North Glasgow Clinical Biochemistry Service User Handbook

Glasgow Royal Infirmary
Gartnavel General Hospital
Stobhill Hospital

https://www.nhsggc.scot/staff-recruitment/staff-resources/laboratory-medicine/biochemistry/

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Contacts

Glasgow Royal Infirmary Switchboard.....0141 211 4000
Gartnavel General Hospital Switchboard 0141 211 3000

Duty Biochemist.....0141 242 (2)9500 (option 2)
General enquiries .....0141 242 (2)9500 (option 1)
Metabolic Biochemist (based at QEUH).....0141 354 (8)9060 (option 4)

GRI Specimen Reception .....0141 242 (2)9545
GGH Specimen Reception .....0141 211 (5)3347

For direct dialling to a hospital extension from outwith the hospitals, replace the last four digits of the hospital number with the last four digits of the extension you require (i.e. to contact General Enquiries at GRI, one would dial 0141 242 9500).

		Site	***Extension***	***Title / Specialty***
Dr Caroline	Millar	GRI	(2)9585	Consultant Biochemist, Lead Clinician
Mrs Patricia	Love	GRI	(2)9559	Technical Services Manager
Mr Alastair	Graham	GRI	(2)9568	Quality/H&S/Training Manager
Dr Alison	Kelly	GRI	(2)9526	Consultant Biochemist
Dr Maurizio	Panarelli	GRI	(2)9573	Consultant Biochemist
Dr John	Wadsworth	GRI	(2)9577	Consultant Clinical Scientist, Core & STEMDRL
Mrs Susan	Johnston	GRI	201(6)6434	Consultant Clinical Scientist, Specialist Endocrinology
Dr Anthony	Catchpole	GRI	(2)9566	Clinical Scientist, STEMDRL
Ms Donna	Chantler	GRI	(2)9525	Clinical Scientist, Endocrinology
Dr Alison	Fairservice	GRI	(2)9520	Clinical Scientist
Ms Amy	Frank	GRI	(2)9534	Clinical Scientist
Dr Kirsten	Grant	GRI	(2)9535	Clinical Scientist
Dr Craig	Livie	GRI	(2)9518	Clinical Scientist
Dr Melissa	McNaughton	GRI	(2)9565	Clinical Scientist, STEMDRL
Ms Hannah	Worthington	GRI	(2)9537	Clinical Scientist
Ms Georgia	Conrich-Wilks	GRI	(2)9531	Clinical Scientist
Mr Andrew	Marshall	GRI	(2)9558	Laboratory Sector Manager
Mrs Rosie	Leung	GRI	(2)9562	Specialist Section Manager
Ms Laura-Jayne	Stewart	GRI	(2)9505	Core Section Manager
Mrs Angela	Winters	GRI	(2)9527	Office Manager
Ms Sheena	Brownlie	GRI	(2)9598/9599	Finance administrator
Mrs Laura	Courtney	GRI	(2)9522	Administration assistant

General Information

The Clinical Biochemistry service is provided by the laboratories at Glasgow Royal Infirmary and Gartnavel General Hospital. There is a small satellite laboratory at Stobhill ACH, which handles emergency samples only. We provide an analytical and interpretative service. The Department will make relevant information available to a patient and any other health service provider at the request of the patient or the request of a healthcare provider acting on their behalf. Patients may request further information using the NHSGGC Freedom of Information Service (Freedom of Information (Scotland) Act 2002 (FOISA/FOI) Environmental Information (Scotland) Regulations 2004 (EIRs) – NHSGGC

Please telephone us to discuss any problems or issues you may have. Our efficiency depends to a large extent on your cooperation. Your compliance with a few simple rules concerning safety, specimen identification and transport of specimens to the laboratory, all outlined in this handbook, will greatly help us deliver an efficient service.

Clinical advice
A duty biochemist is always available for advice on test selection, procedures and interpretation. During routine working hours contact 0141 242 (2)9500 (option 2), for urgent enquiries between 5pm-9am Monday-Friday and 1pm-9am Saturday-Sunday; the Duty Biochemist may be contacted through the hospital switchboard.

Results
Authorised reports are available electronically via Clinical Portal, TrakCare (inpatient results) or ICE/Lab Importer (primary care). The majority of in-patient and out-patient locations, and GP practices within NHSGGC no longer receive hard copy reports. The laboratory will telephone grossly abnormal results.

Telephone requests for results
Please note that we need to establish the caller's identity before giving results over the telephone. We cannot give results to patients or their relatives. We can only provide results to medical practitioners or their authorised deputies.

Add-On Requests to Existing Specimens

The main route for add-on requests is via email to the address:

ggc.northglasgow.biochem@nhs.scot

When emailing, please provide the patient's full name and CHI number and use a secure email account (nhs.net, nhs.scot, or GGC). Add-ons will be processed as soon as is possible, between 9am-5pm, Monday-Friday. This route is capable of processing both urgent (STAT add-ons) and non-urgent GP/out-patient add-ons and is the preferred route of add-on request. No telephone add-on requests should be received by the laboratory between the hours of 9am-5pm, Monday to Friday. Out with core hours, non-urgent add-on requests can still be emailed and will be actioned at 9am on the next working day.
If the sample originated from a STAT location and an add-on test is required urgently (out with 9am-5pm, Monday to Friday) then the add-on request must be made via telephone to:
0141 242 9500 (ext. 29500).

Urgent, out of hours add on requests will only be available for the following tests:

U&E	Glucose	Bone Profile	Magnesium	LFTs
CK	Amylase	Bilirubin	CRP	Osmolality
Gentamicin	Vancomycin	Cortisol	Ethanol	Paracetamol
Salicylate	Lithium	Digoxin	Theophylline	Phenytoin
TFTs	HCG	Methotrexate	Lactate	Carbamazepine
Valproate				

Requests for any other tests should be made via email and will be actioned the next working day.

Point-of-care testing
The Clinical Biochemistry department provides full support for blood gas analysers and glucose meters in North Glasgow hospitals, including:

- A full training and assessment programme.
- A programme of quality control and maintenance to the wards.
- Replacement meters.
- Help and advice when problems arise.

