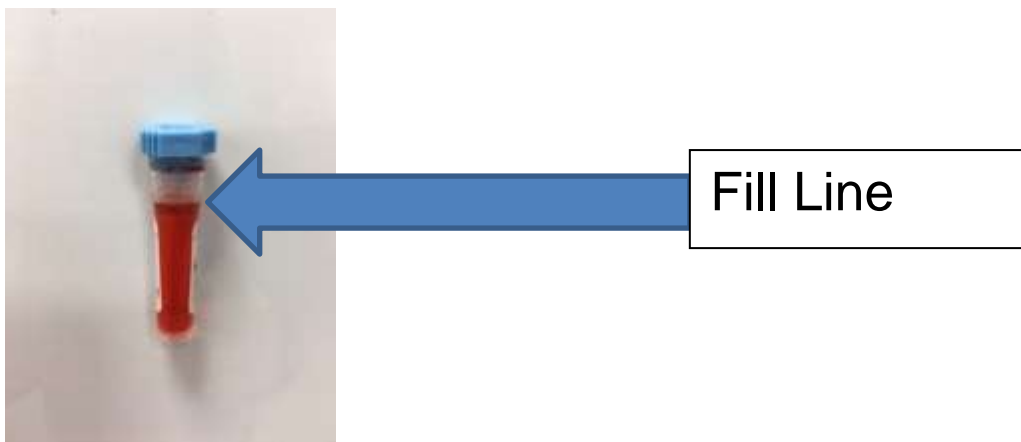
The etched fill indicator on the plastic citrate tubes indicates the minimum acceptable blood volume in the tube.

**Samples that are below the fill line as demonstrated by the arrows in the pictures below will not be accepted.**

Adult Coagulation Sample (Volume 2.7ml)



Paediatric Coagulation Sample (Volume 1ml)



## Specimen labelling requirements

To comply with Trust Policies and the Safer Practice Notice NPSA/2009/SPN002, the NHS number must be given on all correspondence etc.

All specimens **must** be labelled with;

**First Name and Surname**

**Date of birth**

**NHS or Trust number**

and should have

**Date and time of specimen**

**Location**

All request forms **must** give;

**NHS number**

**Full patient name**

**Trust Number (for hospital patients only)**

**Date of birth**

along with

**Location**

**Date and time of specimen**

**Requesting Doctor/Practitioner and Consultant/GP**

All appropriate **Clinical Information** relevant to tests requested

**The identity of the person collecting the primary sample**

### **If urgent tests are required – please telephone the laboratory**

To assist with handling of abnormal results out of hours, all GP request forms should give the patient's address and a contact telephone number.

If not using electronic requesting, all copies of any manual request form must be labelled (preferably using printed labels). Ensure location, Consultant/GP and name of requestor also are written on the form.

Unlabelled or inadequately labelled specimens **will not** be processed in anything but very exceptional circumstances.

If the NHS number is not available the reason should be stated on the request form and the specimens will be analysed as usual if otherwise compliant with the above policy (e.g. Scottish residents, migrant workers, members of the armed forces, prisons etc.).

Any requests/specimens failing the above criteria will be subject to IR1 reporting.

**NOTE: The special requirements for Blood Transfusion specimen & request labelling remain unchanged – see Transfusion Handbook.**

**Sample types/draw order and mixing requirements**





**Tube Guide & Recommended Order of Draw\***

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

**Northumbria Healthcare NHS Foundation Trust - November 2016**

Blood samples should be taken in the following order:

