Referral Test (Sendaways) Directory

Version number 1.5

Author Eileen Byrne

Authorised by Rebecca Stead

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Version Number	Change Details	Date
1.5	Clobazam: Updated reference interval 50-300 ug/L. LDH isoenzymes: Entry removed. Cardiolipin: Entry removed as test is performed by Coagulation/Diagnostic Haemostasis. Does not require referral to Bristol. Bismuth (Blood & Urine): No longer sent to Imperial Pathology Services. Referral lab changed to University Hospital Southampton Pathology Services and details updated. Flecainide: No longer sent to St Georges Analytical Services International. Referral lab changed to Cardiff Toxicology Laboratories and details updated. Plasma Sterol Analysis: (Includes 7-Dehydrocholesterol, 8-Dehydrocholesterol, Cholesterol, Desomsterol, Lathosterol, Lanosterol, 8 (9)-cholestanol and the 4-methyl-sterols). No longer sent to Great Ormond Street. Referral lab changed to Sheffield Children's Hospital and details updated. 7-Dehydrocholesterol: (Includes 7-Dehydrocholesterol, 8-Dehydrocholesterol, Cholesterol, Desomsterol, Lathosterol, Lanosterol, 8 (9)-cholestanol and the 4-methyl-sterols). No longer	11/07/2022

	sent to Great Ormond Street. Referral lab changed to Sheffield Children's Hospital and details updated. Dexamethosone: Added entry for test as a BTEST. Referral lab details added (Department of Medical Biochemistry and Immunology, University of Wales, Cardiff). Test information and requirements also included. Plasma Mycophenolic Acid: Added entry for test as a BTEST. Referral in lab details added (IDM Service - Liver Studies via KCH). Test information and requirements also included.	

1. Introduction

Referral (sendaways) laboratory is defined as (ISO15189) 'external laboratory to which a sample is submitted for examination'. For the purpose of this directory this includes any sample sent outside Viapath Analytics at St Thomas' Hospital including other Viapath sites such as King's College Hospital.

Referral (sendaways) test directory includes pre-analytical, analytical and post analytical aspects of all referral tests and provides guidance for Special Processing Unit (SPU)/ Central Specimen Reception (CSR) and Blood Sciences Sendaways Team.

SPU handle all send away samples including request entry into Pathnet LIMS, sample storage, printing of sendaway request forms, sample packaging and transport, results receipt/logging, first entry into Pathnet LIMS and scanning of sendaway reports once result is entered into Pathnet.

Duty Biochemist, also referred to as CB1 (Clinical Biochemist), is based in Blood Sciences and handles all clinical queries related to Biochemistry. Duty Biochemist in Blood Sciences is available via mobile phone (Tel: 07738 897061).

Sendaways team consists of a Senior Clinical Scientist (CS) and Sendaways Biomedical Scientist (BMS) within Automated Chemistry (Blood Sciences). They are responsible for transcription checking of sendaway tests entered into Pathnet by SPU, clinical authorisation and communication of abnormal results, responding to sendaways queries and quality tasks associated with the sendaways service. This team work in close collaboration with CSR/SPU staff providing advice where needed.

This referral directory covers processes described above and should be used in combination with

- The **Referral Tests (Sendaways) Service SOP [BSAC-SOP-079]** covers the accountability of SPU/ CSR and Blood Sciences Sendaways team in the management of referral of specimens to other laboratories and the authorising of reports from referral laboratories.
- **Blood Sciences Specimen Acceptance Policy [BS-P-006]**.
- Blood Sciences **Communication of Abnormal Results [BSAC-SOP-009]** and **Sendaways Communications Log [BSAC-LF-232]**(not applicable to SPU/CSR).

  Blood Sciences **Amended Results Procedure [BS-MP-047]** (not applicable to SPU/CSR).

Collection tubes quick guide:

Blood: The main vacutainer tube used is the gold/yellow top (SST, clotted blood with gel separator). Others needed for certain tests are: red top (plain clotted blood), purple top (EDTA anticoagulant), grey top (fluoride preservative) and green top (lithium heparin anticoagulant).

Note: while these cap colours are generally correct for adult tubes, they may be different for non-standard adult tubes and paediatric tubes.

Gold

Serum (Serum separator tube)

Red

Serum (no preservative)

Royal Blue

Trace elements (K_2 EDTA)

Green

Plasma/whole blood (Lithium heparin)

Lavender

Whole blood (K_2 EDTA)

Paediatric tubes/samples: the tube top colours given above do not apply to paediatric containers. Usually white tops are plain but other lids will vary according to manufacturer.

Urine: Random and early morning urine samples should be collected in 50 mL Sterilin containers. Plain containers for 24 hour urine collections are from CSR. Acidified containers for 24hr urines, containing hydrochloric acid, are available from CSR.

Faeces: Random samples should be collected in 50 mL Sterilin containers.

Name of test	**1,25-dihydroxyvitamin D**	
Pathnet code	**B125D**	**Orderable on EPR** □ NO √Yes

Sample container	Yellow Top SST/ Green Top Lithium Heparin	
Sample requirements	3 ml of frozen serum/plasma 1 individual aliquot for this test. Centrifuge, separate serum/plasma into send out tube and place into SPU freezer	
Minimum volume required	1.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy **Samples not frozen timely are not suitable for analysis and should not be referred.**	
Storage in laboratory	Frozen < 4 hours – blue bag, Freezer -20°C	
Laboratory referred to	Biomnis	UKAS accreditation reference: COFRAC N° 8-1973 (ISO 15189:Standards)
Transport conditions	Frozen – blue bag Collection organised by Biomnis via City sprint Courier	
Address of referral laboratory	Biomnis 17-19 Avenue Tony Garnier 69007 Lyon	
Contact details for following up results and clinical interpretation:	Email: Vandanah.nunloll-bernard@biomnis.com Telephone: 00 33 4 72 80 23 48	
Turn around time	3 days	
Cost	38.57 Euros or £31.96	
EQA Scheme and performance	ProBioqual Scheme	
Entering results into Pathnet	Enter the numerical result (pmol/L) into Pathnet using ACC. The results on the report are reported by Biomnis in two different units; only the **pmol/L** results are reported. Enter any additional comments on the report as text (F6).	
GLV queue	391-5	
Clinical indications	1,25-di-OH vitamin D does not reflect vitamin D reserves but the activity of renal 1-alpha hydroxylase. In practice, measurement is indicated 2nd or even 3rd line in the investigation of some case of hypo or hypercalcaemia (for example, hypercalcaemia in sarcoidosis or lymphoma), combined with a parallel full calcium and phosphate profile (isolated measurement is of no value). It is also useful to diagnose a rare familial genetic disease, vitamin-resistant rickets (VRR). 1,25-dihydroxvitamin D measurement should therefore only be used in situations where an abnormality of 1a-hydroxylation is suspected (defective vitamin D metabolism).	

Methodology	Radioimmunoassay
Limitations	Current treatments: all proprietary products containing vitamin D may cause hypervitaminosis D. Unlike 25-OH vitamin D, calcitriol concentrations are not affected by anti-epileptic drugs. Other treatments can alter the activity of renal 1-alphahydroxylase including corticosteroids, insulin, growth hormone, sex hormones, calcium, phosphates and potassium.
Reference range(s), units and source	48 – 192 pmol/L **Source:** Souberbielle J.C., Cormier C., Kindermans C., et al. Vitamin D status and redefining serum parapprotein hormone reference range in the eldery. J Clin Endocrinol Metab 2001; 86: 3086-90. Lips P., Vitamin D deficiency and second hyperparathyroidism in the elderly: consequences for bone loss and fractures and therapeutic implications. Endocrine Review 2001; 22: 477-501. Le Moel G., Fain O., Vtamine D. In Cahier de fromation en biologie medicale Bioforma 2007, 38: 40-8.
Critical limits & actions	Critical values are emailed to BiochemSendawaysTeam@gstt.nhs.uk Very high results suggestive of toxicity should be telephoned to the requestor.
Notes about authorising	Please check that results are reported in correct units.

Name of test	**7-Dehydrocholesterol**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Lithium heparin (green top) plasma	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	300 µL (Preferred Volume: 1 mL)	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store at -20°C	
Laboratory referred to	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust.	UKAS accreditation reference: 10139
Transport conditions	Send by first class post. Store at -20°C.	

Address of referral laboratory	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust, Western Bank, Sheffied, South Yorkshire, S10 2TH.
Contact details	Duty Clinical Scientist: 0114 271 7000, Bleep 095 Result Enquiries (Telephone): 2717445 Results Enquiries (email): Metabolic.sch@nhs.net
Turn around time	3 – 6 weeks
Cost	Per Test: £51.75
EQA Scheme and performance	ERNDIM Special Assays in Serum
Entering results into Pathnet	Transcribe all the results, units, reference range (control range) and any reporting comments including on the report into Pathnet. Add the following comment at the end of the report "This test was performed at Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust".
GLV queue	391 5
Clinical indications	
Methodology	GC-MS
Limitations	
Reference range(s) and units	Reference range (umol/L) 7-Dehydrocholesterol: <2 Control range (umol/L) 8-Dehydrocholesterol < 2.0
Critical limits & actions	7-Dehydrocholesterol: Affected range: >5
Notes about authorising	

Name of test	**AAV9 Antibody Screen**	
Pathnet code	**BTEST**	**Orderable on EPR** NO
Sample container	The sample will be collected by the clinical team using a special sample collection kit. They will bring the sample with the sample collection kit box to CSR.	
Sample requirements	Serum in sample collection tube from AAV9 Antibody Screening Kit	
Minimum volume required	500 µl	
Rejection criteria	Samples less than 500 µL Haemolysed samples should be avoided but should still be sent for analysis. State whether light, moderate or heavy haemolysis in the email to Niaz, please see 'Courier booking and collection' – step 4. The Sendaways team or a chemistry BMS can help with determining haemolysis.	
Storage in laboratory	See AAV9 sample processing and transport instructions at end of this entry	
Laboratory referred to	Viroclinics – courier arranged via World Courier, see AAV9 sample processing and transport instructions at end of this entry	UKAS accreditation reference:
Transport conditions	See AAV9 sample processing and transport instructions at end of this	

	entry.	
Address of referral laboratory	Viroclinics Rotterdam Science Tower Marconistraat 16 3029 AK Rotterdam	
Contact details	Clinical advice:	Results follow up: AAV9-Screening@Viroclinics.com Note: due to the AAV9 antibody screening service design, results will be emailed to the requesting clinicians who will email the results to the Sendaways team for result entry.
Turnaround time	Around 5 working days	
Cost	No charge – courier and cost of test covered by Novartis Gene Therapy	
EQA Scheme and performance		
Entering results into Pathnet	Results will be entered and authorised by Sendaways Team. Enter the result as free text in the results field as follows: Estimated anti-AAV9 IgG endpoint dilution ratio: Inferred Clinical Significance: NEGATIVE/POSITIVE **If result is negative, add:** If endpoint dilution ratio is 1:50 or a lower dilution patient exhibits Negative IgG response to AAV9. **If result is positive, add:** If endpoint dilution ratio 1:100 or a higher dilution patient exhibits Positive IgG response to AAV9. Specimen unique identifier: Sample analysed at Viroclinics Biosciences.	
GLV queue	391/5	
Clinical indications	Patients with SMA under the Paediatric Neuromuscular Service being evaluated for, and undergoing treatment, with Zolgensma. The treatment is for patients with 5q SMA with a bi-allelic mutation in the SMN1 gene and a clinical diagnosis of SMA Type 1, or patients with 5q SMA with a bi-allelic mutation in the SMN1 gene and up to 3 copies of the	

	SMN2 gene SMA. AAV9 antibody testing is performed as part of clinical assessment for suitability for gene therapy. Anticipate 6 to 10 patients per year. If positive for AAV9 antibody, the test may need to be repeated a few weeks later to confirm, particularly in neonates or breast fed infants.
Methodology	Anti-AAV9 human IgG ELISA
Limitations	Positive results may require a repeat test a few weeks later, particularly in neonates or breast fed infants due to presence of maternal AAV9 antibody.
Reference range(s) and units	No units, AAV9 result reported as dilution ratio vs IgG. **Inferred Clinical Significance (ICS):** **if endpoint dilution ratio is 1:50 or a lower dilution patient exhibits Negative IgG response to AAV9** **if endpoint dilution ratio 1:100 or a higher dilution patient exhibits Positive IgG response to AAV9**
Critical limits & actions	Not required.
Notes about authorising	Results will be entered and authorised by Sendaways Team.

POS/NEG	anti-AAV9 IgG endpoint dilution ratio
NEG	< 1:12.5
NEG	1:12.5
NEG	1:25
NEG	1:50
POS	1:100
POS	1:200
POS	1:400
POS	>1:400

AAV9 sample processing and transport instructions

AAV9 sample receipt

1. The sample will be hand delivered by the clinician who has taken the sample.
    a. Mon-Fri 0900 – 1700h, the sample will usually be delivered to a member of the Sendaways Team, unless they are unavailable then it will be a member of the SPU Team.
    b. Mon-Fri 1700-0900h, Sat 0800-1700h, Sun 1000-1500h the sample will be delivered to an SPU Team member. The clinician will come to CSR and ask for an SPU Team member.
    c. Samples will not be collected outside of these hours.

2. SPU will receive the sample in small cardboard box that contains:
    a. A yellow top tube containing blood. This sample may look unlabelled but it will have

a unique number barcode on it – this is the number used to identify the patient and will match the number/barcode on the completed Laboratory Requisition Form (LRF) provided.

b. A biohazard bag

c. 2 unique barcode labels that are the same as those on the sample and LRF – note the number of the last number on the barcode may differ i.e. end '-0', '-1', '2' etc

d. A starstead tube labelled with the unique identifier.

Note: We cannot send any patient identifiable information. The LRF will have a unique barcode number that identifies the patient.

The clinical team may provide an EPR label that has the patient details – use this for booking into Pathnet but do not send with patient sample to referral lab. **Before the clinician leaves, ensure they provide the patient details, including hospital number**. If no EPR label is provided write the patient ID information on the PHOTOCOPY of the LRF.

3. Make 2x photocopies of the Laboratory Requisition Form (LRF)
    a. Attach a label with patient details to the **photocopies only (DO NOT attach a patient identifying label to the original LRF)**.
    b. Give one photocopied form to the requesting clinician.
    a. Use the other photocopied form to book in the sample.

Book sample into Pathnet

1. COE, client code 2, request using use patient demographics on EPR label / hospital number provided, requesting doctor: Dr E Wraige.
2. Book as a BTEST, test name: AAV9 Antibodies
3. Amend date and time if provided
4. Book in a BOLN on same number and use the aliquot barcode as OLN (the barcode number ending in '-1' not '-0').
5. Print a set of Pathnet labels and stick on to the PHOTOCOPY of the form, ensuring you do not cover the reference number. Do not stick Pathnet labels on the original form as this will be sent to the referral lab.

Sample processing

1. Allow sample to clot for 1 – 2 hours.
2. Centrifuge for 10 mins at 1200g using the centrifuge (Megastar 16) by air chute in urgent bay in reception.
3. Transfer serum to the Starstead tube labelled with the unique number identifier (located in the sample kit box).
    a. Check serum volume against markings on side of tube, at least 0.5 ml is required, but please aliquot as much serum as possible, up to 1.25 ml marking on tube.
    b. If there is less than 0.5 mL of serum a repeat sample is required.
    c. Secure lid with parafilm.
4. Check sample for haemolysis
    a. Mon to Fri 9-5pm, ask the Sendaways Team to check the sample. The sample must be frozen promptly so if no one is available immediately, ask a Chemistry BMS if the sample is haemolysed.
    b. Outside of Mon to Fri 9-5pm ask a Chemistry BMS to check the sample.
    c. Haemolysed samples should still be sent for analysis, but state whether light, moderate or heavy haemolysis in the email to Niaz, please see 'Courier booking and collection' – step 4. The Sendaways team or a chemistry BMS can help with determining haemolysis.
5. If a repeat is required do not send the sample and request a repeat sample.
    a. Mon to Fri 9-5pm, contact the Sendaways Team immediately on 07738 896628, who will contact the Clinical Team.
    b. Outside of these hours, please contact the requestor to let them know the sample is haemolysed and a repeat sample is required. The requestor's number will be on the LRF.
6. Place sample in the biohazard bag provided, seal the bag and place in the sample kit box, along with the original LRF, and the waybill. Place in the CSR -80 ^{o}C freezer in the freezer room in Chemistry. **Ensure no patient identifiable information is in the box, on the sample tube or LRF.**
7. Add the sample details to the Non-LIMS Send out Spreadsheet. SPU do not need to chase the result.
8. Scan the photocopied, Pathnet labelled LRF, and give the copy to the Sendaways Team to

be stored in the Sendaways Communications Log under the date requested. If it is out of hours or a member of the Sendaways Team is available, please scan the form and email it to: BiochemSendawaysTeam@gstt.nhs.uk

Courier booking and collection

As soon as the clinical team have informed us they are collecting an AAV9 antibody sample, book the courier.

1. Print 3 copies of the customs invoice located here: S:\Pathology\Customer Service\SPUNIT\Sendaways\Sendaways

   Date and sign all 3 copies of the customs invoice.

   World courier prefer to see a copy of the customs invoice when you order a courier, to facilitate customs clearance. When booking the courier, inform World Courier that the customs invoice is ready, and you can email a copy to cs@worldcourier.co.uk and macteam@worldcourier.co.uk if required.

2. Call World Courier GB Customer Service department to schedule the sample pick up via 0207 717 1495.

   Please provide the account number and protocol number to the customer service representative of World Courier during the telephone conversation:

   - **Account number:** 1311
   - **Protocol:** AVXS AAV9

3. Arrange the courier for collection between 0900-1700h. Viroclinics will receive samples on Saturdays and Sundays so it is OK to book the courier on Friday evenings and at weekends.

4. Email BiochemSendawaysTeam@gstt.nhs.uk, SPUnit@viapath.co.uk and niaz.nawaz@novartis.com, the Novartis Gene Therapy Manager, to let them know when the sample will be collected.

5. World Courier will collect the sample, and provide a polystyrene box and dry ice.

6. On the SPU Pending Couriers whiteboard in reception, write: World Courier for Amsterdam, please find "write your name, SPU".

   Note: it is important that it is either you, or another SPU team member who is aware of the sample, that hands the sample over to the World Courier due to the need to follow the steps below.

7. When the courier comes for collection, give the courier:

   a. Serum sample in Biohazard bag (discard the cardboard box)

   b. Laboratory Requisition Form (to be placed on top of the polystyrene box and under outer cardboard box lid)

c. 3 copies of the customs invoice

d. World Courier Waybill

i. The courier may have their own waybill, and if they do, use this one and discard the waybill in the sample box in the confidential waste

ii. The courier will finalise the waybill and hand over the 'origination – shipper copy' of the waybill for our records.

8. Let Sendaways Team know the sample has been shipped and give them the copy of the waybill which should be stapled to the photocopied LRF and stored in the Sendaways Communication Log under the date requested.

Name of test	**Acylcarnitines (plasma)**	
Pathnet code	**N/A**	**Orderable on EPR** √ No □Yes
Sample container	LiHep plasma. Sodium and fluoride can also be used.	

	If ***bloodspot*** acylcarnitines are requested please contact the IMD team on x89652	
Sample requirements		
Minimum volume required	0.5 ml	
Rejection criteria	EDTA samples cannot be accepted	
Storage in laboratory	-20C freezer	
Laboratory referred to	Department of Clinical Chemistry and Newborn Screening, SHEFFIELD CHILDREN'S NHS FOUNDATION TRUST	UKAS accreditation reference:
Transport conditions	*****PLASMA ACYLCARNITINES ARE SENT BY IMD TEAM***** Please contact the IMD Team on x89652 Samples are stored at -20C and posted via first class post	
Address of referral laboratory	Department of Clinical Chemistry and Newborn Screening SHEFFIELD CHILDREN'S NHS FOUNDATION TRUST WESTERN BANK SHEFFIELD S10 2TH	
Contact details	Result enquiries (telephone) 271 7445 Result enquiries (email) Metabolic.sch@nhs.net	Results follow up: N/A
Turn around time	N/A	
Cost	N/A	
EQA Scheme and performance	N/A	
Entering results into Pathnet	N/A	
GLV queue	N/A	
Clinical indications	N/A	
Methodology	N/A	
Limitations	N/A	
Reference range(s) and units	N/A	
Critical limits & actions	N/A	
Notes about authorising		

Name of test	**Adiponectin**	
Pathnet code	**BAPN**	**Orderable on EPR** □ NO
Sample container	Yellow Top SST serum or EDTA or Lithium heparin anti-coagulated plasma	
Sample requirements	Centrifuge specimen, separate serum into Send Out tube and freeze within 1 hour of collection.	
Minimum volume required	0.5mls	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Freezer at -20°C	
Laboratory referred to	Addenbrooke's Hospital https://www.sas-centre.org/assays/hormones/adiponectin	UKAS accreditation reference:
Transport conditions	Send frozen	
Address of referral laboratory	Dept. Clinical Biochemistry Addenbrooke's Hospital Hills Road Cambridge CB2 2QQ	
Contact details	Clinical advice: 01223 217156	Results follow up: 01223 217156
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter result as free text comment exactly as it appears on the report.	
GLV queue	391-5	
Clinical indications	Adiponectin is used as a marker of insulin receptor dysfunction usually in research setting. This test is not used as a routine but may be requested by Diabetes and Endocrine team. Discuss with requesting team.	
Methodology	2-site time resolved fluorescence immunoassay (DELFIA)	
Limitations	Not specified	
Reference range(s) and	Appropriate Gender, Age and BMI related Reference range data will	

units	be provided
Critical limits & actions	
Notes about authorising	

Name of test	**Adrenaline (Blood) (Noradrenaline)**	
Pathnet code	**BAD/BNAD** **Not routinely available – advise to order plasma**	**Orderable on EPR** □ NO √Yes

	metanephrines on EPR (send to King's)	
Sample container	**Special Green (Metabolites) tubes. No longer available from CSR.**	
Sample requirements	Centrifuge and separate plasma on arrival. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen (less than -20°C)	
Laboratory referred to	St Helier. Not routinely requested	UKAS accreditation reference: 8961
Transport conditions		
Address of referral laboratory	Department of Chemical Pathology & Metabolism St. Helier Hospital Wrythe Lane Carshalton SM5 1AA Contact Sendaways team before sending sample - Telephone referral laboratory to check if test is still available before sending	
Contact details	Clinical advice: N/A	Results follow up: N/A
Turn around time	10 days	
Cost	N/A	
EQA Scheme and performance	No EQA programme available. Sample exchange since Mar 2016 with another service provider.	
Entering results into Pathnet	The following comment is automatically stamped onto all adrenaline requests in Pathnet: "Samples should be collected through an indwelling cannula after 30 minutes recumbency".	
GLV queue	391-5	
Clinical indications	Phaeochromocytomas are catecholamine-secreting tumours arising from adrenomedullary tissue (90%) or extra-adrenal chromaffin tissue (10%). Those arising from extra-adrenal tissue are commonly known as paragangliomas.	
Methodology	HPLC with electrochemical detection	
Limitations	**Not routinely available – advise to order plasma metanephrines on EPR (send to King's)** Noradrenaline and adrenaline are produced by the sympathoneuronal and sympathomedullary systems and therefore, are not specific to phaeochromocytoma. Increased plasma catecholamine levels may be produced by a variety of physiological conditions or pathological states (e.g. emotional	

	stress, physical activity, eating, and fever). Many phaeochromocytomas secrete catecholamines episodically; between episodes, plasma levels or urinary excretion of catecholamines may be normal.
Reference range(s) and units	No reference range defined in Pathnet Units: nmol/L
Critical limits & actions	
Notes about authorising	

Name of test	**Adrenocorticotrophic hormone (ACTH)**	
Pathnet code	**BACTH**	**Orderable on EPR** □ NO √Yes
Sample container	Purple top EDTA	
Sample requirements	Urgent sample – Must arrive on ice or kept cold. Centrifuge, separate and freeze plasma.	
Minimum volume required	350 µL plasma	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy **Samples delayed during transport, not frozen or kept in fridge are not suitable for analysis and will not be referred. If part of dynamic function test, discuss with Duty Biochemist (Blood Sciences) before rejection.**	
Storage in laboratory	Frozen at -20˚C	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Frozen on dry ice	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 4130	Results follow up: 020 3299 4107
Turn around time	7-10 working days	
Cost	N/A	
EQA Scheme and performance	UKNEQAS- None declared	
Entering results into Pathnet	ACTH results are entered at KCH and results downloaded to Pathnet via integration engine.	
GLV queue	Entered and validated at KCH, transmitted via the VIE. Results do not queue at St Thomas'.	
Clinical indications	Establishment of aetiology of Cushing's syndrome, assessment of treatment of patients with Cushing's syndrome, differentiation of 1ry from 2ry causes of adrenal insufficiency and localisation of excess ACTH production. ACTH measurement may also be useful in monitoring Nelson syndrome resulting from bilateral adrenalectomy to treat pituitary Cushing's Disease. In about 15-25 % of patients who had bilateral adrenalectomy, Nelson Syndrome develops within 1-4 years.	
Methodology	Chemiluminescence (Immulite XP)	

Limitations	ACTH is secreted in a pulsatile manner and show diurnal variation. Sample collection time is important in test interpretation.
Reference range(s) and units	The following comments are automatically stamped onto all ACTH results in Pathnet: **ACTH ref range: <46 (9am) <10 (midnight) ng/L**
Critical limits & actions	Adrenal insufficiency is a medical emergency and requires communication. High ACTH with low cortisol requires communication if already not telephoned by Blood Sciences.
Notes about authorising	The ACTH results are automatically validated from the KCH site and will not be seen on the queue.

Name of test	**Aldosterone**	
Pathnet code	**BALD**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top SST or EDTA	
Sample requirements	Centrifuge specimen, separate into paediatric tube and freeze. Put in designated box in freezer.	
Minimum volume required	500 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Freezer at -20˚C	
Laboratory referred to	Kings College Hospital	**UKAS accreditation reference:** 9067
Transport conditions	Send frozen to Viapath Kings.	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 4130	Results follow up: 020 3299 3140
Turn around time	7-10 working days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS steroid hormones scheme	
Entering results into Pathnet	When both renin (BREN) and aldosterone (BALD) are requested on Pathnet the aldosterone:renin ratio is automatically requested (BARR). Enter the result for BREN and BALD into Pathnet. For aldosterone results < 50 pmol/L add the result as a see text comment. Do not type < 50 pmol/L because this results in an incorrect BARR calculation in Pathnet. Pathnet will automatically calculate BARR. Check this value against the value on the KCH report. If the result for aldosterone is a **'ST'** see text comment Pathnet will not calculate BARR. Instead type **NOGAP** and press F4 key to expedite. This expands to "component tests not available". **Add the expedite comment KING (F4) as a text comment.** The following comment is automatically added onto all BALD results: **Reference Range:** Supine 100 - 450 pmol/L	

	Erect 100 - 800 pmol/L Please note change in reference range from 18/10/10 The following comment is automatically stamped onto all BARR results: <80 Conns unlikely >80 - <200 Conn's not excluded >200 Conns likely
GLV queue	391-5
Clinical indications	Primary hyperaldosteronism (Conn's and related conditions), secondary hyperaldosteronism (only in Bartter's/Giteleman's syndrome), primary hypoaldosteronism (isolated deficiency of aldosterone synthesis), secondary hypoaldosteronism (hyporeninaemic hypoaldosteronism) and pseudo hypoaldosteronism (aldosterone insensitivity syndrome). Hypokalaemia (K<2.7 mmol/L) inhibits aldosterone secretion and should be corrected before sample collection.
Methodology	Chemiluminescent immunoassay (Diasorin Liaison)
Limitations	If a patient is on aldosterone antagonists e.g. spironolactone) or oestrogens, the therapy must be discontinued for at least 6 weeks before aldosterone-renin system is assessed. In hypertensive patients where drug withdrawal is not safe, alpha-blocker can be used which has little effect. Calcium channel blockers and ACE inhibitors must be avoided (2 weeks). Interpretation is difficult when patient is on mixed-drug regime.
Reference range(s) and units	BALD: Supine 100 - 450 pmol/L Erect 100 - 800 pmol/L BARR <80 Conn's unlikely >80 - <200 Conn's not excluded >200 Conn's likely
Critical limits & actions	Check electrolytes in particular potassium. Please communicate result to clinical team if results are suggestive of Conn's. For known patients, no further action required.
Notes about authorising	If the results for BALD or BREN are amended when reviewing the result the BARR does not automatically recalculate. Use ACC and go over results using return key so that Pathnet re-calculates the ratio.

Name of test	**Adrenal vein aldosterone/renin/cortisol Group test**	
Pathnet code	**MAVARC**	**Orderable on EPR** □ NO □Yes
Sample container	Follow the instructions for aldosterone and renin	
Sample requirements	Follow the instructions for aldosterone and renin. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	Follow the instructions for aldosterone and renin	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. **DO NOT REJECT SPECIMENS IF CRITERIA IS NOT MET. DISCUSS WITH DUTY BIOCHEMIST IN BLOOD SCIENCES. This is a very invasive procedure.**	
Storage in laboratory	Follow the instructions for aldosterone and renin	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Follow the instructions for aldosterone and renin	
Address of referral laboratory	Follow the instructions for aldosterone and renin	
Contact details	Clinical advice: 020 3299 4130	Results follow up: 020 3299 4107
Turn around time	Follow the instructions for aldosterone and renin	
Cost	Follow the instructions for aldosterone and renin	
EQA Scheme and performance	Follow the instructions for aldosterone and renin	
Entering results into Pathnet	*Each component should be entered as they appear on the report as follows:* *Renin initial peripheral BIPREN* *Aldosterone initial peripheral BIPALD* *Cortisol initial peripheral IPCORT* *Aldosterone right adrenal BRAALDO* *Cortisol right adrenal BRACORT* *Aldosterone left adrenal BLAALDO* *Cortisol left adrenal BLACORT* *Aldosterone high IVC BHIALO* *Cortisol high IVC BHICORT* *Aldosterone right renal BRRALDO* *Cortisol right renal BRRCORT*	

	Aldosterone distal left renal BDLRALDO *Cortisol distal left renal BDLRCORT* *Aldosterone proximal left renal BPLRALDO* *Cortisol proximal left renal BPLRCORT* *Aldosterone low IVC BLIALDO* *Cortisol low IVC BLICORT* *Renin final peripheral BFREN* *Aldosterone final peripheral BFPALDO* *Cortisol final peripheral FPCORT*
GLV queue	391-5
Clinical indications	Tumour localisation. Adrenal venous sampling is a way to differentiate unilateral (surgically correctable) from bilateral (usually treated with aldosterone antagonist medications) forms of primary hyperaldosteronism.
Methodology	Refer to aldosterone and renin
Limitations	Please refer to renin and aldosterone
Reference range(s) and units	Not applicable
Critical limits & actions	Not applicable
Notes about authorising	Such requests come from Endocrine team and they are well aware of test interpretation.

Name of test	**Alpha-1 Antitrypsin Phenotype**	
Pathnet code	**BA1AP**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top SST	
Sample requirements	Serum Some requests will be added by Blood Sciences laboratory as a reflex test due to low A1AT result. Samples will be referred to SPU once test added.	
Minimum volume required	300 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 8805
Transport conditions	First class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 4130	Results follow up: 020 3299 3576 Fax: 020 3299 3140
Turn around time	14 working days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS- None declared	
Entering results into Pathnet	Reported as a comment to match the comment on the KCH report. Typing phenotype and then the comment. The following automated comment is stamped onto all BA1AP samples in Pathnet. "PI phenotypes are reported according to International Nomenclature Committee guidelines reporting of a single allele product implies the homozygous state."	
GLV queue	391 5	
Clinical indications	The quantitation of AAT is indicated in the evaluation of chronic obstructive airway disease, emphysema and in neonatal and adult liver disease where low concentrations may have diagnostic importance. Severe genetic deficiencies of AAT (<0.6 g/L) occur in the UK with an incidence of about 1:2000. Typical clinical presentations include chronic obstructive airway disease with severe lower lobe panlobular emphysema occurring between 30-40 years of age,	

	neonatal cholestasis and progressive juvenile cirrhosis. Environmental factors (smoking and atmospheric pollution) contribute to the severity of the lung disease in deficient subjects. AAT (PI phenotyping) should be performed in all cases of deficiency when the quantitative assay gives results below the age related median concentration. The PI phenotyping should be determined in all children with liver disease irrespective of AAT concentration. PI M is the most common phenotype in all populations and racial groups. PI*S and PI*Z alleles are more common in Caucasian than non-caucasian populations.
Methodology	Isoelectric focussing kit using Sebia Hydrasys
Limitations	Separation deteriorates as the samples age
Reference range(s) and units	No reference range. Interpretative comments. Deficiency alleles: S,P,W,Z, Mmalton, Mduaarte, and null Null allele- can only be identified by family studies Mduaarte- functional deficient protein. Antigenic concentrations are normal
Critical limits & actions	Communicate any results that state consistent with deficiency in the comment, or PiSS, PiZZ, PiZ, PiZS phenotypes, unless the deficiency status is already known by the clinical team. For carrier status, i.e. results containing an 'M' allele such as MZ or MS, these do not require phoning.
Notes about authorising	

Name of test	**Alpha-1 antitypsin genotyping**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Whole blood EDTA (purple top)	
Sample requirements	Clinician should complete DNA testing form available on Viapath website. This test is not a first line test. Please consult a Clinical Scientist in the Sendaways team for advice when a request is received. This test is different to A1AT phenotyping.	
Minimum volume required	Adult (16 years and above) 5 mls Children (2- 15 years) 5 mls Infants (0-2 years) 2 mls	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy Presence of heparin anticoagulant will inhibit PCR applications. Clotted samples are unsuitable for DNA analysis.	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 8805
Transport conditions	Room temperature in first class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical interpretation contact laboratory in the first instance: Molecular Laboratory 020 3299 2265 kch-tr.pnd@nhs.net	
Turn around time	10 working days	
Cost	N/A	
EQA Scheme and performance		
Entering results into Pathnet	Enter text result and any interpretative comments as a free text comment. Enter expedite comment (F4) KING.	
GLV queue	391 5	
Clinical indications	A1AT genotype analysis is offered as an adjunct to the phenotyping service and for family studies. Homozygosity or heterozygosity for the Z and S mutations can be detected using a real-time Taqman assay. Other variants and null alleles are not detected by this method.	