For further information contact the POCT team: NorthGlasgow.BiochemistryPOCT@nhs.scot

Research
Please contact the Head of Department to discuss Clinical Biochemistry participation in research projects

Pneumatic tube
A pneumatic tube transport system is available at both GRI and GGH. The pneumatic tube system may be used for blood samples but **should not be used for**:

- High risk samples e.g. TB, Anthrax, VHF
- Sharps
- Samples for Blood Gas Analysis
- Pathology samples
- Heavy material (>kg)
- Large liquids >30mL such as urine or pleural washes
- Leaking samples
- CSF samples

Contamination results in tube shut down for all users until disinfection process is complete.

NHSGGC Biochemistry Laboratory Services

General information is available on the Clinical Biochemistry website:
https://www.nhsggc.scot/staff-recruitment/staff-resources/laboratory-medicine/biochemistry/

Glasgow Royal Infirmary (GRI)

Department of Clinical Biochemistry,
Macewen Building,
Glasgow Royal Infirmary,
GLASGOW G4 0SF
Fax 0141 552 3324
Specimen Reception 0141 242 (2)9545

Emergency requests and out-of-hours service 0141 242 9500

Location of the laboratory and hours of work
The laboratory is in the Macewen Building, at Alexandra Parade (adjacent to Accident & Emergency Department). It provides routine service Monday – Friday between 9am and 5pm and on Saturday between 9am and 12pm. An emergency service operates at all times.

Reporting Office/interpretative advice
Call the Duty Biochemist on ext 29500 (option 2) from any of the hospitals (or 242 9500 option 2, if telephoning from outside) during working hours, and via the switchboard out-of-hours.
Requests from the following locations and patient groups are handled as priorities:

Locations:	*Patients / Tests:*
A&E, minor injuries, same day admissions	All baby samples
Acute Assessment Unit	HCG samples from Sandyford clinic & EPAS
Intensive Care Unit, critical care	Drugs of Abuse screens (emergency only)
Labour ward	All gases/ met Hb / carboxy Hb
Mat Care Assessment, Mat Assessment Unit	CSF samples

Assisted Conception Suite
All theatre and recovery samples
Ward 63 enhanced recovery
Beatson Acute Oncology Assessment Unit
Beatson Enhanced Care Unit
Beatson Critical Care Outreach Patients

Any other requests for emergency analysis must be arranged with the laboratory to alert staff to the arrival of an urgent sample. Also, the electronic request form must specify urgent request.

Gartnavel

Gartnavel General Hospital (GGH)
Department of Clinical Biochemistry
Gartnavel General Hospital
1053 Great Western Road
GLASGOW G12 0YN
Fax 0141 211 3452
Specimen Reception 0141 211 (5)3347

Location of laboratories and hours of work

The main laboratory is at GGH (in the Laboratory Block of the GGH Complex). This laboratory provides routine and emergency services Mon - Fri between 0900 and 1700.

Between 1700-1930 samples can be sent via the pneumatic tube system, these will be diverted to the porter's room and sent regularly to GRI for analysis. This service stops at 1930, all samples collected after this time should be sent via taxi to the laboratories at Glasgow Royal. This taxi should be organised locally at ward level. Any samples sent in the pneumatic tube system after 1930 may remain un-analysed until the next day.

The 24/7 emergency laboratory is at GRI, Macewen Building ground floor.

North Glasgow Specialist Services:

Specialist Biochemistry and Endocrine Laboratory: Based in Macewen Building, GRI
Specialist Endocrine Laboratory - NHSGGC

Scottish Trace Element and Micronutrient Diagnostic and Research Laboratory: Based in Macewen Building, GRI
Email: STEMDRL@nhs.scot
https://www.trace-elements.co.uk/

South Glasgow Specialist Services:

General laboratory information is available on the Clinical Biochemistry website:
South Glasgow Biochemistry - NHSGGC

Specialist Toxicology: Based in QEUH
The Specialist Toxicology Handbook can be accessed via the above website

Specialist Metabolic analyses: Based in QEUH
The Specialist Metabolic Handbook can be accessed via the above website

Specimen Collection and Handling

Sample containers of any type should be obtained through normal supply routes for consumables. The Biochemistry Department does not supply containers or packing materials except by special arrangement for specialist tests. Patient informed consent is obtained by the service user. On sending samples to the Department for analysis, users agree to the "terms and conditions" supplied by the Department. Each request accepted by the Department for examination shall be considered as an agreement. Specimens will not be sent to external laboratories on behalf of ward staff unless specifically arranged. All samples received in the department are treated with utmost care and respect at all times.

Please follow these simple rules to help us provide a service of quality to our patients.

1. Test Requesting

- If request is made electronically, select patient details with care and please give clinical details.
- Ensure printing is clear on form and check date on form is correct. Positively confirm the identity of the patient prior to sampling.
- A label is provided for every sample required – please stick the right label on the right tube.
- Sometimes more than one form is printed. Please use these as some samples go directly to other hospital/labs in Glasgow.
- Do not write tests on form – written requests cannot be accepted.
- When given instructions on sampling, please follow these.
- If paper request forms are used, ensure the request form is completed correctly (Surname, Forename, DOB, CHI No. (or other unique identifier e.g. TJ no.), date & time of specimen collection & brief clinical details).
- The name and full address to which the report should be sent (Consultant, GP Surgery, Hospital Ward, Clinic, etc) must be included on the request form.
- The laboratory will not process samples that do not have clear patient identification. Any handwritten forms must be legible.
- Clinical information included on the form permits laboratory staff to assess the validity of results and may prevent unnecessary repeat analyses. Supporting information may be required for correct interpretation. For example, therapeutic drug monitoring requests require information about dosage, time since last dose, and a complete list of prescribed drugs.
- Please give contact/page number in case of abnormal results

2. Specimen Labelling and sample identification

Normally, the minimum criteria for adequate identification includes the patient's forename and surname, plus date-of-birth and CHI number (or other unique identifier e.g. TJ number). Ideally address should also be available.

- When emergency tests are required for **unidentified patients** the requesting clinician should indicate 'unknown male/female' in place of name and surname, and **must** indicate the exact time of sample withdrawal. The Casualty number should be used, where available.
- It is preferred that details are printed. Identification of the Ward/Clinic/Surgery is essential for telephoning results. The laboratory cannot process specimens that are not clearly identified and will not process unlabelled specimens.

3. Patient Preparation

- The patient should be resting for at least 5 minutes before withdrawal of blood.
- Venous blood samples should be taken with minimal stasis.
- Hyperventilation by the patient during arterial blood gas sampling may affect results.
- Many analyses require that the specimen be collected under specified conditions, e.g. fasting. In some cases, the requirements are quite stringent, e.g. for the measurement of plasma renin/aldosterone. In all cases, you should make sure that the appropriate requirements are met. If in doubt, please contact the Duty Biochemist.