Cap Colour	Cat. No.	Tube Type	Determinations	Special Instructions	
	Cat. No. 442192 Cat. No. 442265	Blood Cultures	Aerobic followed by anaerobic - if insufficient blood for both culture bottles, use aerobic bottle only. Generally collected by clinical staff.	NB:- To be taken prior to all other samples.	
	Cat. No. 363093 Draw Volume 2.7ml	Sodium Citrate	Coagulation Screen, INR, APTT, D-Dimer, Thrombophilia Screen (x4), Anticardiolipins, APTT Ratio.	These tubes must be filled to 'fill line'.	3-4
	Cat. No. 367837 Draw Volume 6ml	Serum	Cryoglobulins.	Cryoglobulin samples must be kept at 37°C during transport to the laboratory.	5-6
	Cat. No. 367954 Draw Volume 5ml	SST™ II	Serum B12/Folate/Ferritin, Most Clinical Chemistry Requests (except Glucose and Glycated Hb), Serology for Microbiology, Immunology and Virology, Maternal Serum Screening.	Check with lab for unusual requests. If requesting Haematology, Biochemistry and Serology - then 3x SST samples should be sent.	5
	Cat. No. 367885 Draw Volume 6ml	Lithium Heparin + PST™ II	Some Genetic Markers and Chromosomes, Plasma Metadrenalines, Vitamin C, Galactose -1-Phosphate, ADH.	Check with laboratory for sampling and transport conditions.	8-10
	Cat. No. 368860 Draw Volume 4ml	EDTA	Full Blood Count, Sickle cell Screen, PCR eg Meningococcal, HIV, Hep B&C viral load, Glycated Hb, HLA, ESR.	Must be at least half full. If requesting Glycated Hb and FBC - then 2x EDTA should be sent.	8-10
	Cat. No. 367941 Draw Volume 6ml	Crossmatch	Blood Group/Antibody Screen, Crossmatch.	Must be labelled with full name, DOB, Trust number and NHS number (if available) - Trust number mandatory for hospital requests, bottle must also be signed and dated by person taking bloods.	8-10
	Cat. No. 368381 Draw Volume 6ml	Trace Element	Copper, Zinc, Selenium, Cobalt, Chromium, Manganese.		8-10
	Cat. No. 368920 Draw Volume 2ml	Fluoride Oxalate	Glucose, Lactate.		8-10

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

**IMPORTANT MIXING GUIDELINES**

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



BD Life Sciences - Preanalytical Systems  
Tel: 01865 781529

BD the BD logo and all other trade names are property of Becton, Dickinson and Company, ©2016 BD  
IMMCOG 0142

**Test repertoire and relevant information (Lab accreditation valid on date of document implementation)**

Test	Sample type	Volume required	Turnaround time (from receipt)	Referral information (where applicable)	Reference range (where applicable) and how established
Full Blood Count (inc. differential)	EDTA Purple top	4ml Or 1ml (paediatric bottle)	2 hours (report may be delayed due to further investigation e.g. blood film)	N/A	See tables below
Blood Film Examination	EDTA Purple top	4ml Or 1ml (paediatric bottle)	24 hours	N/A	N/A
Reticulocyte Count	EDTA Purple top	4ml Or 1ml (paediatric bottle)	2 hours	N/A	42-126x10 <sup>9</sup> /L Immature retic fraction (IRF): <0.3 (Manufacturer recommended and verified by laboratory)
Infectious Mononucleosis Screen	EDTA Purple top	4ml Or 1ml (paediatric bottle)	4 hours	N/A	N/A
Malarial parasites	EDTA Purple top	4ml Or 1ml (paediatric bottle)	4 hours	N/A	N/A

NHS General

<b>ESR</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>2 hours</b>	<b>N/A</b>	Male: ≤ Age/2 Female: ≤ (Age+10)/2
<b>Coagulation Screen</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml Or 1ml (paediatric bottle)</b>	<b>2 hours</b>	<b>N/A</b>	PT: 12-15 seconds APTT: 24-35 seconds Fibrinogen: 1.8-4.5g/L (Manufacturer recommended and verified by laboratory)
<b>INR</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml Or 1ml (paediatric bottle)</b>	<b>2 hours</b>	<b>N/A</b>	Dependant on anticoagulant regimen
<b>APTT ratio (Heparin Control)</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>2 hours</b>	<b>N/A</b>	Dependant on regimen
<b>D-Dimer</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml Or 1ml (paediatric bottle)</b>	<b>2 hours</b>	<b>N/A</b>	<0.5mg/L FEU Age Related Reference Range: For patients >50 years old Normal range is < Age divided by 100 mg/L FEU (e.g. pt. aged 75 normal range = <0.75mg/l) (Based on prospective study ADJUST-PE by Righini et al 2014. Age related cut-offs based on a retrospective study by Douma et al 2015)