Methodology	Real time Taqman assay (PCR)
Limitations	Presence of heparin anticoagulant will inhibit PCR applications. Clotted samples are unsuitable for DNA analysis.
Reference range(s) and units	Interpretative comment
Critical limits & actions	N/A
Notes about authorising	KCH may recommend on the basis of the alpha-1-antitrypsin result that the clinician sends a sample for this test.

	Alpha-subunits (HCG, FSH, LH, TSH)	
Pathnet code	**BASU**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow top SST or green top lithium heparin	
Sample requirements	Centrifuge, separate and freezer within four hours. Frozen < 4 hours store in blue bag. Need 1 ml. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen (less than or equal to - 20°C)	
Laboratory referred to	Biomnis	UKAS accreditation reference: COFRAC N° 8-1973 (ISO 15189:Standards)
Transport conditions	Frozen blue bag. Collection organised by Biomnis vis City Sprint courier.	
Address of referral laboratory	Biomnis 17-19 Avenue Tony Garnier 69007 Lyon.	
Contact details for following up results and clinical advice	Name: Vandanah Nunloll-Bernard Email: Vandanah.nunloll-bernard@biomnis.com Telephone: 00 44 4 72 80 23 48	
Turn around time	1 week	
Cost	44.00 Euros or £36.46	
EQA Scheme and performance	Test not covered by an EQA scheme. Inter-laboratory comparison is used in place of an EQA scheme.	
Entering results into Pathnet	Requests for males have a standard reference range. Requests for females have no reference range set in Pathnet. Reference values should be entered as a comment (F6)	
GLV queue	391 5	
Clinical indications	Subunit measurement is used in the investigation of the anterior pituitary when disease due to adenoma may be responsible. It can be used in hypo and hyperthyroidism with inappropriate TSH secretion to differentiate pituitary thyroid hormone resistance from thyrotropic adenomas. It is also used for post treatment monitoring of thyrotropic adenomas. Subunit measurement is required in the investigation of gonadotrophin pituitary adenomas and particularly so-called non-	

	functional pituitary adenomas as subunit secretion is not associated with specific endocrine signs as it has no biological activity.
Methodology	Radioimmunoassay
Limitations	N/A
Reference range(s), units and source	Men: < 0.7 IU/L Women pre-menopausal: < 0.6 IU/L Women post-menopausal: < 1.3 IU/L Source: Morange I., Figarella-Branger D., Gunz G et al. Interet du dosage de la sous-unite_en pathologie hypophysaire, Ann Endocrinol, 1992; 53: 138-146. Assayag M., Seret-Begue D., Lahlou N. et al. Adenomes gonodotropes. Dans: Ecycl Med Chir (Elsevier, Paris), Endocrinologie-Nutrition, 1997; 10-023B-10, 3p. Chanson P., Adenomes hypophysaires gonadotropes, Ann Endocrinol 2000; 61: 258-68.
Critical limits & actions	Critical values are emailed to Sendaways team at BiochemSendawaysTeam@gstt.nhs.uk
Notes about authorising	

Name of test	**Aluminium (Blood)**	
Pathnet code	**BAL**	**Orderable on EPR** □ NO √Yes
Sample container	Adults (13 years+) Trace element tube (royal blue) Children (0-12 years) plain tube (red top) Dialysis fluid can be received for Aluminium measurement. There is no test code for dialysis fluid. Inform Sendaways team to discuss. **Occasionally empty tube may be received with a request to check for interference. Do NOT discard the empty tube. Send together with the specimen and request form.**	
Sample requirements	Centrifuge and separate serum/plasma	
Minimum volume required	5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable at 2-8˚C for at least 4 days.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference:
Transport conditions	Overnight room temperature first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 3008	Results follow up: 020 3299 5881
Turn around time	1-2 weeks	
Cost	N/A	
EQA Scheme and performance	UK NEQAS Trace elements- None declared	
Entering results into Pathnet	Report numerical results to 1 decimal place. Add the expedite comment KING (F4). The following comments are automatically added onto all requests by Pathnet: "Levels above 2.2 umol/L indicate increased body burden of aluminium. From 17/04/2008, analysis performed at Kings Trace Elements Lab. The comment above refers to results from Kings Trace Elements Lab."	
GLV queue	390-12 (Trace elements)	
Clinical indications	Aluminium is a non-essential trace element of ubiquitous distribution. Although exposure to aluminium dust in industrial situations has been associated with pulmonary fibrosis, most cases of aluminium toxicity have been in patients with chronic renal	

	failure (CRF) on haemo- or peritoneal dialysis. Greatly elevated plasma aluminium concentrations in these patients are clearly associated with the symptoms of dialysis encephalopathy and osteodystrophy. Aluminium accumulation may be possible, in part at least, for the anaemia and soft tissue calcification of CRF. The increased body burden arises from two sources. Firstly, oral aluminium hydroxide was widely used as a phosphate binder and secondly aluminium is added to reservoir water as a flocculent. Occupational exposure is monitored by measurement of aluminium in urine.
Methodology	ICP-MS
Limitations	
Reference range(s) and units	Not defined on Pathnet. Units: umol/L
Critical limits & actions	Abnormal results are phoned to Sendaways team and communicated to requestor.
Notes about authorising	

Name of test	**α-Aminoadipic Semialdehyde (urine)**	
Pathnet code	**UTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Fresh Random Urine in universal container	
Sample requirements	Hand straight to SPU. If out of hours place into the SPU freezer along with request card as analyte is susceptible to breakdown when not frozen.	
Minimum volume required	1 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	If out of hours place into the SPU freezer (less than or equal to -20°C) along with request card.	
Laboratory referred to	UCL Institute of Child Health	UKAS accreditation reference:
Transport conditions	Send by post at room temperature if the sample will arrive within 16 hours. If delivery will take longer than 16 hours transport on dry ice. Organise delivery to ensure that the samples do not arrive in the laboratory at the weekend.	
Address of referral laboratory	UCL Institute of Child Health, Biochemistry Department, Institute of Child Health, 30 Guildford Street, London, WC1N 1EH	
Contact details	Results follow up: 020 79052148	
Turn around time		
Cost	£150	
EQA Scheme and performance	Not available.	
Entering results into Pathnet	Transcribe all results as a comment in Pathnet including all reference ranges, units and interpretative comments The comment on report should be transcribed into Pathnet as follows "These analyses were undertaken in a research laboratory", Add the following comment at the end of the report "This test was performed at UCL Institute of Child Health".	
GLV queue	391 5	
Clinical indications	Assist in the diagnosis of pyridoxine dependent epilepsy.	
Methodology	ESI-MS/MS	
Limitations		

Reference range(s) and units	
Critical limits & actions	
Notes about authorising	

Name of test	**Amiodarone and metabolites group test**	
Pathnet code	**BAMIOD**	**Orderable on EPR** □ NO √Yes
Sample container	Purple top EDTA	
Sample requirements	Plasma	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	University Hospital Llandough (Cardiff and Vale University Health Board)	UKAS accreditation reference: UKAS 8989
Transport conditions	Overnight first class post	
Address of referral laboratory	Cardiff Toxicology Laboratories, Academic Centre, University Hospital Llandough, Cardiff CF64 2XX	
Contact details for results follow-up and clinical advice	Name: ALUN HUTCHINGS Telephone: 02920716894	
Turn around time	7 days	
Cost	£32	
EQA Scheme and performance	LGC Standards	
Entering results into Pathnet	*This test code includes two component metabolites:* Amiodarone BAMIO Desethylamiodarone BDAMIO Enter numerical results for each component. The following comment is automatically stamped on to the request: "Target range 0.5-2.0 based on pre-dose sample in adults."	
GLV queue	391-5	
Clinical indications	THERAPEUTIC DRUG MONITORING	
Methodology	HPLC, CERTIFIED CALIBRANTS AND IQC	
Limitations	AVOID SERUM SEPARATION GEL	
Reference range(s) and units	Amiodarone 0.5 – 2.0 mg/L Desethylamiodarone 0.0 – 2.0 mg/L	
Critical limits & actions	NO CRITICAL LIMITS DEFINED. RESULTS NOT USUALLY	

	TELEPHONED
Notes about authorising	

Name of test	**Amylase isoenzymes**	
Pathnet code	**BAMIS**	**Orderable on EPR** □ NO √Yes
Sample container	Serum/Plasma	
Sample requirements	Centrifuge. Separate into send-away tube.	
Minimum volume required	250 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067.
Transport conditions	First class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Results follow up: 020 3299 3576	
Turn around time	5 days	
Cost	N/A	
EQA Scheme and performance	Total Amylase UKNEQAS- None declared	
Entering results into Pathnet	Group test for amylase consisting of: Total amylase ***TAMY*** Serum salivary amylase ***VAMY*** Serum pancreatic amylase ***PAMY*** Serum pancreatic/total amylase ratio ***PAMYR*** ***Lipase*** LPASE Enter a numerical result for each component test	
GLV queue	391 5	
Clinical indications	Differentiating between different sources of raised amylase	
Methodology	Amylase fractions are differentiated by immunosubtraction. Lipase is measured enzymatically. Both assays are carried out on the Siemens Advia 2400.	
Limitations		
Reference range(s) and units	< 50 IU/L Serum salivary amylase < 100 IU/L Serum pancreatic amylase	

	0.00-0.75 Serum Pancreatic/total amylase ratio Lipase 13 - 60 U/L
Critical limits & actions	None
Notes about authorising	

Name of test	**Androstenedione/ Epiandosterone**	
Pathnet code	**ANDI**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top SST	
Sample requirements	Centrifuge, aliquot and freeze serum.	
Minimum volume required	400µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Freezer at -20˚C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send frozen	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow-up telephone: 020 3299 3576	
Turn around time	7-10 working days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS- None declared	
Entering results into Pathnet	Androstenedione results are auto validated by KCH via integration engine.	
GLV queue	Androstenedione results are entered at KCH and results downloaded to Pathnet via integration engine. Results do not queue.	
Clinical indications		
Methodology	LC-MS/MS	
Limitations		
Reference range(s) and units	Reference ranges: Adult males (18 years and over): 1.5 – 8.3 nmol/L Adult females (18 years and over): 1.1 – 7.7 nmol/L Males (<18): Pre-pubertal: <0.9 nmol/L Post-pubertal: 1.5 – 8.3 nmol/L Females (<18): Pre-pubertal: <0.9 nmol/L	

	Post-pubertal: 1.1 – 7.7 nmol/L
Critical limits & actions	
Notes about authorising	Androstenedione results are entered at KCH and results downloaded to Pathnet via integration engine.

Name of test	**Anti-diuretic hormone (ADH)**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container	Green top lithium heparin	
Sample requirements	Plasma must be separated and frozen within 30 minutes of collection. Rare test, contact referral laboratory to check details prior to sending. **This test is rarely indicated. Please bring it to the attention of Sendaways team before shipping. This test is no longer available anywhere in the UK. Co-peptin is available as an alternative test at Royal Victoria Infirmatory (see Co-peptin)**	
Minimum volume required	5 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. **This test is rarely indicated. Please bring it to the attention of Sendaways team before shipping. This test is no longer available anywhere in the UK. Co-peptin is available as an alternative test at Royal Victoria Infirmatory (see Co-peptin)**	
Storage in laboratory	Frozen at -20˚C	
Laboratory referred to	N/A no longer offered	UKAS accreditation reference:
Transport conditions	Frozen	
Address of referral laboratory	N/A	
Contact details	Clinical advice: N/A	Results follow up: N/A
Turn around time	14 days	
Cost	Not available	
EQA Scheme and performance	N/A	
Entering results into Pathnet	Results need to be entered as See Text and typed with units, reference ranges and interpretative comments if available.	
GLV queue	391-5	
Clinical indications	Diagnosis and classification of diabetes insipidus. This test is very rarely indicated.	
Methodology	N/A	
Limitations	N/A	
Reference range(s) and units	N/A	

Critical limits & actions	N/A
Notes about authorising	

Name of test	**Antihypertensives Drug Screen (Urine)**	
Pathnet code	**UAHD**	**Orderable on EPR** □ NO √ Yes
Sample container	Random urine – plain universal	
Sample requirements	Random urine. Sample must be sent with a completed request form from the referral lab (NCAT) detailing medication of patient. Request form is available from Sendaways Team – please contact if sample received without completed form and do not discard sample. Chemistry Sendaways Team: the requesting clinician may send the completed NCAT form with the sample, or email it to the sendaways email account. If a completed NCAT form is not received, please contact the requesting clinician to ask for one.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences sample acceptance/rejection policy	
Storage in laboratory	Store refrigerated until sent	
Laboratory referred to	Special Chemistry (NCAT), Leicester Royal Infirmary	UKAS accreditation reference: 8376
Transport conditions	Ambient courier. **Sample must be received at referral laboratory within 48 hours of collection.**	
Address of referral laboratory	Special Chemistry (NCAT) Level 4, Sandringham Building Leicester Royal Infirmary Leicester LE1 5WW	
Contact details	Clinical advice:	Results follow up:
Turn around time	Not stated	
Cost	Not stated	
EQA Scheme and performance	Not stated	
Entering results into Pathnet	Enter results on report as free text comment, detailing prescribed drugs and whether detected. Include Urine Creatinine result and units on report. **Below is an example, note that drugs listed will vary with patient report**: "Hypertension Compliance Screen:	

	Drug Adherence Screening by LC-MS/MS Amilioride Not Detected Atenolol Detected Nifedipine Assay Not Available" **Enter referral laboratory location as follows:** "Test performed at National Centre for Adherence Testing, Leicester Royal Infirmary, University of Leicester NHS Trust"
GLV queue	391/5
Clinical indications	Used for assessing compliance with anti-hypertensive medications in patients with resistant hypertension or suspected non-compliance.
Methodology	LC-MS/MS
Limitations	Not stated Note not all drugs will be available for measurement, and assay is qualitative.
Reference range(s) and units	Results for antihypertensives are qualitative (i.e. DETECTED/NOT DETECTED) Results for Urine Creatinine are numerical, given in mmol/L. Reference range is provided on report.
Critical limits & actions	Not stated.
Notes about authorising	

Name of test	**Anti-Retinal Antibodies**

Pathnet code	**BTEST**	**Orderable on EPR** √ NO □ Yes
Sample container	Yellow top SST	
Sample requirements	Spin and store separated serum in fridge until send out. Make sure sample is not haemolysed and has minimum serum volume of 500uL.	
Minimum volume required	500 uL of serum	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store in fridge.	
Laboratory referred to	Neuroimmunology, Queen Square, (University College London Hospitals NHS Trust)	UKAS accreditation reference: UKAS 8116
Transport conditions	Ambient temperature via first class post.	
Address of referral laboratory	Neuroimmunology & CSF Laboratory, (Box 76) 9th floor UCL Queen Square Institute of Neurology Queen Square London WC1N 3BG	
Contact details	Name: Dr M Lunn./ Dr V. Worthington Email: viki.worthington@uclh.nhs.uk Telephone: 020 3348 3814	
Turn around time	21 working days	
Cost	£68	
EQA Scheme and performance	None available	
Entering results into Pathnet	Enter the result as free text comment exactly as it appears on the report, including reference ranges and stating the referral lab.	
GLV queue	391/5	
Clinical indications	Tests for paraneoplastic retinopathy against recoverin, alpha-enolase and carbonic anhydrase II.	
Methodology	Western immunoblot	
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising		

Name of test	**Aripiprazole and Dehydroaripiprazole**	
Pathnet code	**BDRUG**	**Orderable on EPR** √ NO □Yes
Sample container	EDTA tube	
Sample requirements	ETDA whole blood is preferred (pre-dose or 'trough' sample). Serum or plasma can be used if required, but please avoid gel-separator tubes. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	4mL whole blood	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	Therapeutic Drug Monitoring King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	First class post	
Address of referral laboratory	Toxicology Department King's College Hospital Bessemer Wing - 3rd Floor Denmark Hill London SE5 9RS	
Contact details	Email: kch-tr.toxicology@nhs.net Telephone: 020 3299 5881	
Turn around time	5 working days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Component test codes:	
GLV queue	391 5	
Clinical indications		
Methodology	LC-MS/MS	
Limitations		
Reference range(s) and units	Aripiprazole 150–300 µg/L Dehydroaripiprazole 60-120 µg/L	

Critical limits & actions	
Notes about authorising	

Name of test	**Arsenic (Blood)**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container	Purple top EDTA whole blood **Occasionally additional empty bottle can be received with the blood to check for specimen contamination. Empty bottle should also be sent to the referral lab together with the blood.**	
Sample requirements	Do not centrifuge. Place into send outs fridge. Send as whole blood. Please note that arsenic is also measured in urine and urine is preferred sample.	
Minimum volume required	4 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067.
Transport conditions	First class post	
Address of referral laboratory	Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	3-5 working days	
Cost	N/A	
EQA Scheme and performance	TEQAS (UK NEQAS- Trace elements)- None declared	
Entering results into Pathnet	Results need to be entered as 'See Text' and typed with units, reference ranges and interpretative comments. **Add the expedite comment KING (F4) as a text comment.**	
GLV queue	391-5	
Clinical indications	Acute or chronic exposure. Arsenic exists as both organic and inorganic forms, neither has any known biological function. Arsenic exists as a number of species and oxidation states having marked differences in toxicity. If taken acutely, arsenic can cause diarrhoea and acute renal failure. If exposure is chronic, then abdominal pain, upper respiratory tract difficulty can develop. Organic forms of arsenic are relatively non-toxic. Arsenic can be measured in both urine and whole blood; however urine is the preferred sample. Urine preferred for monitoring occupational exposure. Separation of the arsenic species in urine is necessary to distinguish between toxic and non-toxic forms.	

Methodology	ICP-MS
Limitations	Concentration both in urine and blood will increase after consumption of seafood.
Reference range(s) and units	Blood < 0.13 µmol/L
Critical limits & actions	None
Notes about authorising	None

Name of test	**Arsenic (urine)**	
Pathnet code	**UTEST**	**Orderable on EPR** √NO □Yes
Sample container	2-3 mL urine minimum (Portion of 24 hour collection [acid-washed bottle], record total volume on sample tube or request form).	
Sample requirements	Send unused sample container from the same batch as used for sample collection to check for contamination. Organic arsenic is present in seafood and therefore it should be excluded from the diet for 5 days before a sample is taken. **NOTE: Test is different from Urine Arsenic Speciation (see separate entry).** If one urine sample received for both Urine Arsenic (UTEST) and Urine Arsenic Speciation (UARSP, see entry), sample should be split, ensuring minimum sample volume for each test is provided. If insufficient sample provided to split appropriately please notify the Sendaways Team, who will contact clinician to discuss further.	
Minimum volume required	20 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	3-5 working days	
Cost	N/A	
EQA Scheme and performance	TEQAS (Trace elements UKNEQAS)	
Entering results into Pathnet	Results need to be entered as 'See Text' and typed with units, reference ranges and interpretative comments. **Add the expedite comment KING (F4) as a text comment.**	
GLV queue	391 5	
Clinical indications	Acute or chronic exposure. Arsenic exists as both organic and inorganic forms, neither has any known biological function. Arsenic exists as a number of species and oxidation states having marked differences in toxicity. If taken acutely, arsenic can cause diarrhoea	

	and acute renal failure. If exposure is chronic, then abdominal pain, upper respiratory tract difficulty can develop. Organic forms of arsenic are relatively non-toxic. Arsenic can be measured in both urine and whole blood; however urine is the preferred sample. Urine preferred for monitoring occupational exposure.
Methodology	ICP-MS
Limitations	Concentration both in urine and blood will increase after consumption of seafood.
Reference range(s) and units	Urine < 0.13 µmol/24 h (Inorganic arsenic)
Critical limits & actions	None
Notes about authorising	None

Name of test	**Asialotransferrin (TAU transferrin)**	
Pathnet code	**MTAU**	**Orderable on EPR** □ NO √Yes
Sample container	Fluid sample – plain tube (and paired Yellow Top Serum SST – note paired serum is not essential)	
Sample requirements	Nasal Fluid - Please include specimen type/source & clinical details on request form. Please do not use large containers for small fluid volumes as evaporation will lead to processing difficulties. Paired serum samples are sometimes also requested to aid exclusion of chronic renal failure as a cause of raised fluid Tau transferrin. However a serum sample is not required and most requests will come as fluid only.	
Minimum volume required	100 uL fluid and 500 uL of serum	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Neuroimmunology Queen Square (University College London Hospitals NHS Trust)	UKAS accreditation reference: UKAS 8116
Transport conditions	First Class Post	
Address of referral laboratory	Neuroimmunology and CSF Laboratory for Neurology and Neurosurgery Queen Square London WC1N 3BG	
Contact details for results follow up and clinical advice	Name: Dr M Lunn./ Dr V. Worthington Email: viki.worthington@uclh.nhs.uk Telephone: 020 3348 3814	
Turn around time	3 working days	
Cost	£74	
EQA Scheme and performance	NEQAS Pilot Scheme - good	
Entering results into Pathnet	Enter the text results as written on the report including interpretative comments.	
GLV queue	391 5	
Clinical indications	Investigation of possible CSF fluid leaks. Fluid that is negative for asialotransferrin indicates that it does not contain CSF.	

Methodology	IEF
Limitations	Results from samples contaminated with blood or serum may be uninterpretable Sample degradation due to microbial contamination may make results uninterpretable
Reference range(s) and units	No ref range. Qualitative interpretative comment given.
Critical limits & actions	None
Notes about authorising	None

Name of test	**Basophil Histamine release (also called HR-Urticaria test)**	
Pathnet code	**BBHR**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top Serum SST	
Sample requirements	Spin and separate for SPU Freezer.	
Minimum volume required	500 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen.	
Laboratory referred to	RefLab	UKAS accreditation reference: ISO17025 accreditation number 4723.
Transport conditions	Can be shipped at ambient conditions.	
Address of referral laboratory	RefLab Aps PO Box 590 Ole Maaloes Vej 3 DK-2200 Copenhagen N Denmark	
Contact details for following-up results and clinical interpretation	Name: Lise Bo Phone + 44 70 70 23 45 Email: reflab@dk www.reflab.dk	
Turn around time	2 weeks from sample receipt	
Cost	69 Euros	
EQA Scheme and performance	No formal EQA scheme.	
Entering results into Pathnet	For results less than 16.5 % report as negative using the short cut key (F10) 01 NEG. Do not report the max histamine release %. For results greater than 16.5 % enter the max histamine release % into the result field as a number. The automated comment is stamped on all results in Pathnet: 'Results greater than 16.5% histamine release are considered Positive, values less than this are reported as Negative.'	

GLV queue	391 5
Clinical indications	Monitoring patients with urticaria
Methodology	Patient serum in two concentrations (20 % and 10 %) is incubated with IgE-depleted basophil leukocytes (buffycoat). Released histamine absorbed to glass microfibres, detected fluormetrically (HR-Test method) and reported as percentage release of total histamine.
Limitations	None
Reference range(s) and units	Units % Max histamine release < 16.5 % = negative Max histamine release > = 16.5 % = Positive
Critical limits & actions	None
Notes about authorising	

Name of test	**Beta Carotene**	
Pathnet code	**BBCAR**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top SST	
Sample requirements	Protect from light at all times. Sample to be separated and frozen.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Separate and store frozen protected from light.	
Laboratory referred to	St Helier Hospital (Epsom and St Helier University Hospital NHS Trust)	UKAS accreditation reference: 8961
Transport conditions	Dry ice protected from light.	
Address of referral laboratory	Department of Chemical Pathology & Metabolism St. Helier Hospital Wrythe Lane Carshalton SM5 1AA	
Contact details	Telephone 020 8641 4011	
Turn around time	21 days	
Cost	£38.18 (NHS) £57.69 (Private)	
EQA Scheme and performance	UKNEQAS	
Entering results into Pathnet	Enter numerical result into Pathnet to 2 decimal places as shown on the referral report. If there are any comments on the report add these comments exactly as written on the report as a text comment with the result.	
GLV queue	391 5	
Clinical indications	Beta-carotene is a member of the family of carotenoids, highly pigmented (red, orange, yellow) fat-soluble vitamins that are the precursors or provitamins of vitamin A. The principle provitamin A compounds include beta-carotene, alpha-carotene, and beta-cryptoxanthin. The most significant effect of these provitamins is their conversion to vitamin A, which plays a major role in vision as well as reproduction, embryonic growth, and immune function. The highest levels of carotene can be found in the serum of individuals ingesting large amounts of vegetables, primarily carrots. These people may have a slight yellowish tinge of the skin but the sclera of the eye is not discolored. Most samples are received from patients with yellowish/orange tinge on skin and	

	confirmed/suspected excessive ingestion of carrots.
Methodology	Reverse phase HPLC
Limitations	None
Reference range(s) and units	0.06 – 2.20 umol/L
Critical limits & actions	None
Notes about authorising	

Name of test	**Bile acids (urine)**	
Pathnet code	**UTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Universal container	
Sample requirements	Random urine	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store at -20°C	
Laboratory referred to	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust.	UKAS accreditation reference: 10139
Transport conditions	Send by first class post. Store at -20°C.	
Address of referral laboratory	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust, Western Bank, Sheffied, S10 2TH.	
Contact details	Duty Clinical Scientist: 0114 271 7000, Bleep 095 Result Enquiries (Telephone): 271 7445 Results Enquiries (email): Metabolic.sch@nhs.net Claire Hart (Principal Clinical Scientist / Metabolic Lead) Tel: 271 7307 Sharon Colyer (Principal Clinical Scientist), Tel: 271 7307 Ben Nicholson (Senior Clinical Scientist), Tel: 271 7479	
Turn around time	3 – 6 weeks	
Cost	£75.69	
EQA Scheme and performance	Currently no EQA scheme / sample exchange scheme. Quality is assured by running regular IQC samples. Bile acid results can be compared with known affected patients and results can be correlated with the results of other complementary assays.	
Entering results into Pathnet	Transcribe all the results, units, reference range (control range) and any reporting comments including on the report into Pathnet. Add the following comment at the end of the report "This test was performed at Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust".	
GLV queue	391 5	
Clinical indications	For the diagnosis of the primary bile acid biosynthesis disorders,	

	for further investigations of probable Peroxisomal disorders, and for diagnosis of Cerebrotendinous Xanthomatosis (specific bile alcohols).
Methodology	TQD Tandem Mass Spec (UPLC-MS/MS)
Limitations	NOT for the diagnosis of cholestasis of pregnancy 4 primary bile salts are quantitatively measured with additional qualitative analysis looking for the presence of abnormal bile acid / salt intermediates
Reference range(s) and units	Interpretation provided with report
Critical limits & actions	Inform metabolic clinical team of any result suggestive of bile acid synthesis defect
Notes about authorising	

Name of test	**Bismuth (Blood)**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	**Whole-blood** Heparin (green top)	
Sample requirements	Do not separate. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	1 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	University Hospital Southampton Pathology Services	UKAS accreditation reference: 8483
Transport conditions	Overnight first class post	
Address of referral laboratory	Trace Elements Unit LD60 Level D South Academic Block Southampton General Hospital Tremona Rd SO16 6YD	
Contact details	Telephone: 02381 206237	
Turn-around time	5 days	
Cost	£27.09	
EQA Scheme and performance	Quebec Multi-element EQA scheme	
Entering results into Pathnet	Enter results using ACC. All results should be entered as Text with associated reference ranges.	
GLV queue	391 5	
Clinical indications	Bismuth toxicity can occur as a result of iatrogenic toxicity for ulcers.	
Methodology	ICP-MS	
Limitations	Rapid renal clearance maintains low circulating concentrations of bismuth so that clinical and biochemical abnormalities are more likely with renal insufficiency.	
Reference range(s) and units	Blood: 0.2 – 3.8 nmol/L <240 nmol/L Therapeutic acceptable level 240 – 480 Therapeutic warning level >480 nmol/L Risk of toxicity Urine : <0.5 nmol/L	

Critical limits & actions	Results suggestive of toxicity should be telephoned.
Notes about authorising	

Name of test	**Cadmium (Blood)**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	EDTA (purple top) whole blood Send unused sample container from the same batch as used for sample collection to check for contamination (If available)	
Sample requirements	Do not centrifuge. Place into send out fridge. Sent as whole blood.	
Minimum volume required	4 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy.	
Storage in laboratory	Stable at 2 – 8 °C for at least 2 days	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	First class overnight post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry,1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 3008 Results follow up: 020 3299 5881	
Turn around time	3-5 days	
Cost	N/A	
EQA Scheme and performance	TEQAS (UK NEQAS- Trace elements)- None declared	
Entering results into Pathnet	Enter results including reference range and units as a free text comment. Add the expedite comment KING (F4) as a text comment.	
GLV queue	391 5	
Clinical indications	Cadmium (Cd) is a heavy metal widely used within industry. It currently has no known biological role. Acute ingestion of cadmium salts can cause nausea and vomiting and inhalation of cadmium fumes develops a 'metal fume fever'; a pneumonitis with cough, dyspnoea and also myalgia. Cadmium is transported to the liver by plasma proteins where it is bound to metallothionein. This complex is then transported to the kidneys, where the cadmium-metallothionein complex dissociates leading to proximal renal tubular damage. Tobacco contains significant concentrations of cadmium, such that smokers may have blood cadmium concentrations that are 4–5 times greater than those of non-smokers. The preferred sample for the measurement of cadmium is whole blood. Cadmium can also be measured in urine but should only be undertaken when blood cadmium indicates significant	

	exposure.
Methodology	ICP-MS
Limitations	Contamination may lead to falsely high results.
Reference range(s) and units	Blood; Non-smokers: < 27 nmol/L (< 3 µg/L); Smokers < 53 nmol/L (< 6 µg/L)
Critical limits & actions	High results should be communicated to the requestor and contamination should be excluded.
Notes about authorising	Information collated from Viapath web page.

Name of test	**Cadmium (urine)**	
Pathnet code	**UTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Universal container	
Sample requirements	Fresh urine	
Minimum volume required	5 ml urine	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	2- 8 °C	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 3008	Results follow up: 020 3299 5881
Turn around time	3-5 days	
Cost	N/A	
EQA Scheme and performance	TEQAS (UK NEQAS- Trace elements)- None declared	
Entering results into Pathnet	Enter results including reference range and units as a free text comment. Add the expedite comment KING (F4) as a text comment.	
GLV queue	391 5	
Clinical indications	Urine preferred for monitoring occupational exposure Cadmium can also be measured in urine but should only be undertaken when blood cadmium indicates significant exposure.	
Methodology	ICP-MS	
Limitations	None	
Reference range(s) and units	Urine: < 1 nmol/L (< 1 µg/L) - Maybe higher in smokers	
Critical limits & actions	High results should be communicated to the requestor.	
Notes about authorising		

Name of test	**Caffeine**	
Pathnet code	**BCAFF**	**Orderable on EPR**

		□ NO √Yes
Sample container	Yellow top SST or green top lithium heparin	
Sample requirements	Serum samples need to be collected 1 – 2 hours post dose in neonates receiving caffeine therapy. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	2- 8 °C – stable for 7 days	
Laboratory referred to	Sandwell and West Birmingham Hospitals NHS Trust	UKAS accreditation reference: 8848 Accredited.
Transport conditions	First class overnight post (room temperature)	
Address of referral laboratory	Department of Clinical Biochemistry City Hospital, Dudley Road Birmingham B18 7QH	
Contact details	Jonathon Berg (Assay Lead) 0121 507 5290 Jonathon.berg@nhs.net	Jonathon Berg (Assay Lead) 0121 507 5290 Jonathon.berg@nhs.net
Turn around time	1 – 2 working days	
Cost	£20	
EQA Scheme and performance	NEQAS	
Entering results into Pathnet	Entered as a see text comment. The following automated comment is present on all requests. "Always interpret drug levels according to clinical context". Transcribe caffeine and paraxanthine results as written on the report including the reference range and comment.	
GLV queue	391 5	
Clinical indications	Neonates: Monitoring of caffeine levels during treatment is of use in those infants who show signs of toxicity or who are not responding to a standard dose.	
Methodology	Our assay measures caffeine and its major metabolite paraxanthine by HPLC.	
Limitations		
Reference range(s) and units	(Reference range in Pathnet 0 – 2 mg/L). Please note that this is adult reference range. Caffeine mg/L 0.3-2.0 Paraxanthine mg/L 0.3-1.2 Normal Caffeine Level Less than 2.0 mg/L High Level 2.0-5.0 mg/L : Very high level greater than 5 mg/L	

	Normal paraxanthine level less than 1.2 mg/L High Level 1.2-2.1 mg/L : Very high level greater than 2.1 mg/L **Neonates:** 12 – 36 mg/L
Critical limits & actions	
Notes about authorising	Please check the age of patient. If neonate, ensure that caffeine result is not reported as a value but entered as see text.