4. Specimen Collection

- Ensure that the correct sample container is used for the requested tests.
- For venous blood use vacuum blood collection tubes.
- Collect fluid samples (ascitic, drain etc) into vacutainers – the laboratory can provide details of aspiration devices
- You must use an appropriate container for each test.
- If more than one tube is collected from a patient, the potassium EDTA tube should be filled last to avoid errors in potassium and calcium measurement.
- Anticoagulant tubes should be inverted several times to ensure adequate mixing.
- When taking arterial blood gas samples expel liquid heparin from arterial blood gas syringes. The heparin should fill only the dead-space of the syringe. Air bubbles should be expelled before the syringe is sealed.
- Some analyses require that the samples be collected into special containers and/or separated and deep-frozen within minutes of collection. Details of the appropriate collection containers for all samples – blood, urine, CSF, and faeces – can be found on page 10.
- Where there is any doubt about sample preparation, storage, or transport please contact the Duty Biochemist.

5. Specimen Packaging

In order to minimise the risk of interchange of samples and cross contamination a specimen bag must contain specimens from one patient only. Always ensure the sample container is securely capped.

For primary care submissions, each sample should be placed in a separate sample bag and please use the correct coloured transport bag for each discipline:

Green	Biochemistry
Pink	Haematology
Blue	Microbiology
Grey	Immunology
Teal	Virology

For secondary care submissions, samples and forms for each individual patient must be placed in separate sample bags for each laboratory discipline.

6. Storage Prior To Transport To Laboratory

- Do not expose the specimens to extremes of temperature prior to transport.
- Samples should be transferred to the laboratory with minimal delay to maintain sample integrity. Delays in centrifugation can affect the values obtained for certain analyses (e.g. potassium).

7. Safety and Dangerous Specimens

This guidance applies to blood and other body fluid samples for Biochemistry, Immunology, Haematology, Microbiology, Virology and Genetics. It does not apply to Pathology where existing procedures should continue.

Clinical staff need no longer use “DANGER OF INFECTION” stickers to highlight samples containing (or suspected of containing) blood borne viruses (BBV) such as HIV and hepatitis B or C. It is not necessary to alert laboratories (other than Pathology) about potential infectivity of such samples since all laboratories observe standard precautions.

Users MUST alert relevant laboratories by phone (contact details below) for the following samples:

i.) Body fluids containing group 4 hazard grade pathogens, namely from patients with confirmed or high possibility viral haemorrhagic fevers (VHF). (Refer to VHF guidance).

ii.) CSF from patients with tuberculous meningitis (or high suspicion of). (CSF spectrophotometry would **not** be performed on such samples).

iii.) Sputum from patients with Middle East respiratory syndrome (MERS), or high suspicion of – MUST be discussed with Consultant virologist before sample sent

The above samples MUST NOT be transported via pneumatic tube.

Biochemistry contact: reporting biochemist 29500 (option 2) Mon – Fri, 9am-5pm on call consultant outwith hours above via switchboard

8. Disposal Of Phlebotomy Equipment

Please refer to your local health and safety procedures for the safe disposal of all materials used during specimen collection

9. Dealing With Spillages And Breakages

Please refer to your local health and safety procedures for dealing with spillages and breakages.

10. Collection Of Specimens From Neonates

- Specimens from the neonatal unit are mainly capillary specimens taken from heel stabs. Care should be taken to ensure that the specimen is taken from the outer aspect of the heel, that there is no contamination, that undue force is not exerted and that the blood is free-flowing and is collected quickly. Even with the best blood collection technique, samples may still show haemolysis and results cannot then be given for certain analytes, e.g. potassium, conjugated bilirubin.
- The volume of blood required for routine analyses (e.g., U&E, LFT, Bone, CRP, bilirubin, triglycerides) depends on the number of tests/test profiles being requested. In general we require 0.25 mL blood for 1 test/test profile, 0.5mL for 2 and 0.75mL for 3 or more. However, this is dependent on the haematocrit and more blood will be required if the haematocrit is high.
- Blood can be taken from an arterial line if the umbilical artery has been catheterised. It is important not to use a line that is used for infusion, since this can lead to contamination of specimens and to increased risk of infection.
- Blood gases are analysed by medical staff in the laboratory at the ward.

Data Protection

The Data Protection Act 2018 is based upon eight enforceable principles of good practice:

1. Personal data shall be obtained and processed fairly and lawfully.
2. Personal data shall be held only for specified and lawful purposes and shall not be further processed in any manner incompatible with those purposes.
3. Personal data shall be adequate, relevant, and not excessive in the relation to the required purposes.
4. Personal data shall be accurate and, where necessary, kept up-to-date.
5. Personal data shall not be retained longer than is necessary.
6. An individual shall be entitled to have access to his or her data and where appropriate, have it corrected or erased.
7. Appropriate technical and organisational measures shall be taken against unauthorised or unlawful processing of personal data and against accidental loss or destruction of the data.
8. Personal data shall not be transferred outside EU countries unless an adequate level of data protection exists.

Organisations are obliged to comply with these principles. Failure to comply can result in an enforcement notice being issued by the Registrar.

Request Intervention

Request intervention (RI) procedures have been set up for a number of tests to facilitate more appropriate testing and help reduce unnecessary repeat testing. Appropriate time intervals for repeat testing have been discussed with clinical colleagues before being introduced. Requests for repeat analyses for a limited set of tests are held for viewing by the Duty Biochemist and may be over-ridden if deemed appropriate. Comprehensive clinical details assist the Biochemist in this task. Note requests from relevant clinics/consultants will be exempted from RI and full details of clinic, location and consultant code should be provided on all requests. Note samples are only stored for 3-4 days.

Analyte	***Request Intervention interval (days)***
Calprotectin (faecal)	120
Copper	14
Lipids	28
Protein electrophoresis	90
Selenium	14
Thyroid Function Tests (TFT) + T3	30
Vitamin A	14
Vitamins B1, B2 & B6	14
Vitamin D	340
Vitamin E	14
Vitamin K	14
Zinc	14
β Carotene	14

Specimen Information

Tube Types

The following tube are available within Greater Glasgow and Clyde. Note the colour for paediatric bottles may be different, please check the preservative. Other tube colours may be in use in other hospitals.