NHS General

<b>Reptilase Time</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>8 hours</b>	<b>N/A</b>	<20 seconds (Manufacturer recommended and verified by laboratory)
<b>Thrombin Time</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>8 hours</b>	<b>N/A</b>	16-20 seconds (Manufacturer recommended and verified by laboratory)
<b>Anti-Xa assay</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>2 hours</b> (samples should be taken 4-6 hours post injection for peak level)	<b>N/A</b>	Dependant on regimen
<b>Serum Vitamin B12</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>72 hours</b>	<b>N/A</b>	150-1000ng/L (Manufacturer recommended and verified by laboratory)
<b>Serum Folate</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>72 hours</b>	<b>N/A</b>	2.3-18.8µg/L (Manufacturer recommended and verified by laboratory)
<b>Serum Ferritin</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>72 hours</b>	<b>N/A</b>	12-250µg/L (Manufacturer recommended and verified by laboratory)
<b>Red cell Folate</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>72 hours</b>	<b>N/A</b>	140-820µg/L (Manufacturer recommended and verified by laboratory)
<b>Screening for Haemoglobinopathy</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>120 hours</b>	<b>N/A</b>	N/A
<b>Haemoglobin S Screen</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>4 hours</b>	<b>N/A</b>	N/A

NHS General

<b>Haemoglobin A2 Quantitation</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>120 hours</b>	<b>N/A</b>	1.6-3.4% (Based on Dace and Lewis – practical Haematology)
<b>Haemoglobin F Quantitation</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>120 hours</b>	<b>N/A</b>	<1% (Adult) (Based on Dace and Lewis – practical Haematology)
<b>G-6-PD Deficiency Screening</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>120 hours</b>	<b>N/A</b>	N/A
<b>Intrinsic factor</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>120 hours</b>	<b>N/A</b>	N/A
<b>Urinary Haemosiderin</b>	<b>Urine sample</b>	<b>10ml</b>	<b>120 hours</b>	<b>N/A</b>	N/A
<b>Serum haptoglobin</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>100 hours</b>	<b>N/A</b>	0.32-1.97g/L (Manufacturer recommended and verified by laboratory)
<b>Tissue typing (HLA)</b>	<b>EDTA Purple top</b>	<b>6ml</b>	<b>7 days</b>	NHSBT H&I laboratory NHSBT Holland Dr, Newcastle upon Tyne NE2 4NQ  <b>UKAS/CPA: North: 2823</b> <b>MHRA: BE25224 site :90668</b>	N/A



NHS General

<b>Bone Marrow Aspiration and Trepine biopsy</b>	<b>EDTA Purple top for aspirate</b> 1 x <b>Lithium heparin</b>	<b>10 ml EDTA 5ml Lithium Heparin</b>	<b>120 hours</b>	NEHODS Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	N/A
<b>Haemoglobin H inclusions</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>120 hours</b>	<b>N/A</b>	Normal = Not present
<b>Beta 2 Microglobulins</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>120 hours</b>	<b>N/A</b>	0.8-2.2mg/L (Manufacturer recommended and verified by laboratory)
<b>Serum Free Light Chains</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>120 hours</b>	<b>N/A</b>	Kappa: 3.3-19.40mg/L Lambda: 5.71-26.30mg/L (Manufacturer recommended and verified by laboratory)
<b>Coagulation Factor Assays</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>8 hours (if urgent)</b>	<b>N/A</b>	Factor II: 70-120% Factor V: 70-120% Factor VII: 55-170% Factor X: 70-120% Factor VIII: 60-150% Factor IX: 60-150% Factor XI: 60-150% Factor XII: 60-150% (Manufacturer recommended and verified by laboratory)

NHS General

<b>Lupus Anticoagulant Screening</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>14 days</b>	<b>N/A</b>	N/A
<b>Anti-cardiolipin Antibodies</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>120 hours</b>	<b>N/A</b>	< 10 GPL-U/ml ≥ 10 GPL-U/ml (Manufacturer recommended and verified by laboratory)
<b>Beta 2 Glycoprotein 1 antibodies</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>120 hours</b>	<b>N/A</b>	0.8 – 2.2 mg/l (Manufacturer recommended and verified by laboratory)
<b>Anti-Thrombin III</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>14 days</b>	<b>N/A</b>	Male: 80-120% Female: 80-120% (Manufacturer recommended and verified by laboratory)
<b>Protein C</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>14 days</b>	<b>N/A</b>	Male: 70-130% Female: 70-130% (Manufacturer recommended and verified by laboratory)
<b>Protein S</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>14 days</b>	<b>N/A</b>	Male: 90-130% Female: 70-114% (Manufacturer recommended and verified by laboratory)
<b>Factor V leiden/Prothrombin gene mutation</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>14 days</b>	<b>N/A</b>	N/A