Name of test	**Calcitonin**	
Pathnet code	**BCALC**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top SST or plain	
Sample requirements	Centrifuge and separate serum into paediatric tube. Sample must be frozen immediately after separation. Fasting sample are recommended but not required.	
Minimum volume required	400µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen after separation.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Dry ice by courier	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	020 3299 4107 or 020 3299 4130	
Turn around time	7-10 days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS (peptide hormones) None declared.	
Entering results into Pathnet	Enter numerical result to 1 decimal place as on KCH result into Pathnet. The following comment is automatically stamped onto all results "Please note new Calcitonin reference range (June 2010)". Add the expedite comment KING (F4) as a text comment.	
GLV queue	391 5	
Clinical indications	Monitoring of patients with medullary thyroid cancer (MTC). MTC is a rare form of thyroid cancer and accounts for 3 to 10% of all thyroid cancers. The major risk factor for MTC is genetics. Approximately 20% of cases of MTC are associated with one of three familial syndromes known as multiple endocrine neoplasia *(MEN) 2A*, *MEN 2B*, and familial medullary thyroid carcinoma (*FMTC*). MEN 2A is a syndrome consisting of medullary thyroid cancer, phaeochromocytoma and parathyroid hyperplasia.	
Methodology	Chemiluminescent immunoassay (Liaison)	
Limitations	Please note that raised concentrations may also be found in other malignancies such as breast, lung, pancreas, as well as phaeochromocytoma, renal failure, hyperparathyroidism and Paget's disease. In early MTC disease, basal concentrations of	

	calcitonin may be normal.
Reference range(s) and units	Ref range < 4.8 ng/L Females On Pathnet 0-4.7 ng/L Females Ref range < 11.8 males On Pathnet 0-11.7 ng/L
Critical limits & actions	If calcitonin is raised look at clinical details to determine if the patient is a known MTC patient. If the patient is a known MTC patient look at previous results on Pathnet. If there is no increase in calcitonin or the level is reduced no action is required. If the level has significantly risen this may be telephoned to the clinician as required. If the patient is not a known MTC as has raised calcitonin this should be telephoned to the clinician.
Notes about authorising	Please note that some patients are seen in MEN genetics clinics.

Name of test	**Carbohydrate Def Transferrin (CDT)**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container	Yellow Top SST	
Sample requirements	Spin and separate	
Minimum volume required	500 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge 2- 8 °C stable up to 1 week	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Results follow up: 020 3299 3576	
Turn around time	3-5 days	
Cost	N/A	
EQA Scheme and performance	Not available	
Entering results into Pathnet	Currently a BTEST. Enter the result, units, reference range and any comments as stated on the reports. Add the expedite comment KING (F4) as a text comment.	
GLV queue	391 5	
Clinical indications	Monitoring for alcohol intake over the last 7 days. Serum transferrin is a glycoprotein which acts as an iron-transporting protein. Human transferrin occurs in isoforms with different levels of sialylation. There are at least six such isoforms: penta, tetra, tri, di, mono and asialyo transferrin. In a normal healthy individual the tetrasialo isoform predominates, but it has been found that in individuals with chronic or recent elevated alcohol intake the asialo, mono and disialo isoforms occur in higher levels. Together, the asialo, mono and disialo isoforms are collectively referred to as carbohydrate-deficient transferrin (CDT).	
Methodology	Capillary electrophoresis	
Limitations	Note - Transferrin variant (B or D) seen on analysis - CDT result calculated but interpret results with caution.	
Reference range(s) and units	Not in Pathnet. Reference ranges entered manually.	

	CDT < or = 1.5% : No excess alcohol intake CDT 1.6-1.9% : Intake may be high but not necessarily in the range of dependence CDT > or = 2.0% : Excess alcohol intake Information collected from Viapath website
Critical limits & actions	None
Notes about authorising	

Name of test	**Catecholamines random urine group test**	
Pathnet code	**UCAT**	**Orderable on EPR** √ NO □Yes
Sample container	Plain universal Please re-book as UMET and cancel UCAT.	
Sample requirements	Fresh sample. Sample needs to be acidified on receipt. Metanephrines are stable and preferred test.	
Minimum volume required	10 -20 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge 2- 8 °C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice:	Results follow up:
Turn around time	2 working days	
Cost	N/A	
EQA Scheme and performance	UKNEQAS- None declared	
Entering results into Pathnet	*This test cannot be ordered directly by clinicians on EPR. EPR will direct clinicians to order UMET instead. This test may be added on by King's College Hospital based on the UMET results. If results for UCAT are received from King's College Hospital add UCAT onto the same sample number in Pathnet by branching to COE. The numerical result should be added for each component test under the Pathnet codes shown below:* **Adrenaline: creatinine urine:** ADRNCR **Noradrenaline:creatinine urine:** NORCR **Dopamine:creatinine ratio urine:** DOPCR A text comment should be added to the UCAT results stating "test added by King's College Hospital based on the urine metadrenaline results". Add expedite comment (F4) KING to results.	
GLV queue	391 5	
Clinical indications	Phaeochromocytoma is a slow growing tumour which may be	

	found in the adrenal medulla or extra-adrenally. Associated with hypertension unresponsive to conventional treatment, symptoms may be non-specific e.g. headaches, anxiety, tachycardia etc. Benign in 90% of cases identification of a phaeochromocytoma is important as it is a potentially curable cause of hypertension. Random urine catecholamines are not recommended due to possible episodic secretion and risk of missing cases. Urinary metanephrines are preferred test.
Methodology	Reversed phase HPLC with electrochemical detection
Limitations	Require acidification and episodic secretion may lead to false negative results. Also be aware of drug interference.
Reference range(s) and units	**Random urine: All results are in nmol/mmol creatinine** **Age(yrs) Noradrenaline Adrenaline Dopamine** 0-3 < 100 < 10 < 500 3-15 < 50 < 10 < 500 Adult < 40 < 10 < 200
Critical limits & actions	Results significantly raised (i.e. at least x5 ULN) should be telephoned to the requestor.
Notes about authorising	

Name of test	**Catecholamines 24 hour urine group test**	
Pathnet code	**UCATS**	**Orderable on EPR** √ NO □Yes
Sample container	Acid (HCl) 24 hr collection	
Sample requirements	Catecholamines are unstable and should be collected in acid container. If received in plain urine bottle please cancel test and request it for urine metanephrines (UMETS).	
Minimum volume required	20 mL (please write 24hr urine volume on container)	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy.	
Storage in laboratory	Fridge at 2-8 ˚C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 4107	Results follow up: 020 3299 4128
Turn around time	2 working days	
Cost	N/A	
EQA Scheme and performance	UKNEQAS	
Entering results into Pathnet	*This test cannot be ordered directly by clinicians on EPR. EPR will direct clinicians to order UMETS instead. This test may be added on by King's College Hospital based on the UMETS results. If results for UCATS are received from King's College Hospital add UCATS onto the same sample number in Pathnet by branching to COE. The numerical result should be added for each component test under the Pathnet codes shown below:* **Adrenaline Urine:** ADRN **Adrenaline:Creatinine Urine:** ADRNCR **Noradrenaline Urine :** NOR **Noradrenaline:Creatinine Urine:** NORCR **Dopamine Urine:** DOP **Dopamine:Creatinine Ratio Urine:** DOPCR **Creatinine Urine:** UCR **Urine Collection Period:** UHRS	

	Volume: UMLS Please note that urine volume in Pathnet is in **millilitres** not in litres. The following comment is automatically stamped onto the results in Pathnet "Reference ranges quoted for urinary excretions are only applicable where the save has been collected over a 24 hour period. A text comment should be added to the UCATS results stating "test added by King's College Hospital based on the urine metadrenaline results". Add the expedite comment KING (F4) as a text comment.
GLV queue	391 5
Clinical indications	Second line test for investigation of phaeochromocytoma. It may also be useful where urinary methoxytyramine result has interference and urinary dopamine is required for neuroblastoma.
Methodology	HPLC with electrochemical detection
Limitations	
Reference range(s) and units	**Results reported in nmol/24 hrs** **Age(yrs) Noradrenaline Adrenaline Dopamine** 1-4 < 179 < 30 < 1700 4-10 < 290 < 60 < 2500 10-15 < 360 < 100 < 2500 Adult < 570 < 100 < 2500
Critical limits & actions	
Notes about authorising	

Name of test	**CEA fluid**	
Pathnet code	**MCEA**	**Orderable on EPR** □ NO √Yes
Sample container	Plain universal or SST tube	
Sample requirements	None	
Minimum volume required	200 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Results follow up: 020 3299 3576 Fax: 020 3299 3140	
Turn around time	Same day	
Cost	N/A	
EQA Scheme and performance	UK NEQAS –None declared	
Entering results into Pathnet	Enter results as shown on report. Add expedite comment (F4) KING.	
GLV queue	391 5	
Clinical indications	Pancreatic cystic lesions include inflammatory pseudocysts, benign serous tumors, and mucinous neoplasms, some of which are malignant. CEA is high in all benign and malignant mucinous cysts, and low in the pseudocysts and benign serous cystadenomas. CEA has been suggested as a useful marker in discrimination between mucinous and nonmucinous cysts.	
Methodology	Siemens Advia immunoassay	
Limitations	No definitive ranges.	
Reference range(s) and units	ug/L No reference ranges provided. Benign cysts have values below 30 ug/L and malignant above 300 ug/L	
Critical limits & actions	None	
Notes about authorising	None	

Name of test	**Chromium (whole blood)**	
Pathnet code	**BCHROM**	**Orderable on EPR** □ NO √Yes
Sample container	Purple Top EDTA tube **Occasionally additional empty bottle can be received with the blood to check for specimen contamination. Empty bottle should also be send to referral lab together with the blood.**	
Sample requirements	Do not centrifuge. Place into send outs fridge. Send as whole blood.	
Minimum volume required	4 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	First class post	
Address of referral laboratory	Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London SE5 9RS	
Contact details	Telephone: 020 3299 3008 Email: Kishor.raja@nhs.net	
Turn around time	1-2 weeks.	
Cost	N/A	
EQA Scheme and performance	UK NEQAS Trace elements- None declared	
Entering results into Pathnet	**Check whether whole blood or serum has been sent to Kings.** There is no separate code for serum chromium. For serum chromium results booked under BCHROM do not input the results instead add the following see text comment. "Whole blood is the recommended sample for cobalt and chromium analysis. Serum specimen received for analysis. Please note the serum reference ranges are different to whole blood. Please use the serum ranges quoted below: Serum chromium = XXX (insert result) nmol/L (Reference range < 10 nmol/L)." Add the expedite comment KING (F4) as a text comment.	
GLV queue	390 12	
Clinical indications	Guidance from MHRA (MDA/2017/018): All patients with metal on	

	metal hip implants (symptomatic and asymptomatic) should have blood metal level test annually for at the least the first 5 years while the device remains implanted. Frequency of subsequent monitoring may be annual or less frequent depending on type of implant and patient symptoms.
Methodology	ICP MS
Limitations	
Reference range(s) and units	0-40 nmol/L N.B. Occupational exposure will lead to significantly elevated Cr concentrations
Critical limits & actions	
Notes about authorising	Care: there is no test code for serum. Check on the report that whole blood has been sent and not serum. If serum has been sent check that the results have been entered as a comment otherwise the incorrect reference range will be displayed.

Name of test	**Chromogranin A and Chromogranin B Group Test**	
Pathnet code	**BCHROMAB**	**Orderable on EPR** □ NO √Yes
Sample container	Purple Top EDTA	
Sample requirements	Sample to be spun and separated and placed in the send out box in SPU freezer. If sample is part of gut hormone profile the following criteria should be met: • Patient must be off ***omeprazole*** for a minimum of 2 weeks and off H2 beta-blockers for a minimum of 3 days. • The sample must be a ***fasting*** sample.	
Minimum volume required	3 ml plasma	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Transport sample rapidly to lab on ice. Store plasma separated.	
Laboratory referred to	Imperial College Healthcare NHS Trust	UKAS accreditation reference: UKAS 8673
Transport conditions	Store plasma separated and ship to testing lab on dry ice via courier.	
Address of referral laboratory	The SAS Laboratories Clinical Biochemistry and Medical Oncology Ground Floor Charring Cross Hospital Fulham Palace Road London W6 8RF	
Contact details	Name: Dr Tricia Tan, Prof Waljit Dhillo Email:tricia.tan@imperial.nhs.uk waljit.dhillo@imperial.nhs.uk Telephone: gut hormone lab 020 331 33949	
Turn around time	3 weeks	
Cost	£51.00 single hormone, £87.00 profile	
EQA Scheme and performance	UK NEQAS Tumour markers (CgA only)	
Entering results into Pathnet	If chromogranin A and B is required in addition to a gut hormone screen. CHROMAB must be requested because chromogranin A and B are not part of the gut hormone profile in Pathnet. Component tests codes for CHROMAB: Chromogranin A ***CHROMA***	

	Chromogranin B ***CHROMB*** Enter the numerical results under each component test code. Comments are added by the referral laboratory (displayed in the box in the top left hand corner of the report) and typed manually into Pathnet e.g.: "Assuming normal renal function and nil treatment, CgA and CgB are elevated. May be consistent with diagnosis of neuroendocrine neoplasia in the presence of supporting clinical signs and symptoms." The chromogranin A is reported as greater than 300 and the comment accurate CgA to follow is included in the reporting comments add the chromogranin A (CHROMA) as a see text comment (F10 – choose see text) and add the result as a see text comment then add the following comment "accurate result to follow. Report will be amended when this result is available". When the report with the accurate report is received give this to the Sendaways team to error correct the report and add the result. Resulting team error correct the report to enter the result and add the expedite comment (F4) AMM to indicate that this is a new report.
GLV queue	391 5
Clinical indications	Diagnosis and monitoring of patient with neuroendocrine neoplasia.
Methodology	RIA
Limitations	Omeprazole has an impact on test interpretation.
Reference range(s) and units	Chromogranin A N < 60 pmol/L Chromogranin B N < 150 pmol/L
Critical limits & actions	
Notes about authorising	Abnormal results are highlighted in yellow on the referral form by the referral laboratory.

Name of test	**Citrate (random urine)**	
Pathnet code	**UCITT**	**Orderable on EPR** □ NO √Yes
Sample container	Random urine	
Sample requirements	Fresh random urine	
Minimum volume required	10 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	University College London Hospitals NHS Foundation Trust	UKAS accreditation reference: UKAS 8169
Transport conditions	Can be shipped at ambient temperature	
Address of referral laboratory	Biochemistry Department, UCL Hospitals, 3rd Floor, 60 Whitfield Street, London, W1T 4EU	
Contact details	Name: UCLH Duty Biochemist Email: dutybiochemist@uclh.nhs.uk Telephone: Clinical 020 344 79405 Result follow-up 020 3908 1362	
Turn around time	5 days	
Cost	Please contact directorate for current prices Victoria.hiscock@uclh.nhs.uk	
EQA Scheme and performance	WEQAS Satisfactory	
Entering results into Pathnet	Enter the result for urine citrate as a numerical result to 1 decimal place. Note the UCH report is to 2 decimal places. Enter the results for citrate/creatinine ratio as a comment including the reference ranges as stated on the report. E.g. for males "Urine citrate:creatinine ratio = XX mmol/mmol (Reference range 0.04-0.33)"	
GLV queue	391 5	
Clinical indications	Investigation of renal stone formers	
Methodology	Citrate lyase	
Limitations		
Reference range(s) and units	Random excretion: Citrate/creatinine ratio (mmol/mmol)	

	Males : 0.04 - 0.33 Females :0.11 - 0.55
Critical limits & actions	
Notes about authorising	Check that the urine citrate:creatinine ratio has been entered as a comment.

Name of test	**Citrate (24 hour urine)**	
Pathnet code	**UCITTS**	**Orderable on EPR** □ NO √Yes
Sample container	24 hour urine container	
Sample requirements	10 mL aliquot from 24h urine acid collection (collected in to 40ml of 25% conc. HCl)	
Minimum volume required	10 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	University College London Hospitals NHS Foundation Trust	UKAS accreditation reference: UKAS 8169
Transport conditions	Can be shipped at ambient temperature	
Address of referral laboratory	Clinical Biochemistry Department, UCL Hospitals, 3rd Floor, 60 Whitfield Street, London, W1T 4EU	
Contact details	Name: UCLH Duty Biochemist Email: dutybiochemist@uclh.nhs.uk Telephone: Clinical 020 344 79405 Result follow-up 020 3908 1362	
Turn around time	5 days	
Cost	Please contact directorate for current prices Victoria.hiscock@uclh.nhs.uk	
EQA Scheme and performance	WEQAS Satisfactory	
Entering results into Pathnet	*Enter the numerical result for each component:* Urine citrate as UCITT Urine citrate output as UCITE (excretion calculated from urine volume once the concentration is entered) **Citrate excretion (24 hour urine)** ***UCITE*** ***UCICR*** Enter the urine citrate: creatinine ratio as a numerical value under UCICR.	
GLV queue	391 5	

Clinical indications	Investigation of renal stone formers
Methodology	Citrate lyase
Limitations	
Reference range(s) and units	24 hour excretion: Males: 0.6 - 4.8 mmol/24 h Females: 1.3 - 6.0 mmol/24 h.
Critical limits & actions	
Notes about authorising	

Name of test	**Clobazam and metabolites Group test**	
Pathnet code	**BCLOB**	**Orderable on EPR** □ NO □Yes
Sample container	EDTA plasma	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	Cardiff and Vale UHB	UKAS accreditation reference: 8989
Transport conditions	Overnight first class post	
Address of referral laboratory	Cardiff Toxicology Laboratories, Academic Centre, University Hospital Llandough, Cardiff, CF64 2XX	
Contact details	Name: ALUN HUTCHINGS Telephone:02920716893	
Turn around time	7 working days	
Cost	£32	
EQA Scheme and performance	LGC Standards	
Entering results into Pathnet	Component test codes: ***Desmethyl Clobazam*** DCL ***Clobazam*** CLOB	
GLV queue	391 5	
Clinical indications	Clobazam is a 1,5-benzodiazepine drug with marked anticonvulsant properties, which is less sedating than other benzodiazepines. It is licensed for use as adjunctive therapy of partial seizures or generalized seizures in patients above 3 years of age and also for the management of nonconvulsive status epilepticus. It is also prescribed as an anxiolytic. Clobazam is available in tablet and capsule formulations. Ther Drug Monit Volume 35, Number 1, February 2013	
Methodology	HPLC, CERTIFIED CALIBRANTS AND IQC USED	
Limitations	AVOID SERUM SEPARATION GEL. CARBAMAZEPINE INTERFERES WITH NORCLOBAZAM	
Reference range(s) and units	No ranges in pathnet	

	Units ug/L Clobazam 50-300
Critical limits & actions	NO CRITICAL LIMIT DEFINED
Notes about authorising	

Name of test	**Clonazepam (Rivotril)**	
Pathnet code	**BCLON**	**Orderable on EPR** □ NO □√Yes
Sample container	Serum or plasma	
Sample requirements	Sample to be taken immediately before an oral dose. Centrifuge and separate serum into paediatric tube. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	200 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	Therapeutic Drug Monitoring Unit (TDM Unit) Chalfont Centre for Epilepsy Chesham Lane Chalfont St Peter SL9 ORJ	UKAS accreditation reference: UKAS 8353
Transport conditions	Overnight first class post	
Address of referral laboratory	N/A	
Contact details	Clinical advice: Dr. N. Ratnaraj	Results follow up: 01494 601423
Turn around time	3 working days	
Cost	N/A	
EQA Scheme and performance	None stated. LGC standards	
Entering results into Pathnet	This test is not routinely requested. If a requested is received for this test please inform the Sendaways team. The Sendaways team will confirm with the clinician if this test is needed and find an appropriate external referral laboratory to test this.	
GLV queue	391 5	
Clinical indications	Clonazepam is licensed for the treatment of a variety of seizure types including absence, akinetic, atonic, and myo- clonic seizures. Also, it is licensed for use in patients with Lennox–Gastaut syndrome and in the management of status epilepticus. Clonazepam is available in a variety of formula- tions including tablets, a disintegrating wafer and a liquid formulation for intravenous administration. Clonazepam is rapidly absorbed after oral ingestion with a T max of 1–4 hours and bioavailability of 80%. Ther Drug Monit Volume 35, Number 1, February 2013	
Methodology		

Limitations	Time of sampling is important.
Reference range(s) and units	20-70 µg/L
Critical limits & actions	None
Notes about authorising	Please check units.

Name of test	**Clozapine (plasma) and metabolites Group test**	
Pathnet code	**BCLOZ**	**Orderable on EPR** □ NO √Yes
Sample container	Purple top EDTA	
Sample requirements	Pre-dose or 'trough' sample required. Do not centrifuge. Place in send away fridge. Send as whole blood.	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	2 days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS Therapeutic drug assays. None declared	
Entering results into Pathnet	Enter numerical result for the component test codes: *Clozapine* **BCLO** *Norclozapine* **BNCLO** The following comment is automatically stamped onto the reports: A target range for plasma clozapine of 0.35 - 0.50 mg/L is suggested in treatment resistant schizophrenia, but some patients respond at lower concentrations. The upper limit is likewise not well defined, but there is an increased risk of convulsions at higher doses/plasma concentrations. The measurement of norclozapine can be useful in monitoring adherence, and concentrations average 70% those of clozapine during normal therapy. **Add the expedite comment KING (F4) as a text comment.**	
GLV queue	391 5	
Clinical indications	TDM for patients on clozapine Clozapine is an atypical antipsychotic used to treat schizophrenia resistant to conventional therapy. Because of the risk of agranulocytosis, white blood cell counts (WBC) are monitored weekly in the early stages of therapy and monthly thereafter. It is recommended that therapy is withheld if the WBC is less than	

	3,500 mm-3 and abandoned if the WBC falls below 3000 mm-3 or the granulocyte count below 1,500 mm-3. Side-effects of clozapine include lethargy, hypersalivation, constipation and somnolence. There is a risk of hypotension and seizure at higher doses. A single dose of 300-400 mg may be life-threatening in a clozapine naïve subject. Clozapine is metabolised by N-demethylation, hydroxylation and N-oxidation. The N-demethylated metabolite, norclozapine, is present in plasma at similar concentrations to the parent compound, but has a longer plasma half-life.
Methodology	LC with UV detection
Limitations	
Reference range(s) and units	0.35 – 0.50 mg/L Plasma clozapine concentrations of 0.35 mg/L and above have been associated with a good response, with the risk of convulsions increasing above 1.0 mg/L.
Critical limits & actions	See above
Notes about authorising	Information if stated check: Date and time of last dose Clozapine dose Smoker? Monitoring service number

Name of test	**Cobalt (whole blood)**	
Pathnet code	**BCOB**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA whole blood Cobalt can also be measured in serum or plasma however here is no Pathnet test code. If serum received, this should be put in as order comment.	
Sample requirements	Whole blood	
Minimum volume required	4 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: Email: Kishor.raja@nhs.net	Results follow up:020 3299 3008
Turn around time	5-7 days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS (Trace elements) – None declared	
Entering results into Pathnet	**Check whether whole blood or serum has been sent to Kings.** There is no separate code for serum cobalt For the serum cobalt results booked under BCOB do not input the results instead add the following see text comment. "Whole blood is the recommended sample for cobalt and chromium analysis. Serum specimen received for analysis. Please note the serum reference ranges are different to whole blood." Please use the serum ranges quoted below: Serum cobalt = XXX (insert result) nmol/L (Reference range 1.7 – 6.8 nmol/L). Add the expedite comment KING (F4) as a text comment.	

GLV queue	390 12
Clinical indications	Cobalt (Co) is an essential element, as a component of cyanocobalamin (Vitamin B12). It is also used industrially in the manufacture of high-strength alloys used for cutting/drilling tools, in the semi-conductor industry and as a pigment. Dicobalt Edentate is used in the treatment of cyanide poisoning. Updated guidance from MHRA (MDA/2017/018): All patients with metal on metal hip implants (symptomatic and asymptomatic) should have blood metal level test annually for at the least the first 5 years while the device remains implanted. Frequency of subsequent monitoring may be annual or less frequent depending on type of implant and patient symptoms.
Methodology	ICP-MS
Limitations	
Reference range(s) and units	0-10 nmol/L
Critical limits & actions	
Notes about authorising	Please note there is no separate code for serum cobalt. If the sample type on the KCH report states serum cobalt ensure that the results have been entered as a see text comment.

Name of test	**Copeptin (CT-proAVP)**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container	Green top lithium heparin or gold top	
Sample requirements	Separated serum or plasma. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	200 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. **Rare test, contact referral laboratory to check details prior to sending. This test replaces the ADH (AVP) service offered previously by Royal Victoria Infirmary.**	
Storage in laboratory	Separated serum/plasma is stable at room temperature for 7 days	
Laboratory referred to	Royal Victoria Infirmary (Newcastle upon Tyne)	UKAS accreditation reference: UKAS 8543
Transport conditions	Ambient temperature sent by first class post. Avoid weekends	
Address of referral laboratory	SAS Laboratory, Department of Blood Sciences, Royal Victoria Infirmary, Newcastle upon Tyne, NE1 4LP	
Contact details	0191 244 8889 TNU-Tr.duty.biochemist@nuth.nhs.uk	
Turn around time	Within 4 weeks	
Cost	£32.08	
EQA Scheme and performance	No EQA scheme available, participant in sample exchange	
Entering results into Pathnet	Results need to be entered as 'See Text' and typed with units, reference ranges and interpretative comments if available.	
GLV queue	391-5	
Clinical indications	Diagnosis and classification of diabetes insipidus. This test is very rarely indicated.	
Methodology	N/A	
Limitations	N/A	
Reference range(s) and units	pmol/L There is no applicable reference range as copeptin concentrations are dependent on osmolar status. An interpretative comment will be included with all reports.	
Critical limits & actions	N/A	
Notes about authorising		

Name of test	**Copper (serum)**	
Pathnet code	**BCU**	**Orderable on EPR** □ NO √Yes
Sample container	Trace element blue top tube (preferred) or serum **Occasionally additional empty bottle can be received with the blood to check for specimen contamination. Empty bottle should also be send to referral lab together with the blood.**	
Sample requirements	1 mL plasma/serum	
Minimum volume required	1 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: Results follow up: 020 3299 3576	
Turn around time	2-4 working days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS (Trace Elements) – None declared	
Entering results into Pathnet	Copper results from KCH are reported to 1 decimal place. Enter results in Pathnet to 1 decimal place, as received from Kings. Add any interpretative comments stated on the report. Add the expedite comment KING (F4) as a text comment. The following comment is automatically stamped onto all of the reports: From 17/04/2008, analysis performed at Kings Trace Elements Lab.	
GLV queue	390/12	
Clinical indications	Copper is now well established as an essential trace element. The majority of copper in the circulation is bound to caeruloplasmin which is synthesised in the liver, and binds 6-8 atoms of copper per molecule. Measurement indicated in the investigation of Wilson's disease and Menke's disease and TPN. The rare sex linked recessive disorder Menke's disease is characterised by a failure of intestinal copper absorption due to a defect in the gene coding for the intestinal copper transporter ATP7A. Wilson disease is an autosomal recessive disorder due to defects in the gene coding for	

	the copper transporter (ATP7B) in other cells. Children and adults presenting with liver disease should be investigated for Wilson disease as part of differential diagnosis. The classical presentation in adults is of progressive neurological symptoms and characteristic copper depoWs in the corneas (Kayser-Fleischer rings).
Methodology	ICP-MS
Limitations	Caeruloplasmin is a positive acute phase protein.
Reference range(s) and units	0 – 4 months: 1.4 – 7.2 umol/L 4 – 6 months: 3.9 – 17.3 umol/L 7 – 12 months: 7.9 – 20.5 umol/L Children over 1 year and adults: 12-25 umol/L
Critical limits & actions	None
Notes about authorising	Also check Caeruloplasmin if Wilson's disease is suspected.

Name of test	**Copper (urine)**	
Pathnet code	**UCU**	**Orderable on EPR** □ NO √Yes
Sample container	Plain universal	
Sample requirements	Fresh urine	
Minimum volume required	20 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: 020 3299 3576	Results follow up: 020 3299 3576
Turn around time	2-4 working days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS (Trace elements) – None declared	
Entering results into Pathnet	Enter the numerical result stated on the report in umol/L using ACC. Add urine copper:creatinine ratio and random creatinine results as a text comment, including reference ranges as stated on the report.	
GLV queue	390 12	
Clinical indications	Investigating of suspected Wilson's disease patients	
Methodology	ICP-MS	
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising		

Name of test	**Creutzfeldt-Jakob disease (CJD) / CSF 14-3-3 protein**	
Pathnet code	N/A – this test is not booked onto Pathnet. SPu store the sample for collection by a courier arranged by the clinician via the NCJDRSU	**Orderable on EPR** √ NO □ Yes
Sample container	Universal container	
Sample requirements	1. Prior to collecting the sample the requesting clinician **must** discuss the request with the clinical team at the National Creutzfeldt-Jakob Disease Research & Surveillance Unit (NCJDRSU) lab by calling 0131 537 1980. 2. Further information including the request form to be completed by the clinician can be found here: https://www.cjd.ed.ac.uk/csf-laboratory-1 3. At least 0.5 mL of clear and colourless CSF is required, if it is blood-stained in anyway this invalidates the test. CSF samples with a red cell count of greater than 150 are not accepted. 4. The CSF sample should be collected into a routine universal container. 5. If the lumbar puncture is traumatic it is advised that the CSF sample is collected in a series of containers until it is clear. 6. The sample must be sent to SPU for storage. The laboratory must freeze the CSF sample. It should be frozen within 2- 3 hours. A normal -20°C freezer is acceptable but if the lab has a -70 °C/-80 °C this is preferred. 7. On approval of the request by the referral lab, a member of the NCJDRSU laboratory staff will contact SPU and arrange for a courier to collect the CSF sample. 8. The results will be sent directly to the requesting clinician.	
Minimum volume required	0.5 mL	
Rejection criteria	Blood stained samples will not be accepted (red cell count >150).	
Storage in laboratory	Store in -80 °C freezer. Sample should be frozen within 2–3 hours of collection.	
Laboratory referred to	The National Creutzfeldt-Jakob	UKAS accreditation reference:

	Disease Research & Surveillance Unit	
Transport conditions	The NCJDRSU laboratory staff will contact SPU and arrange for a courier to collect the CSF sample.	
Address of referral laboratory	The National Creutzfeldt-Jakob Disease Research & Surveillance Unit Bryan Matthews Building Western General Hospital Crewe Road Edinburgh EH4 2XU	
Contact details	Clinical advice: CSF Referrals +44 (0)131 537 1980 loth.securecjd@nhslothian.scot.nhs.uk https://www.cjd.ed.ac.uk/csf-laboratory-1	Results follow up: Neuropathology Laboratory +44 (0)131 537 3084 contact.cjd@ed.ac.uk
Turn around time	Approximately 5-7 working days after receipt of the CSF sample.	
Cost		
EQA Scheme and performance	N/A	
Entering results into Pathnet	The results will be sent directly to the requesting clinician.	
GLV queue	N/A	
Clinical indications	14-3-3 proteins are found in the cerebrospinal fluid (CSF) and are used to help identify patients with sporadic Creutzfeldt-Jakob disease (sCJD).	
Methodology	Real-time quaking induced conversion (RT-QuIC)	
Limitations	N/A	
Reference range(s) and units	N/A	
Critical limits & actions	N/A	
Notes about authorising	N/A	

Name of test	**CSF angiotensin converting enzyme**	
Pathnet code	**CACE**	**Orderable on EPR** □ NO √Yes
Sample container	Plain universal	
Sample requirements	CSF	
Minimum volume required	0.5 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	National Hospital for Neurology and Neurosurgery Queen Square (University College London Hospitals NHS Foundation Trust)	UKAS accreditation reference: 8116
Transport conditions	May be sent at ambient temperature	
Address of referral laboratory	Postal address for all samples: Neurometabolic Unit 6th Floor, Institute of Neurology, Queen Square House Queen Square, London WC1N 3BG	
Contact details	Clinical advice:	Results follow up: 02034483818
Turn around time	95 % inside 10 working days	
Cost	£40	
EQA Scheme and performance	None available. Participates in a sample swap with another laboratory.	
Entering results into Pathnet	Enter numerical value using ACC.	
GLV queue	391 5	
Clinical indications	Specific LC-MS/MS method developed for the low levels found in CSF. However, this test has very poor diagnostic sensitivity and specificity for neurosarcoidosis but can be useful for monitoring disease progression/regression. Activity may be increased if blood brain barrier impairment leads to passage of serum proteins (including serum ACE) or blood contamination. Contact Mr G Lynes or Mr J Willans.	