Description / Preservative	***Adult bottle colour***
Blood spot	BS card
Blood: Fluoride/oxalate	Grey
Blood: Potassium EDTA	Purple
Blood: Lithium Heparin	Green (non-gel) **
Blood: Plain	White
Blood: Serum Separator Tube (gel)	Yellow
Blood: Trace element tube	Dark-blue
Fluid: Plain	White
Urine: 24 hr acid	2.5 L urine bottle containing acid (available from local lab)
Urine: 24 hr plain	2.5 L urine bottle
Urine: Early morning plain (EMU)	White 20 mL universal container
Urine: Random plain (Random UC)	White 20 mL universal container
Faeces: Calprotectin	Calex tubes

Faeces: qFIT (faecal haemoglobin)	Alpha qFIT 'Picker'
Faeces: Other tests	White 20 mL universal container

*** Green and yellow top tubes are lithium heparin with gel and are unsuitable for all STEMDRL trace element and vitamin tests.*

Turn Around Time definition

Turnaround time is calculated from time of receipt of sample to authorisation of result. Results are available electronically in NHSGGC TrakCare and Clinical Portal following authorisation. Emergency requests are normally available electronically one hour after specimen receipt.

Sample Volume

The majority of tests can be carried out on a single full serum sample (yellow top). If a large number of tests are required (eg >10), please provide an additional yellow top bottle. The sample volume in the following table is a guide only.

Accreditation

North Glasgow Biochemistry is a UKAS accredited medical laboratory No.9572. The specimen catalogue (below) indicates which tests are accredited to the ISO 15189:2012 standard *Medical laboratories – Requirements for quality and competence*. Non-accredited tests still follow rigorous quality control procedures.

** NB. Some results produced may not be UKAS accredited. Please contact the laboratory for further information if required.*

Specimen Catalogue

The following table lists all of the assays available in North Glasgow Biochemistry. The reference ranges refer to adults only unless otherwise stated. Paediatric ranges are available for some analytes. The volume stated is the preferred amount, however smaller sample volumes may be acceptable (further information available on specific websites). For urgent analysis, please contact the lab.

Measurement of uncertainty refers to the concept that all measurement have an inherent degree of imprecision or variability, hence, the Department estimates uncertainty for every measurand. For more information about measurement of uncertainty for a specific analyte, please contact the duty biochemist

***Please note that biotin (Vitamin B7) can interfere with some immunoassay test results. If patients are on high doses of biotin, please contact the laboratory to discuss any unexpected result**.*

North Glasgow Biochemistry

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
α1-Antitrypsin	Blood	Yellow	2	Yes	1	1.1 – 2.1 g/L Phenotyping available by arrangement.
α-Fetoprotein (AFP)	Blood	Yellow	2	Yes	1	See tumour marker bookmark *Refer to specialist endocrine website*
1,25 Dihydroxyvitamin D	Blood	Yellow	0.25	Yes	35	*Refer to specialist endocrine website*
17-Hydroxyprogesterone	Blood	Yellow	1	Yes	7	Part of androgen screen. *Refer to specialist endocrine website* **For any urgent newborn samples please contact the lab to notify the Duty Biochemist.**

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
17-Hydroxyprogesterone (blood spot)	Blood spot	BS card	-	Yes	56	*Refer to specialist endocrine website*
25-Hydroxyvitamin D	Blood	Yellow	1	Yes	1	<25 nmol/L deficient 25-50 nmol/L insufficient >50 nmol/L adequate
25-Hydroxyvitamin D3 & D2	Blood	Yellow	2	Yes	14	*Refer to specialist endocrine website*
5-Hydroxyindoleacetic acid (HIAA)	Urine	24 hr acid	-	Yes	14	*Refer to specialist endocrine website*
Active B_{12} (Holotranscobalamin)	Blood	Yellow	2	Yes	1	≤ 25 pmol/L consistent with B_{12} deficiency 25-70 indeterminate range *Refer to North Glasgow Haematology*
Adrenocorticotrophin (ACTH)	Blood	Purple	1	Yes	7	*Refer to specialist endocrine website*
Alanine aminotransferase (ALT) *(LFT)*	Blood	Yellow	2	Yes	1	< 50 U/L
Albumin *(LFT)*	Blood	Yellow	2	Yes	1	35 – 50 g/L
Albumin (urine)	Urine	EMU	2	Yes	1	< 20 mg/L
Albumin/creatinine ratio (ACR)	Urine	EMU	2		1	Male: < 2.5 mg/mmol Female: < 3.5 mg/mmol
Aldosterone	Blood	Purple	2		14	*Refer to specialist endocrine website*
Alkaline phosphatase *(LFT)*	Blood	Yellow	2	Yes	1	<4 weeks: 70-380 U/L 4w - <16yr: 60-425 U/L Adult: 30-130 U/L ALP may be elevated in children, during pregnancy and in the elderly.
Aluminium	Blood	Green (non-gel)	1	Yes	6	*Refer to STEMDRL website.*
Aluminium (RO water)	RO Water	Universal	1		10	*Refer to STEMDRL website.*
Amylase	Blood	Yellow	2	Yes	1	< 125 U/L
Amylase/creatinine clearance ratio	Urine & Blood	Universal & Yellow	5 & 2		1	1 to 5% < 1% suggests macroamylasaemia. > 5% suggests acute pancreatitis.
Androstenedione	Blood	Yellow	1	Yes	7	Part of androgen screen. *Refer to specialist endocrine website*
Angiotensin converting enzyme (ACE)	Blood	Yellow	2	Yes	1	< 88 U/L
Anti-Mullerian Hormone (AMH)	Blood	Yellow	2	Yes	14	*Refer to specialist endocrine website*
Anti-Streptolysin O (ASOB)	Blood	Yellow	1		5	*Refer to NHSGGC Microbiology*
Anti-thyroid peroxidase antibody (anti-TPOAb)	Blood	Yellow	2	Yes	1	*Refer to specialist endocrine website*
Apolipoprotein A1	Blood	Yellow	2	Yes	7	1.0 – 2.2 g/L
Apolipoprotein B	Blood	Yellow	2	Yes	7	0.6 – 1.3 g/L
Arsenic	Urine	Universal	2		10	*Refer to STEMDRL website.*
Arsenic (hair)	Hair	Sealable bag	-	Yes	10	*Refer to STEMDRL website.*
Aspartate aminotransferase (AST) *(LFT)*	Blood	Yellow	2	Yes	1	< 40 U/L