NHS General

<b>Anti-Platelet Antibodies</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>5 days</b>	NHSBT Filton H & I Laboratory 500 North Bristol Park, Northway, Filton, Bristol, BS34 7QH  <b>CPA No. 2821</b>	N/A
<b>Platelet Aggregation Studies</b>	<b>Blue Top (Citrate)</b>	<b>10.8ml for adult</b>  <b>5.4ml for paediatric</b>	<b>2 days</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>CPA No. 1265</b>	Results interpreted by Haematology medical staff
<b>Cell Marker Studies</b>	<b>EDTA Purple top</b>	<b>2ml</b>	<b>72 hours</b>	Flow Laboratory, Blood Sciences Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	N/A
<b>BCR/ABL diagnostic monitoring</b>	<b>EDTA Purple top</b>	<b>5ml</b>	<b>10 days</b>	NewGene Ltd. Biomedicine West Wing, International Centre for Life, Times Square United Kingdom, NE1 4EP  <b>UKAS No. 8220</b>	N/A

NHS General

<b>BCR/ABL PCR</b>	<b>Orange Lithium Heparin top</b>	<b>4ml</b>	<b>10 days</b>	NewGene Ltd. Biomedicine West Wing,International Centre for Life,Times SquareUnited Kingdom, NE1 4EP <b>UKAS No. 8220</b>	N/A
<b>BRAF mutation</b>	<b>EDTA Purple top (bone marrow)</b>	<b>4ml</b>	<b>10 days</b>	NewGene Ltd. Biomedicine West Wing,International Centre for Life,Times SquareUnited Kingdom, NE1 4EP <b>UKAS No. 8220</b>	N/A
<b>JAK-2 mutation</b>	<b>EDTA Purple top</b>	<b>2ml</b>	<b>10 days</b>	NewGene Ltd. Biomedicine West Wing,International Centre for Life,Times SquareUnited Kingdom, NE1 4EP <b>UKAS No. 8220</b>	N/A
<b>CD55/59 PNH Screen</b>	<b>EDTA Purple top</b>	<b>1ml</b>	<b>2 days</b>	Flow Laboratory, Blood Sciences Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP <b>UKAS No. 8543</b>	Not present

NHS General

<b>CD61</b>	<b>EDTA Purple top</b>	<b>1ml</b>	<b>2 days</b>	Flow Laboratory, Blood Sciences Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP <b>UKAS No. 8543</b>	N/A
<b>Eosin-5-maleimide (EMA)</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>2 days</b>	Immunology Department Royal Victoria Infirmary Queen Victoria Road Newcastle upon Tyne NE1 4LP <b>CPA No. 0187</b>	Normal 87-11% Positive 60-84% Indeterminate 80-90% (Supplied by reference lab)
<b>Cytogenetics (Bone Marrow and Peripheral Blood)</b>	<b>1 x Lithium heparin</b>	<b>5ml</b>	<b>21 days</b>	Institute of Human Genetics International Centre for Life Central Parkway Newcastle-upon-Tyne NE1 3BZ Tel 0191 2418600 <b>CPA No. 2212</b>	N/A

NHS General

<b>Karyotyping</b>	<b>EDTA Purple top for patients &gt;6 months</b>  <b>1 x Lithium heparin and 1 x EDTA purple top for patients &lt;6 months</b>	<b>4ml</b>  <b>5ml + 4ml</b>	<b>21 days</b>	Institute of Human Genetics International Centre for Life Central Parkway Newcastle-upon-Tyne NE1 3BZ Tel 0191 2418600  <b>CPA No. 2212</b>	N/A
<b>CD4/CD8 Lymphocyte Subsets</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>2 days</b>	Immunology Department Royal Victoria Infirmary Queen Victoria Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	See report for details
<b>Autoimmune lymphoproliferative syndrome screen (ALPS)</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>2 days</b>	Immunology Department Royal Victoria Infirmary Queen Victoria Road Newcastle upon Tyne NE1 4LP  <b>CPA No. 0187</b>	Normal = <1% (Supplied by reference lab)