Methodology	LCMSMS
Limitations	
Reference range(s) and units	0-1.20 umol/min/L
Critical limits & actions	
Notes about authorising	

Name of test	**CSF Hypocretin (Orexin)**	
Pathnet code	**CHYCRE**	**Orderable on EPR** □ NO □Yes
Sample container	CSF – universal container	
Sample requirements		
Minimum volume required	1ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Ambient temperature	
Laboratory referred to	Immunology Laboratory	UKAS accreditation reference: 8782
Transport conditions	Samples should be posted in packaging that complies with UN3373 and packing instructions P650.	
Address of referral laboratory	Department of Immunology Oxford Hospitals NHS Foundation Trust The Churchill Hospital Old Road, Headington Oxford OXZ3 7LE	
Contact details	Email: immunology.office@nhs.net Telephone: 01865225995 Website: https://www.ouh.nhs.uk/immunology/	
Turn around time	42 days	
Cost	£50.00	
EQA Scheme and performance	Not available	
Entering results into Pathnet	Enter numerical result. Interpretative comments should be entered as a comment (F6) as they appear on result report.	
GLV queue	391 5	
Clinical indications	Orexin/hypocretin is a CSF peptide that is severely reduced or absent in narcolepsy with cataplexy.	
Methodology	Radioimmunoassay	
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising		

Name of test	**CSF neurotransmitters profile Group test**	
Pathnet code	**CSFMA**	**Orderable on EPR** □ NO √Yes
Sample container	Special tubes required – provided by Neurometabolic Unit, UCH	
Sample requirements	Requires specific order of draw from lumber puncture. Instructions included in Neurometabolic Unit CSF Neurotransmitters request form provided with special collection tubes. Completed form required. Sample require freezing after collection.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. Do not throw away CSF samples if they do not meet the acceptance criteria. Discuss with Principal Clinical Scientist or Sendaways team for advice.	
Storage in laboratory	Freeze at -20 °C	
Laboratory referred to	University College Hospital NHS foundation Trust	UKAS accreditation reference: 8116
Transport conditions	Transport frozen	
Address of referral laboratory	Neurometabolic Unit 6th Floor, Institute of Neurology, Queen Square House Queen Square, London WC1N 3BG	
Contact details	Clinical advice: Simon Heales 020 7813 8321 Simon.heales@gosh.nhs.uk	Results follow up: 020 344 83818
Turn around time	95% 20 working days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	CSFMA is the group test. The following tests are part of this group: **CSF Homovanillic acid** ***CHVA*** **CSF Monoamines** ***CSFMA***	

CSF 5-Hydroxyindoleacetic acid

CSF5HIAA

CSF HVA:5HIAA Ratio

CSF HVA:5HIAA

CSF 5-Methyltetrahydrofolate

CSF 5MTH

CHVA is a stand-alone test and can be requested on its own.

CSF samples that are sent to the University College Hospital at Neurometabolic Unit to test for CSF Pyridoxal/ CSF 5-Methytetrahydrofolate.These test may exist and show within a profile (even if not originally requested) as the Neurometabolic Unit will test depending if the result is abnormal or clinical details have specific details on requested patient to investigate.

These tests will also show as different reference ranges as it is age related.

Please see below a breakdown of the 2 profiles **CSF Pterins** and **CSF Neurotransmitters** that may show to be entered on report via Pathnet due to further testing.

Test Code	**Name Of Test**
CSF Neurotransmitters Profile	
CHVA	CSF Homovanillic Acid
CSFMA	**CSF Monamines**
C5HIAA	CSF 5-Hydroxyindoleacetic Acid
CSF HVA: 5HIAA	CSF 5HIAA Ratio
CSF 5MTH	CSF 5-Methyltetrahydrofolate
CSFPT	**CSF Pterins**
CBH2	CSF Dihydrobiopterin
CBH4	CSF Tetrahydrobiopterin
CNEO	CSF Total Neopterin
Stand Alone Tests	
CPPH	CSF Pyridoxal Phosphate

	CCOM: CSF Comment Additional action required CSF HVA:5HIAA. This is to be entered as a comment using test code CCOM or F6 option. CSF 5MTH May show as CSF monoamines (CSFMA).
GLV queue	391 5
Clinical indications	Determination of degree of CNS pterin and monoamine deficiency Pterin defects and other disorders of monoamine metabolism Monitoring response to treatment (DHPR deficiency) Other neurotransmitter disorders: •Tyrosine Hydroxylase Deficiency •Dopamine Transporter Defect •Aromatic Amino Acid Decarboxylase Deficiency
Methodology	HPLC electrochemical detection
Limitations	Analytes unstable and require freezing immediately after collection.
Reference range(s) and units	**Low HVA,5HIAA and pterins>>>**GTP cyclohydrolase deficiency **Low HVA,5HIAA , BH4 and high NH2**>>> PTP synthase deficiency
Critical limits & actions	
Notes about authorising	

Name of test	**CSF Pterins**	
Pathnet code	CSFPT	**Orderable on EPR** □ NO √Yes
Sample container	Special tubes required – provided by Neurometabolic Unit, UCH	
Sample requirements	Lumbar CSF. Third tube (2nd ml) of sequential lumbar CSF samples, which should contain 1mg DTE + 1mg DETAPAC. Requires specific order of draw from lumber puncture. Instructions included in Neurometabolic Unit CSF Neurotransmitters request form provided with special collection tubes. Completed form required. Sample require freezing after collection.	
Minimum volume required	1 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Freeze immediately, store at –70C.	
Laboratory referred to	University College Hospital NHS foundation Trust	UKAS accreditation reference: 8116
Transport conditions	Transport frozen	
Address of referral laboratory	Neurometabolic Unit 6th Floor, Institute of Neurology, Queen Square House Queen Square, London WC1N 3BG	
Contact details	Clinical advice: Simon Heales 020 7813 8321 Simon.heales@gosh.nhs.uk	Results follow up:
Turn around time	95 % inside 30 working days	
Cost	£153	
EQA Scheme and performance	None available.	
Entering results into Pathnet	*This is a group test code consisting of the following component tests:* **CSF Dihydrobiopterin** ***CBH2*** **CSF Tetrahydrobiopterin**	

	CBH4 **CSF Total Neopterin** ***CNEO*** For entering information see CSF neurotransmitters
GLV queue	391 5
Clinical indications	BH4, BH2 and neopterin measurements provide diagnostic information regarding disorders and diseases affecting serotonin and dopamine metabolism within the central nervous system, particularly inborn errors of BH4 metabolism, for example atypical phenylketonuria and Dopa responsive dystonia. Neopterin is also a measure of immune response activation.
Methodology	HPLC electrochemical detection
Limitations	
Reference range(s) and units	Age dependent reference intervals.
Critical limits & actions	None
Notes about authorising	

Name of test	**CSF Pyridoxal Phosphate**	
Pathnet code	**CPPH**	**Orderable on EPR** □ NO √Yes
Sample container	Special tubes required – provided by Neurometabolic Unit, UCH.	
Sample requirements	Second 0.5 ml of sequential lumbar CSF samples. Requires specific order of draw from lumber puncture. Instructions included in Neurometabolic Unit CSF Neurotransmitters request form provided with special collection tubes. Completed form required. Sample require freezing after collection.	
Minimum volume required	0.5 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Freeze immediately, protect from light, store at -70°C	
Laboratory referred to	University College Hospital NHS foundation Trust	UKAS accreditation reference: 8116
Transport conditions	Dry ice by courier- transport frozen.	
Address of referral laboratory	Neurometabolic Unit 6th Floor, Institute of Neurology, Queen Square House Queen Square, London WC1N 3BG	
Contact details	Clinical advice: Simon Heales 020 7813 8321 Simon.heales@gosh.nhs.uk	Results follow up: 020 7813 8321
Turn around time	95 % inside 20 working days.	
Cost	£29	
EQA Scheme and performance	Not available	
Entering results into Pathnet	This is a standalone test associated with CSF neurotransmitters. For entering information see CSF neurotransmitters.	
GLV queue	391 5	
Clinical indications	Plasma and CSF amino acids are useful adjuncts to this test for the investigation of intractable seizures.	

Methodology	HPLC electrochemical detection
Limitations	
Reference range(s) and units	
Critical limits & actions	None
Notes about authorising	

Name of test	**Cystatin C**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Lithium Heparin or EDTA plasma.	
Sample requirements	Lithium Heparin or EDTA plasma.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store refrigerated (2-8 days at 4C)	
Laboratory referred to	Blood Sciences, King's College Hospital	UKAS accreditation reference:
Transport conditions	Send ambient via transport or first class post.	
Address of referral laboratory	Clinical Biochemistry (Blood Sciences) King's College Hospital Bessemer Wing Denmark Hill London SE5 9RS	
Contact details	Clinical advice:	Results follow up: 020 3299 4126
Turn around time	Up to 72 hours	
Cost	Not stated	
EQA Scheme and performance	Not stated	
Entering results into Pathnet	Enter result, units, reference range and any interpretative comment as they appear on result report.	
GLV queue	391/5	
Clinical indications	Cystatin C is used as an indicator of renal glomerular function. It is produced by all nucleated cells and is freely filtered at the glomerulus, almost completely reabsorbes, degraded and not secreted by the proximal renal tubular cells, making it a good marker for glomerular filtration rate (GFR). Cystatin C is particularly useful where there is a need to accurately identify a reduced GFR in patients where serum creatinine is of limited use. An example is monitoring nephrotoxicity in children receiving immunosuppressant drugs following organ transplantation. It is not affected by muscle mass or gender. Serum levels reach adult ranges by 1 year of age.	

	Information collated from Viapath website entry 26/04/21.
Methodology	Immunoturbidimetric assay (Siemens Advia 2400).
Limitations	None stated
Reference range(s) and units	See report for most up to date reference ranges and units.
Critical limits & actions	None stated
Notes about authorising	None stated

Name of test	**Dehydroepiandrosterone/Dehydroepiandrosterone sulphate**	
Pathnet code	**BDHAS**	**Orderable on EPR** □ NO √Yes
Sample container		
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost	N/A	
EQA Scheme and performance	UKNEQAS –none declared	
Entering results into Pathnet	DHEA and DHEAS results are entered at KCH and results downloaded to Pathnet via integration engine.	
GLV queue	DHEA and DHEAS results are entered at KCH and results downloaded to Pathnet via integration engine. Results do not queue.	
Clinical indications	Investigation of androgen excess.	
Methodology	Immunoassay	
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising	DHEA and DHEAS results are entered at KCH and results downloaded to Pathnet via integration engine. Results do not queue on PNC.	

Name of test	**Dementia Screening Profile/CSF TAU**	
Pathnet code	**CDEMS**	**Orderable on EPR** □ NO √Yes
Sample container	Polypropylene (**not** polystyrene) tubes	
Sample requirements	CSF – Unhaemolysed sample to be centrifuged, separated and	

	supernatant frozen ideally within 2 hours of collection or at least the same day as LP	
Minimum volume required	Each test min 500uL in separate tubes	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Short term freezer, Long term -80C	
Laboratory referred to	National Hospital for Neurology and Neurosurgery, Queen Square	UKAS accreditation reference: UKAS 8116
Transport conditions	Frozen on dry ice	
Address of referral laboratory	National Hospital for Neurology and Neurosurgery, Box 76 Queen Square, London WC1N 3BG	
Contact details	Name: Miles Chapman Email: miles.chapman@uclh.nhs.uk Telephone: 0203 448 3841	
Turn around time	25 working days	
Cost	£198	
EQA Scheme and performance	Alzheimer's Association EQA scheme (European)	
Entering results into Pathnet	Enter values on the report under the following fields as follows: ***CTAU: CSF Total Tau*** Enter as numerical value on report ***CAMYB: CSF Amyloid Beta 1-42*** Enter result as "See Text", along with the following results as an F6 comment. Include units and interpretative comment on report (See below): CSF Amyloid Beta 1-42 CSF Amyloid Beta 1-40 CSF Amyloid Beta 1-42:40 Ratio ***CPTAU: CSF Phosphorylated Tau*** Enter numerical value as on report. As comment (F6) under result, enter Total/PTau Ratio on report as well as interpretative comment. *Example of comment for entry under CAMYB:* *"Interpretation of CSF neurodegenerative markers: The typical CSF profile of Alzheimer's disease is low Ab-42/40 ratio, with elevated P-tau and NF-L. A low Ab-42/40 ratio is a marker of*	

	fibrillary beta-amyloid deposition in the brain. An Ab-42/40 ratio of <0.065 has ~85% sensitivity and ~95% specificity for the detecting abnormal beta-amyloid deposition measured using amyloid PET. *Fibrillar beta-amyloid deposition is necessary, but not sufficient for a diagnosis of AD and should not be used for diagnosis in asymptomatic individuals. Biomarkers should be interpreted as part of a complete clinical assessment and to support a clinical diagnosis.* *Reference ranges are not given for Ab42 and Ab40 – use of the (unitless) ratio corrects for inter-individual patient variation."* *Example of comment for entry under CPTAU (phosphorylated Tau):* *"Elevated Phosphorylated Tau-181 reflects CNS neurofibrillary tangle pathology in the context of Alzheimer's disease. Ptau-181 of >57 pg/mL gives optimal separation of probable AD vs controls, with 77% sensitivity and 88% specificity for AD diagnosis compared to amyloid PET."*
GLV queue	391 5
Clinical indications	Investigation for early onset dementia including Alzheimer's Disease
Methodology	ELISA
Limitations	
Reference range(s) and units	CTAU: 146 – 595 pg/ml CAMYB: No reference range; interpretation of ratio in comment CPTAU: 0 -57 pg/ml
Critical limits & actions	
Notes about authorising	

Name of test	**Dexamethasone**	
Pathnet code	**BTEST**	**Orderable on EPR** □ NO √Yes
Sample container	Serum / Lithium Heparin Plasma	
Sample requirements	After separation, freeze sample at -20°C	
Minimum volume required	600µL	

Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store sample at -20°C	
Laboratory referred to	Department of Medical Biochemistry and Immunology, University of Wales, Cardiff.	UKAS accreditation reference: UKAS 8989
Transport conditions	First Class Post	
Address of referral laboratory	Department of Medical Biochemistry and Immunology, University of Wales, Heath Park, Cardiff, CF14 4XW	
Contact details	Results Enquiries: Rachel Hunt Tel: 029 2184 4157 Email: rachel.hunt@wales.nhs.uk Clinical Advice: Dr. Carol Evans (Lead Clinical Scientist) Tel: 029 2184 8367 Email: carol.evans@wales.nhs.uk Sarah Tennant (Clinical Scientist) Tel: 029 2184 5863 Email: sarah.tennant@wales.nhs.uk	
Turn around time	20 days	
Cost	Not Specified - contact referral laboratory	
EQA Scheme and performance	U.K. NEQAS Birmingham	
Entering results into Pathnet	Transcribe all the results, units, reference range (control range) and any reporting comments including on the report into Pathnet. Add the following comment at the end of the report "This test was performed at Department of Medical Biochemistry and Immunology, University of Wales, Cardiff".	
GLV queue	391 5	
Clinical indications	To evaluate for possible false-positive results following an overnight dexamethasone suppression test.	
Methodology	Tandem Mass Spec	
Limitations		
Reference range(s) and units	Interpretation provided on report.	
Critical limits & actions		
Notes about authorising		

Name of test	**Dihydrotestosterone**	
Pathnet code	**BDHT**	**Orderable on EPR** □ NO √ Yes
Sample container	Serum SST sample (EDTA acceptable)	
Sample requirements	None	
Minimum volume required	150 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store refrigerated if sending within 24 hours. Store frozen (-20°C)	
Laboratory referred to	Steroid Laboratory, Kings College Hospital	UKAS accreditation reference: 9067 (test not yet accredited, ETS Feb 2021)
Transport conditions	Send ambient if stored refrigerated, send on dry ice frozen if sample stored frozen.	
Address of referral laboratory	Steroid Laboratory, Kings College Hospital Denmark Hill London SE5 9RS	
Contact details	Clinical advice: David Taylor davidtaylor8@nhs.net 0203 299 3009	Results follow up: Steroid laboratory 0203 299 4131
Turn around time	7 days	
Cost	Not stated	
EQA Scheme and performance	NEQAS (Testosterone) RCPAQAP (DHT and Testosterone)	
Entering results into Pathnet	Request for a dihydrotestosterone (BDHT) will automatically add the following test codes to that sample: **TEMS Testosterone by Mass Spectrometry** **BTDHTR Testosterone:Dihydrotestosterone Ratio** BDHT entered to 2 decimal places e.g. 1.51 nmol/L TEMS entered to 1 decimal place e.g. 1.5 nmol/L BTDHTR entered to 1 decimal place. TEMS is not mapped outside of Pathnet, therefore the TEMS result is only viewable in Pathnet. Therefore, also add the TEMS results	

	as a comment under the DHT result. Any additional interpretative comments or reference ranges on the report should be entered as a comment (F6) **under the result to which they refer.** **Add the expedite comment KING (F4) as a text comment to each individual result.**
GLV queue	391-5
Clinical indications	Investigation of 5-α reductase deficiency, androgenic alopecia, monitoring of 5-α reductase inhibitor therapy or investigation of interference in Roche testosterone immunoassay (Testosterone by Mass Spec only - TEMS) Clinical details required for interpretation include patient age and gender.
Methodology	LC-MS/MS. MU Testosterone <6.18% MU DHT <5.33%
Limitations	None known
Reference range(s) and units	Units = nmol/L Age and gender specific reference ranges.
Critical limits & actions	None stated
Notes about authorising	None

Name of test	**Dimethylglycine**	
Pathnet code	**UTEST**	**Orderable on EPR** √NO □Yes
Sample container	Universal	
Sample requirements	Random urine in a universal container. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	-	
Laboratory referred to	Sheffield Children's NHS Trust	UKAS accreditation reference:
Transport conditions	First class post	
Address of referral laboratory	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Trust, Western Bank, Sheffield, S10 2TH	
Contact details result follow up and clinical interpretation	Name: Joanne Croft Email: Joanne.croft@sch.nhs.uk Telephone: 0114 271 7307	
Turn around time	4 – 6 weeks	
Cost	£50.50 (included in price of Trimethylamine if added on by Sheffield Children's hospital laboratory)	
EQA Scheme and performance	No EQA scheme exists for this analysed. Previously analysed samples are re-analysed approximately 1/month to check consistency of results.	
Entering results into Pathnet	As per report	
GLV queue	391 5	
Clinical indications	Indicated for the investigation of dimethylglycinuria as a cause of odour. A normal result would exclude dimethylglycine as the cause of odour. This test may be indicated following Trimethylamine (TMA) analysis however is no longer added automatically By Sheffield as part of that test profile. Also used for MADD monitoring.	
Methodology	GCMS	
Limitations		
Reference range(s) and units	< 16 umol/mmol/creatinine	
Critical limits & actions	N/A	

Notes about authorising	Add this result to the TMA result using ECR in Pathnet. Type the result, reference range and comment as written on the report. Remove the comment Dimethylglycine to follow. Indicate the report has been amended using the comment AMM. Ask another member of the Sendaways team to transcription check the result once it has been entered. **Please note: results entered by ECR do not go into the GLV queue.**

Name of test	**Down Syndrome**	
Pathnet code	**BDSS**	**Orderable on EPR** □ NO √Yes
Sample container		
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Bart's and the London	UKAS accreditation reference: UKAS 9804
Transport conditions		
Address of referral laboratory	Antenatal Screening, Centre for Environmental and Preventative Medicine, Wolfson Institute for Preventative Medicine, Bart's and the London, Queen Mary's School of Medicine and Dentistry, Charter House Square, London, EC1M 6BQ.	
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Not applicable reports are sent directly back to the requesting clinician.	
GLV queue	Not applicable reports are sent directly back to the requesting clinician.	
Clinical indications	Antenatal screening for Downs Syndrome (2nd trimester). **Not routinely available – 1st trimester screening performed at St Thomas'.**	
Methodology		
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising	The reports are sent directly back to the clinicians	

Name of test	**Enhanced Liver Fibrosis (ELF) Test**	
Pathnet code	**BTEST**	**Orderable on EPR** √No □Yes
Sample container	Serum SST (gold top)	
Sample requirements	None provided	
Minimum volume required	1 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable for up to 7 days refrigerated, 3 months frozen	
Laboratory referred to	HSL pathology	UKAS accreditation reference: 8169
Transport conditions	Transport on ice or at ambient temperatures	
Address of referral laboratory	Delivery address: Clinical Biochemistry, 60 Whitfield Street, London, W1T 4EU	
Contact details	Clinical advice: Simon Salter Simon.salter@hslpathology.com 02039 081360	Results follow up: Simon Salter Simon.salter@hslpathology.com 02039 081360
Turn around time	1 week	
Cost	Please contact Malcolm.nudd@hslpathology.com or josh.brady@tdlpathology.com	
EQA Scheme and performance	UKNEQAS Liver Fibrosis Markers. Good performance.	
Entering results into Pathnet	Results entered to 1 decimal place. Reference range must be entered, along with any additional interpretative comments: Interpretation of the ELF score	

	<7.7; (no significant fibrosis); 7.7-9.7; (mild to moderate fibrosis F2/F3 Metavir) 9.8-11.2; (advanced fibrosis>/=F3 Metavir); >11.2 Cirrhosis
GLV queue	391-5
Clinical indications	The use of the ELF test has been established in viral hepatitis, NAFLD, and alcoholic patient groups. The ELF test has been shown to be at least as accurate as biopsy at predicting liver disease-related outcomes.
Methodology	Siemens ELF Test The ELF Score is determined by combining in an algorithm, quantitative measurements of the following by-products of the fibrotic process: • Hyaluronic acid (HA) • Amino-terminal propeptide of type III procollagen (PIIINP) Tissue inhibitor of metalloproteinase 1 (TIMP-1)
Limitations	Haemolysed samples must not be used
Reference range(s) and units	Interpretation of the ELF score <7.7; (no significant fibrosis); 7.7-9.7; (mild to moderate fibrosis F2/F3 Metavir) 9.8-11.2; (advanced fibrosis>/=F3 Metavir); >11.2 Cirrhosis Day et al., (2019) Derivation and Performance of Standardized Enhanced Liver Fibrosis (ELF) Test Thresholds for the Detection and Prognosis of Liver Fibrosis. JALM 3 (5) 815-826 From NICE NG49: Non-alcoholic fatty liver disease (NAFLD): assessment and management: An ELF score of 10.51 in a patient with non-alcoholic fatty liver disease (NAFLD) indicates advanced liver fibrosis.
Critical limits & actions	No critical limits stated.
Notes about authorising	

Name of test	**Essential Fatty Acid Red Cell Profile (EFAR)**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	EDTA whole blood – spot on bloodspot card (stored in plastic box in SPU cupboard) **DO NOT SEPARATE**	
Sample requirements	EDTA whole blood – URGENT SAMPLE. Spotted onto bloodspot card.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy.	
Storage in laboratory	Store at ambient temperature in cool dry place.	
Laboratory referred to	University of Stirling Laboratory	UKAS accreditation reference:
Transport conditions	Send ambient by first class post.	
Address of referral laboratory	**FAO: Fiona Strachan/James Dick** University of Stirling Nutrition Analytical Service Institute of Aquaculture Pathfoot Buidling University of Stirling FK9 4LA Stirling United Kingdom	
Contact details	Results follow up: James Dick (j.r.dick@stir.ac.uk) or Fiona Strachan (fiona.strachan@stir.ac.uk) +44 (0) 1786 473171	
Turn around time	Not stated	
Cost	Not stated	
EQA Scheme and performance	Not stated	
Entering results into Pathnet	Enter results, units and reference ranges as free text comments. Enter the result summary and comments on the cover page, as well as fatty acid summary results given in bold on the full report. An example is provided below, this may vary based on report: "Omega 6/Omega 3 EFA	

	ARA (20:4n-6): xx.xx EPA (20:5n-3): x.xx ARA Omega-6/EPA Omega-3 ratio: x.xx (1.5 to 3.0, optimal =2) Comment: xxxx Fatty Acid composition (% of total fatty acids) of red blood cell polar lipid fraction: Total saturated = xx.xx% (Between xx-xx% = Normal) Total monounsaturated = xx.xx% (Between xx-xx% = Normal) Total n-6 PUFA = xx.xx% (Between xx-xx% = Normal) Total n-3 PUFA = xx.xx% (Between xx-xx% = Normal) Total Dimethylacetate = x.xx% (Between x-x% = Normal) This test was performed at Institute of Aquaculture, University of Stirling".
GLV queue	391/5
Clinical indications	Not stated
Methodology	Not stated
Limitations	Not stated
Reference range(s) and units	Results stated in ratios or percentages (no units provided)
Critical limits & actions	None stated
Notes about authorising	A copy of the full report should be emailed to the requesting clinician following authorisation.

Name of test	**Ethylene glycol**	
Pathnet code	**BDRUG/BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Plasma	
Sample requirements	Gel tubes cannot be used for analysis.	
Minimum volume required	1 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Birmingham City Hospital (Sandwell and West Birmingham Hospitals NHS Trust)	UKAS accreditation reference: 8407
Transport conditions	Courier to the lab at ambient temperature. Out of hours, ring Consultant Clinical Biochemist before sending on 0121 554 3801	
Address of referral laboratory	Within working hours: Department of Clinical Biochemistry, Toxicology Laboratory, City Hospital, Dudley Road, Birmingham B18 7QH. Out of hours: Blood bank door (ring bell) Pathology Department City Hospital Dudley Road Birmingham B18 7QH	
Contact details	Clinical advice: **During working hours:** 09:00 - 17.30 Please contact the laboratory on 0121 507 4138.	Results follow up: **Out of hours:** 17:30 - 09:00 Please contact switchboard on 0121 554 3801 and ask them to bleep the On-Call Consultant Biochemist.
Turn around time	Urgent samples 2 hrs from receipt.	
Cost		
EQA Scheme and performance	None available	
Entering results into Pathnet	The result are inputted as a manual comment	
GLV queue	391-5	
Clinical indications	Suspected ethylene glycol ingestion or confirmed cases on	

	treatment
Methodology	GC with flame ionisation detection
Limitations	Gel tubes or serum from gel tubes as they interfere with analysis.
Reference range(s) and units	**Limit of quantitation:** Ethylene Glycol : 25 mg/L Diethylene Glycol : 25 mg/L
Critical limits & actions	Results should be communicated regardless of negative or positive in suspected ingestion.
Notes about authorising	

Name of test	**Ethosuximide**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Green top lithium heparin or yellow top SST.	

Sample requirements	Serum/Plasma. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 µl	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Chalfont Centre for Epilepsy	UKAS accreditation reference: UKAS 8353
Transport conditions	Transport at room temperature in first class post.	
Address of referral laboratory	Therapeutic Drug Monitoring Unit, Epilepsy Society, Chalfont Centre For Epilepsy, Chalfont St Peter, Buckinghamshire, SL9 ORJ	
Contact details	Name: N. Ratnaraj/ P N Patsalos Email: n.ratnaraj@ucl.ac.uk/philip.patsalos@epilepseysociety.org.uk Telephone: 01494 601423	
Turn around time	3 working days	
Cost	£28	
EQA Scheme and performance	None stated. LGC standards	
Entering results into Pathnet	Enter result, reference range and any interpretative comments on the report as a free text comment.	
GLV queue	391-5	
Clinical indications	Many clinical uses and interpretation	
Methodology	LC-MS – traceability documented	
Limitations	None	
Reference range(s) and units	40 – 100 mg/L	
Critical limits & actions	None	
Notes about authorising	Check that the reference range for the test has been added in the free text comment.	

Name of test	**Faecal alpha-1 antitrypsin**	
Pathnet code	**FA1AN**	**Orderable on EPR** □ NO √Yes
Sample container	Faecal tube (blue top with scoop)	
Sample requirements	Faeces	
Minimum volume required	0.5 g	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen at -20˚C	
Laboratory referred to	St Georges Healthcare NHS Trust	UKAS accreditation reference:
Transport conditions	On dry ice.	
Address of referral laboratory	Protein Reference Unit Immunology, St Georges Hospital, Cranmer Terrace, London, SW17 ORE	
Contact details	Results follow up: Immunology department: 020 8725 0025 www.pathology.stgeorges.nhs.uk Clinical advice: Immunology Consultants: 0208 725 1870	
Turn around time	7 days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	If the patient has a low serum alpha-1 antitrypsin (AAT) concentration, the faecal AAT may be low even in the presence of protein loss through gut.	
GLV queue	391 5	
Clinical indications	Check for protein loosing enteropathy after Fontan surgery	
Methodology	Siemens Atellica Neph 630	
Limitations	Lower limit of assay: 0.22 mg/g ww	
Reference range(s) and units	0.00 - 0.48 mg/g ww	
Critical limits & actions		
Notes about authorising		

Name of test	**Faecal Calprotectin**	
Pathnet code	**FCAL**	**Orderable on EPR** □ NO √Yes
Sample container	Plain universal	
Sample requirements	Faecal sample from any time of day, no dietary restrictions required. Samples grossly contaminated with blood are unsuitable for FCALP analysis.	
Minimum volume required	Approximately 1 gram in weight	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	First class post within 4 days (temperature not to exceed 30°C during transport).	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: Results follow up: 020 3299 3576	
Turn around time	5-7 working days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	N/A: All results are uploaded automatically by VIE.	
GLV queue	N/A	
Clinical indications	Part of nice guidelines to investigate irritable bowel syndrome and inflammatory bowel disease Used by gastroenterologists to monitor disease activity in UC.	
Methodology	Enzyme immunoassay	
Limitations	Reference range not applicable to neonatal samples.	
Reference range(s) and units	< 50 ug/g faeces Reference range not applicable to neonatal samples.	
Critical limits & actions		
Notes about authorising		

Name of test	**Faecal Elastase**	
Pathnet code	**FELAST**	**Orderable on EPR** □ NO √Yes
Sample container	Random faecal sample in a plain universal container	
Sample requirements	Faecal sample from any time of day, no dietary restrictions required. Samples grossly contaminated with blood and/or a lot of fibrous matter, hard stools, mucous samples, neonatal samples and watery stool samples are unsuitable.	
Minimum volume required	Approximately 1 gram in weight	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	First class post within 3 days (temperature not to exceed 30°C during transport).	
Address of referral laboratory	Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice:	Results follow up: 020 3299 3576
Turn around time	10-14 working days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	N/A: All results are uploaded automatically by VIE.	
GLV queue	Results do not queue at GSTT, they are transmitted automatically via the VIE.	
Clinical indications	Diagnosis or exclusion of pancreatic exocrine insufficiency which can be caused by chronic pancreatitis, cystic fibrosis, diabetes mellitus, cholelithiasis (gallstones), 'failure to thrive', pancreatic cancer or papillary stenosis. E1 is recommended by the British Society of Gastroenterology for non-invasive pancreatic function testing.	
Methodology	DiaSorin Liaison XL® - Lower reporting limit: 0.2 µg/g faeces (previously 15 µg/g) - Upper reporting limit: 800 µg/g faeces (previously 500 µg/g)	
Limitations		

Reference range(s) and units	Normal: 200 - >500 µg E1/g faeces Moderate to mild exocrine pancreatic insufficiency: 100 – 200 µg E1/g faeces Severe exocrine pancreatic insufficiency: <100 µg E1/g faeces
Critical limits & actions	
Notes about authorising	

Name of test	**Faecal Occult Blood**	
Pathnet code	**FOB**	**Orderable on EPR** □ NO √Yes
Sample container	Fresh faecal sample in a plain universal container	
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice:	Results follow up: 020 3299 3576
Turn around time	1 day	
Cost	N/A	
EQA Scheme and performance	WEQAS, UKNEQAS	
Entering results into Pathnet	N/A: All results are uploaded automatically by VIE.	
GLV queue	391 5	
Clinical indications	Screening for bowel cancer	
Methodology	Faecal immunochemical test (FIT)	
Limitations	Some oral medication such as aspirin, corticosteroids, reserpine phenylbutazone, inomethavin etc. can cause gastrointestinal irritation and subsequent occult bleeding in some patients. Ascorbic acid in amounts >250 mg per day may cause false negatives.	
Reference range(s) and units	Qualitative result positive or negative. Normal faeces reported as negative.	
Critical limits & actions	None	
Notes about authorising		

Name of test	**FGF-23 (C-terminal)**

Pathnet code	**BFGF**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA plasma	
Sample requirements	None stated	
Minimum volume required	600 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection Policy.	
Storage in laboratory	Once separated, freeze plasma and send frozen.	
Laboratory referred to	Eastern Pathology Alliance, Norfolk and Norwich University NHS Foundation Trust	UKAS accreditation reference: 10294 (note test not included in scope)
Transport conditions	Send frozen	
Address of referral laboratory	Eastern Pathology Alliance, Laboratory Medicine East Block Level 1 Norfolk & Norwich University NHS Foundation Trust Colney Lane Norwich NR4 7UY	
Contact details	Clinical advice: Dr Allison Chipchase Alison.chipchase@nnuh.nhs.uk 01603 287945	Results follow up: 01603 289419
Turn around time	4 weeks	
Cost	£30.94	
EQA Scheme and performance	Information not provided	
Entering results into Pathnet	Results are entered as they appear on the report, entered as whole numbers. Any additional comment available on the report should be entered under the result (F6). The referral lab location is added automatically following validation, this does not need to be entered. For reference, it states: "Analysis performed at Bone SAS Laboratory, Norfolk and Norwich Hospital."	
GLV queue	391/5	
Clinical indications	Fibroblast growth factor-23 (FGF-23) is involved in phosphate homeostasis and over-expression leads to phosphate excretion. Clinical indication for request: a marker for phosphate-wasting disorders such as oncogenic osteomalacia and	

	hypophosphataemic rickets.
Methodology	Radioimmunoassay
Limitations	Not stated
Reference range(s) and units	<100 RU/mL
Critical limits & actions	None stated
Notes about authorising	None stated

Name of test	**Flecainide**	
Pathnet code	**BFLEC**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA Plasma	
Sample requirements	Trough Sample	
Minimum volume required	Preferred volume: 0.5mL (minimum volume: 250µL)	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Cardiff Toxicology Laboratories	UKAS accreditation reference: 8989
Transport conditions	First Class Post	
Address of referral laboratory	Cardiff Toxicology Laboratories, The Routledge Academic Centre (4th Floor), University Hospital Llandough, Pernarth, CF64 2XX.	
Contact details results and clinical interpretation	Results Enquiries: 029 2071 6894 Clinical advice: Katie Jones / Liz Palmer (Clinical Scientists) 029 218 25299 / Katie.Jones14@wales.nhs.uk / Joanne Rogers (Consultant Clinical Scientist) 029 218 26892 or Joanne.Rogers@wales.nhs.uk	
Turn around time	7 days	
Cost	£50.04	
EQA Scheme and performance	LGC Standards	
Entering results into Pathnet	Enter numerical result into Pathnet. The following comment is stamped onto Pathnet reports: 'Reference range: this is dependent on several factors; obstetric/child/adult samples and doses per day. Please call Prof. Holt on 020 8725 2845 or 07966 528257 for interpretation of results.'	
GLV queue	391 5	
Clinical indications	Antirhythmic drug. Used to treat heart rhythm disorders.	
Methodology	HPLC	
Limitations	None stated	
Reference range(s) and units	Units: mg/L 0.15 – 0.9	
Critical limits & actions	None stated.	
Notes about authorising		

Name of test	**Fluoxetine and metabolites**	
Pathnet code	**BFLUOX**	**Orderable on EPR** □ NO √Yes
Sample container	Plasma EDTA (preferred), serum, Li Hep plasma	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500ul	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Toxicology Laboratory Birmingham Heartlands Hospital	UKAS accreditation reference: UKAS 8217
Transport conditions	Overnight first class post	
Address of referral laboratory	Department of Toxicology Birmingham Heartlands Hospital Bordesley Green East B9 5SS	
Contact details	Name: Dr Alex Lawson, Principal Clinical Scientist Email: alexander.lawson@heartofengland.nhs.uk Telephone: 0121 4241392	
Turn around time	3 days	
Cost	N/A	
EQA Scheme and performance		
Entering results into Pathnet	This is a group test. Enter the results for the individual component tests as follows: **Desmethyl Fluoxetine** ***BDFLU*** **Fluoxetine** ***BFLU***	
Reporting comments on pathnet		
GLV queue	391 5	

Clinical indications	TDM
Methodology	HPLC DAD
Limitations	AVOID SERUM SEPARATION GEL. INTEGRITY OF PEAKS CHECKED BY DIODE ARRAY UV SPECTRA
Reference range(s) and units	TOXICITY ASSOCIATED WITH FLUOXETINE LEVELS > 1.0 mg/L (Schulz et al. Critical Care 2012, 16:R136)
Critical limits & actions	
Notes about authorising	

Name of test	**Free Phenytoin**	
Pathnet code	**BFPHE**	**Orderable on EPR** □ NO √Yes
Sample container	Serum/plasma tube	
Sample requirements	Sample to be taken immediately before an oral dose. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2-8˚C	
Laboratory referred to	TDM Unit - Chalfont Centre for Epilepsy	UKAS accreditation reference: 8353
Transport conditions	First class post (ambient temperature)	
Address of referral laboratory	Therapeutic Drug Monitoring Unit (TDM Unit) Chalfont Centre for Epilepsy Chesham Lane Chalfont St Peter SL9 ORJ	
Contact details	Name: Dr E Spencer Email: Edgar.Spencer@Epilepsysociety.org.uk Telephone: 01496601423	
Turn around time	3 working days	
Cost	£40.00	
EQA Scheme and performance	None stated. LGC standards	
Entering results into Pathnet	Component test codes:	
GLV queue	391 5	
Clinical indications		
Methodology	LC/MS	
Limitations	N/A	
Reference range(s) and units	1 – 2 mg/L	
Critical limits & actions		
Notes about authorising	Results outside limits are not phoned to requesting laboratory.	