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
Bence Jones protein (BJP)	Urine	Universal	2	Yes	14	Qualitative test. Early morning sample preferred. Also request serum protein electrophoresis. See tumour marker bookmark See Protein electrophoresis guidelines
Bicarbonate	Blood	Yellow	2	Yes	1	22 – 29 mmol/L Sample must be received in the lab within 2 hr.
Bilirubin (Total) *(LFT)*	Blood	Yellow	2	Yes	1	≤ 20 µmol/L
Bilirubin (Direct/Conjugated)	Blood	Yellow	2	Yes	1	< 15% total, only measured if total bilirubin > 45 µmol/L
Blood gases (arterial)	Blood	Syringe			POC	H^+: 36 – 44 nmol/L PCO_2: 4.6 – 6.0 kPa PO_2: 10.5 – 14.0 kPa
CA125	Blood	Yellow	2	Yes	1	See tumour marker bookmark *Refer to specialist endocrine website*
Cadmium	Blood	Purple	1		6	*Refer to STEMDRL website.*
Cadmium (urine)	Urine	Universal	2		10	*Refer to STEMDRL website.*
Caeruloplasmin	Blood	Yellow	2	Yes	1	Up to 16w 0.08-0.23 g/L 16w-1y 0.12-0.35 g/L 2y-13y 0.20-0.40 g/L 14y+ 0.16-0.47 g/L
Calcitonin	Blood	Green	1	Yes	14	Separate and freeze plasma. Transport frozen. *Refer to specialist endocrine website*
Calcium	Urine	24 hr plain	2	Yes	1	2.5 – 7.5 mmol/24 hr Ca/Creat ratio: 0.04 – 0.7
Calcium (*Bone*)	Blood	Yellow	2	Yes	1	2.20 – 2.60 mmol/L. Adjusted for albumin.
Calprotectin	Faeces	Calex tubes	1-5 g	Yes	7	Please see *Faecal Testing Guidelines* for advice and secondary care referral.
Carbamazepine	Blood	Yellow	2	Yes	1	4.0- 12.0 mg/L. Pre dose sample preferred. Conversion Factor (molar into mass units) µmol/L x 0.24 = mg/L.
Carboxyhaemoglobin	Blood	Syringe			POC	0.5 – 1.5 % of total haemoglobin Neonates: < 5 % of total haemoglobin Smokers: 10 – 15 %
Carcinoembryonic antigen (CEA)	Blood	Yellow	2	Yes	1	See tumour marker bookmark *Refer to specialist endocrine website*
Chloride	Blood	Yellow	2	Yes	1	95 - 108 mmol/L
Chloride (urine)	Urine	24 hr plain	5	Yes	1	150 – 250 mmol/24hr
Cholesterol (*Lipids or Chol & Trig*)	Blood	Yellow	2	Yes	1	Total < 5.0 mmol/L desirable in 'at-risk' individuals. LDL < 3.0 mmol/L desirable in 'at risk' individuals. HDL > 1.0 mmol/L desirable in 'at risk' individuals. Calculated LDL = Chol – HDL-C - 0.46 x trig
Chromium	Blood	Purple	1		10	*Refer to STEMDRL website.*
Chromium (urine)	Urine	Universal	5		10	*Refer to STEMDRL website.*
Chromogranin A	Serum	Yellow	1	Yes	28	*Refer to specialist endocrine website*
Cobalt	Blood	Purple	1		10	*Refer to STEMDRL website.*
Cobalt (urine)	Urine	Universal	5		10	*Refer to STEMDRL website.*
Copper	Blood	Green (non-gel)	1	Yes	6	*Refer to STEMDRL website.*
Copper	Urine	24 hr plain	5		6	*Refer to STEMDRL website.*
Copper (liver)	Liver	Universal		Yes	10	*Refer to STEMDRL website.*

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
Cortisol	Blood	Yellow	2	Yes	1	7 – 9 am: 240 – 600 nmol/L 9 pm – 12 midnight: 50 – 290 nmol/L 30 min post 250 µg synacthen > 450 nmol/L
Cortisol (saliva)	Saliva	Plain tube	2.5		35	Collection tubes available from lab *Refer to specialist endocrine website*
Cortisol (urine)	Urine	24 hr or Random	10	Yes	14	*Refer to specialist endocrine website*
C-Reactive protein (CRP)	Blood	Yellow	2	Yes	1	≤ 10 mg/L
Creatine kinase (CK)	Blood	Yellow	2	Yes	1	Female: 25 – 200 U/L Male: 40 – 320 U/L
Creatinine *(U&E)*	Blood	Yellow	2	Yes	1	≤ 7 days 53 - 97 umol/L 8 days – <4 weeks 27 - 62 umol/L 4 weeks – <9 weeks 18 - 44 umol/L 9 weeks – <51 weeks 18 - 40 umol/L 51 weeks – 1 year 19 - 43 umol/L 2 years old 20 - 44 umol/L 3 years – <8 years 18 - 44 umol/L 8 years – <10 years 20 - 50 umol/L 10 years – <14 years 30 - 65 umol/L 14 years - <15 years 35 - 70 umol/L 15 years – <16 years 35 – 100 umol/L Adult 40 – 130 µmol/L
Creatinine (urine)	Urine	24 hr plain	2	Yes	1	9.0 – 18.0 mmol/24 hr
Creatinine clearance 24hr	24hr Urine & Blood	Universal & Yellow	2 & 2		1	80 – 140 mL/min Requires serum creatinine on a sample taken during the urine collection period.
Cryofibrinogen	Blood	Purple	2	Yes	14	Normally absent. Pre-arrange with laboratory for warm flask.
Cryoglobulin	Blood	White	2	Yes	14	Normally absent. Pre-arrange with laboratory for warm flask.
Dehydroepiandrosterone sulphate (DHEAS)	Blood	Yellow	2	Yes	14	*Refer to specialist endocrine website*
Digoxin	Blood	Yellow	2	Yes	1	0.5 – 2.0 µg/L. Collect at least 6 hr post-dose. Conversion Factor (molar into mass units) nmol/L x 0.78 = µg/L.
Ethanol	Blood	Grey	2	Yes	1	Reported in mg/dL. Conversion Factors: molar into mass units mmol/L x 4.6 = mg/dL mass to molar units mg/dL x 0.22 = mmol/L
Erythropoietin (EPO)	Blood	Green	1	Yes	14	2.6 – 18.5 U/L *Refer to North Glasgow Haematology*
Ferritin	Blood	Yellow	2	Yes	1	Males 15-300 ug/l (<15 iron deficiency) Females 15-200 ug/l (<15 iron deficiency) 15-50 ug/l intermediate result. Consider iron deficiency in anaemic patients, older patients, and those with inflammatory disease. *Refer to North Glasgow Haematology*
Folate	Blood	Yellow	2	Yes	1	3.1 – 20.0 ug/L *Refer to North Glasgow Haematology*
Follicle stimulating homone (FSH)	Blood	Yellow	2	Yes	1	Ranges available upon request. Vary throughout cycle and with age.
Gamma glutamyl transferase (GGT)	Blood	Yellow	2	Yes	1	Male < 70 U/L Female < 40 U/L
Gastrin (Fasting)	Blood	Green	1	Yes	35	FASTING sample. LABILE. *Refer to specialist endocrine website*
Gentamicin	Blood	Yellow	2	Yes	1	Trough: pre-dose. Peak: 1-hour post- dose. *Refer to pharmacy for prescribing protocols.*
Glucose	Blood	Grey	2	Yes	1	Fasting: 3.5 – 6 mmol/L