NHS General

<b>Nitro-blue tetrazolium</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>2 days</b>	Immunology Department Royal Victoria Infirmary Queen Victoria Road Newcastle upon Tyne NE1 4LP  <b>CPA No. 0187</b>	N/A
<b>Neutrophil Oxidative burst test</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>2 days</b>	Immunology Department Royal Victoria Infirmary Queen Victoria Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	N/A
<b>HLA Typing</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>7 days</b>	NHSBT H&I laboratory NHSBT Holland Dr, Newcastle upon Tyne NE2 4NQ  <b>UKAS/CPA: North: 2823</b> <b>MHRA: BE25224 site :90668</b>	N/A

NHS General

<b>Donath-landsteiner test for paroxysmal cold haemoglobinuria</b>	<b>No additive Red top</b>	<b>6ml</b>	<b>7 days</b>	NHSBT H&I laboratory NHSBT Holland Dr, Newcastle upon Tyne NE2 4NQ  <b>UKAS/CPA: North: 2823</b> <b>MHRA: BE25224 site :90668</b>	N/A
<b>Anti-platelet antibodies (allo &amp; auto)</b>	<b>1 x EDTA purple top and 2 x SST gold top</b>	<b>4ml + 2 x 6ml</b>	<b>14 days</b>	NHSBT Filton H & I Laboratory 500 North Bristol Park, Northway, Filton, Bristol, BS34 7QH  <b>CPA No. 2821</b>	N/A
<b>Anti-Neutrophil antibodies</b>	<b>1 x EDTA purple top and 2 x SST gold top</b>	<b>4ml + 2 x 6ml</b>	<b>14 days</b>	NHSBT Filton H & I Laboratory 500 North Bristol Park, Northway, Filton, Bristol, BS34 7QH <b>CPA No. 2821</b>	N/A
<b>ELANE testing</b>	<b>EDTA Purple top</b>	<b>5mls</b>	<b>30 days</b>	HCMDs Level 2 Camelia Botnar Laboratories Great Ormond Street Hospital NHS Foundation Trust Great Ormond St London, WC1N 3JH  <b>CPA No. 668</b>	N/A



NHS General

<b>Extended Paediatric Clotting screen for NAI</b>	<b>EDTA Purple top x 1</b> <b>Blue Top (Citrates) x 3</b>	<b>4ml + 3 x 2.7ml</b>	<b>7 days</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	See report
<b>Factor assays (send away)</b>	<b>Blue Top (Citrates)</b>	<b>2.7ml</b>	<b>2 days</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	Factor II 50-150% Factor V 50-150% Factor VII 50-150% Factor X 50-150% Factor VIII 50-150% Factor IX 50-150% Factor XI 70-160% Factor XII 50-150% <a href="#">(Supplied by reference lab)</a>
<b>Von Willebrand Screen</b>	<b>Blue Top (Citrates)</b>	<b>5.4ml</b>	<b>7 days</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	VWF activity = 40-150% VWF Ag = 40-150% VWF multimers – interpreted by Haematology medical staff <a href="#">(Supplied by reference lab)</a>

NHS General

<b>FVIII inhibitor assay</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>24 hours</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	Normal = Negative
<b>ADAMTS 13</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>48 hours</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	0.4-1.3IU/ml (Supplied by reference lab)
<b>Factor XIII</b>	<b>Blue Top (Citrate)</b>	<b>2.7ml</b>	<b>4 hours</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>CPA No. 1265</b>	50-150% (Supplied by reference lab)

NHS General

<b>HIT confirmation</b>	<b>SST Gold top</b>	<b>6ml</b>	<b>1 working day</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	N/A
<b>G-6-PD quantitation</b>	<b>EDTA Purple top</b>	<b>0.5ml</b>	<b>7 days</b>	Blood Sciences Department Level 3 Leazes Wing Royal Victoria Infirmary Richardson Road Newcastle upon Tyne NE1 4LP  <b>UKAS No. 8543</b>	4.6 - 13.5iu/gHb (Supplied by reference lab)
<b>Erythropoietin</b>	<b>EDTA Purple top and SST Gold top</b>	<b>4ml + 6ml</b>	<b>7 days</b>	Biochemistry Department Division of Pathology James Cook University Hospital Marton Road Middlesbrough TS4 3BW  <b>CPA No. 0937</b>	4.3 – 29.0 IU/L (Supplied by reference lab)