Name of test	**Fructose 1,6 Bisphosphatase**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Lithium Heparin tube	
Sample requirements	Lithium Heparin whole blood **Sample should be dispatched by courier ASAP to reach referral lab within 24 hr of collection. It must Enzyme laboratory by 2pm on a Friday. Advise Clinical Team to ideally not collect samples on a Friday.** **Sendaways Team:** Contact GOSH the following day to confirm receipt of sample.	
Minimum volume required	5 – 10 mL required	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store at 4ºC. **Sample should be dispatched by courier ASAP to reach referral lab within 24 hr of collection. It must Enzyme laboratory by 2pm on a Friday. Advise Clinical Team to ideally not collect samples on a Friday.** DO NOT SEPARATE OR FREEZE SAMPLE	
Laboratory referred to	Great Ormond Street Hospital	UKAS accreditation reference: 8692
Transport conditions	Sample should be dispatched by courier ASAP to reach referral lab within 24 hr of collection. **Sendaways Team:** Contact GOSH the following day to confirm receipt of sample.	
Address of referral laboratory	FAO Enzyme Laboratory Sample Reception Chemical Pathology Reception Paediatric Laboratory Medicine Camelia Botnar Building Great Ormond Hospital for Children Great Ormond Street London WC19 3JH	
Contact details	Enzyme Laboratory 020 7405 9200 ext 6751 or 1785 Available between 9am and 5.30pm Mon – Fri	

	Name: Duty Biochemist Email: duty.biochemists@gosh.nhs.uk Telephone: 02074059200 (GOSH hospital switchboard) – Bleep 0589
Turn around time	6 weeks
Cost	
EQA Scheme and performance	
Entering results into Pathnet	
GLV queue	391 5
Clinical indications	Specialist metabolic test for the investigation of hypoglycaemia. Requests from the Paediatric Metabolic team at Evelina London's Children Hospital (Drs Champion, Mundy, Vara and Lemonade) or Adult Metabolic team (Dr Ramachandran) should be accepted as appropriate. Requests from any other sources should be discussed with Sendaways team or Principal Clinical Scientist.
Methodology	Enzyme activity assay
Limitations	
Reference range(s) and units	Unknown – refer to report
Critical limits & actions	Results consistent with Fructose 1,6 Bisphosphate deficiency should be communicated to the paediatric metabolic team at Evelina London's Children Hospital or adult metabolic team ASAP – contact Sendaways team for contact details if required.
Notes about authorising	

Name of test	**Gabapentin**	
Pathnet code	**BGAB**	**Orderable on EPR** □NO √Yes
Sample container	Plain tube, yellow top SST or green top lithium heparin.	
Sample requirements	Serum/plasma - Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 µl	

Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Chalfont Centre for Epilepsy	UKAS accreditation reference: UKAS 8353
Transport conditions	Transport at room temperature in first class post.	
Address of referral laboratory	Therapeutic Drug Monitoring Unit, Epilepsy Society, Chalfont Centre For Epilepsy, Chalfont St Peter, Buckinghamshire, SL9 ORJ	
Contact details	Name: P N Patsalos Email:NSE_TDM@EpilepsySociety.org.uk philip.patsalos@epilepseysociety.org.uk Telephone: 01494 601423	
Turn around time	3 working days	
Cost	Unknown	
EQA Scheme and performance	Unknown	
Entering results into Pathnet	Enter result, reference range and any interpretative comments on the report as a free text comment.	
GLV queue	391-5	
Clinical indications	Therapeutic drug monitoring	
Methodology	LC-MS	
Limitations	None	
Reference range(s) and units	2-20 mg/L	
Critical limits & actions	None	
Notes about authorising	Check that the reference range for the test has been added in the free text comment.	

Name of test	**Growth hormone**	
Pathnet code	**BGH**	**Orderable on EPR** □ NO √Yes
Sample container	Serum (yellow top SST)	
Sample requirements		
Minimum volume required	350µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge at 2 – 8 °C	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice:	Results follow up:
Turn around time	7-10 days	
Cost	N/A	
EQA Scheme and performance	UKNEQAS	
Entering results into Pathnet	Growth hormone results are entered at KCH and results downloaded to Pathnet via integration engine.	
GLV queue	Growth hormone results are entered at KCH and results downloaded to Pathnet via integration engine. Results do not queue.	
Clinical indications	Investigation of acromegaly and GH deficiency.	
Methodology	Chemiluminescent immunoassay using the Immulite Xpi	
Limitations		
Reference range(s) and units	"For resting samples: GH < 0.10 excludes acromegaly; GH > 4.50 excludes GH deficiency"	
Critical limits & actions		
Notes about authorising	Growth hormone results are entered at KCH and results downloaded to Pathnet via integration engine.	

Name of test	**Gut hormone screen Group test**	
Pathnet code	**BGUTH**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA purple top	
Sample requirements	• Patient must be off ***omeprazole*** for a minimum of 2 weeks and off H2 beta-blockers for a minimum of 3 days. The sample must be a ***fasting*** sample.	
Minimum volume required	3 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Transport sample rapidly to lab on ice. Store plasma at – 20 °C.	
Laboratory referred to	Imperial College Healthcare NHS Trust	UKAS accreditation reference:
Transport conditions	Store plasma separated and ship to testing lab on dry ice via courier.	
Address of referral laboratory	The SAS Laboratories Clinical Biochemistry and Medical Oncology Ground Floor Charing Cross Hospital Fulham Palace Road London W6 8RF	
Contact details	Name: Dr Tricia Tan, Prof Waljit Dhillo Email: tricia.tan@imperial.nhs.uk waljit.dhillo@imperial.nhs.uk Telephone: gut hormone lab 020 331 33949	
Turn around time	15 working days	
Cost	£51.00 single hormone, £87.00 profile	
EQA Scheme and performance	EQA available for gastrin and CgA only. All gut hormone tests assessed by two sample re-examination once a month.	

Entering results into Pathnet	Enter the numerical result for each component test codes as follows: ***VIP*** BVIP ***PP*** BPPP ***Gastrin*** BGAST ***Glucagon*** BGLON ***CART*** (cocaine and amphetamine-regulated transcript) Awaiting test code ***Somatostatin*** BSOM CART is awaiting a test code so this result and reference range should be added as a comment. Any interpretative comments on the report (shown in the top left hand box on the report) should be entered into the report. Please note BNT (neurotensin) is no longer available as part of the gut hormone profile. **Note: Chromogranin A and B are not part of the gut hormone profile in Pathnet and will need to be requested separately as CHROMAB. If chromogranin A and B need to be reported add these tests using COE in Pathnet and then report the results do not report these results as a comment.** Refer to BCHROMAB for reporting the chromogranin results. Note: Each component test can be ordered alone.
GLV queue	391 5
Clinical indications	Diagnosis and monitoring of neuroendocrine tumours
Methodology	
Limitations	
Reference range(s) and units	VIP N < 30pmol/L PP N < 300 pmol/L Gastrin N <40 pmol/L Glucagon N <50 pmol/L CART N < 85 pmol/L Somatostatin N < 150 pmol/L Chromogranin A N < 60 pmol/L Chromogranin B N < 150 pmol/L £51.00 single hormone, £87.00 profile Gastrin N <40 pmol/L Glucagon N <50 pmol/L CART N < 85 pmol/L Somatostatin N < 150 pmol/L For reference ranges and information about chromogranin A and B

	see chromogranin A and B pages.
Critical limits & actions	
Notes about authorising	The abnormal results are highlighted in yellow. If chromogranin A and B have been reported in addition to the other hormones in the gut hormone profile check that chromogranin A and B requests have been added and reported.

Name of test	**HIV therapeutic drug monitoring** **Maraviroc** **Darunavir** **Etravirine** **Nevirapine** **Efravirenz** **Dolutegravir** **Atazanavir**	
Pathnet code	**HIVTDM**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA or Li-Hep Plasma	
Sample requirements	Centrifuge within 4 hours of collection and send plasma. If submitting more than one sample for the same patient please complete separate test request forms for each time point.	
Minimum volume required	>2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Cambridge Clinical Labs	UKAS accreditation reference:
Transport conditions		
Address of referral laboratory	Cambridge Clinical Labortories, Park House, Winship Road, Cambridge, CB24 6BQ, United Kingdom.	
Contact details	Clinical advice:	Results follow up: 01223 395450 info@CamClinLabs.co.uk
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter all the results from the report. On all samples add comment visible on report as follows: 'The utility of TDM as a laboratory test to aid optimisation of therapy is currently being trialled. Data are encouraging; however, Lab21 does not regard it possible to make definitive recommendations on	

	the use of TDM in clinical situations. It is the responsibility of the physician to consider whether to act on the data presented in this report.'
GLV queue	391 5
Clinical indications	TDM to aid optimisation therapy is being trialled
Methodology	
Limitations	
Reference range(s) and units	No range instead an interpretative comment is made by Lab21 for each sample.
Critical limits & actions	
Notes about authorising	Check: Lab21 ID; Sample time and date; time post-dose; concentration and comment.

Name of test	**Inhibin B**	
Pathnet code	**BINB**	**Orderable on EPR** □ NO √Yes
Sample container	Serum (SST tube)	
Sample requirements		
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store frozen as soon as possible after separation.	
Laboratory referred to	Supraregional Protein Reference Unit (Sheffield Teaching Hospitals NHS Foundation Trust)	UKAS accreditation reference: 8494
Transport conditions	Overnight at room temperature	
Address of referral laboratory	Supraregional Protein Reference Unit (Sheffield Teaching Hospitals NHS Foundation Trust) P.O Box 894 Sheffield S5 7YT	
Contact details	Telephone: 0114 271 5552	
Turn around time	2 weeks	
Cost	£29.17	
EQA Scheme and performance	Participate in sample exchange scheme Satisfactory performance	
Entering results into Pathnet	Add the numerical result as shown on the referral report for both male and female samples. Please note all the results for inhibin B and inhibin A measured on the patient by the referral laboratory are included on the referral report. The result for the current sample should be the result at the bottom of the list of results. This can be confirmed by cross-checking the sample collection date at the top of the report with the date next to the result. This can then be checked against the sample date on Pathnet. To all results add a comment (F6) must be added regarding referral lab location e.g. "This test was performed at Sheffield Teaching Hospitals NHS Foundation Trust". Reference ranges will be added automatically following validation of results, and do not require entry (see Reference Ranges section for details). Any additional interpretative comments should be entered as they appear on reports.	

GLV queue	391 5
Clinical indications	Monitoring and diagnosis of granulosa cell ovarian and sertoli cell testicular tumours.
Methodology	Chemiluminescent immunoassay
Limitations	Heterophilic antibodies may interfere with the assay.
Reference range(s) and units	**Adult males (17y and greater):** 25 -325 pg/mL **Adult females (17y and greater):** Female range - post-menopausal: 0 – 9.8 pg/mL. Values in the premenopausal female vary with the stage of cycle 0 – 341 pg/mL. **Paediatric patients, male and female (<17y):** Please note the following paediatric reference ranges apply: Males: Age (years) / Ref range 0 - 1 / 68 – 630 1 - 2 / 87 – 419 2 - 6 / 42 – 268 6 - 10 / 35 – 167 10 - 11 / 50 – 310 11 - 12 / 104 – 481 12 - 17 / 74 – 470 Females: Age (years) / Ref range 0 - 1 / <91 1 - 3 / <44 3 - 6 / <25 6 - 9 / <35 9 - 11 / <72 11 -16 / <143 Values in females that have started to menstruate may vary with the stage of cycle: 0 – 341 pg/mL. In pre-pubertal boys, inhibin B is a marker of Sertoli cells and post-puberty is a marker of spermatogenesis. NOTE: Clarification from PRU Clinical Scientist was sought with respect to the age brackets stated for reference ranges. It was confirmed that each ref range is "up to" therefore: 12-17 refers to: 12y 0d – 16y 364d 17y 0d upward: adult reference range
Critical limits & actions	None stated
Notes about authorising	The reference range is automatically added as a free text comment for female and paediatric samples. Check this comment is correct compared to the report.

Name of test	**Insulin antibodies**	
Pathnet code	**BINSAAB**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow top SST	
Sample requirements	Serum	
Minimum volume required	0.1 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Separate ASAP. Fridge (2 – 8 °C) or freeze if delay in sending.	
Laboratory referred to	Frimley Park, St Peters and Royal Surrey County	UKAS accreditation reference: 9732
Transport conditions	Room temperature by first class post.	
Address of referral laboratory	SAS Peptide Hormone Section, Clinical Laboratory, Royal Surrey County Hospital, Egerton Road, Guildford GU2 7XX	
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost	£38.40	
EQA Scheme and performance		
Entering results into Pathnet	Enter results via ACC using the help keys (F10) 1: Negative 2: Positive 3: Indeterminate 4: See text	
GLV queue	391 5	
Clinical indications	Assessment of early stages of type 1 DM and insulin autoimmunity. Investigation of hypoglycaemia associated with antibodies to either endogenous or more commonly, exogenous insulin (please note animal insulin is no longer widely used)	
Methodology		
Limitations		
Reference range(s) and units	No reference ranges. Quantitative results negative, positive and indeterminate.	

Critical limits & actions	
Notes about authorising	

Name of test	**Insulin type/like growth factor type 1**	
Pathnet code	**BIGF1**	**Orderable on EPR** □ NO √Yes
Sample container		
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost		
EQA Scheme and performance	NEQAS Guildford	
Entering results into Pathnet	Insulin like growth factor type 1 results are entered at KCH and results downloaded to Pathnet via integration engine.	
GLV queue	Insulin like growth factor type 1 results are entered at KCH and results downloaded to Pathnet via integration engine. Results do not queue.	
Clinical indications	Diagnosis and monitoring of acromegaly Investigation of short stature in children Differential diagnosis of spontaneous hypoglycaemia	
Methodology	Immunoassay	
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising	Insulin like growth factor type 1 results are entered at KCH and results downloaded to Pathnet via integration engine.	

Name of test	**Insulin type/like growth factor type 2**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Yellow top SST	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Separate ASAP. Fridge (2 – 8 °C) or freeze if delay in sending.	
Laboratory referred to	Royal Surrey County Hospital	UKAS accreditation reference:
Transport conditions	Room temperature by first class post.	
Address of referral laboratory	SAS Peptide Hormone Section Clinical Laboratory Royal Surrey County Hospital Egerton Road Guildford GU2 7XX	
Contact details	Results follow up: Telephone: 0845 835 8538 Email: office@nhspathology.fph.nhs.uk	
Turn around time	1 week	
Cost		
EQA Scheme and performance	No EQA scheme available.	
Entering results into Pathnet	Enter results including reference range and units as a free text comment.	
GLV queue	391 5	
Clinical indications	Differential diagnosis of spontaneous hypoglycaemia. In some cases of non-islet tumour where severe hypoglycaemia is present, IGF-II produced by tumour has been implicated as the hypoglycaemic agent. The diagnosis is based on the raised IGF-II ratio to IGF-I molar ratio in association with suppressed insulin, C-peptide, ketones and GH.	
Methodology		
Limitations		

Reference range(s) and units	
Critical limits & actions	
Notes about authorising	

Name of test	**IGF-binding protein 3**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container		
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment.	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units	Units mg/ml Reference range 1.60 – 6.50	
Critical limits & actions		
Notes about authorising		

Name of test	**Lamotrigine**	
Pathnet code	**BLAM**	**Orderable on EPR** □ NO √Yes
Sample container	Lithium Heparin plasma or Serum SST	
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Lamotrigine results are entered at KCH and results downloaded to Pathnet via integration engine.	
GLV queue	Lamotrigine results are entered at KCH and results downloaded to Pathnet via integration engine. Results do not queue at GSTT.	
Clinical indications		
Methodology	Indiko	
Limitations		
Reference range(s) and units	2.5 – 15.0 mg/L Automate comment added to results <2.0: "Review dose/compliance"	
Critical limits & actions		
Notes about authorising	Lamotrigine results are entered at KCH and results downloaded to Pathnet via integration engine.	

Name of test	**Lead (Blood)**

Pathnet code	**BPB**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA whole blood	
Sample requirements	Do not centrifuge	
Minimum volume required	2 mL	
Rejection criteria	Viapath specimen acceptance/rejection	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	3-4 days	
Cost		
EQA Scheme and performance	NEQAS Trace Elements	
Entering results into Pathnet	Transcribe numbers from report into Pathnet (1 dp).	
GLV queue	390 12	
Clinical indications	Lead is a non-essential element. Toxic effects may result from its extensive use in silver smelting, paint production, jewellery making, ceramic glazes, building construction, and drinking vessels and water supply systems. Through the introduction of stringent safety precautions in industry, and regulations limiting the amount of lead in paints, the number of cases of severe inorganic lead poisoning has fallen dramatically. Possible effects of prolonged subclinical lead exposure on neuro-behavioural developments in neonates and children have been topical issues. Pica, repetitive ingestion of non-food substances by children and those with learning difficulties, may present a hazard in poorly maintained housing with lead-based paint. The traditional remedies of a number of ethnic groups may contain substantial amounts of lead and several instance of clinical lead poisoning by ingestion of Asian traditional remedies have been reported in the U.K. Middle Eastern and Asian eye cosmetics may also contain lead.	
Methodology	ICP-MS	
Limitations	None	

Reference range(s) and units	No range in Pathnet. The following comments are automatically stamped onto the request. Recommended upper limit of blood lead in children is less than 0.5 umol/L. In adults there is a need to reduce exposure if the blood lead exceeds 2.0 umol/L and suspension from exposure at 3.0 umol/L or higher.
Critical limits & actions	High results should be telephoned if new finding and there is a significant change in results. Please note that it is possible to see significantly raised lead in patients intentionally consuming lead containing materials and presenting to Toxicology clinic at Guy's.
Notes about authorising	

Name of test	**Leptin**	
Pathnet code	**BTEST**	**Orderable on EPR** □ ✓NO □Yes
Sample container	Serum, EDTA or Lithium heparin anticoagulated plasma	
Sample requirements	Fasting 9a.m. samples. Separate within 1 hour and freeze.	
Minimum volume required	500 uL of serum or plasma	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen	
Laboratory referred to	Addenbrooke's Dept. Clinical Biochemistry Addenbrooke's Hospital Hills Road Cambridge CB2 2QQ	UKAS accreditation reference:
Transport conditions	Send frozen.	
Address of referral laboratory	Department of Clinical Biochemistry and Immunology Box 232, Addenbrooke's Hospital, Cambridge, CB2 2QQ	
Contact details	Clinical advice:	Results follow up:
Turn around time	3 weeks	
Cost		
EQA Scheme and performance	None available	
Entering results into Pathnet	Enter results including reference range and units as a free text comment	
GLV queue	391 5	
Clinical indications	1. *Diagnosis of Congenital Leptin Deficiency in Severe Early Onset Obesity* A rare cause of extreme early onset obesity is genetic deficiency of leptin. Thus the early evaluation of children who manifest hyperphagic obesity in the first few years of life should include serum leptin determination. 2. *Diagnosis of leptin deficiency in congenital or acquired lipodystrophy*	

	All generalised lipodystrophy and some cases of acquired lipodystrophy are associated with hypoleptinaemia. Correction of this with subcutaneous leptin therapy has dramatic metabolic benefits and so identification of candidates for leptin therapy in this group of patients is important. 3. *Diagnosis of weight-related hypothalamic amenorrhoea* Demonstration of low or absent leptin may provide supportive biochemical evidence for extreme weight loss in the aetiology of secondary amenorrhoea.
Methodology	2 site timer resolved fluorescence immunoassay (DELFIA)
Limitations	
Reference range(s) and units	Dependent on BMI, case specific.
Critical limits & actions	
Notes about authorising	

Name of test	**Levetiracetam**	
Pathnet code	**BDRUG**	**Orderable on EPR** √ NO □ Yes
Sample container	Serum SST, EDTA plasma or lithium heparin plasma	
Sample requirements	Ideal sample collection - immediately before the next oral dose. For suspected toxicity, sampling should be undertaken when adverse events are presenting. **If available, please include the following information on the request form:** • Dose, date and time of the last dose • Sample collection date and time	
Minimum volume required	200 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy.	
Storage in laboratory	Serum/plasma separated from cells. Stability: ambient temperature at least 48h Refrigerated 2 weeks Frozen 3 months	
Laboratory referred to	Chalfont Centre for Epilepsy	UKAS accreditation reference: 8353
Transport conditions	First class post, ambient.	
Address of referral laboratory	Therapeutic Drug Monitoring Unit Chalfont Centre for Epilepsy Chalfont St Peter Gerrards Cross SL9 0RJ	
Contact details	Clinical advice: Dr Karin Kipper or Dr Edgar Spencer TDM_Unit@epilepsysociety.org.uk 01494 601 423 or 01494 601 424	Results follow up: Anthony James and Frank Quinlivan TDM_Unit@epilepsysociety.org.uk 01494 601 423 or 01494 601 424
Turn around time	3 working days	
Cost	£25 per sample	
EQA Scheme and performance	LGPCT Satisfactory performance	

Entering results into Pathnet	Enter results, reference range and any comment on report as a 'See Text' comment.
GLV queue	391/5
Clinical indications	- To establish and monitor individual reference range - Uncontrolled or persistent seizures - Suspected toxicity - To guide dosage adjustment (in pregnancy, children, adolescents, elderly patients, renal and hepatic diseases) - Investigation of non-compliance or non-adherence to treatment and changes in medication formulation
Methodology	LC-MS/MS assay. Calibrators prepared using certified reference material. Assay is validated in-house and accredited to ISO15189
Limitations	No known interference to other anti-epileptic drugs and other commonly used medications
Reference range(s) and units	Reference range: 12 - 46 mg/L
Critical limits & actions	Critical results indicating severe toxicity will be reported urgently over telephone
Notes about authorising	Critical results telephoned by referral laboratory should be phoned out to requesting clinician.

Name of test	**Lipase**	
Pathnet code	**LPASE**	**Orderable on EPR** □ NO √Yes
Sample container	SST gold top	
Sample requirements	Serum	
Minimum volume required	350 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Results follow up: 020 3299 3576	
Turn around time		
Cost	N/A	
EQA Scheme and performance		
Entering results into Pathnet	Enter numerical result. Add expedite comment (F4) KING.	
GLV queue	391 5	
Clinical indications	Diagnosis and monitoring of acute pancreatitis alongside amylase.	
Methodology	Enzymatic	
Limitations		
Reference range(s) and units	13 - 60 IU/L	
Critical limits & actions	None	
Notes about authorising		

Name of test	**Manganese (Blood)**	
Pathnet code	**BMNG**	**Orderable on EPR** □ NO √Yes
Sample container	4 mL EDTA whole blood	
Sample requirements	Note there is no Pathnet code for serum manganese. The ideal sample type for measurement of manganese is a whole blood sample. Unless the consultant has specifically asked for serum manganese do not send serum samples for the measurement of manganese.	
Minimum volume required	4 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	5-7 working days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter the numerical result into Pathnet using ACC. Add expedite comment (F4) KING as a text comment	
GLV queue	390 12	
Clinical indications		
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	0-1 year old: 120-325 nmol/L Over 1 year old: 73-210 nmol/L	
Critical limits & actions	Raised manganese results are communicated to the Sendaways Team by KCH Trace Elements. These should be telephoned to the requesting clinician.	
Notes about authorising	Check that the report is for blood manganese.	

Name of test	**Mannose Binding Lectin (MBL)**	
Pathnet code	**BTEST**	**Orderable on EPR** √**NO** □Yes
Sample container	Serum	
Sample requirements	Separated. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500uL	
Rejection criteria	Any samples received for this test should be discussed with the Resulting team prior to arranging sample transport.	
Storage in laboratory		
Laboratory referred to	Sheffield Teaching Hospitals	UKAS accreditation reference: UKAS 8494
Transport conditions	1st class post	
Address of referral laboratory	Supraregional Protein Reference Unit and Department of Immunology, P.O. Box 894, Sheffield, S5 7YT	
Contact details	Clinical advice:	Results follow up:
Turn around time	7 working days	
Cost		
EQA Scheme and performance	Participate in sample exchange scheme Satisfactory performance	
Entering results into Pathnet	Results will have to be entered as a text comment under the BTEST request. Ensure result, reference range and interpretative comments are included.	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units	0-5 years = 0.6-4.0 mg/L >5 years = 1-4 mg/L Levels of <0.075 mg/L (75 ng/ml) correlate with non-functional allele/homozygous variant alleles. Individuals with identical genotypes for all known MBL variants may differ by 10-fold in MBL levels. MBL deficiency is common. 5-10% of the population have MBL deficiency. An additional 25% of the population is	

	heterozygous for a deficient state. MBL deficiency is unlikely to pose a significant risk to an otherwise immune-competent host. MBL deficiency plays a role in the predisposition to infection in individuals with other defects of immunity. MBL deficiency is associated with a predisposition to autoimmune diseases.
Critical limits & actions	
Notes about authorising	

Name of test	**Mercury**	
Pathnet code	**BHG**	**Orderable on EPR** □ NO □✓Yes
Sample container	EDTA whole blood	
Sample requirements		
Minimum volume required	4 ml.	
Rejection criteria		
Storage in laboratory	Stable at 4°C for at least two days.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by overnight first class post. Send samples promptly to avoid loss of mercury on storage.	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	7-10 days	
Cost		
EQA Scheme and performance	UK NEQAS (Trace elements)	
Entering results into Pathnet	Enter results using ACC.	
GLV queue	390 12	
Clinical indications	If exposure to elemental or inorganic mercury is suspected urine is the preferred sample. Conversely if exposure to organic mercury is suspected, a blood sample is preferred, if there is doubt a blood sample should be sent. The preservative thiomersal should not be used. If the patient consumes high quantities of sea food this should be borne in mind when interpreting mercury concentrations.	
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	0-50 nmol/L	
Critical limits & actions		

Notes about authorising	

Name of test	**Metanephrines (24 hour urine) Group test**	
Pathnet code	**UMETS**	**Orderable on EPR** □ NO □✓Yes
Sample container	Sample – plain 24hr urine collection (acidified urine is also acceptable.)	
Sample requirements	Record urine volume	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. In addition do not throw away a 24 hour urine collection if it does not meet the rejection criteria instead seek advice from the Sendaways team or Principal Clinical Scientist.	
Storage in laboratory	Sample should reach the referral laboratory as soon as possible.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 1245
Transport conditions	Sample should reach the referral laboratory as soon as possible.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Name: David Taylor / Hagosa Abraha Email: davidtaylor8@nhs.net / h.abraha@nhs.net Telephone: 020 3299 4131/4128	
Turn around time	5 working days	
Cost	Available from Viapath finance.	
EQA Scheme and performance	UKNEQAS. Satisfactory performance.	
Entering results into Pathnet	*This is a group test code. Enter the results for the component tests as shown below.* **UHRS length of urine collection** **UMLS urine volume in ml** **Metadrenaline 24 hr urine MTD** **3-Methoxytyramine 24 hr urine MOT** **Normetadrenaline 24 hr urine NMTD** The following comment is automatically stamped on requests by Pathnet: Reference ranges quoted for urinary excretions are only applicable where the save has been collected over a 24 hour period. Please note KCH may add UCATS to the request if one of the	

	component tests in this profile is mildly raised to confirm if it is a spurious result. If this happens add UCATS (using COE in Pathnet) and add a comment to both requests stating "Urine Catecholamines were added by King's College Hospital".
GLV queue	390 5
Clinical indications	Aid in the diagnosis and monitoring of patients with catecholamine-producing tumours i.e. phaeochromocytoma and paraganglioma is important.
Methodology	LC-MS/MS
Limitations	
Reference range(s) and units	Urine Normetadrenaline = < 3.7 µmol/24hr Urine Urine Metadrenaline = < 1.3 µmol/24hr Urine 3-methoxytyramine = <2.6 µmol/24hr
Critical limits & actions	Results phoned when clearly pathological. Not phoned if an established diagnosis.
Notes about authorising	Check that the urine volume on the report matches the urine volume in Pathnet.

Name of test	**Metanephrines (random urine) Group test**	
Pathnet code	**UMET**	**Orderable on EPR** □ NO □✓Yes
Sample container	Random spot urine	
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Sample should reach the referral laboratory as soon as possible.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Sample should reach the referral laboratory as soon as possible.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Name: David Taylor / Hagosa Abraha Email: davidtaylor8@nhs.net / h.abraha@nhs.net Telephone: 020 3299 4131/4128	
Turn around time	5 working days	
Cost	Available from Viapath finance.	
EQA Scheme and performance	UKNEQAS. Satisfactory performance.	
Entering results into Pathnet	Enter the numerical results to 2 decimal place for each component test as listed below: ***Random urine Metadrenaline MTDCR*** ***Random urine 3-Methoxytyramine MOTCR*** ***Random urine Normetadrenaline NMTDCR*** Random urine creatinine mmol/L UCR The following comment is automatically stamped onto each component test code. "Result reported in umol/mmol Creatinine." Add the expedite comment (F4) KING. Please note KCH may add UCATS to the request if one of the component tests in this profile is mildly raised to confirm if it is a spurious result. If this happens add UCATS (using COE in Pathnet) and add a comment to both requests stating "Urine catecholamines were added by King's College Hospital".	
GLV queue	391 5	

Clinical indications	Aid in the diagnosis and monitoring of patients with catecholamine-producing tumours i.e. phaeochromocytoma and paraganglioma is important.
Methodology	LC-MS/MS
Limitations	
Reference range(s) and units	Age (yr) < 5 years old: Urine Normetanephrine <1.15 µmol/mmol creatinine Urine Metanephrine <0.55 µmol/mmol creatinine Urine 3-Methoxytyramine <1.0 µmol/mmol creatinine Age (yr) 6 - 10 years old: Urine Normetanephrine <0.21 µmol/mmol creatinin Urine Metanephrine <0.12 µmol/mmol creatinine Urine 3-Methoxytyramine <0.17 µmol/mmol creatinine Age (yr) 11 - 17 years old: Urine Normetanephrine <0.28 µmol/mmol creatinine Urine Metanephrine <0.11 µmol/mmol creatinine Urine 3-Methoxytyramine <0.21 µmol/mmol creatinine Age (yr) 18 - 90 years old: Urine Normetanephrine <0.37 µmol/mmol creatinine Urine Metanephrine <0.12 µmol/mmol creatinine Urine 3-Methoxytyramine <0.31 µmol/mmol creatinine
Critical limits & actions	Results phoned when clearly pathological. Not phoned if an established diagnosis.
Notes about authorising	

Name of test	**Plasma Mycophenolic Acid**	
Pathnet code	**BMPA**	**Orderable on EPR** □ NO √**Yes**
Sample container	EDTA Plasma	
Sample requirements	Separate plasma from cells within 12 hours after collection.	