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
Glucose (CSF)	CSF	Grey	0.5	Yes	1 hr	> 70% of plasma glucose Compare with simultaneous plasma glucose
Growth Hormone (GH)	Blood	Yellow	2	Yes	7	*Refer to specialist endocrine website*
Haemoglobin A_{1c} (HbA_{1c})	Blood	Purple	2	Yes	3	Non-diabetic: <42 mmol/molHb Impaired glucose regulation: 42-47 mmol/molHb Diabetes: ≥ 48 mmol/molHb
Haptoglobin	Blood	Yellow	2	Yes	1	0.3 – 2.0 g/L
HDL-cholesterol (*Lipids*)	Blood	Yellow	2	Yes	1	Total < 5.0 mmol/L desirable in 'at-risk' individuals. LDL < 3.0 mmol/L desirable in 'at risk' individuals. HDL > 1.0 mmol/L desirable in 'at risk' individuals. Calculated LDL = Chol – HDL-C - 0.46 x trig
Human chorionic gonadotrophin (HCG)	Blood	Yellow	2	Yes	1	See tumour marker bookmark *Refer to specialist endocrine website*
Immunoglobulins	Blood	Yellow	2	Yes	1	IgG: 6 – 16 g/L IgA: 0.8 – 4.0 g/L IgM: 0.4 – 2.4 g/L Age-related reference range available.
Insulin	Blood	Green	2	Yes	7	FASTING sample. LABILE. Avoid haemolysis. *Refer to specialist endocrine website*
Insulin C-peptide	Blood	Green	1	Yes	7	FASTING sample *Refer to specialist endocrine website*
Insulin-like growth factor (IGF1)	Blood	Yellow	2	Yes	7	*Refer to specialist endocrine website*
Iron	Blood	Yellow	2	Yes	1	10 – 30 µmol/L
Iron (liver)	Liver	Universal	0.5 mg	Yes	10	*Refer to STEMDRL website.*
Iron (urine)	Urine	Universal	1		10	*Refer to STEMDRL website.*
Lactate	Blood	Grey	2	Yes	1	0.6 – 2.2 mmol/L
Lactate dehydrogenase (fluid)	Fluid	White	2		1	Pleural fluid/serum LDH > 0.6: consistent with exudates
Lactate dehydrogenase (LDH)	Blood	Yellow	2	Yes	1	80 – 240 U/L
Lead	Blood	Purple	0.5		6	*Refer to STEMDRL website.*
Lipase	Blood	Yellow	2	Yes	1	8 – 78 U/L
Lipoprotein (a)	Blood	Yellow	2	Yes	7	< 30 mg/dL: minimal increment in CV risk 30-90 mg/dL: moderate increment in CV risk 90 – 180 mg/dL: greater (~50%) increment in CV risk
Lithium	Blood	Yellow	2	Yes	1	0.4 – 1.0 mmol/L Other ranges acceptable depending on clinical circumstances. Samples must be collected 12 hr ± 30 min post dose.
Luteinising hormone (LH)	Blood	Yellow	2	Yes	1	Ranges available upon request. Vary throughout cycle and with age.
Macroprolactin	Blood	Yellow	2		7	*Refer to specialist endocrine website* Only available if prolactin > 700 mU/L
Magnesium	Blood	Yellow	2	Yes	1	0.7 – 1.0 mmol/L
Magnesium (urine)	Urine	24 hr (adult) or random (paediatric)	1	Yes	6	*Refer to STEMDRL website*
Manganese	Blood	Green (non-gel)	1	Yes	6	*Refer to STEMDRL website.*
Mercury	Blood	Purple	1		6	*Refer to STEMDRL website.*