NHS General

<p><b>Haemoglobinopathy confirmation</b></p>	<p><b>EDTA Purple top</b></p>	<p><b>4ml</b></p>	<p><b>Minimum of 28 days</b></p>	<p>National Haemoglobinopathy reference laboratory Molecular Haematology Level 4 John Radcliffe Hospital Oxford OX3 9DU</p> <p><b>CPA No. 1040</b></p>	<p>N/A</p>
<p><b>Vitamin B1</b></p>	<p><b>EDTA Purple top</b></p>	<p><b>4ml</b></p>	<p><b>10 days</b></p>	<p>Scottish Trace Element &amp; Micronutrient Reference Laboratory Department of Clinical Biochemistry Glasgow Royal Infirmary Glasgow G4 0SF</p> <p><b>CPA No. 2335</b></p>	<p>275 to 675 ng/g Hb</p> <p>150 to 275 ng/g Hb (subclinical deficiency)</p> <p>&lt;150 ng/g Hb (clinically deficient) (Supplied by reference lab)</p>

NHS General

<p><b>Vitamin B2</b></p>	<p><b>EDTA Purple top</b></p>	<p><b>4ml</b></p>	<p><b>10 days</b></p>	<p>Scottish Trace Element &amp;          Micronutrient Reference          Laboratory          Department of Clinical          Biochemistry          Glasgow Royal Infirmary          Glasgow          G4 0SF</p> <p><b>CPA No. 2335</b></p>	<p>1.0 to 3.4 nmol/g Hb          (Supplied by reference lab)</p>
--------------------------	-------------------------------	-------------------	-----------------------	---	--

NHS General

<b>Vitamin B6</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>10 days</b>	<p>Scottish Trace Element &amp; Micronutrient Reference Laboratory Department of Clinical Biochemistry Glasgow Royal Infirmary Glasgow G4 0SF</p> <p><b>CPA No. 2335</b></p>	<p>250-680 pmol/g Hb</p> <p>&lt;200 pmol/g Hb (At risk of deficiency)</p> <p>&gt;2000 pmol/g Hb (over supplementation)</p> <p>&gt;4000 pmol/g Hb (risk of toxicity)</p> <p>Plasma (for diagnosis/investigation of hypophosphatasia)</p> <p>PLP: 20 – 140 nmol/L</p> <p>PA: 9 - 60 nmol/L</p> <p>PLP:PA ratio: &lt;5</p> <p>(Supplied by reference lab)</p>
<b>Pyruvate Kinase</b>	<b>EDTA Purple top</b>	<b>4ml</b>	<b>10 days</b>	<p>Department of Haematological Medicine Kings College Hospital Denmark Hill London SE5 9RS</p> <p><b>CPA No. 3109</b></p>	Contact reference laboratory

### Adult Full blood count reference ranges

The reference ranges for adult and paediatric full blood count were based on information from Dacie and Lewis - Practical Haematology

Test Parameter	Sex	Normal Range	Units
Haemoglobin	Male	130 – 180	g/L
	Female	115 - 165	
Haematocrit	Male	0.400 – 0.540	L/L
	Female	0.370 – 0.470	
White Blood Count		4.0 – 11.0	$\times 10^9/L$
Platelets		140 – 400	$\times 10^9/L$
RBC	Male	4.50 – 6.50	$\times 10^{12}/L$
	Female	3.80 – 5.80	
MCV		82 – 100	fL
MCH		27.0 – 32.0	pg
MCHC		320 – 360	g/L
RDW		12.0 – 15.0	
Neutrophils		2.0 – 7.5	$\times 10^9/L$
Lymphocytes		1.5 – 4.0	$\times 10^9/L$
Monocytes		0.2 – 0.8	$\times 10^9/L$
Eosinophils		<0.4	$\times 10^9/L$
Basophils		<0.1	$\times 10^9/L$