	Please input all patient demographics including sample date and time, last dose date and time, clinical details if available.	
Minimum volume required	100µl	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy.	
Storage in laboratory	Room temperature if sample going to be sent same day. Refrigerate at 4°C if sample is going to be sent within 2 days Freeze at 20°C if sample is not going to be sent within 2 days (i.e. if sample received on a Friday) If frozen, the sample does not need to be sent on dry ice.	
Laboratory referred to	KCH CSR who will then direct to: IDM Service - Liver Studies	UKAS accreditation reference: **8805**
Transport conditions	Same day: send ambient by courier Within 2 days: store refrigerated and then send ambient by courier More than 2 days: send frozen (dry ice not required)	
Address of referral laboratory	IDM Service Liver Studies Kings College Hospital Denmark Hill, London SE5 9RS	
Contact details	Clinical advice and Results Follow Up 020 3299 3147 kch-tr.KCHIDMService@nhs.net	
Turn around time	24 hours of sample receipt, Monday to Friday 9am – 5.30pm	
Cost		
EQA Scheme and	Annual certification from participation in LGC Proficiency Testing Scheme.	

performance	
Entering results into Pathnet	**BMPA is a numerical value input in a single field result.** If an interpretative comment has been provided for the sample, this should also be entered exactly as it appears on the report. **Enter the interpretative comment under BMPA.** Commonly used phrases can be found below: MPA1 Last dose date not specified MPA2 Last dose not specified MPA3 Last dose time not specified. MPA4 Sample time not specified. MPA5 Sample date not specified MPA6 BEWARE! There are insufficient dosage data available to interpret this test result. MPA7 Dosage data / sample times assist full interpretation of results: PLEASE PROVIDE MPA8 Is this a genuine pre-dose blood sample? MPA9 MPA concentration is BELOW limit of quantification MPA10 Note VERY LOW MPA concentration MPA11 Note LOW MPA concentration MPA12 Note HIGH MPA concentration MPA13 Note VERY HIGH MPA concentration MPA14 NON-TROUGH sample at only **[insert hour]** post-dose * MPA15 Note long **[insert hour]** interval post-dose * *comment requires editing The below comment will automatically generate for all results. 'Mycophenolic Acid: Assay by LC-MS/MS. Analysis performed by IDM, Liver Unit, Kings College Hospital (UKAS accredited, ref 8805).
GLV queue	391/5
Clinical indications	Therapeutic drug monitoring of patients on mycophenolic acid. Mycophenolic acid is an immunosuppressive agent which exerts its effect by inhibiting the growth of B and T cells of the immune system. It is important to monitor the blood concentration of MPA as at toxic concentrations patients are susceptible to a number of side effects including leukopenia and anaemia. At sub-therapeutic dosage patients may experience transplant rejection. MPA is increasingly used as a steroid-sparing treatment in other autoimmune mediated disorders, for example psoriasis.
Methodology	Analysis by liquid chromatography tandem mass spectrometry.
Limitations	N/A
Reference range(s) and	Units: mg/L

units	Suggested therapeutic range: 1-3.5 mg/L'
Critical limits & actions	N/A
Notes about authorising	ISD @ KCH to telephone any abnormal results.

Name of test	**N-Methyl Histamine (urine)**	
Pathnet code	**UMHIS**	**Orderable on EPR** □ NO □Yes
Sample container	Universal container	
Sample requirements		
Minimum volume required	5mL urine	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	frozen	
Laboratory referred to	Supraregional Protein Reference (Sheffield Teaching Hospitals NHS Foundation Trust)	UKAS accreditation reference: UKAS 8494
Transport conditions	First class post (allowed to defrost in transit)	
Address of referral laboratory	Supraregional Protein Reference (Sheffield Teaching Hospitals NHS Foundation Trust) P.O Box 894 Sheffield S5 7YT	
Contact details	Telephone: 01142715552	
Turn around time	2 weeks	
Cost		
EQA Scheme and performance	No EQA scheme	
Entering results into Pathnet	Enter the Urine Histamine: Creatinine ratio (expressed in ug/mmol) under UMHIS in Pathnet as it appears on the report. Results are reported to 1 decimal place. DO NOT ENTER the Urine Methyl Histamine result expressed in ug/L.	
GLV queue	391 5	
Clinical indications	Anaphylaxis, urticaria, mastocytosis.	
Methodology	ELISA	
Limitations		
Reference range(s) and units	0-25 ug/mmol creatinine	
Critical limits & actions		
Notes about authorising	The "Urine Histamine/Creatinine Ratio" result from the Sheffield report (expressed in ug/mmol) should be entered under the numerical field	

	"UMHIS" in Pathnet. Check Urine Methyl Histamine result expressed in ug/L has not been entered in error.

Name of test	**Nickel**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container	1 mL plasma/serum	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	1 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable at 4°C for at least two days.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by overnight first class post.	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time	1-2 weeks	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment. Enter expedite comment (F4) KING.	
GLV queue	391 5	
Clinical indications	Monitoring exposure to nickel	
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	Enter reference ranges as they appear on report.	
Critical limits & actions		
Notes about authorising		

Name of test	**Olanzapine**	
Pathnet code	**BOLAN**	**Orderable on EPR** □ NO □✓Yes
Sample container	ETDA whole blood.	
Sample requirements	4 mL of ETDA whole blood is preferred (pre-dose or 'trough' sample). Serum or plasma can be used if required, but please avoid gel-separator tubes.	
Minimum volume required	4 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by first class post.	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: kch-tr-toxicology@nhs.net Tel: 020 3299 5881	Results follow up: kch-tr-toxicology@nhs.net Tel: 020 3299 5881 Fax: 020 3299 5888
Turn around time	5 working days.	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter numerical result for olanzapine into Pathnet (BOLAN) as a whole number. In the comments write: olanzapine dose XXX mg/d Date and time of last dose XX.XX.XX HH:MM Comments are automatically stamped onto the report as follows: "There is no clear target range for plasma olanzapine concentrations that are associated with optimal antipsychotic response, although a reference range of 20-40 ug/L has been suggested (12h post-does sample)."	
GLV queue	391 5	

Clinical indications	
Methodology	LC-MS/MS.
Limitations	
Reference range(s) and units	No reference ranges are stated instead the following comment is added to results: There is no clear target range for plasma olanzapine concentrations that are associated with optimal antipsychotic response, although a reference range of 20-40 ug/L has been suggested (12h post-does sample).
Critical limits & actions	
Notes about authorising	

Name of test	**Oxalate (blood)**	
Pathnet code	**BOX**	**Orderable on EPR** □ NO □✓Yes
Sample container	Plasma - EDTA	
Sample requirements	Plasma EDTA	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Separate and store frozen within 2 hours.	
Laboratory referred to	University College Hospital	UKAS accreditation reference: UKAS 8169
Transport conditions	Transport frozen by courier.	
Address of referral laboratory	Clinical Biochemistry Department , UCL Hospitals, 3rd Floor, 60 Whitfield Street, London, W1T 4EU	
Contact details result follow up and clinical	Name: UCLH Duty Biochemist Email: dutybiochemist@uclh.nhs.uk Telephone: Clinical 020 344 79405	
Turn around time	10 days	
Cost	Please contact directorate for current prices Victoria.hiscock@uclh.nhs.uk	
EQA Scheme and performance	None available. Recovery experiments performed as an alternative.	
Entering results into Pathnet	Enter the numerical result. If there are any comments on the report add these as a comment (F6). The following comment is automatically stamped onto all results. Blood Oxalate reference range: Fasting 1.0 - 3.0 umol/L Non fasting <10 umol/L	
GLV queue	391 5	
Clinical indications		
Methodology	Oxalate oxidase	
Limitations	Plasma oxalate always increased in renal failure. If renal function is normal urine oxalate should be analysed.	
Reference range(s) and units	Non fasting <10 umol/L (in house)	

Critical limits & actions	N/A
Notes about authorising	

Name of test	**Oxalate timed urine**	
Pathnet code	**UOXS**	**Orderable on EPR** □ NO □✓Yes
Sample container	Random urine	
Sample requirements	10 mL from acidified 24 collection or random sample acidified on receipt. Patient preparation: Avoid vitamin C supplements when patients are preparing to have samples taken.	
Minimum volume required	10 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. In addition do not throw away 24 hour urine sample that do not meet the acceptance criteria. In these cases contact the Principal Clinical scientist or Sendaways team for advice.	
Storage in laboratory		
Laboratory referred to	University College London Hospitals NHS Foundation Trust	UKAS accreditation reference: UKAS 8169
Transport conditions	Can be shipped at ambient temperature	
Address of referral laboratory	Clinical Biochemistry Department , UCL Hospitals, 3rd Floor, 60 Whitfield Street, London, W1T 4EU	
Contact details for result follow-up and clinical interpretation.	Name: UCLH Duty Biochemist Email: dutybiochemist@uclh.nhs.uk Telephone: Clinical 020 344 79405 Result follow-up 020 3908 1362	
Turn around time	5 working days	
Cost	Please contact directorate for current prices Victoria.hiscock@uclh.nhs.uk	
EQA Scheme and performance	WEQAS Satisfactory	
Entering results into Pathnet	Do not enter the results for urine oxalate. Enter the result for urine oxalate output on the UCLH report under oxalate excretion urine (UOXE) on Pathnet. Enter urine oxalate:creatinine ratio under OXCRR on Pathnet. The following comment will be stamped onto Pathnet automatically on OXCRR Oxalate creatinine ratio reported in umol/mmol/creatinine. The following comment will be stamped onto Pathnet automatically	

	on UOXE: Please note reference range quoted is for adults with an average body surface area of 1.73 square meters. Please correct accordingly for children.
GLV queue	391 5
Clinical indications	For investigation of renal stone disease. Interpretative comments provided
Methodology	Oxalate oxidase
Limitations	
Reference range(s) and units	UOXE 100 – 460 μmol/24 hour (adults, correct to 1.73m^2 for children) Age related ref ranges for oxalate:creatinine ratio (OXCRR): 0-6 months <291 μmol/mmol 7-23 months <220 μmol/mmol 2-4 years <143 μmol/mmol 5-11 years <76 μmol/mmol 12 -17 years <44 μmol/mmol 18+ female <45 μmol/mmol 18+ male <33 μmol/mmol
Critical limits & actions	N/A
Notes about authorising	

Name of test	**Oxcarbazepine**	
Pathnet code	**BOXC**	**Orderable on EPR** □ NO □Yes
Sample container	EDTA tube	
Sample requirements	EDTA plasma. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	250 ul, prefer 1ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Cardiff Toxicology Laboratories	UKAS accreditation reference: 8989
Transport conditions	First class post	
Address of referral laboratory	Cardiff Toxicology Laboratories The Academic Centre University Hospital Llandough Penarth Vale of Glamorgan CF64 2XX	
Contact details	Name: Katie Hicks Email: Katie.hicks@wales.nhs.uk Telephone: 02920748372	
Turn around time	7 days	
Cost	£28.38	
EQA Scheme and performance		
Entering results into Pathnet	Enter numerical result	
GLV queue	391 5	
Clinical indications	Therapeutic treatment of seizures	
Methodology		
Limitations		
Reference range(s) and units	See report	

Critical limits & actions	
Notes about authorising	Oxcarbazepine and 10-Hydroxycarbazepine reported

Name of test	**Oxysterol**	
Pathnet code	**BTEST**	**Orderable on EPR** □✓ NO □Yes
Sample container	1-2 ml EDTA plasma separated and frozen on same day of sampling.	
Sample requirements	1-2 ml EDTA plasma separated and frozen on same day of sampling.	
Minimum volume required	1- 2 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Separated and frozen on same day of sampling.	
Laboratory referred to	Central Manchester University Hospitals: Willink Biochemical Genetics	UKAS accreditation reference: 9865
Transport conditions	Sent frozen on dry ice. The Willink Laboratory is only open Mon-Fri 9am – 5pm, so transport should be arranged to ensure they arrive within these hours.	
Address of referral laboratory	Willink Biochemical Genetics, Genomic Diagnostics Laboratory, Manchester Centre for Genomic Medicine, 6th Floor, St Mary's Hospital, Oxford Road, Manchester, M13 9WL	
Contact details	Clinical advice: Willink Biochemical Genetics Duty Biochemist 0161 701 8612	Results follow up: Willink Biochemical Genetics Duty Biochemist 0161 701 8612
Turn around time	4 working weeks	
Cost	£87	
EQA Scheme and performance	Participant of an EQA scheme – Not specified	
Entering results into Pathnet	Transcribe result, reference range and comments from report into Pathnet.	
GLV queue	391 5	
Clinical indications	Investigation of Niemann Pick C disease	
Methodology		
Limitations		
Reference range(s) and units	Cholestane-3b, 5a,6b-triol Control (n=70): 8.1-37.7 ng/ml (95% CI 9.6-37.0) NPC1 (n=15): 35.3-1170 ng/ml (95% CI 39.3-811.9)	
Critical limits & actions		

Notes about authorising	

Name of test	**Pipecolate**	
Pathnet code	**BTEST**	**Orderable on EPR** ✓ NO □Yes
Sample container	CSF (universal), urine (universal) or plasma	
Sample requirements	Plain CSF and urine collected into a universal. Lithium heparin or EDTA plasma, or serum.	
Minimum volume required	0.5 mL CSF 5 mL urine 1 mL plasma/serum	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Sheffield Children's Hospital	UKAS accreditation reference:
Transport conditions	Send by first class post	
Address of referral laboratory	Metabolic Section, Clinical Chemistry, Sheffield Children's Hospital, Western Bank, Sheffield, S10 2TH	
Contact details	Clinical advice: Joanne Croft joanne.croft@sch.nhs.uk 0114 271 7307	Results follow up: Same as clinical advice
Turn around time	4-6 weeks	
Cost	£162	
EQA Scheme and performance	ERNDIM special assays, good performance.	
Entering results into Pathnet	Transcribe result, reference range and comments from report into Pathnet	
GLV queue	391, 05	
Clinical indications	Pyridoxine dependent epilepsy. Peroxisomal biogenesis disorders	
Methodology	Stable isotope dilution GCMS	

Limitations	
Reference range(s) and units	CSF 0.01 - 0.12 umol/L Plasma <10.8 umol/L (1st week of life) Plasma <2.46 umol/L (>1 week of life) Urine 0.6 - 24 umol/mmol creat (<6 months) Urine 0.01 – 1.54 umol/mmol creat (>6 moths)
Critical limits & actions	At discretion of reporting Clinical Scientist but abnormal results are phoned.
Notes about authorising	

Name of test	**Plasmalogens**	
Pathnet code	**BTEST**	**Orderable on EPR** ✓ NO □Yes
Sample container	EDTA blood	
Sample requirements	EDTA whole blood required (DO NOT FREEZE and do not spin to separate). Phone x89652 on receipt of the sample. The IMD Clinical Scientist will collect the sample and wash the red blood cells three times in saline, before returning the sample to SPU to be sent	
Minimum volume required	1 mL whole blood	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store at 4°C – analyte is stable in unseparated samples at this temperature overnight therefore samples received out of hours can be dealt with first thing the next day. DO NOT FREEZE. If the sample will not be received by the referral laboratory the day after the sample is taken, the washed cells can be frozen but the sample must then be sent frozen to Sheffield (note clearly on form that the cells were washed).	
Laboratory referred to	Sheffield Children's Hospital	UKAS accreditation reference:
Transport conditions	If sending the same day of sample collection, send by first class post – do not dispatch on Fridays. No need to freeze sample if it will be sent the next morning. If sent the next morning, send by ambient courier so it will arrive that day. If sample will not be received by the ref lab the day after collection, freeze and send frozen on dry ice by courier.	
Address of referral laboratory	Metabolic Section, Clinical Chemistry, Sheffield Children's Hospital, Western Bank, Sheffield, S10 2TH	
Contact details	Clinical advice: Claire Hart claire.hart@sch.nhs.uk 0114 271 7307	Results follow up: Same as clinical advice.

Turn around time	4 – 6 weeks
Cost	£162
EQA Scheme and performance	N/A. Using internal quality control. Sample exchange initiated with Willink laboratory in 2017.
Entering results into Pathnet	Transcribe result, reference range and comments from report into Pathnet
GLV queue	391, 05
Clinical indications	Investigation of inherited peroxisomal biogenesis disorders including Refsum's disease and Zellweger Syndrome and Rhizomelic chondrodysplasia punctata.
Methodology	GCMS
Limitations	
Reference range(s) and units	C16/Palmitate 0.06 - 0.14 C18/Sterate 0.150 - 0.28
Critical limits & actions	
Notes about authorising	

Name of test	**Plasma Metanephrines Group test**	
Pathnet code	**BMETS**	**Orderable on EPR** □ NO □✓Yes
Sample container	Purple top EDTA plasma	
Sample requirements	Create two aliquots and bag together in the same bag for each patient.	
Minimum volume required	600 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store frozen.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send the frozen sample to the laboratory ASAP.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details for result follow-up and clinical advice	Name: David Taylor / Hagosa Abraha Email: davidtaylor8@nhs.net / h.abraha@nhs.net Telephone: 020 3299 4131/4128	
Turn around time	7 days	
Cost	Available from Viapath finance.	
EQA Scheme and performance	Registered with RCPAQAP Australian EQA scheme for all analytes. Fair – good performance over previous 12 months.	
Entering results into Pathnet	Enter the results for each of the component tests ***Plasma Normetadrenaline*** (NMET) ***Plasma metadrenaline*** (MET) For MET < 51 use the short cut key 02 <51. There is currently no component test code for Plasma 3-methoxytyramine. For Plasma 3-methoxytyramine enter this as a comment under plasma metadrenaline as follows: 'Plasma 3-methoxytyramine XXX pmol/L (Reference range < 120 pmol/L'. Add expedite comment KING (F4). This expands to This test was performed at Viapath Analytics, King's College Hospital. The following comments are automatically stamped onto the result in Pathnet: "As of 11/06/13, please note changes in reporting units and reference ranges. Samples should be collected through an indwelling cannula after 30 minutes recumbency."	

GLV queue	391 5
Clinical indications	Most phaeochromocytomas produce predominantly noradrenaline, many produce both noradrenaline and adrenaline, and rarely tumours produce predominantly adrenaline. Phaeochromocytomas producing adrenaline are usually located in the adrenal gland and patients commonly present with palpitations, anxiety, and hyperglycemia. Metastatic phaeochromocytomas are often characterized by high tissue, plasma, and urinary levels of DOPA and dopamine. Metabolism of catecholamines in adrenal medullary chromaffin and phaeochromocytoma tumor cells involves both MAO and COMT. The profile of catecholamine metabolites produced by adrenal medullary chromaffin and phaeochromocytoma tumour cells, therefore, importantly includes the O-methylated metabolites, normetanephrine and metanephrine. The metanephrines, in particular, are relatively poor markers of sympatho-adrenal activation. Theoretically, this make the metanephrines less prone to false positive results in physiological and pathological states associated with sympatho-adrenalmedullary activation. Furthermore, plasma free metanephrines (either normetanephrine or metanephrine or both) are constantly produced by the actions of catechol-O-methyltransferase on catecholamines leaking from storage vesicles within tumours and independently of catecholamine secretion. Therefore these measurements show larger and more consistent increases above normal than plasma catecholamines and help to reliably exclude the presence of all but the smallest of phaeochromocytomas (> 99% sensitivity, > 89% specificity). **Aid in the diagnosis and monitoring of patients with catecholamine-producing tumours i.e. phaeochromocytoma and paraganglioma is important.** To avoid possible false positive plasma metanephrine results it is recommended that an initial frontline investigation in urine is performed.
Methodology	Liquid chromatography-tandem mass spectrometry using TurboFlowTM (online sample preparation system). Calibration and IQC material traceable to certified reference material produced by Cerriliant.
Limitations	No known co-eluting isobaric compounds. Several drug classes have been reported in the literature to induce mild elevations in plasma metanephrines. These include monoamine oxidase inhibitors, catecholamine reuptake inhibitors including cocaine, some anesthetic gases, particularly halothane, withdrawal from sedative drugs, medical or recreational, in particular alcohol, benzodiazepines (eg. Valium), opioids, and some central acting antihypertensive drugs. DOPA medication causes increases in 3-methoxytyramine.

Reference range(s) and units	***Plasma Normetadrenaline*** 120- 1180 pmol/L ***Plasma metadrenaline*** 80 - 510 pmol/L Plasma 3-methoxytyramine < 120 pmol/L
Critical limits & actions	Results phoned when clearly pathological – either plasma metadrenaline >2 times the upper limit of normal or normetadrenaline >3 times the upper limit of normal. Results below this are equivocal. Not phoned if an established diagnosis.
Notes about authorising	There is no test code for Plasma 3-methoxytyramine. If this has not been added as a comment to MET add the result.

Name of test	**Porphyrin Screen Blood (Group test)**	
Pathnet code	**BPOR**	**Orderable on EPR** □ NO ✓□Yes
Sample container	6 mL whole blood Lithium Heparin (Green top). Separate all visible plasma into a labelled aliquot tube, and keep red cells in original labelled tube. Protect both tubes from light, and send both tubes to KCH for analysis. **NOTE: All sample containers must be labelled, not the light-protective wrapper.**	
Sample requirements	Separate all visible plasma into a **labelled aliquot tube**, and keep red cells in original labelled tube. **Protect both tubes from light, and send both tubes** to KCH for analysis.	
Minimum volume required	6 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store tubes refrigerated (4°C) and protected from light. If delay in sending is anticipated (>24 h post collection) store both tubes frozen and protected from light, and send frozen to KCH.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	**Send all tubes to KCH protected from light.** If stored refrigerated, send both tubes at ambient temperature. If stored frozen, tubes must be sent frozen on dry ice.	
Address of referral laboratory	Kings College Hospital, Departmental of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Name: Porphyrins and Gastrointestinal Laboratory at King's College Hospital Telephone: 020 3299 3856	
Turn around time	1-2 weeks	
Cost		
EQA Scheme and performance	EpNet Porphyria external quality assessment scheme and the Royal College of Australian Pathologists quality assurance program.	
Entering results into Pathnet	The test profile includes the following component test codes: *BPORD:* ***Blood porphyrin screen/plasma porphyrins***	

	Enter automatic expansion comments in BPORD and INT BPORD: Enter **NXS** for no porphyrin peak detected Enter **XS** is there is a peak detected. If XS, enter values from the King's report to edit the XS comment to: Fluorescence emission spectroscopy shows porphyrin peak at excitation maximum xxx = nm. Emission maximum = xxx nm. *BFP**: Free Protoporphyrin*** ***BZP*****:** *Zinc Protoporphyrin* **BOMBS:** HBMS activity For BFP, BZP and BOMBS add numerical values from report The following interpretative comments can be added as footnotes for each component to match the comments on the KCH report: **Normal plasma porphyrins (BPORD):** The normal plasma fluorescence emission scan virtually excludes all porphyrias as the cause of any active skin symptoms. However, if clinical suspicion of porphyria remains then urine and faeces (for patients with bullae, fragility, scarring etc.) or red blood cells (for patients complaining of burning, itching and erythema on exposure to sunlight, but without bullae and minimal scarring) should be examined. **Normal RBC Free protoporphyrin (BZP):** The normal red cell free protoporphyrin excludes erythropoietic protoporphyria as the cause of any photosensitivity (i.e. burning, itching, erythema, pain and oedema on direct exposure to sunlight but without bullae and little or no scarring). **Raised RBC Free protoporphyrin (BZP):** The red cell free protoporphyrin is marginally raised and excludes erythropoietic protoporphyria (EPP) as the cause of any current symptoms. Symptomatic patients with EPP usually have red cell free protoporphyrin levels at least ten times the upper limit of normal. If symptoms persist suggest send urine and faeces for further porphyrin studies.

	Normal HMBS activity (BOMBS): The normal red cell HMBS activity reduces the probability of, but cannot exclude, inheritance of the defect for acute intermittent porphyria. The normal red cell free protoporphyrin excludes erythropoietic protoporphyria as the cause of any photosensitivity (i.e. burning, itching, erythma and oedema on direct sunlight but without bullae and minimal or no scarring). **Low HMBS activity (BOMBS):** The red cell HMBS activity is below the normal reference range. A deficiency of this enzyme is associated with acute intermittent porphyria (AIP). However this result should be interpreted with caution. Is there a family history of AIP? In suspected acute porphyria, measurement of urinary PBG (preferably using a specimen collected during an attack) is the most useful (and essential) front-line investigation. Add expedite comment (F4) KING to one of the results.
GLV queue	391 5
Clinical indications	Diagnosis of patients with porphyria and monitoring of patients with porphyria.
Methodology	Fluorimetry
Limitations	
Reference range(s) and units	Free Protoporphyrin (BFP) 0-200 nmol/L cells Zinc Protoporphyrin (BZP) 0-800 nmol/L cells
Critical limits & actions	Phone all abnormal new results i.e. phone all newly diagnosed porphyria patients.
Notes about authorising	If the patient is known to King's College Hospital state this on the report. If the results are positive and there is no comment that it is a known patient check the clinical details to see if it is a known patient.

Name of test	**Porphyrin Faeces (Group test)**	
Pathnet code	**FPOR**	**Orderable on EPR** □ NO ✓□Yes
Sample container	Stool sample Plain Universal container. **NOTE: All sample containers must be labelled, not the light-protective wrapper.**	
Sample requirements	Samples must be protected from light.	
Minimum volume required	10 g	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Samples must be stored frozen and protected from light	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send frozen to KCH, protected from light.	
Address of referral laboratory	Kings College Hospital Departmental of Clinical Biochemistry 1st Floor Bessemer Wing Denmark Hill London SE5 9RS	
Contact details	Name: Porphyrins and Gastrointestinal Laboratory at King's College Hospital Telephone: 020 3299 3856	
Turn around time	1-2 weeks	
Cost	N/A	
EQA Scheme and performance	EpNet Porphyria external quality assessment scheme and the Royal College of Australian Pathologists quality assurance program.	
Entering results into Pathnet	Inputting results. • Input values for total faecal porphyrin (FPORC); • There is no space in Pathnet to input Coproporphyrin I and Coproporphyrin III. • Total coproporphyrin (I + III) (FCPORC). This will appear in ACC as FCPOR • Dicarboxylate porphyrin (FPPORC). This will appear in ACC	

	as FPPOR. Input any comments added included on the report as a free text comment. Add expedite comment (F4) KING to all results.
GLV queue	391 5
Clinical indications	Measurement of intermediates of haem biosynthesis for the diagnosis of porphyria. Monitoring of patients with porphyria. The results may be interpreted alongside measurement in serum and urine to distinguish between the forms of porphyria.
Methodology	UV-Vis spectrophotometry (first line) HPLC with fluorimetric detection (as required for additional testing based on initial results)
Limitations	
Reference range(s) and units	Total faecal porphyrin < 50 nmol/g faeces If excess porphyrins detected, HPLC fractionation carried out. There are individual ranges for each component porphyrin.
Critical limits & actions	
Notes about authorising	

Name of test	**Porphyrin screen Urine (group test)**	
Pathnet code	**UPOR**	**Orderable on EPR** □ NO ✓□Yes
Sample container	Random urine sample, protected from light. **If a 24h urine sample is received, do not discard immediately. Notify the Sendaways Team who will advise the clinical team the sample has been rejected, and that a repeat random urine sample is required (protected from light).**	
Sample requirements	No preservative is necessary but specimens must be protected from light. In suspected acute porphyrias samples should be taken during a suspected attack. **NOTE: All sample containers must be labelled, not just the light-protective wrapper.**	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. In addition do not throw away 24 hour urine collections that do not meet the acceptance criteria. In these cases contact the Principal Clinical Scientist or the Sendaways team for advice.	
Storage in laboratory	Store refrigerated (4°C) and protected from light. If delay in sending is anticipated (>24 h post collection) store sample frozen and protected from light, and send frozen to KCH.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	**Send all samples to KCH protected from light.** If stored refrigerated, send sample at ambient temperature. If stored frozen, sample must be sent frozen on dry ice.	
Address of referral laboratory	Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Name: Porphyrins and Gastrointestinal Laboratory at King's College Hospital Telephone: 020 3299 3856	
Turn around time	1 -2 weeks	
Cost		
EQA Scheme and performance	WEQAS, EPNET, RCPA	
Entering results into Pathnet	The test profile includes the following component test codes: ***UPORD:*** *Porphyrin (total) urine*	

UPORBC: *Porphobilinogen urine*

UCPOR1: ***Coproporhyrin I urine***

UCPOR3: ***Coproporhyrin III urine***

UUPOR1: ***Uroporphyrin I urine***

UUPOR3: ***Uroporphyrin III urine***

UHCPOR: ***Heptacarboxylate porphyrin urine***

UALVA: ***Aminoaevulinic acid urine***

Inputting results into Pathnet via ACC:

Partial Pathnet codes are visible when inputting results via ACC. The should be inputted in the order below:

ACC Screen	Full pathnet code
UPORD	UPORD
UPORB	UPORBC
UCPOR	UCPOR3
UCPOR	UCPOR1
UUPOR	UUPOR3
UUPOR	UUPOR1
UHCPO	UHCPOR
UALVA	UALVA

Interpretative comments commonly seen on the reports:

In suspected acute porphyria, measurement of urinary PBG (preferably using a specimen collected during an attack) is the most useful and essential front-line test.

For urine creatinine <2.0 mmol/L:

This is a very dilute urine. It is easy to produce misleading ratios calculated from analytical data close to the detection limits of the methods employed. Suggest repeat using a fresh, early morning, urine.

HPLC fractionation of urine showed a normal pattern.

These results exclude a current attack of acute porphyria. During an attack both ALA and PBG are significantly raised. These results do not exclude a neurological porphyria in remission or the

	latent phase. Add the interpretative comment as a free text comment (F6) exactly as written on the King's College Hospital Report. Add the expedite comment (F4) KING to one of the results.
GLV queue	***391 5***
Clinical indications	Diagnosis and monitoring of patients with porphyria
Methodology	UV-Vis spectrophotometry HPLC with fluorimetric detection Ion exchange chromatography
Limitations	Urine ALA and PBG levels may return to normal between attacks leading to potential false negative results. Dilute urine samples can give misleading ratios.
Reference range(s) and units	Total urine porphyrin 0 - 35 nmol/mmol creatinine Amiolaevulinic acid urine (UALVA) 0 -3.8 µmol/mmol creatinine Porphobilinogen urine (UPORBC) 0 - 1.5 µmol/mmol creatinine Heptacarboxylate porphyrin urine (UHCPOR) 0-4 nmol/L For uroporphyrins and coproporphyrins the reference ranges are automatically added as a comment as follows: Uroporphyrin ref range (type I + type III) < 24 nmol/L Coproporphyrin (type I and type III) < 115 nmol/L
Critical limits & actions	
Notes about authorising	

Name of test	**Prealbumin (transthyretin)**	
Pathnet code	**BTEST**	**Orderable on EPR** ✓□ NO □Yes
Sample container	Serum (SST Tube)	
Sample requirements		
Minimum volume required	2 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy.	
Storage in laboratory		
Laboratory referred to	Sheffield Teaching Hospitals	UKAS accreditation reference: UKAS 8494
Transport conditions	Transport overnight at room temperature.	
Address of referral laboratory	Supraregional Protein Reference Unit (Sheffield Teaching Hospitals NHS Foundation Trust) P.O Box 894 Sheffield S5 7YT	
Contact details	Telephone: 0114 2715552	
Turn around time	7 days	
Cost	£7.34	
EQA Scheme and performance	UK NEQAS Scheme for Specific Proteins.	
Entering results into Pathnet	Enter results including reference range and units as a free text comment	
GLV queue	391 5	
Clinical indications	Assessment of nutritional status and hepatic synthetic function. Increased in pregnancy. Male <0.2 or female <0.1g/L may indicate poor nutritional intake/status and may identify the need for nutritional support. Results must be interpreted in the clinical context.	
Methodology	Nephelometry.	
Limitations	Turbid, icteric and in particular lipaemic specimens which do not clear on centrifugation may be unsuitable for analysis.	
Reference range(s) and units	Male 0.2 – 0.5 g/L Female 0.1 – 0.4 g/L	

	Reference range established in house and PRU collaboration
Critical limits & actions	
Notes about authorising	

Name of test	**Prednisolone**	
Pathnet code	**BPRED**	**Orderable on EPR** □ NO ✓□Yes
Sample container	Serum or plasma (lit hep or EDTA)	
Sample requirements	Sample to be collected 3-4hrs post dose. Separate sample within 12hrs of collection. Freeze sample until time to post.	
Minimum volume required	1ml serum or plasma (lit hep or EDTA). Can work with smaller volumes (0.5 ml) but this increases imprecision.	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen	
Laboratory referred to	Immunosuppression Monitoring Service Harefield Hospital	UKAS accreditation reference: 2891
Transport conditions	First Class Post (room temp) – IMS Lab will refreeze once received.	
Address of referral laboratory	Immunosuppression Monitoring Service Harefield Hospital Royal Brompton & Harefield NHS Foundation Trust Hill End Road Harefield Middlesex UB9 6JH	
Contact details	Jane Tiller Deputy Head of Immunosuppression Monitoring Laboratory j.tiller@rbht.nhs.uk 01895 828570	
Turn around time	1 week (tested on Wednesdays)	
Cost	£12.25	
EQA Scheme and performance	No EQA scheme available. Sample swap participation and IQC performance good.	
Entering results into Pathnet	Enter numerical result for prednisolone into Pathnet. Add the following comment and report LC-MS cortisol result using the F6 comment function: "Prednisolone and cortisol assays are performed by Mass spectrometry (LC-MS/MS) IMS lab, Harefield. Cortisol = …… nmol/L"	

	Also state prednisolone dose details if given.
GLV queue	391 5
Clinical indications	This assay is used to check compliance for patients on prednisolone. The presence of prednisolone (and the suppression of cortisol) indicates compliance with treatment. Prednisolone peaks at 4 – 6 hours post dose so a sample taken up to 6 hours post dose may be the most useful. Ideally take sample between 2-4 hours post dose.
Methodology	LC-MS/MS. The test also includes the measurement of cortisol.
Limitations	
Reference range(s) and units	There is no reference range for this assay and it should be used to check compliance only.
Critical limits & actions	None
Notes about authorising	If there is no time and date of dose stated a low cortisol and low prednisolone could indicate that the patient is taking their prednisolone regularly causing the suppression of their cortisol but because the sample has been taken more than 6 hours post dose the prednisolone may have already been cleared from the system.