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
Mercury (hair)	Hair	Universal		Yes	10	*Refer to STEMDRL website.* Contact 0141 242 9560 to arrange.
Mercury (urine)	Urine	Universal	5	Yes	10	*Refer to STEMDRL website.*
Metadrenalines (plasma)	Blood	Purple	2	Yes	14	*Refer to specialist endocrine website*
Metadrenalines (urine)	Urine	24 hr plain	2	Yes	14	*Refer to specialist endocrine website*
Methaemoglobin	Blood	Green/ syringe	1		1	< 1.5% Send ASAP; protect from light.
Methotrexate	Blood	Yellow	2	Yes	1	See local protocols. Toxic levels: > 10 µmol/L at 24 hr > 0.5 µmol/L at 48 hr > 0.1 µmol/L at 72 hr Assay detection limit: 0.1 µmol/L. Interpretation related to time since start of dose. If the patient has had prep of mass monoclonal A/B or had carboxypeptidase G2 as a rescue therapy the specimen should not be tested by this assay.
Micronutrient screen	Blood	1 x Green & 1 x Purple	5 5		10	Includes: copper, zinc, selenium, manganese and vitamins A, B1, B2, B6, C and E. Screens for Scottish customers also include vitamins D and K. *Refer to STEMDRL website.*
Nickel	Urine	Universal	1		10	*Refer to STEMDRL website.*
NTproBNP	Blood	Purple	2	Yes	1	See Heart Failure, Heart MCN guidelines for Investigation and Management for guidance
Oestradiol	Blood	Yellow	2	Yes	1	Ranges available upon request. Oestradiol varies throughout cycle and with age.
Osmolality	Blood	Yellow	2	Yes	1	275 – 295 mmol/Kg
Osmolality (urine)	Urine	Universal	5	Yes	1	Fresh specimen required.
Oxalate (urine)	Urine	24 hr acid	2	Yes	14	Adult male: 0.08-0.49 mmol/24 hr Adult female: 0.04-0.34 mmol/24 hr Children: reference ranges for oxalate:creatinine ratio are available
Paracetamol	Blood	Yellow	2		1	Refer to BNF diagram. Collect at least 4 hours post-dose. Relate to time after dose to assess hepatotoxicity. Conversion Factor (molar to mass units) mmol/L x 151 = mg/L
Parathyroid hormone (PTH)	Blood	Purple	2	Yes	1	*Refer to specialist endocrine website*
Phenytoin	Blood	Yellow	2	Yes	1	Neonates: 6.0-15.0 mg/L Adults: 10.0-20.0 mg/L. Collect pre-dose. Conversion Factors (molar to mass units) µmol/L x 0.25 = mg/L
Phosphate (urine)	Urine	24 hr plain	2	Yes	1	13 - 39 mmol/24 hr Varies with diet.
Phosphate (*Bone*)	Blood	Yellow	2	Yes	1	0.8 – 1.5 mmol/L
PLP/PA ratio (Plasma Vitamin B6)	Blood	Purple	1		15	*Refer to STEMDRL website*
Potassium *(U&E)*	Blood	Yellow	2	Yes	1	3.5 – 5.3 mmol/L Invalid in old/ haemolysed samples.
Potassium (urine)	Urine	24 hr or Random	2	Yes	1	25 – 125 mmol/L Interpret with serum concentration. Varies with diet
Procalcitonin	Blood	Yellow	2	Yes	1	*Refer to NHSGGC Microbiology*
Progesterone	Blood	Yellow	2	Yes	1	> 20 nmol/L Confirms ovulation if taken in mid-luteal phase.
Prolactin	Blood	Yellow	2	Yes	1	Male <400 mU/L Female <630 mU/L Avoid stress.

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
Prostate-specific antigen (PSA)	Blood	Yellow	2	Yes	1	See tumour marker bookmark *Refer to specialist endocrine website*
Protein (CSF)	CSF	Grey or Plain UC	2	Yes	1 hour	< 0.45 g/L. Contamination with blood renders this test invalid.
Protein (fluid)	Fluid	White	2		1	Pleural fluid/serum protein > 0.5: consistent with exudates.
Protein (*LFTs*)	Blood	Yellow	2	Yes	1	60 to 80 g/L Avoid venous stasis and haemolysis.
Protein (urine)	Urine	24 hr plain	2	Yes	1	< 150 mg//24 hour
Protein electrophoresis	Blood	Yellow	2	Yes	14	Paraprotein quantitation and typing. Also request urine BJP. See tumour marker bookmark See Protein electrophoresis guidelines
qFIT (faecal haemoglobin)	Faeces	Picker	2ug	Yes	2	*Please see NHSGGC qFIT website*
Renin Concentration	Blood	Purple	5	Yes	14	*Refer to specialist endocrine website* Do not collect on ice. Avoid haemolysis. Separate and freeze plasma. Transport frozen.
Salicylate	Blood	Yellow	2	Yes	1	Intoxication: > 350 mg/L Severe Toxicity: > 700 mg/L >280 mg/L , if under 5 years Conversion Factor (molar to mass units) mmol/L x 138 = mg/L
Selenium (Plasma)	Blood	Green (non-gel)	1	Yes	6	*Refer to STEMDRL website.*
Selenium (Red cell)	Blood	Green (non-gel)	1	Yes	6	*Refer to STEMDRL website.*
Sex hormone-binding globulin (SHBG)	Blood	Yellow	2	Yes	1	*Refer to specialist endocrine website*
Sodium *(U&E)*	Blood	Yellow	2	Yes	1	133 to 146 mmol/L. Avoid haemolysis.
Sodium (urine)	Urine	24 hr plain	2	Yes	1	Varies with diet.
Steroid profile (urine)	Urine	24 hr plain	10	Yes	28	*Refer to specialist endocrine website*
Testosterone (female)	Blood	Yellow	1	Yes	7	Part of androgen screen *Refer to specialist endocrine website*
Testosterone (male)	Blood	Yellow	2	Yes	1	Adult males: 10 – 36 nmol/L Analysed by immunoassay
Theophylline	Blood	Yellow	2	Yes	1	Neonates: 5.0 to 10.0 mg/L 1 Month - 1 year: 5.0 -15.0 mg/L Adults: 10.0 to 20.0 mg/L (5.0 to 10.0 mg/L adequate in some circumstances). Collect pre-dose or > 8 hours post-dose for slow-release preparations. Conversion Factor (molar to mass units) µmol/L x 0.18 = mg/L
Thyroglobulin and Thyroglobulin antibody	Blood	Yellow	2	Yes	7	*Refer to specialist endocrine website*
Thyroid stimulating hormone (TSH) (*TFT*)	Blood	Yellow	2	Yes	1	0.35 – 5.0 mU/L
Thyrotrophin receptor antibodies (TRAb)	Blood	Yellow	2	Yes	14	*Refer to specialist endocrine website*
Thyroxine, free (fT4) (*TFT*)	Blood	Yellow	2	Yes	1	9.0 – 21 pmol/L
Tri-iodothyronine total (T3)	Blood	Yellow	2	Yes	1	0.9 – 2.5 nmol/L
Transferrin	Blood	Yellow	2	Yes	1	2.0 to 4.0 g/L
Triglycerides (*Lipids, Chol & Trig*)	Blood	Yellow	2	Yes	1	0.2 – 2.3 mmol/L Fasting range only (12 hr fast)
Troponin I high sensitivity	Blood	Green	2	Yes	1	Male: ≤ 34 ng/L in men