**Paediatric Full blood count reference ranges**

Parameter	At birth	3 days	1 month	2-6 months	2-6 years	6-12 years	Units
Haemoglobin	165 +/- 30	185 +/- 40	140 +/- 30	115 +/- 20	125 +/- 15	135 +/- 20	g/L
White cell count	18.0 +/- 8.0	15.0 +/- 8.0	12.0 +/- 7.0	12.0 +/- 6.0	10.0 +/- 5.0	9.0 +/- 4.0	x10 <sup>9</sup> /L
Platelets	As per adult range						
MCV	110 +/- 10	108 +/- 13	104 +/- 19	91 +/- 17	81 +/- 6	86 +/- 8	fl
HCT	0.54 +/- 0.1	0.56 +/- 0.11	0.43 +/- 0.12	0.35 +/- 0.07	0.37 +/- 0.03	0.4 +/- 0.05	l/L
Red cell count	6.0 +/- 1.0	5.3 +/- 1.3	4.2 +/- 1.2	3.8 +/- 0.7	4.6 +/- 0.7	4.6 +/- 0.6	x10 <sup>9</sup> /L
MCH	34 +/- 3.0	34 +/- 3.0	34 +/- 6.0	30 +/- 5.0	27 +/- 3.0	29 +/- 4.0	pg
MCHC	33 +/- 3.0	33 +/- 4.0	33 +/- 4.0	33 +/- 3.0	34 +/- 3.0	34 +/- 3.0	g/dL
Neutrophils	5.0 – 13.0	3.0 – 5.0	3.0 – 9.0	1.5 - 9.0	1.5 – 8.0	2.0 – 8.0	x10 <sup>9</sup> /L
Lymphocytes	3.0 – 10.0	2.0 – 8.0	3.0 – 16.0	4.0 - 10.0	6.0 – 9.0	1.0 – 5.0	x10 <sup>9</sup> /L
Monocytes	0.7 – 1.5	0.5 – 1.0	0.3 – 1.0	0.1 – 1.0	0.1 – 1.0	0.1 – 1.0	x10 <sup>9</sup> /L
Eosinophils	0.2 – 1.0	0.1 – 2.5	0.2 – 1.0	0.2 – 1.0	0.2 – 1.0	0.1 – 1.0	x10 <sup>9</sup> /L
Basophils	As per adult range						



NHS General

## Anticoagulant service

Current trust Guidelines for warfarin management are available on the Trust intranet

<http://intranet/Anticoagulation/guidelines/default.asp>

Current Thromboprophylaxis Guidelines are available on the Trust Intranet

<http://intranet/dvtguidelines/default.asp>

British Committee for Standards in Haematology Guidelines on Oral Anticoagulation

[http://www.bcsghguidelines.com/documents/warfarin\\_4th\\_ed.pdf](http://www.bcsghguidelines.com/documents/warfarin_4th_ed.pdf)

## Anticoagulant Clinics

Appointments for all clinics must be pre-booked via the Anticoagulant Clinic.

A fully completed referral form is required for all new patients.

Your hospital-based anticoagulant service will be happy to advise on local practice, difficult cases, and duration of therapy.

Advice on commencing warfarin or other aspects of anticoagulation may be sought by contacting the anticoagulant service manager (extension 33729) or one of the anticoagulant specialist nurses on extension 2393/4590 (North Tyneside), 33739 (Wansbeck) or 5435 (Hexham Tues-Thurs only). If unavailable, the Consultant Haematologists are available for advice. Staff are available for advice Mon-Fri 9am-5pm.

NHS General

## North Tyneside

The service based at North Tyneside covers both hospital and community based clinics as well as all monitoring of housebound patients for North Tyneside, Northumberland and Tyne Valley via a postal service.

The team consists of:

Paul Barbieri	Anticoagulant Service Manager
Lee Sharp	Lead Anticoagulant Nurse Specialist
Avril Elliott	Nurse Specialist
Johanna Rusby	Nurse Specialist
Laura Brock	Nurse Specialist
Suzette Basilan	Nurse Specialist
Sandra Clarke	Senior Assistant Technical Officer
Sophie Stewart	Senior Assistant Technical Officer
Paula Wilson	Senior Assistant Technical Officer
Catherine Houghton	Medical Laboratory Assistant

The following clinics are run from North Tyneside

Day	am	pm
Mon	Forrest Hall Health Centre Nelson Health Centre	Hospital Outpatients Dept. Hospital New patient clinic
Tue	Hospital Outpatients Dept.	Wallsend Health Centre Monkseaton Health Centre
Wed	Hospital Outpatient Dept. Hospital New patient clinic Shiremoor Health Centre (includes early morning appt)	Wallsend Health Centre
Thurs	Nelson Health Centre Monkseaton Health Centre	Hospital Clinic – Pathology Department Evening Clinic – Pathology Department Whitley Bay Health Centre
Fri	Wallsend Health Centre Shiremoor Health Centre	Nelson Health Centre Hospital New Patient Clinic

We operate a postal dosing system for housebound patients.

Please inform the anticoagulant clinic of all hospital discharges of patients on warfarin and fax details of any drug changes along with a warfarin chart to 0191 2932796.