Name of test	**Plasma ProCollagen III (P3NP)**	
Pathnet code	**BP3NP**	**Orderable on EPR** □ NO √Yes
Sample container	Yellow Top SST tube (Serum)	
Sample requirements	Serum	
Minimum volume required	500 µL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable at 4°C for up to two days.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by overnight first class post	
Address of referral laboratory	Kings College Hospital Departmental of Clinical Biochemistry 1st Floor Bessemer Wing Denmark Hill London SE5 9RS	
Contact details	Tel: 020 3299 3576 Fax: 020 3299 3140	
Turn around time	7 working days	
Cost	N/A	
EQA Scheme and performance		
Entering results into Pathnet	Enter numerical results to 1 decimal place as written on the report. In F6 text comments add the expedite comment (F4) KING. Comments are automatically stamped onto the sample, for ages >= 19 the report is as follows: P3NP > 4.2 ug/L – First occasion: repeat in 3 months. If P3NP is raised: >8 ug/L on two occasions; or >4.2 ug/L but <8.0 ug/L on three occasions within 12 months; or >10 ug/L on one occasion Results may indicate liver fibrosis – suggest onward referral for specialist advice. For ages < 19 the report is as follows: We do not recommend P3NP testing in childhood owing to the wide reference intervals associated with the collagen deposition of normal growth. However, as a guide please refer to the age-related	

	references ranges stated below: 0 – 3 years: 3.4 – 52.6 ug/L 3 - 9 years: 3.4 – 12.1 ug/L 9 - 16 years: 2.9 – 24.4 ug/L 16 - 18 years: 2.0 – 7.0 ug/L
GLV queue	391 5
Clinical indications	Monitoring liver fibrosis in patients on methotrexate. P3NP is not organ specific and also note to consider other causes of liver fibrosis (i.e. alcohol). Note that P3NP will be raised in any cause of fibrosis in any tissue type.
Methodology	Radioimmunoassay
Limitations	
Reference range(s) and units	1.2 – 4.2 ug/L aged >= 19 years 2.0 – 7.0 ug/L aged 16 – 18 years 2.9 – 24.4 ug/L aged 9 – 16 years 3.4 – 12.1 ug/L aged 3 – 9 years 3.4 – 52.6 ug/L aged 0 – 3 years
Critical limits & actions	If first finding, raised P3NP >10 ug/L should be telephoned. Exception: ICU patients in respiratory failure/undergoing ECMO do not need to be phoned.
Notes about authorising	This test is mainly used by Dermatology teams to monitor patients on methotrexate. Also occasionally requested by ICU for patients in respiratory failure/on ECMO.

Name of test	**Plasma sterol analysis**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Lithium heparin (green top) plasma	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	Preferred Volume: 1 mL (minimum volume: 300 uL)	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store at -20°C	
Laboratory referred to	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust.	UKAS accreditation reference: 10139
Transport conditions	Send by first class post. Store at -20°C.	
Address of referral laboratory	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust, Western Bank, Sheffied, S10 2TH.	
Contact details	Duty Clinical Scientist: 0114 271 7000, Bleep 095 Result Enquiries (Telephone): 271 7445 Results Enquiries (email): Metabolic.sch@nhs.net Claire Hart (Principal Clinical Scientist / Metabolic Lead) Tel: 271 7307 Sharon Colyer (Principal Clinical Scientist), Tel: 271 7307 Ben Nicholson (Senior Clinical Scientist), Tel: 271 7479	
Turn around time	3 – 6 weeks	
Cost	£103.39	
EQA Scheme and performance	ERNDIM Special Assays in Serum	
Entering results into Pathnet	Transcribe all the results, units, reference range (control range) and any reporting comments including on the report into Pathnet. Add the following comment at the end of the report "This test was performed at Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Foundation Trust".	
GLV queue	391 5	
Clinical indications		
Methodology	GC-MS	

Limitations	
Reference range(s) and units	Reference range (umol/L) 7-Dehydrocholesterol: <2 Desomsterol: Interpretation provided with report Lathosterol: Interpretation provided with report Cholestanol: 3-16 Lanosterol: Interpretation provided with report 8 (9) Cholesterol: 8-Dehydrocholesterol: <3 4-methyl-sterols: Interpretation provided with report Control range (umol/L) 7-Dehydrocholesterol 0.70 – 1.96 Desomsterol 2.65 – 9.22 Lathosterol 0.53 – 15.98 Cholestanol 3.87 – 18.04 Lanosterol 0.00 – 1.53 8 (9) Cholesterol < 4.0 8-Dehydrocholesterol < 2.0 4-methyl-sterols:
Critical limits & actions	7-Dehydrocholesterol: Affected range: >5
Notes about authorising	

Name of test	**Promethazine**	
Pathnet code	**BDRUG**	**Orderable on EPR** √ NO □Yes
Sample container	Serum/EDTA/Lithium Heparin (no gel)	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	Serum/plasma 500ul	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge 4C	
Laboratory referred to	Toxicology Laboratory Birmingham Heartlands Hospital	UKAS accreditation reference: 8217
Transport conditions	First class post	
Address of referral laboratory	Department of Toxicology Birmingham Heartlands Hospital Bordesley Green East B9 5SS	
Contact details	Name: Dr Alex Lawson, Principal Clinical Scientist Email: alexander.lawson@heartofengland.nhs.uk Telephone: 0121 4241392	
Turn around time	7 days	
Cost	£25.00	
EQA Scheme and performance	YES, LGC QUARTZ, LGC CLIN TOX	
Entering results into Pathnet	Component test codes:	
GLV queue	391 5	
Clinical indications		
Methodology	HPLC-DAD	
Limitations		
Reference range(s) and units	High dose therapeutic use of promethazine associated with concentrations of up to 0.2 mg/L. Toxicity associated with concentrations > 1 mg/L. (Schulz et al. Critical Care 2012, 16:R136).	
Critical limits & actions		

Notes about authorising	

Name of test	**PTH related peptide (also called PTHrP)**	
Pathnet code	**BPTHRP**	**Orderable on EPR** □ NO ✓□Yes
Sample container	Special tube EDTA + aprotonin supplied on request by Biomnis.	
Sample requirements	1 ml EDTA plasma frozen < 1 hour. Centrifuge at + 4 °C and freeze the plasma immediately. For instructions on sample requirements, collection and processing please refer to **BSAC-LI-210 (PTHrP sample handling)**.	
Minimum volume required	500 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen – blue bag	
Laboratory referred to	Biomnis	UKAS accreditation reference: COFRAC N° 8-1973 (ISO 15189:Standards)
Transport conditions	Frozen blue bag. Collection organised by Biomnis vis CitySprint courier	
Address of referral laboratory	Biomnis 17-19 Avenue Tony Garnier 69007 Lyon.	
Contact details	Name: Vanadanah Nunloll-Bernard Email: Vandanah.nunloll-bernard@biomnis.com Telephone: 00 33 4 72 80 23 48	
Turn around time	2 weeks from sample receipt	
Cost	26.37 Euros or £21.85.	
EQA Scheme and performance	Note this test is not covered by the laboratory accreditation and it is not covered by an EQA scheme. Inter laboratory assay comparison is carried out in place of EQA.	
Entering results into Pathnet	Enter the numerical result (pmol/L) into Pathnet using ACC. The results on the report are reported by Biomnis in two different units; only the pmol/L results are reported. Enter any additional comments on the report as text (F6).	
GLV queue	391 5	
Clinical indications	For the aetiological investigation in hypercalcaemia, as a measurement of second intention, after PTH measurement (except in particular cases), during: - Solid tumours, such as cancer of the lung, breast, kidney, bladder, oesophagus and prostate. - Haematological tumours: lymphoma or myeloma	

	- Other conditions, such as phaeochromocytoma and sarcoidosis.
Methodology	Radioimmunoassay
Limitations	None
Reference range(s) and units	Less than 1.2 pmol/L
Critical limits & actions	Critical values are emailed to the Sendaways team at BiochemSendawaysTeam@gstt.nhs.uk.
Notes about authorising	

Name of test	**Quetiapine**	
Pathnet code	**BQUET**	**Orderable on EPR** □ NO ✓□Yes
Sample container	ETDA whole blood (purple top)	
Sample requirements	2mL EDTA whole blood or 1 mL plasma or serum (pre-dose or 'trough' sample). Serum or plasma can be used if required, but please avoid gel-separator tubes. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Refrigerate (if possible) if not sending immediately.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by first class post.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Telephone: 020 3299 5881 Email clinical advice: kch-tr.toxicology@nhs.net	
Turn around time	5 working days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter the numerical result for quetiapine. Use the expedite comment (F4) QUET to enter the results for the metabolites N-Desalkylquetiapine, O-Desalkylquetiapine, 7-Hydroxyquetiapine in place of the XX. The QUET expedite comment expands to: N-Desalkylquetiapine XX ug/L O-Desalkylquetiapine XX ug/L 7-Hydroxyquetiapine XX ug/L Interpretation Information In 59 pre-dose TDM samples [dose (median, range) 600, 400 - 1,500 mg/d] the plasma concentrations (median, range) were (ug/L): Quetiapine 116 (2-748) N-desalkylquetiapine 127 (8-417) O-desalkylquetiapine 15 (<1-59) 7-hydroxyquetiapine 4 (<1-48)	

	Add the expedite comment (F4) KING to the end of the results. The following comments are autostamped on all requests: There is no clear target range for plasma quetiapine concentrations that are associated with optimal antipsychotic response, although a reference range of 100- 500 g/L has been suggested (pre-dose sample).
GLV queue	391 5
Clinical indications	TDM patients on quetiapine
Methodology	Quetiapine, N-desalkylquetiapine, O-desalkylquetiapine and 7-hydroxyquetiapine by LC-MS/MS.
Limitations	Avoid the use of gel-separator tubes as these can cause interference in the assay.
Reference range(s) and units	50 – 200g/L (suggested range)
Critical limits & actions	
Notes about authorising	Note reference ranges are added as an automated comment and cannot be seen in the GLV report. Check in RIE that the comment matches the current KCH report.

Name of test	**Renin**	
Pathnet code	**BREN**	**Orderable on EPR** □ NO √Yes
Sample container	EDTA plasma	
Sample requirements	Process blood samples at room temperature in a non-chilled centrifuge. Plasma should be separated from cells immediately after centrifugation. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 ul in two separate aliquots one for renin and one for aldosterone	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Frozen at –20ºC	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Transport on dry ice by courier.	
Address of referral laboratory	Kings College Hospital, Departmental of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Telephone: 020 3299 4130	
Turn around time	7-10 working days	
Cost	N/A	
EQA Scheme and performance		
Entering results into Pathnet	When both renin (BREN) and aldosterone (BALD) are requested on Pathnet the aldosterone:renin ratio is automatically requested (BARR). Enter the result for BREN and BALD into Pathnet. For aldosterone results < 50 pmol/L add the result as a see text comment. Do not type < 50 pmol/L because this results in an incorrect BARR calculation in Pathnet. Pathnet will automatically calculate BARR. Check this value against the value on the KCH report. If the result for aldosterone is a ST comment Pathnet will not calculate BARR. Instead enter the expedite comment (F4) NOGAP. This expands to "component tests not available". **Add the expedite comment (F4) KING to result using the F6 free text comments.**	

	The following comment is stamped onto all BREN results in Pathnet: Reference Range: Supine 5.4 - 30 mU/L Erect 5.4 - 60 mU/L Please note change in reference range from 21/9/10
GLV queue	391 5
Clinical indications	Renin, aldosterone and their ratio are the most frequently measured parameters used to access the renin-angiotensin-aldosterone axis integrity. Patient groups where renin and aldosterone are measured include: evaluation of patients with hypertension; patients with hypo or hyperkalaemia who may have hyperaldosteronism (or other forms of genuine or apparent mineralocorticoid excess) or hypoaldosteronism respectively and patients with adrenal insufficiency to distinguish primary from secondary cause.
Methodology	Chemiluminescent immunoassay using the Diasorin Liaison
Limitations	
Reference range(s) and units	BREN: Supine 5.4 - 30 mU/L Erect 5.4 - 60 mU/L BARR: <80 Conns unlikely >80 - <200 Conn's not excluded >200 Conns likely
Critical limits & actions	
Notes about authorising	If the results for BALD or BREN are amended when reviewing the results the BARR does not automatically recalculate. Use ACC and go over results using return key so that Pathnet re-calculates the ratio.

Name of test	**Risperidone**	
Pathnet code	**BDRUG**	**Orderable on EPR** □ NO √Yes
Sample container	ETDA whole blood (purple top)	
Sample requirements	2mL of EDTA whole blood preferred. Serum or plasma can be used if required.	
Minimum volume required	2 mL	
Rejection criteria		
Storage in laboratory	Refrigerate if not sending immediately.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by first class post.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details		
Turn around time	5 working days.	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	The results will need to be entered as a free text comment. A general guide to the layout of the report is as follows: Risperidone Plasma Risperidone xxx ug/L 9OH-Risperidone xxx ug/L There is no clear target range for plasma risperidone and 9-hydroxyrisperidone concentrations that are associated with optimal antipsychotic response, although a reference range of 20 – 60 ug/L (Risperidone and total 9-hydroxyrisperidone) has been suggested (pre-dose sample: chronic oral dosage). Risperidone Dose xxx mg/d Date and time of last dose xxxxx Add the expedite comment (F4) KING at the end of the report.	
GLV queue	391 5	
Clinical indications		

Methodology	Risperidone and 9-hydroxyrisperidone by LC-MS/MS.
Limitations	
Reference range(s) and units	Although a target range in therapy has not been established, a steady state reference range of 20-60 µg/L (risperidone + total 9-hydroxyrisperidone) has been suggested.
Critical limits & actions	
Notes about authorising	

Name of test	**Salivary Cortisol**	
Pathnet code	**MTEST**	**Orderable on EPR** √ NO □ Yes
Sample container	Salivette (see link and details below)	
Sample requirements	**Contact Sendaways Team in case of query.** Specialist test for Endocrinology, ideally specialist collection device required therefore prior arrangement with lab necessary. Sendaways Team: Please state if dynamic function test. Collection device link: https://www.sarstedt.com/fileadmin/user_upload/99_Broschueren/Englisch/156_Salivette_GB_0813.pdf Order number: 51.5134.500 Description: Cortisol-Salivette® *Note passive drool also acceptable.	
Minimum volume required	150 uL	
Rejection criteria	**Viapath sample acceptance policy**	
Storage in laboratory	Store refrigerated	
Laboratory referred to	Wythenshawe Hospital Biochemistry	UKAS accreditation reference: 9063
Transport conditions	First class post, ambient.	
Address of referral laboratory	Wythenshawe Hospital Manchester University NHS Foundation Trust Biochemistry Department Wythenshawe Manchester M23 9LT	
Contact details	Clinical advice: Duty Biochemist mft.biochemistry.wythenshawe@nhs.net 0161 291 2136	Results follow up: Jo Adaway Jo.Adaway@mft.nhs.uk 0161 291 2126
Turn around time	10 working days	
Cost	£14.30	
EQA Scheme and	Salivary cortisol = IBL International	

performance	Salivary cortisone = recovery studies, every 3 months
Entering results into Pathnet	Enter salivary cortisol and cortisone results, reference ranges and any comment on report as a 'See Text' comment.
GLV queue	391/05
Clinical indications	This is not a routine request. It is usually requested by the Endocrine Department for the investigation of Cushing's syndrome.
Methodology	LC-MS/MS
Limitations	Bloodstained samples are unsuitable for analysis.
Reference range(s) and units	Ensure reference ranges match those on report. **Salivary cortisol adult reference range**: 8-9am = 5-46 nmol/L Late night = < 2.6 nmol/L **Salivary cortisone adult reference range**: 9am = 18-47 nmol/L Late night = <18 nmol/L
Critical limits & actions	Not applicable
Notes about authorising	None.

Name of test	**Selenium**	
Pathnet code	**BSE**	**Orderable on EPR** □ NO ✓□Yes
Sample container	Trace element blue top tube (preferred) or serum **Occasionally additional empty bottle can be received with the blood to check for specimen contamination. Empty bottle should also be send to referral lab together with the blood.**	
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable at 4°C.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by overnight first class post.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Clinical advice: Results follow up:	
Turn around time	1-2 weeks	
Cost		
EQA Scheme and performance	UK NEQAS- Trace elements – None declared	
Entering results into Pathnet	Transcribe results as written on the KCH report to 2 decimal places. Add expedite comment (F4) KING to results.	
GLV queue	390-12	
Clinical indications	Monitoring of patients of parental nutrition.	
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	0 – 16 years: 0.45 – 1.47 umol/L Adults (over 16y): 0.90 – 1.67 umol/L	
Critical limits & actions		
Notes about authorising		

Name of test	**Serum Amyloid A**	
Pathnet code	**BTEST**	**Orderable on EPR** ✓□ NO □Yes
Sample container	Serum (SST tube)	
Sample requirements	No special requirements.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store at 4 °C	
Laboratory referred to	The Royal Free London NHS Foundation Trust	UKAS accreditation reference: 8169
Transport conditions	Transport by First class post.	
Address of referral laboratory	HSL Analytics LLP, Department of Clinical Biochemistry, Royal free Hospital, Pond Street, London, NM3 2QG.	
Contact details results and clinical interpretation	Name: Simon Salter Email: simon.salter@hslpathology.com Telephone: 02039081360	
Turn around time	1 week	
Cost	Pricing set on a case-by-case basis. Please contact matthew.grey@tdlpathology.com and linda.boxer@nhs.net for price details.	
EQA Scheme and performance	No EQA Scheme available. Aside from traditional IQC controls, participation in a sample exchange programme with the Sheffield Protein Reference Unit. Currently has an aggregate +6.7% bias when compared to their results. A basic linear regression analysis gives an R^2 value of 0.9698.	
Entering results into Pathnet	Transcribe all results including interpretative comments, units and reference ranges as written on the laboratory report as a free text comment.	
GLV queue	391 5	
Clinical indications	Diagnosis and monitoring of patients with amyloidosis.	
Methodology	Siemens SAA reagent (Immunonephelometry) Siemens BNII platform Calibration material for assay is traceable to WHO 1st IS 92/680.	
Limitations	Lipaemic and haemolysed samples are not suitable.	

Reference range(s) and units	< 10 mg/L Discussion with the National Amyloidosis Centre. Professor Phillip Hawkins has agreed limits and clinical interpretation below. In case of amyloidosis: SAA < 10mg/L: Amyloid deposits stable or gradually regress in virtually all patients - no increase in anti-inflammatory treatment is required. SAA 10-25 mg/L: Amyloid deposits stable in most patients -further monitoring without changes in therapy may be appropriate. SAA > 50mg/L: Amyloid deposits accumulate in most patients, and more intensive or alternative treatments should be considered. Results should be interpreted with CRP result.
Critical limits & actions	No critical limits
Notes about authorising	

Name of test	**Silver Levels**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	EDTA whole blood	
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	SAS Trace Element Laboratory, Guildford.	UKAS accreditation reference: 9732
Transport conditions	Send by 1st Class Post	
Address of referral laboratory	SAS Trace Element Laboratory The Surrey Research Park 15 Frederick Sanger Road Guildford GU2 7YD	
Contact details	Email: rsc-tr.TraceElements@nhs.net Telephone: 01483 689978	
Turn around time	5 to 10 Days	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter the result, units, reference range and any comments as they appear on the report as a free text comment (F6).	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units	Enter the result, units, reference range and any comments as they appear on the report as a free text comment (F6).	
Critical limits & actions		
Notes about authorising		

Name of test	**Strontium**	
Pathnet code	**BSR**	**Orderable on EPR** □ NO √Yes
Sample container	Serum/plasma (500µl, no anticoagulant, Li-Hep)	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	500 ul serum/plasma.	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable at 4°C for at least a week.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 1245
Transport conditions	Send by overnight first class post.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details		
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter the numerical result into Pathnet using ACC.	
GLV queue	391 5	
Clinical indications		
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	Serum/plasma: < 0.34 µmol/L up to 200 µmol/L (patients on Protelos).	
Critical limits & actions		
Notes about authorising		

Name of test	**Sulphonylurea Screen (Serum)**	
Pathnet code	**BSU**	**Orderable on EPR** □NO √Yes
Sample container	SST tube (yellow top)	
Sample requirements	Serum is the preferred sample type for sulphonylurea screen, however sulphonylurea screen is also available for urine samples - please see 'Sulphonylurea Screen (Urine)'.	
Minimum volume required	0.6 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store frozen at -20˚C (unless sending immediately)	
Laboratory referred to	Surrey Pathology Services	UKAS accreditation reference: 9732
Transport conditions	Room temperature by first class post.	
Address of referral laboratory	SAS Peptide Hormone Section, Clinical Laboratory, Royal Surrey County Hospital, Egerton Road, Guildford, GU2 7XX	
Contact details	01483 406715	
Turn around time	1 week	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results, including reference range and units, as well as any interpretative comments on the report, as a free text comment	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units	Enter results, including reference range and units, as well as any interpretative comments on the report, as a free text comment	
Critical limits & actions		
Notes about authorising		

Name of test	**Sulphonylurea Screen (Urine)**	
Pathnet code	**UTEST**	**Orderable on EPR** √NO □Yes
Sample container	Random urine in a universal container	
Sample requirements	Serum is the preferred sample type for sulphonylurea screen - please see Sulphonylurea Screen (Serum) – BSU. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	10 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store frozen (unless sending immediately)	
Laboratory referred to	Surrey Pathology Services	UKAS accreditation reference: 9732
Transport conditions	Room temperature by first class post.	
Address of referral laboratory	SAS Peptide Hormone Section, Clinical Laboratory, Royal Surrey County Hospital, Egerton Road, Guildford, GU2 7XX	
Contact details	01483 406715	
Turn around time	1 week	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results, including reference range and units, as well as any interpretative comments on the report, as a free text comment	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units	Enter results, including reference range and units, as well as any interpretative comments on the report, as a free text comment	
Critical limits & actions		
Notes about authorising	Serum samples preferred.	

Name of test	**Sulpiride**	
Pathnet code	**BSULP**	**Orderable on EPR** □ NO √Yes
Sample container	Serum (plain tube, not SST)	
Sample requirements	AVOID SERUM SEPARATION GEL	
Minimum volume required	2 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	NO SPECIAL REQUIREMENTS	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	NO SPECIAL REQUIREMENTS	
Address of referral laboratory	Kings College Hospital Toxicology Unit 3rd Floor Bessemer Wing Denmark Hill London SE5 9RS	
Contact details	Tel:020 3299 5881 Fax: 020 3299 5888 Email: kch-tr.toxicology@nhs.net	
Turn around time	7 days	
Cost	£32	
EQA Scheme and performance	SATISFACTORY	
Entering results into Pathnet	Enter the numerical result into Pathnet using ACC.	
GLV queue	391 5	
Clinical indications	400 – 600 ug/L	
Methodology	HPLC, CERTIFIED CALIBRANTS AND IQC USED	
Limitations	AVOID SERUM SEPARATION GEL. AMISULPRIDE WILL INERFERE WITH SULPIRIDE	
Reference range(s) and units	400 – 600 ug/L	
Critical limits & actions	NO CRITICAL LIMIT DEFINED	
Notes about authorising		

Name of test	**Testosterone by Mass Spectrometry**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO √ □ Yes
Sample container	Serum SST sample (EDTA acceptable)	
Sample requirements	None	
Minimum volume required	150 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store refrigerated if sending within 24 hours. Store frozen (-20°C)	
Laboratory referred to	Steroid Laboratory, Kings College Hospital	UKAS accreditation reference: 9067 (test not yet accredited, ETS Feb 2021)
Transport conditions	Send ambient if stored refrigerated, send on dry ice frozen if sample stored frozen.	
Address of referral laboratory	Steroid Laboratory, Kings College Hospital Denmark Hill London SE5 9RS	
Contact details	Clinical advice: David Taylor davidtaylor8@nhs.net 0203 299 3009	Results follow up: Oliver Rayner Oliver.Rayner@nhs.net 0203 299 4131
Turn around time	7 days	
Cost	Not stated	
EQA Scheme and performance	NEQAS (Testosterone) RCPAQAP (DHT and Testosterone)	
Entering results into Pathnet	Enter results including reference range and units as a free text comment Entered to 1 decimal place e.g. 1.5 nmol/L **Add the expedite comment KING (F4).**	
GLV queue	391-5	
Clinical indications	Investigation of interference in Roche testosterone immunoassay (Testosterone by Mass Spec only - TEMS)	
Methodology	LC-MS/MS.	

	MU Testosterone <6.18%
Limitations	None known
Reference range(s) and units	Units = nmol/L Age and gender specific reference ranges.
Critical limits & actions	None stated
Notes about authorising	None

Name of test	**Thallium (Blood)**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container	4 ml EDTA whole blood.	
Sample requirements	Send unused sample container from the same batch as used for sample collection to check for contamination. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	4 ml blood	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Stable at 4°C for at least two days.	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by overnight first class post.	
Address of referral laboratory	King's College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS.	
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment	
GLV queue	391 5	
Clinical indications	Diagnosis of suspected thallium exposure.	
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	< 5 nmol/L normal >50 nmol/L significant exposure >1500 nmol/L severe toxicity >12500 nmol/L life-threatening toxicity	
Critical limits & actions		
Notes about authorising		

Name of test	**Tin (plasma)**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Lithium Heparin plasma	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Store refrigerated	
Laboratory referred to	Trace Elements, Southampton General	UKAS accreditation reference: 8483
Transport conditions	First class post, ambient	
Address of referral laboratory	Trace Element Unit, Southampton General Hospital, Southampton SO16 6YD	
Contact details	Results Follow up: John Stevens Email: john.stevens@uhs.nhs.uk Phone: 02381 206675 Clinical advice and interpretation: Dr Paul Cook Email: paul.cook@uhs.nhs.uk Phone: 02381 206419	
Turn around time	5 working days	
Cost	£26.30	
EQA Scheme and performance	QUEBEC MULTIELEMENT EQAS Satisfactory	
Entering results into Pathnet	This test is a BTEST. Enter result, reference range and any interpretative comments on the report as they appear into Pathnet.	
GLV queue	391 5	
Clinical indications	Diagnosis of suspected tin exposure or occupational exposure.	
Methodology	ICP-MS	
Limitations	None stated	
Reference range(s) and units	< 0.25 nmol/L	

Critical limits & actions	None stated
Notes about authorising	None stated

Name of test	**Tin (urine)**	
Pathnet code	**UTEST**	**Orderable on EPR** √NO □Yes
Sample container	Plain universal container	
Sample requirements	Random urine. Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	0.5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Refrigerated	
Laboratory referred to	Trace Elements, Southampton General	UKAS accreditation reference: 8483
Transport conditions	First class post, ambient	
Address of referral laboratory	Trace Element Unit, Southampton General Hospital, Southampton SO16 6YD	
Contact details	Results Follow up: John Stevens Email: john.stevens@uhs.nhs.uk Phone: 02381 206675 Clinical advice and interpretation: Dr Paul Cook Email: paul.cook@uhs.nhs.uk Phone: 02381 206419	
Turn around time	5 working days	
Cost	£26.30	
EQA Scheme and performance	QUEBEC MULTIELEMENT EQAS Satisfactory	
Entering results into Pathnet	This test is a UTEST. Type the results for urine tin, units and reference ranges as a comment. Include any interpretative comments on report. Type the results for urine tin and urine creatinine, units and reference ranges as a comment.	
GLV queue	391 5	
Clinical indications	Diagnosis of suspected tin exposure or occupational exposure.	
Methodology	ICP-MS	

Limitations	None stated
Reference range(s) and units	< 0.25 nmol/L
Critical limits & actions	None stated
Notes about authorising	None stated

Name of test	**Topiramate**	
Pathnet code	**BTOP**	**Orderable on EPR** □ NO √Yes
Sample container	Refer to Sendaways team if request received	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Not routinely sent	UKAS accreditation reference:
Transport conditions	N/A	
Address of referral laboratory	N/A	
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet		
GLV queue		
Clinical indications	TDM (Anti-convulsant drug)	
Methodology		
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising	Refer to Sendaways team if request received	

Name of test	**Transferrin glycoforms**	
Pathnet code	**BTIF**	**Orderable on EPR** □ NO □Yes
Sample container	Serum Yellow Top SST Plasma Green Top Lithium Heparin Serum is the preferred sample type	
Sample requirements	Spin, separate and place in send away fridge	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Neuroimmunology and CSF Laboratory, The National Hospital Queen Square (University College London Hospitals NHS Trust)	UKAS accreditation reference: 8116
Transport conditions		
Address of referral laboratory	University College Hospital London Hospitals NHS Trust, Neuroimmunology and CSF Laboratory (NICL), The National Hospital for Neurology and Neurosurgery, Queen Square, London, WC1N 3BG	
Contact details	Name: Viki Worthington Email: viki.worthington@uclh.nhs.uk Telephone: 020 3448 3814	
Turn around time	9 working days (within lab TaT)	
Cost	£100	
EQA Scheme and performance	ERNDIM Good	
Entering results into Pathnet	The results for this test should be entered as text transcribing the result and comment as written on the referral form. Example comments on reports. Transferrin Glycoforms = Normal pattern No atypical glycoforms detected.	
GLV queue	391 5	
Clinical indications	To screen for congenital disorders of glycosylation	
Methodology	IEF	
Limitations	Unreliable in neonates <3weeks old. Recent transfusion may invalidate the result.	

Reference range(s) and units	No reference range. Qualitative interpretative comment provided.
Critical limits & actions	Request for a second sample will be made if atypical transferrin glycoforms are detected
Notes about authorising	

Name of test	**Trimethylamine (TMA) Group test**	
Pathnet code	**UTMET**	**Orderable on EPR** □ NO √Yes
Sample container	24 hour urine collected in HCl is optimal (10 mL of 6M HCl) 20 mL random urine is acceptable if fresh sample that is acidified to pH 1 with HCl before sending to Sheffield.	
Sample requirements	Carry out a dipstix for nitrites and leucocytes on receipt. If positive the specimen is unsuitable and a comment should be entered into Pathnet using expedite code "FISH".	
Minimum volume required	20 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy In addition, carry out a dipstix for nitrites and leucocytes. If it is positive the specimen is unsuitable and a comment should be entered into Pathnet using expedite code "FISH".	
Storage in laboratory	Store at -20^{o}C	
Laboratory referred to	Sheffield Children's Hospital	UKAS accreditation reference:
Transport conditions	First class post.	
Address of referral laboratory	Department of Clinical Chemistry and Newborn Screening, Sheffield Children's NHS Trust, Western Bank, Sheffield, S10 2TH.	
Contact details	Name: Joanne Croft Email: Joanne.Croft@sch.nhs.uk Telephone: 0114 271 7307	
Turn around time	6 – 8 weeks	
Cost	£137	
EQA Scheme and performance	No EQA scheme exists for this analyte. Previously analysed samples are re-analysed approximately 1/month to check consistency of results. Sample exchange with other laboratories.	
Entering results into Pathnet	Enter TMA results under TMETCR (Trimethylamine creatinine ratio). Enter the other parts of the report as a text comment exactly as written on the report. The following comment is automatically stamped on all the reports: Trimethylamine:Creatinine Ratio reported in umol/mmol creatinine.	
GLV queue	391 5	
Clinical indications	For the diagnosis of primary and secondary trimethylaminuria (Fish Odour Syndrome).	
Methodology	GCMS	
Limitations	None known	

Reference range(s) and units	Free TMA/creat ratio: <7.7 umol/mmol creatinine TMA-N-Oxide/creat ratio: <119 umol/mmol creatinine %N-oxidation: >94%
Critical limits & actions	N/A
Notes about authorising	It is recommend that patients have a 'choline load' the day before their first urine collection - e.g. 2 meals containing 2 eggs + 400g beans - [50% less for children under 10]). Dimethylglycine WILL NOT be automatically added on by Sheffield if indicated - this will need to be requested separately as DMG no longer part of the TMAU profile.