Analyte *(SET)*	Sample	Adult Tube	Vol (mL)	Accredited	Result time (days)	Reference Range and General Comments
						Female: ≤ 16 ng/L in women Refer to NHSGGC chest pain pathway for guidance.
Urate	Blood	Yellow	2	Yes	1	Males: 200 – 430 µmol/L Female: 140 – 360 µmol/L <9 years (M and F): 110 – 300 µmol/L
Urate (urine)	Urine	24 hr plain	2	Yes	1	1.5 to 4.5 mmol/24 hr
Urea *(U&E)*	Blood	Yellow	2	Yes	1	2.5 to 7.8 mmol/L
Urea (urine)	Urine	24 hr plain	2	Yes	1	160 to 500 mmol/24 hr
Valproate	Blood	Yellow	2	Yes	1	50 to 100 mg/L Poor correlation between serum concentration and effect. Collect pre-dose (not critical). Only useful to detect toxicity or non-compliance. Conversion Factor (molar to mass units) µmol/L x 0.14 = mg/L.
Vancomycin	Blood	Yellow	2	Yes	1	Trough: pre-dose *Refer to pharmacy for prescribing protocols.*
Vitamin A (retinol) & β	Blood	Green (non-gel)	1	Yes	10	*Refer to STEMDRL website.*
Vitamin B1 (thiamine diphosphate)	Blood	Purple	1	Yes	10	*Refer to STEMDRL website.*
Vitamin B2 (flavin adenine nucleotide)	Blood	Purple	1	Yes	10	*Refer to STEMDRL website.*
Vitamin B6 (pyridoxal phosphate)	Blood	Purple	1	Yes	10	*Refer to STEMDRL website.*
Vitamin C (ascorbic acid)	Blood	Green (non-gel)	1		10	*Refer to STEMDRL website.*
Vitamin E (tocopherol)	Blood	Green (non-gel)	1	Yes	10	*Refer to STEMDRL website.*
Vitamin K (phylloquinone)	Blood	Purple	2	Yes	10	*Refer to STEMDRL website.*
Zinc	Blood	Green (non-gel)	1	Yes	6	Blood should be spun within 4 hr or within 24 hr if refrigerated. *Refer to STEMDRL website.*
Zinc (urine)	Urine	24 hr plain	2		6	*Refer to STEMDRL website.*

A number of other specialist tests are available in referral labs. Details are available via the Duty Biochemist 0141 242 9500, option 2.

Trace Elements and Vitamins – STEMDRL

The Scottish Trace Element and Micronutrient Diagnostic and Research Laboratory (STEMDRL) is in part centrally funded by the National Services Division of NHS Scotland to provide a specialist analytical and advisory service for trace elements and vitamins. The principal aspects of this service are:

- a reliable analytical and interpretative service of trace elements and vitamins for the NHS in Scotland
- analysis of water quality for Scottish renal dialysis units
- monitoring of occupational exposure to toxic elements
- research and audit aimed at improving the services offered

Full details of tests available and sample requirements can be found at https://www.trace-elements.co.uk

Diagnosis of Wilson's Disease:

The first line tests recommended for suspected Wilson's Disease are plasma copper and 24 hour urine copper. In borderline cases a simple dynamic test (Copper-65 Absorption Test) is available. Contact 0141 242 9560 or refer to website.

Micronutrient Screen

The following analyses are part of the Micronutrient Screen (each of these tests may also be requested separately):

Trace elements: copper, zinc, selenium, manganese.

Vitamins: A, E, B1, B2, B6, C. (Screens for Scottish customers also include vitamins D and K)

Specimens required: 1 Heparin non-gel tube (5mL) and 1 EDTA tube (5mL). Please note if using TrakCare, 'Micronutrient set 2' should be requested. This requires 1 EDTA and 3 Heparin non-gel tubes, but 2 of the heparin tubes only need to be partially filled.

The assessment of nutritional status should also include measurements of urea & electrolytes, calcium, glucose, magnesium, protein/albumin and CRP.

Notes:

- Blood specimens should be sent to the laboratory promptly, accompanied by one request card (if from outwith NHS Greater Glasgow and Clyde) appropriately filled and marked 'Micronutrient screen' (to arrive at GRI Monday to Thursday only).
- Micronutrient screening for patients on TPN: blood samples for micronutrient screening should be taken at least eight hours after TPN infusion has been completed to allow micronutrients to distribute from the central compartment to tissues. In patients who depend on long-term TPN micronutrient concentrations should be measured no more frequently that every 2-3 months.
- The inflammatory status of the patient should be assessed (by measuring CRP) before requesting a micronutrient screen, if:
  CRP levels > 10 mg/L, *laboratory assessment of plasma selenium, copper and vitamin C are unlikely to be reliable*
  CRP levels > 20 mg/L *laboratory assessment of plasma zinc, vitamin A and vitamin D are unlikely to be reliable*

Complaints and Feedback

The Department shares the corporate objectives of NHS Greater Glasgow and Clyde (NHSGGC) and commits to provide a comprehensive and efficient analytical, interpretative, clinical advisory and educational service of the highest quality to the Hospitals and General Practitioners within NHSGGC.
The Department constantly strives to improve its service. If we fail to provide the service that you expect, please get in contact with our Quality Manager or Head of Technical Services. Should you wish to make a complaint about a clinical issue or our reporting please contact our Lead Consultant.

We investigate all complaints and will inform complainants of any outcomes. Complaints are investigated, reviewed monthly at management meetings and general feedback is given to all our staff at monthly staff meetings.

Keeping the service efficient

Electronic requesting:
1. There is a label for every sample required that tells you tube type. Please ensure that you stick the right label on the right tube
2. Sometimes more than one form is printed. Please use these, as some samples go directly to other hospital/labs in Glasgow
3. Please do not write tests on form – written requests cannot be accepted
4. Ensure printing clear on form and check that date on form correct
5. When given instructions on sampling, please follow these.
6. Please give clinical details and contact/page number in case of abnormal results

Paper request forms:

1. Tell us who the patient is. Please use labels if available. If there are no labels, please write legibly the patient's name, CHI No, date-of-birth and the ward. Please put the date and time of the collection on the form and the specimen bottle. Do not put more than one patient's specimens into one primary specimen bag.
2. Tell us where you are. Write your name and the name or number of your ward so that we know where to send the report. Many results are not delivered because we do not know where to send them.
3. If you are using the phlebotomy service, fill the request form the night before blood collection but make sure that the date of collection is correct. Make sure that there is patient ID on each specimen bottle, that the bottles are not leaking and that they are placed in the polythene bag for transport. We cannot analyse blood that comes in an unmarked bottle.

Further general points:

1. Please send specimens to the laboratory as soon as possible.
2. If you are sending emergency samples notify the laboratory. This ensures priority handling.
3. On Saturdays, Sundays and Public Holidays you need to send samples early. They must reach us before 11am.
4. Use Clinical Portal or TrakCare to obtain results.
5. Call the Duty Biochemist if you need advice.

This handbook is also available on the NHSGGC website:
North Glasgow Biochemistry - NHSGGC