An in-patient dosing service is available on all wards at North Tyneside. They can be contacted on bleep #6690.

NHS General

## Wansbeck

The Haematology Department at WGH offers both outreach clinics and Hospital Based clinics for dosing for patients in the community on oral anticoagulants. The Consultant lead service is staffed by a multi-disciplinary team consisting of:

Paul Barbieri	Anticoagulant Service Manager
Tracy Anderson	Nurse Specialist
Doreen Wright	Nurse Specialist
Judith Dickinson	Nurse Specialist
Paul Shepherd	Nurse Specialist
Heather Brooks	Nurse Specialist
Jennifer Brotherton	Senior Clerical Officer
Margaret McCloud	Clerical Officer
Lynda Redpath	Clerical Officer

The following clinics are run from Wansbeck Hospital

Day	am	pm
Mon	Blyth Hospital	Rothbury Hospital Cramlington Health Centre
Tues	Wansbeck Hospital Outpatients Department	Wellway Surgery, Morpeth Alnwick Community Hospital
Wed	Amble Health Centre Berwick Community Hospital	Cramlington Health Centre Belford Health Centre* Widdrington Surgery
Thurs	Wansbeck Hospital Outpatients Department	Bedlington Health Centre Newbiggin Health Centre
Fri	Blyth Community Hospital Guidepost Health Centre	Morpeth NHS Centre

\*not on 3rd Wednesday of month

The anticoagulant monitoring team also provide an in-patient monitoring service for Wansbeck General Hospital. The team can be contacted on bleep number 3148 between 9.00 a.m. and 4.00 p.m.

NHS General

## Hexham

The Haematology Department at WGH also provides outreach clinics, for patients in Tynedale on oral anticoagulants. The Consultant lead service is staffed by a part time team of Specialist Nurses from Wansbeck General Hospital.

The following clinics are run from Hexham hospital

Day	am	pm
Mon	No Clinics	
Tues	Hexham Hospital Outpatients	Hexham Hospital Outpatients
Wed	Corbridge Health Centre	Humshaugh Surgery Bellingham Practice
Thurs	Oaklands Health Centre Prudhoe	Hexham Hospital Outpatients
Fri	No Clinics	

Enquiries regarding outreach clinics or postal service at Wansbeck or Hexham should be directed to 01670 529739 between 9.00 a.m. and 5.00 p.m.

## The Northumbria Specialist Emergency Care Hospital (NSECH)

Our Specialist Nurses visit NSECH every afternoon Mon-Fri to offer ward dosing service to patients who are current in-patients. Staff can be contacted via our Wansbeck office on 01670 529739.

## Clinical Haematology

### North Tyneside General Hospital

Most patients with Haematological disorders can be treated at North Tyneside, with the exception of young patients with Acute Leukaemia or patients with Haemophilia who are referred to the RVI, Newcastle.

Outpatient clinics: are held at NTGH on Monday, Wednesday and Friday afternoons. In order to refer a patient, please write to one of the Haematologists, or for urgent referrals telephone the appropriate Medical Secretary.

Day cases: Aspirate and Trepine biopsies, Chemotherapy administrations, are performed on the Oncology Day Unit on Tuesdays and Fridays. Day case transfusions are generally performed any clinic day on either the Oncology Day Unit or Surgical Day Unit. Venesections are carried out in Outpatients on Monday, Wednesday and Friday clinics.

In patients: are generally treated on either Ward 17 or Ward 18

### Wansbeck General Hospital

Haematology Inpatients are usually admitted to Ward 2.

Haematology Outpatients attend the Wansbeck Clinic based within the Department of Pathology and are held on Mondays, Tuesdays and Wednesdays.

Haematology / Oncology Day patients attend the Wansbeck Oncology Day Unit

### Hexham General Hospital

Outpatient clinics: are held at HGH on Tuesday mornings, every third Wednesday afternoon and Friday afternoons.

In order to refer a patient, please write to one of the Haematologists, or for urgent referrals telephone the appropriate Medical Secretary.

### NSECH

There is a visiting haematologist every day at NSECH to review inpatients and perform laboratory work.

NHS General

**Clinical advice can be obtained during normal working hours by contacting the relevant laboratory or Consultant Secretary.**

**On-call advice is available weekday evenings, Saturday and Sunday afternoon, evenings and overnight.**

**Contact hospital switchboard and ask for the on-call Consultant Haematologist.**