Name of test	**Troponin I (high sensitivity)**	
Pathnet code	**BTEST**	**Orderable on EPR** √ NO □ Yes
Sample container	EDTA plasma	
Sample requirements	Spin, separate and freeze plasma ASAP.	
Minimum volume required	500 uL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Sample to be spun and separated and placed in the send out box in SPU freezer (-20C).	
Laboratory referred to	North West London Pathology (Imperial)	UKAS accreditation reference: 8673
Transport conditions	Store separated plasma at -20C. Send to referral laboratory on **dry ice, by routine courier**. **Mark box as URGENT** so that it is processed ASAP at referral laboratory.	
Address of referral laboratory	Specimen Reception, Laboratory Block 1st Floor, Charing Cross Hospital, London W6 8RF	
Contact details	Imperial Results Line 0203 313 5353 If chasing more than one result make a request by email with patient name, DOB and NHS/hospital no. to: ichc-tr.imperialpathologyresults@nhs.net If significant delay to results send patient details to duty biochemist to notify of samples arriving to ensure timely processing and analysis. Imperial Duty Biochemist: ICHC-tr.biochemistryadvice@nhs.net 0203 313 0348	
Turn around time	1 day	
Cost	Not stated	
EQA Scheme and performance	Not stated	

Entering results into Pathnet	Enter results, reference range and any comment on report. Add sample location as follows: "Test performed on Abbott Alinity at Charing Cross Hospital, Imperial NHS Trust". .
GLV queue	391/5
Clinical indications	Diagnosis of MI when non-specificity or interference in the troponin T result produced at GSTT is suspected. Risk stratification of patients with acute coronary syndromes, including unstable angina and non-ST elevation, with respect to relative risk of mortality, MI or increased probability of ischaemic events. Troponin I is also measured in paediatric patients as part of the treatment protocol for ZOLGENSMA (onasemnogene abeparvovec) a gene therapy for patients with spinal muscular atrophy (SMA).
Methodology	Abbott Alinity Immunoassay
Limitations	None stated
Reference range(s) and units	Male <35 ng/L Female <16 ng/L
Critical limits & actions	None stated
Notes about authorising	None

Name of test	**Tryptase**	
Pathnet code	**BTRYP**	**Orderable on EPR** □ NO √Yes
Sample container	Serum	
Sample requirements	1. Random samples can be taken for diagnosis or monitoring of mastocytosis. 2. Suspicion of anaphylaxsis: preferable 3 sequential samples; 1st at / or close to time of anaphylactic reaction, 2nd 3 to 6 hours later, 3rd 24 hours later	
Minimum volume required	200ul	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Serum stored at 4°C should be sent by first class post as soon as possible.	
Laboratory referred to	Kings College Hospital (Immunology)	UKAS accreditation reference: 8641
Transport conditions	Sent by first class post as soon as possible. All tests are compromised by long transit times. For this reason the date of bleed and of postage must be provided with each request.	
Address of referral laboratory	King's College Hospital, Department of Clinical Immunology and Allergy, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	020 3299 1171	
Turn around time	6 days	
Cost	£39.60 to external clients	
EQA Scheme and performance	UK NEQAS for Tryptase, Sheffield Performance Good: MRVIS: 58 MRBIS: -44 SDBIS: 49	
Entering results into Pathnet	Report tryptase numerical result to 2 decimal places. Comments automatically stamped on Pathnet for high results: '**MCT is raised transiently after anaphylaxis.'** Note: Pathnet only allow numbers up to 2 digits i.e. up to 99. For results of 100 or above enter the results as a see text comment. Add the expedite comment (F4) KING,	
GLV queue	391 5	
Clinical indications	Elevated concentrations of serum tryptase are found in patients with	

	mastocytosis, in anaphylaxis and other direct mast cell degranulation events. The assay measures both alpha and beta subunits of tryptase. The investigation of suspected anaphylaxis requires that 3 blood samples are taken; 1) As soon as possible after onset of anaphylaxis, within one hour 2) Between 3 and 6 hours post-anaphylaxis 3) At least 24 hours after onset This timescale allows the differentiation of true anaphylaxis and mastocytosis. In anaphylaxis the tryptase concentration will return to baseline post 24 hours whereas in mastocytosis the concentration remains high.
Methodology	ImmunoCAP 250 (Fluorescence Enzyme Immunoassay). Method calibrated against a Thermofisher tryptase reference preparation purified from human lung.
Limitations	None stated
Reference range(s) and units	2.00 – 14.00 ug/L
Critical limits & actions	
Notes about authorising	Note: Care for results with 3 digits i.e. 100 and above the results need to be entered as a see text comment for high results ensure that they have not been entered as only 2 digits. The comment automatically stamped on high results '**MCT is raised transiently after anaphylaxis' can be removed where this comment is not appropriate by deleting the footnote.**

Name of test	**Unknown toxicology screen**	
Pathnet code	**BDRUG** **UDRUG**	**Orderable on EPR** □ NO √Yes
Sample container	Whole blood EDTA and random urine. Urine is the preferred specimen type. In general gel containing (SST) is not recommended for unknown	

	toxicology analysis/screening but SST may be referred when no other alternative is available, contact referral laboratory and state on form if this is the case.
Sample requirements	See directory entry or contact referral laboratory
Minimum volume required	See directory entry or contact referral laboratory
Rejection criteria	Refer all **"unknown drug screen"** BDRUG and UDRUG requests to the Sendaways Team. A Clinical Scientists to determine if request is appropriate. Checking clinical details is not part of the booking in process. However, if a CSR team member processing the sample notices the words: ***police / forensics /chain of evidence/ COE / chain of custody / unknown drug screen*** then please refer to the Sendaways team for Clinical Scientist review. A list of know drugs and medications must be sent with the request, a Clinical Scientist will liaise with the clinical team for this. **If the sample is a Chain of Evidence (CoE) sample, bring it to the attention of the Sendaways Team. A Clinical Scientist will contact the clinical team to discuss.** **DRUGS OF ABUSE** • Requests for analysis of drugs of abuse in blood should only be cancelled after discussion with the requesting clinician. Preferred sample for drugs of abuse is urine however blood may be needed in exceptional cases where samples will need to be referred to Birmingham City (http://www.cityassays.org.uk/swbhtoxicology). • Requests for analysis of drugs of abuse in urine that are not included in the King's panel must be considered on a case by case basis. Information on the wider DOA profile offered by Birmingham can be found here: http://www.cityassays.org.uk/swbhtoxicology **UNKNOWN DRUG SCREEN** • Requests for "Unknown Drug Screen" should be discussed with the requesting clinical team and full clinical details, including known medications and any suspected undisclosed drugs, provided. Please note that this is a qualitative assay and that plain random urine is the preferred sample type however blood samples may be sent where clinically indicated, e.g. sample taken during an acute episode. **UNEXPLAINED HYPOGLYCAEMIA** • Requests for unexplained hypoglycaemia due to possible inappropriate use of oral hypoglycaemic drugs or insulin administration should be sent to Guilford for a Sulphonylurea screen (includes other oral hypoglycaemic drugs) and insulin studies. Insulin/c-peptide will require a paired blood glucose

	result for interpretation. Please note Insulin assay used in GSTT Blood Sciences (Roche method) does not measure synthetic insulin analogues and sample should be referred to Guildford. **NAMED DRUG REQUEST NOT LISTED IN DIRECTORY** Requests for any other named drug should be considered on a case by case basis in discussion with the requesting clinician, the referral laboratory and, if required, clinical toxicology. **ANTIBIOTICS** • Requests for antibiotics in blood should be referred to Infection Sciences by SPU.	
Storage in laboratory	See directory entry or contact referral laboratory	
Laboratory referred to	**Dependent on drug**	UKAS accreditation reference:
Transport conditions	See directory entry or contact referral laboratory	
Address of referral laboratory	See directory entry or contact referral laboratory Unknown Drug Screens are sent to: Clinical Biochemistry Department, SWBH NHS Trust, City Hospital Birmingham, B18 7QH Contact: swbh.toxicology@nhs.net or 0121 507 4138 A letter must be included stating full clinical details, including known medications and any suspected undisclosed drugs	
Contact details	Clinical advice:	Results follow up:
Turn around time	See directory entry or contact referral laboratory	
Cost	See directory entry or contact referral laboratory	
EQA Scheme and performance	See directory entry or contact referral laboratory	
Entering results into Pathnet	See directory entry (where applicable). Unknown Drug Screens should be entered as on report form: "Specimen was screened by UPLC-TOF-MS (ultra-performance liquid chromatography-time of flight-mass spectrometry. The time of flight library contains over 1,300 drugs and metabolites, including: classic drugs of abuse; legal highs; prescription-only drugs and over-the-counter medications. Please note that this is a qualitative test only. The following drugs were detected: ENTER ANY DRUGS DETECTED HERE" Any additional interpretative comments should also be included. Any other drug test results should be entered as indicated on the report – including any stated units, ranges and interpretative	

	comments.
GLV queue	391 5
Clinical indications	All requests must be considered on a case by case basis in discussion with the requesting clinician, the referral laboratory and, if required, clinical toxicology.
Methodology	See directory entry or contact referral laboratory
Limitations	See directory entry or contact referral laboratory
Reference range(s) and units	See directory entry or contact referral laboratory
Critical limits & actions	None
Notes about authorising	

Name of test	**Unknown toxicology store samples**	
Pathnet code	**BSAVE**	**Orderable on EPR** √NO □Yes
Sample container	The sample will arrive with a paper request form with the label shown below attached for easy identification. **TOXICOLOGY STORE SAMPLES (72 HOURS)** No of samples sent: Sample type: Urine □ Serum (yellow top) □ Plasma (green top) □ Samples received in lab (date):	
Sample requirements	N/A	
Minimum volume required	N/A	
Rejection criteria		
Storage in laboratory	SPU fridge for 72 hours	
Laboratory referred to		UKAS accreditation reference:
Transport conditions	N/A	
Address of referral laboratory	N/A	
Contact details	Clinical advice:	Results follow up:
Turn around time	N/A	
Cost	N/A	
EQA Scheme and performance	N/A	
Entering results into Pathnet	Book the sample into Pathnet as BSAVE. The samples are stored in a box in the SPU fridge for 72 hours. During this time if the clinician wants to add a specific test to this sample they will contact SPU. After 72 hours the sample are discarded. If the clinician requests a specific drug measurement during this time the sample should be booked in for that test and sent to the appropriate referral laboratory. If the test requested is not in the sendaway directory contact the Sendaways team or Clinical Scientists for advice before sending.	
GLV queue	N/A	
Clinical indications	ITU patients with unknown drug ingestion. This code is used to allow the laboratory to store blood samples from these patients on	

	behalf of the clinical toxicologists for analysis if required.
Methodology	
Limitations	
Reference range(s) and units	
Critical limits & actions	
Notes about authorising	

Name of test	**Toxicology (Urine) Urine Drug Screen**	
Pathnet code	**UDRUG**	**Orderable on EPR** □ NO √Yes
Sample container	Random urine plain universal container	
Sample requirements	Please send at least 3 mL in a plain universal container for a full drug screen. Very small samples will be accepted, but they may not be adequate for full testing and confirmation. Please list all drugs taken in the past week, if available **Any requests for an "unknown drug screen" or if the sample is a Chain of Evidence (CoE) sample, bring it to the attention of the Sendaways Team. A Clinical Scientist will contact the clinical team to discuss.**	
Minimum volume required	30 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital Toxicology Unit 3rd Floor Bessemer Wing Denmark Hill London SE5 9RS	
Contact details	Tel:020 3299 5881 Fax: 020 3299 5888 Email: kch-tr.toxicology@nhs.net	
Turn around time	Preliminary results are normally available same day. Confirmation and classification of opiates and amfetamines may take up to 1 week.	
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Results entered manually copying text from the KCH report. Creatinine is reported qualitatively, and should be reported under name "Specimen Validity" with one of the following comments: - Sample Valid (creatinine within expected range)	

	- Dilute sample (creatinine <2 mmol/L) - Extremely dilute sample (creatinine <0.5 mmol/L) Drugs detected will be listed in groups as follows: Opioids Methadone Metabolite (EDDP) Benzodiazepine Group Barbiturates Cannabis Cocaine (as benzoylecgonine) Amfetamines **Note: Buprenorphine and ketamine are not part of the standard UDRUG screen, and must be requested either separately or as part of the Premium drug screen.**
GLV queue	391 5
Clinical indications	"A routine drug screen is made up of the most common illicit drugs in the UK, for use in monitoring the diagnosis and treatment of substance misuse" Viapath website
Methodology	Immunoassay for initial screen. Mass spectrometry for follow-up
Limitations	
Reference range(s) and units	No ranges screening test
Critical limits & actions	
Notes about authorising	

Name of test	**Urine Arsenic Speciation**	
Pathnet code	**UARSP**	**Orderable on EPR** □ NO √Yes
Sample container	Urine (plain top universal)	
Sample requirements	**NOTE: Urine Arsenic Speciation is different request to Urine Arsenic. If Urine Arsenic is required, please refer to relevant entry in the Referral Directory.** Do NOT use collection container with preservatives, especially boric acid. Samples should be sent with accompanying HSE request form, with the following fields completed by the clinical team: - Patient initials and hospital number (note: no patient identifiable information should be sent to HSE, so a patient ID consisting of patient's initials and hospital number is used. See SPU Team instructions in blue text below) - Smoking status - Consent **Refer to Sendaways Team for completion of the remainder of the form. If no form is received with sample for UARSP, contact the Sendaways Team who will speak to the clinician.** Copies of the HSE request form can be found in: S:\Pathology\Blood Sciences\Chemistry\Sendaways\Request Forms (Outgoing)\UARSP If available, please include on the HSE assay request form the total arsenic concentration (see Urine Arsenic entry in Referral Directory). ***Sendaways Team***: The usual send outs form that contains information about where to email results to, and who to invoice cannot be included with the sample as it contains PID. • Please ensure the HSE form is completed fully, including the name and address of our department, the Sendaways mobile number and the Sendaways email address to receive the results report (the information box in the top right of form of the first page). • And complete section 4 of page 2 (payment details) including the name and address of our department, the Sendaways mobile number and the accounts department email address for invoicing: ***accountspayable@viapath.org***	

	SPU Team: HSE will not process any samples sent with patient identifiable information. Therefore, create a patient ID formed of the patient's initials and hospital number. For example Smith John, hospital number 123456A would become: SJ-123456A • Reprint a sample label using the CEL function in Pathnet in the following format, including the relevant information: Patient ID: (e.g. SJ-123456A) DOB: Sample date: Lab number: • Relabel the sample with the CEL label, covering the original label. • Send the sample with the completed HSE form • Do not include the GA WAY/send outs form with the request as it contains patient identifiable information	
Minimum volume required	3 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. **Do not dispose of labelled urine samples for UARSP if they do not have a form. Contact the Sendaways Team for assistance.** If one urine sample received for both Urine Arsenic (UTEST, see entry) and Urine Arsenic Speciation (UARSP), sample should be split, ensuring minimum sample volume for each test is provided. If insufficient sample provided to split appropriately please notify the Sendaways Team, who will contact clinician to discuss further.	
Storage in laboratory	Upon receipt, store sample at 4°C (refrigerate) and send within 24 hours. If received on a Friday, store sample at 4°C and send on Monday morning. If delay >1 week anticipated, then sample may be frozen (avoid if possible, as it will affect the sample integrity). If frozen, the sample must be sent frozen on dry ice by courier.	
Laboratory referred to	HSE Sample Reception Harpur Hill Buxton Derbyshire SK17 9JN	UKAS accreditation reference: N/A
Transport conditions	If stored refrigerated: send ambient by courier.	

	If stored frozen: send frozen on dry ice by courier.	
Address of referral laboratory	HSE Sample Reception Harpur Hill Buxton Derbyshire SK17 9JN	
Contact details	Clinical advice: Dr Liz Leese Liz.leese@hse.gov.uk 0203 028 1951 Dr Jackie Morton Jackie.morton@hse.gov.uk 0203 028 1997	Results follow up: Sample Reception Registration.sample@hse.gov.uk 0203 028 3383
Turn around time	20 working days	
Cost	£94 per samples (price accurate up until 31/03/21).	
EQA Scheme and performance	Annual certification from participation in G-EQUAS (German External Quality Assurance Scheme). No UK scheme.	
Entering results into Pathnet	**UARSP is the group test.** The following tests are part of this group: **UAS3** Inorganic Arsenic 3+ (As_3) **UAS5** Inorganic Arsenic 5+ (As_5) **UASAB** Arsenobetaine (dietary arsenic) (As_AB) **UASDM** DMA arsenic metabolite (As_DMA) **UASMM** MMA arsenic metabolite (As_MMA) Each result should be entered under its respective field. UAS3 (As3+) and UAS5 (As5+) are to 2 decimal places. UASAB (Arsenobetaine) is entered as a whole number UASDM and UASMM (arsenic metabolites) are to 1 decimal place. A total urine arsenic ("As(total)") may be provided on the report, where it has been added by the referral laboratory. Where provided, this should be entered under the UAS3 as a comment: "Total arsenic in urine (includes dietary arsenic) = XX umol/mol creatinine. Ref Range: <150 umol/mol creatinine" If an interpretative comment has been provided for the sample, this should also be entered exactly as it appears on the report. **Enter the interpretative comment under UAS3.**	

GLV queue	391-5
Clinical indications	This is a specialist test usually requested by toxicology clinicians for the investigation of arsenic exposure/poisoning.
Methodology	Analysis by inductively coupled plasma – mass spectrometry coupled to a micro liquid chromatography system, using an anion exchange column.
Limitations	Interference from boric acid
Reference range(s) and units	HSE have background reference range only for a UK population. E. Leese, J. Morton, E. Tan, P.H.E. Gardiner and V.A. Carolan. LC-ICP-MS determination of unexposed UK urinary arsenic speciation reference values. Anal. Toxicol., 2014, 38(1): 24-30 Units for all analytes are mmol/mol Creatinine. A comment stating this is added to results under the MMA arsenic metabolite result. A comment is automatically added to all Arsenobetaine (UASAB) results following authorisation to specify: "Reference range provided is for a no-fish diet."
Critical limits & actions	None stated.
Notes about authorising	**Email a copy of the full report to the requesting clinician following authorisation.**

Name of test	**Urine Bismuth**	
Pathnet code	**UTEST**	**Orderable on EPR** √ NO □Yes
Sample container	20ml 'Sterilin' Universal container	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	20ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	University Hospital Southampton Pathology Services	UKAS accreditation reference: 8483
Transport conditions	Overnight first class post	
Address of referral laboratory	Trace Elements Unit LD60 Level D South Academic Block Southampton General Hospital Tremona Rd SO16 6YD	
Contact details	Telephone: 02381 206237	Contact details
Turn-around time	5 days	
Cost	£27.09	
EQA Scheme and performance	Quebec Multi-element EQA scheme	
Entering results into Pathnet	Enter results using ACC. All results should be entered as Text with associated reference ranges.	
GLV queue	391 5	
Clinical indications	Bismuth toxicity can occur as a result of iatrogenic toxicity for ulcers.	
Methodology	ICP-MS	
Limitations	Rapid renal clearance maintains low circulating concentrations of bismuth so that clinical and biochemical abnormalities are more likely with renal insufficiency.	
Reference range(s) and units		
Critical limits & actions	Results suggestive of toxicity should be telephoned.	
Notes about authorising		

Name of test	**Urine 5HIAA 5 OH Indole Acetic Acid (24 hour urine)**	
Pathnet code	**UHIAAS**	**Orderable on EPR** □NO √Yes
Sample container	Acid bottle	
Sample requirements	24 hr collection (dates and start and end time should be recorded). Measure volume and check pH. Aliquot into universal.	
Minimum volume required	20 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: Tel:020 3299 3576 Fax: 020 3299 3140	
Turn around time		
Cost	N/A	
EQA Scheme and performance	UK NEQAS	
Entering results into Pathnet	Enter results for HIAA as a whole number.	
GLV queue	391 5	
Clinical indications	Investigation of carcinoid	
Methodology	LC-MS/MS	
Limitations		
Reference range(s) and units	0 - 42 µmol/24hr	
Critical limits & actions	Very high results should be phoned to the requesting clinician if not a known patient.	
Notes about authorising		

Name of test	**Urine 5HIAA 5 OH Indole Acetic Acid (random)**

Pathnet code	**UHIAA**	**Orderable on EPR** □NO √Yes
Sample container	Acid bottle	
Sample requirements	Random urine, acidified.	
Minimum volume required	20 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: Tel:020 3299 3576 Fax: 020 3299 3140	
Turn around time		
Cost	N/A	
EQA Scheme and performance	UK NEQAS	
Entering results into Pathnet	Enter the result for urine creatinine Pathnet code UCR to 1 decimal place and 5HIAACR as a whole number.	
GLV queue	391 5	
Clinical indications	Investigation of carcinoid	
Methodology	LC-MS/MS	
Limitations		
Reference range(s) and units	< 4.0 umol/mmol creatinine	
Critical limits & actions		
Notes about authorising		

Name of test	**Urine Iodine**	
Pathnet code	**UTEST**	**Orderable on EPR** √ NO □ Yes
Sample container	Plain (White Top) Universal	
Sample requirements	Store refrigerated	
Minimum volume required	5 mL (random, or aliquot of 24h urine) Note: if aliquot of 24h urine, original volume MUST be stated on the form	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection Policy	
Storage in laboratory	Store refrigerated	
Laboratory referred to	Southampton General Hospital	UKAS accreditation reference: 8483
Transport conditions	First class post, ambient	
Address of referral laboratory	Pathology Department Level C, Mailpoint 8 Southampton General Hospital Tremona Road Southampton SO16 6YD	
Contact details	Clinical advice: 023 8077 7222 (1) bleep 2612	Results follow up: 023 8120 6675
Turn around time	5 working days	
Cost	Not stated	
EQA Scheme and performance	QUEBEC Performance satisfactory (04/11/20)	
Entering results into Pathnet	Enter results, reference range and any comment on report as a 'See Text' comment.	
GLV queue	391/5	
Clinical indications	Urine iodine is not routinely requested. Urine iodine may be used as a nutritional marker of iodine intake (dietary excess or deficiency), or supplementary to thyroid function testing and imaging in order to determine aetiology of congenital hypothyroidism.	
Methodology	ICP-MS	

Limitations	None stated
Reference range(s) and units	See report for most up to date reference ranges. Random Urine Iodine 0.39 – 1.97 umol/L 24 hour Urine Iodine 0.79 – 1.57 umol/24h (<0.16 umol/L = severe deficiency)
Critical limits & actions	None stated
Notes about authorising	None

Name of test	**Urine Manganese**	
Pathnet code	**UTEST**	**Orderable on EPR** √NO □Yes
Sample container		
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment. Enter expedite comment (F4) KING.	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising		

Name of test	**Urine Mercury**	
Pathnet code	**UTEST**	**Orderable on EPR** √NO □Yes
Sample container		
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions		
Address of referral laboratory	Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment. Enter expedite comment (F4) KING.	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units	No ranges in pathnet – reference range must be entered manually Urine mercury (assay) nmol/L < 50 Urine mercury/creat. ratio nmol/mmol creatinine < 5 Random urine creatinine mmol/L	
Critical limits & actions		
Notes about authorising		

Name of test	**Urinary free cortisol**	
Pathnet code	**UCORS**	**Orderable on EPR** □ NO √Yes
Sample container	Transfer sample to a LP4 tube – label bottle with barcode, pH, volume and times.	
Sample requirements	A plain 24-hour timed collection is required. Random urine samples are not accepted. Enter the following comment under UCORS code: "Test cancelled. Urine cortisol measurement is not available for random urine samples. Please send a plain 24 hour urine collection."	
Minimum volume required	4 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy. Do not throw away 24 hour urine collections that do not meet the acceptance criteria - in these cases contact the Sendaways team for advice. Reject random urine samples. Add the comment, "Test cancelled. Urine cortisol measurement is not available for random urine samples. Please send a plain 24 hour urine collection."	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Overnight first class post	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Result follow up: 020 3299 3576	
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter the numerical results for the following component test codes: Urine Cortisol UCOR 24h Urine Cortisol Excretion UCORE	
GLV queue	391 5	
Clinical indications	Diagnosis of Cushing's disease.	

Methodology	
Limitations	
Reference range(s) and units	Free cortisol excretion urine 1-199 nmol/day
Critical limits & actions	
Notes about sending	The urine volume must be hand written on the sendaway request form that is sent to KCH. The urine volume entered into Pathnet is not visible on the printed sendaway referral form visible to staff at KCH.
Notes about authorising	

Name of test	**Urinary steroid profile**	
Pathnet code	**USP**	**Orderable on EPR** □ NO √Yes
Sample container	Random urine or 24 hour urine. Send 20 ml in a universal container. If a random urine indicate this on the sample and form. If 24 hour urine write collection time period and volume on sample and form.	
Sample requirements	When investigating suspected inborn errors of steroid metabolism in newborns, it is important to make a collection before instituting steroid or electrolyte replacement. The sample should preferably be collected more than 48h after birth. If possible complete urine steroid profile referral form on the Viapath website and send with sample.	
Minimum volume required	Laboratory do not state a minimum volume.	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Samples can be stored before dispatch at 4°C for short periods of time or frozen if stored for longer. Preservatives, with the exception of merthiolate, should be avoided.	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	First class post within 4 days.	
Address of referral laboratory	SAS Steroid Profiling Laboratory, Department of Clinical Biochemistry, King's College Hospital.	
Contact details	Clinical advice: DavidTaylor davidtaylor8@nhs.net 0203 299 3009 Results follow up: Steroid laboratory 0203 299 4131	
Turn around time	2-3 weeks for written reports. Urgent results can usually be given over the phone within 3 working days	
Cost	£215 (2 samples if part of a test charged as one, repeats for infants when the first result was inconclusive are not charged)	
EQA Scheme and	SKML Urinary steroid profile scheme. No unsatisfactory	

performance	performance, placed 4th out of 28 overall for last year
Entering results into Pathnet	The comments on the report are entered into Pathnet.
GLV queue	391 5
Clinical indications	Investigation of precocious adrenarche and precocious puberty. Investigation of suspected problems of adrenal steroidogenesis, or suspected adrenocortical carcinoma. (This is very condensed – see PDF on Viapath website for full summary.)
Methodology	GC-MS
Limitations	None, but note treatment with glucocorticoids will suppress adrenocortical function and use of cortisol (hydrocortisone) will give rise to cortisol metabolites that are indistinguishable from those of endogenous origin. Agents that alter steroid metabolism (eg metyrapone) and use of synacthen for adrenal stimulation need to be noted on the request form.
Reference range(s) and units	Age appropriate reference ranges are quoted on reports (we can provide a separate list if required).
Critical limits & actions	The whole profile is evaluated rather than certain steroids. Results that require urgent action, such as positive findings in newborns and the finding of an adrenocortical tumour, are telephoned to the Sendaways Team (who should phone results to the requesting clinician), or direct to the clinician.
Notes about authorising	For abnormal results a copy of the report can be sent by internal mail or emailed via NHS mail to the clinician.

Name of test	**Urine Uranium**	
Pathnet code	**UTEST**	**Orderable on EPR** √ NO □Yes
Sample container	Random urine in universal container	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required	5 mL	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	Southampton General Hospital	UKAS accreditation reference: UKAS 8483
Transport conditions	First class post	
Address of referral laboratory	Trace element Unit, Level D, South Academic block, Southampton General Hospital, Tremona Road, Southampton, SO16 6YD	
Contact details	Name: Dr Paul Cook Email Paul.Cook@uhs.nhs.uk Telephone: 023 8120 6419 or 023 8120 6675	
Turn around time	6 working days	
Cost	£41.70	
EQA Scheme and performance	Quebec Multielement EQAS satisfactory performance	
Entering results into Pathnet	Transcribe result, units, reference range and any comments on the report as a free text comment (F6).	
GLV queue	391 5	
Clinical indications		
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	< 24 pmol/mmol creatinine	
Critical limits & actions		
Notes about authorising		

Name of test	**Vigabatrin**

Pathnet code	**BVIG**	**Orderable on EPR** □ NO √Yes
Sample container	Not routinely requested. If a sample is received please contact the Sendaways team.	
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Not routinely requested	UKAS accreditation reference:
Transport conditions		
Address of referral laboratory		
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment	
GLV queue	391 5	
Clinical indications	TDM (Anti-convulsant)	
Methodology		
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising	Contact external referral laboratories to confirm if this test is available and advise SPU on where to send the sample.	

Name of test	**Vitamin B2**	
Pathnet code	**Not applicable**	**Orderable on EPR** √ NO □Yes
Sample container	Test now carried out by Nutristasis at Viapath	
Sample requirements		
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to		UKAS accreditation reference:
Transport conditions		
Address of referral laboratory		
Contact details	Clinical advice:	Results follow up:
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment	
GLV queue	391 5	
Clinical indications		
Methodology		
Limitations		
Reference range(s) and units		
Critical limits & actions		
Notes about authorising		

Name of test	**White cell Ubiquinone**	
Pathnet code	**BTEST**	**Orderable on EPR** √NO □Yes
Sample container		
Sample requirements	Rare test, contact referral laboratory to check details prior to sending.	
Minimum volume required		
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory		
Laboratory referred to	National Hospital for Neurology & Neurosurgery Queen Square (University College London Hospitals NHS Foundation Trust)	UKAS accreditation reference: Not accredited – research test only
Transport conditions		
Address of referral laboratory	Neurometabolic Unit 6th Floor, Institute of Neurology, Queen Square House Queen Square, London WC1N 3BG	
Contact details		
Turn around time		
Cost		
EQA Scheme and performance		
Entering results into Pathnet	Enter results including reference range and units as a free text comment	
GLV queue	391 5	
Clinical indications	Investigation of mitochondrial disorders, electron transport chain disorders	
Methodology		
Limitations		
Reference range(s) and units	37-133 pmol/mg	
Critical limits & actions		

Notes about authorising	

Name of test	**Xanthochromia (CSF) – refer also to BSAC-SOP-078 as this test is processed by staff in the Automated Chemistry Laboratory**	
Pathnet code	**CXNTH**	**Orderable on EPR** □ NO √Yes
Sample container	Sterile universal container (protected from light) CSF Xanthochromia should be measured on the last fraction collected where possible, ideally at least the 4th fraction. Paired serum sample for total protein and bilirubin also required as these results may be required for interpretation.	
Sample requirements	Centrifuge asap and aliquot supernatant into 1.5 mL starsted screw top tube. Protect from light. Send with accompanying CSF Xanthochromia Referral Form [BSAC-LF-230]	
Minimum volume required	250 uL, if < 250 uL pool aliquot with TP CSF sample. If final volume is < 250uL after pooling report as insufficient and phone the requesting doctor immediately.	
Rejection criteria	Refer to BSAC-SOP-078. If any doubts, contact Duty Biochemist/Consultant on Call immediately to discuss.	
Storage in laboratory	Fridge at 2-8˚C, once sample is aliquoted place in black bag or brown envelope.	
Laboratory referred to	Blood Science Laboratory King's College Hospital	UKAS accreditation reference: 9067
Transport conditions	Courier, inform King's College Hospital that a sample is being delivered. Day: 0203 299 4126, On call: 0203 299 2286	
Address of referral laboratory	Central Specimen Reception Blood Science Laboratory Ground Floor Bessemer Wing King's College Hospital Denmark Hill, SE5 9RS	
Contact details	Day: 0203 299 4126 On call: 0203 299 2286	
Turn around time	Same day	
Cost		

EQA Scheme and performance	
Entering results into Pathnet	Results are entered by BMS staff in Automated Chemistry. Detailed in BSAC-SOP-078.
GLV queue	Results are autovalidated following entry into Patnet.
Clinical indications	Subarachnoid Haemorrhage
Methodology	Spectrophotometer
Limitations	Oxyhaemoglobin in sufficient quantities may inhibit the ability to detect bilirubin is CSF.
Reference range(s) and units	Full interpretative comment provided by referral laboratory.
Critical limits & actions	All requests, and therefore results, are urgent and should be treated accordingly.
Notes about authorising	

Name of test	**Zinc**	
Pathnet code	**BZN**	**Orderable on EPR** □ NO □Yes
Sample container	1 mL plasma (blue trace element tube) or serum	
Sample requirements	Haemolysed samples are not suitable for analysis.	
Minimum volume required	1 ml	
Rejection criteria	Viapath Blood Sciences specimen acceptance/rejection policy	
Storage in laboratory	Fridge (2 – 8 °C)	
Laboratory referred to	Kings College Hospital	UKAS accreditation reference: 9067
Transport conditions	Send by overnight first class post.	
Address of referral laboratory	Kings College Hospital, Department of Clinical Biochemistry, 1st Floor Bessemer Wing, Denmark Hill, London, SE5 9RS	
Contact details	Results follow up: 0203 299 3576	
Turn around time	3-5 days	
Cost	N/A	
EQA Scheme and performance	UK NEQAS (Trace elements) – None declared	
Entering results into Pathnet	Enter numerical result to 1 decimal place as shown on the report. Add any interpretative comments written on the report into the comments on Pathnet for this test. Add expedite comment (F4) KING to report. Automated comment stamped on all results. From 17/04/2008, analysis performed at Kings Trace Elements Lab.	
GLV queue	390 12	
Clinical indications	Monitoring of patients on TPN Low zinc concentrations can be seen in patients with a dietary deficiency and during an acute phase response. Zinc is a negative acute phase protein. Raised zinc concentration can occur due to contamination during the sample collection and when a patient is on zinc supplementation.	
Methodology	ICP-MS	
Limitations		
Reference range(s) and units	11.0 – 19.0 umol/L	

Critical limits & actions	
Notes about authorising	Reference ranges are not visible until after results have been verified.