IV Chemical Pathology & Haematology

1 Contact information

Address	Chemical Pathology & Haematology Division Public Health Laboratory Services Branch 3/F, Public Health Laboratory Centre 382 Nam Cheong Street, Kowloon	
Opening hours		
Monday – Friday	9:00am – 5:00pm	
Telephone no.		
General enquiries	2319 8472	
Chemical Pathology Laboratory (CPL)	2319 8474	2319 8473
Haematology & Serology Laboratory (HSL)	2319 8470	2319 8468
Senior Medical Technologist (CPL)	2319 8448	
Senior Medical Technologist (HSL)	2319 8449	
Senior Medical Technologist (CPL)	2319 8450	
Scientific Officer (Medical) (CPL)	2319 8451	
Scientific Officer (Medical) (HSL)	2319 8452	
Consultant Pathologist	2319 8214	
Facsimile no.		
General enquiries	2699 4221	
Request for laboratory report	2694 7949	
Suggestions and feedback		
Quality Manager	2319 8451 / 2319 8452	

2 Specimen containers

(a) Bar-coded collection tubes and containers:
For DH users : Blood and spot urine tests are required to be collected in tubes with bar code labels (Table 1). The main portion of the label is firmly stuck to the tube and the *oval portion* is designed for peeling off and sticking on to the request form for identification & matching.

For HA GCRS e-ordering users : GCRS specimen labels printed at blood collection / submission of spot urine specimen should be affixed to corresponding tubes provided (Table 1).

Table 1: Tubes with or without bar codes for collection of blood and spot urine

Tube ***with*** bar code	Colour of cap	Volume after filling to the mark on tube	Major Tests (Please refer to Appendices 1 & 2)
Gel tube	Yellow	3.5 mL	LFT, RFT, iron, TIBC, lipid profile, fructosamine, amylase, etc.
Plain tube	Red	4 mL / 6mL	- Hormones including thyroid hormones - Tumour marker e.g. PSA, AFP - Immunochemistry e.g. C3, C4, RF - Drugs, active B12, serum folate - Antibody detection: antinuclear antibodies, etc.
Fluoride tube	Grey	2 mL	Glucose
EDTA tube	Purple	3 mL	CBC, ESR, haemoglobin pattern, haemoglobin A1c, G6PD, etc.
Plain spot urine tube	White	3 mL	ACR, protein / creatinine ratio, urine osmolality

(b) Collection tubes & containers without bar codes:

Tube/Container ***without*** bar code	Feature	Sample type	Test (Please refer to Appendices 1 & 2)
Citrate tube	Blue cap	2.7mL	Coagulation study
EDTA tube	Purple cap	3 mL of blood	**Blood grouping (ABO, Rh(D)) only**
Plastic container	No preservative Yellow cap	Stool	Occult blood
Plain bottle	No preservative; Size ~ 25 mL White cap	Urine, body fluid	Body fluid for chemistry test Spot urine for chemistry test e.g. chyle, porphyrins, Bence Jones protein
24-h urine bottle	Size of 4 L i) No preservative ii) Preservative added	24-hour urine	24-hour urine for chemistry test

(c) Specimen tubes/containers can be obtained as described in section V of this handbook and preferably on monthly basis. The quantity requested should be based on the usual consumption of the unit.

(d) Keep the tubes/containers in a cool and dry place before use. In particular, blood collection tubes should be stored at 4ºC to 25ºC and away from sunlight. It is important to maintain the optimal storage environment to ensure consistent performance of the product throughout its shelf life. Otherwise, there may be adverse impact on laboratory test results.

3 Request form

For users of GCRS and CIMS (the ordering system in Hospital Authority (HA) and Department of Health (DH) respectively), please follow the guidelines issued by HA and DH accordingly, in sending laboratory requests to Chemical Pathology & Haematology Division (CPHD).

(a) Types:

No.	*Use for*
DH2456	Tests of Haematology & Serology, Chemical Pathology.

(b) Enter **all** the fields in the request form:

Field	*Requirement*	*Note*
Surname	Block letters, clear & legible	Shown on the report
Other Names	Block letters, clear & legible	Shown on the report
HKID No.	Legible, including check digit	Shown on the report
Sex[@]	Male (or M); female (or F)	Shown on the report
Age/DOB[@]	Date of birth is required	Age shown on the report
Clinical Diagnosis	Diagnosis and/or history *Maximum 50 characters*	Useful information
Dr.	Block letters, clear & legible	Shown on the report
Signature	MUST be provided	
Report to Clinic/Institution Clinic Code	Clinic name and LIS code (Chop is preferred)	Clinic name shown on the report
Clinic/Institution reference	As a reference for clinic staff, such as AN no., room no. etc. to facilitate sorting/filing. *Maximum 14 characters*	Shown on the report for clinic use if it is provided on the request form.
Date Requested		Necessary information
Sample Collection Date: Time:	State clearly & legibly **BOTH** date and time.	Collection date shown on the report

[@] **No report will be issued if sex and/or age is not provided.**

For the above-collected patient information, CPHD adopts Department of Health's 'Policy and Guidelines on the Handling of Personal Data under the Personal Data (Privacy) Ordinance'.

(c) Prepare the appropriate tubes/containers for sampling as indicated in Appendices 1 & 2.

(d) A patient's demographic data (name, sex, ID number, date of birth) must be the same in each request. If the current data is different from the previous one (as checked by the DH Laboratory Information System), the request form will be faxed to the clinic for clarification. Clinic staff has to sign and date for amendments made on the request form. The report will be withheld until the data concerned are clarified.

(e) The laboratory staff will not change or enter any data/information obtained over the phone on behalf of clinic staff.

(f) To indicate an urgent case, a red "URGENT" tag must be flagged on the laboratory request form to ensure prompt handling of specimen. Form marked with hand-written or pre-printed "urgent"/ "asap" / "stat" notes will not be treated as an urgent case.

4 Specimen

(a) Safety practice in specimen collection:
- Collect specimen using safety precautions and personal protective equipment in accordance with infection control guidelines of your institution.
- Dispose of any potentially contaminated materials used for specimen collection in accordance with infection control guidelines of your institution and Code of Practice promulgated by the Environmental Protection Department.

(b) Each sample must be collected in an appropriate tube/container; the specimens have to be treated appropriately according to the requirement listed in this Guidebook.

(c) Blood specimens require **same day delivery** to CPHD for immediate processing. Otherwise, contact laboratory at 2319 8472 / 2319 8474 for advice. Fresh samples are recommended for analysis; accuracy of the results may be affected if the specimens are stored overnight. Presence of haemoglobin, lipoprotein and bilirubin in serum and plasma may have interfering effect on some laboratory tests. Details are provided on laboratory reports.

(d) For 24 hr urine specimen collection, the bladder should be emptied at the start time, without collecting the urine. Thereafter and within the next 24 hours, all urine passed should be collected, including the urine voided at the end of the 24-hour period. The start and end time of urine collection should be clearly written on the specimen container.

Under or over collection of 24 hr urine specimens can lead to inaccurate results. Clinics should verify the completeness of collection with patients when specimens are submitted to the clinics, especially for specimens with volume under 1.0 litre.

(e) Label the specimens clearly, legibly and correctly:
- Check that the entry/entries on the tube/container is/are **correct and identical** to that of the request form. Entries of "Name" should be in the same language, otherwise, are not treated as identical.
- For specimen tube with barcode, peel off the oval bar code from each specimen and stick it on the lower right corner of the request form. One oval sticker corresponds to one specimen tube.

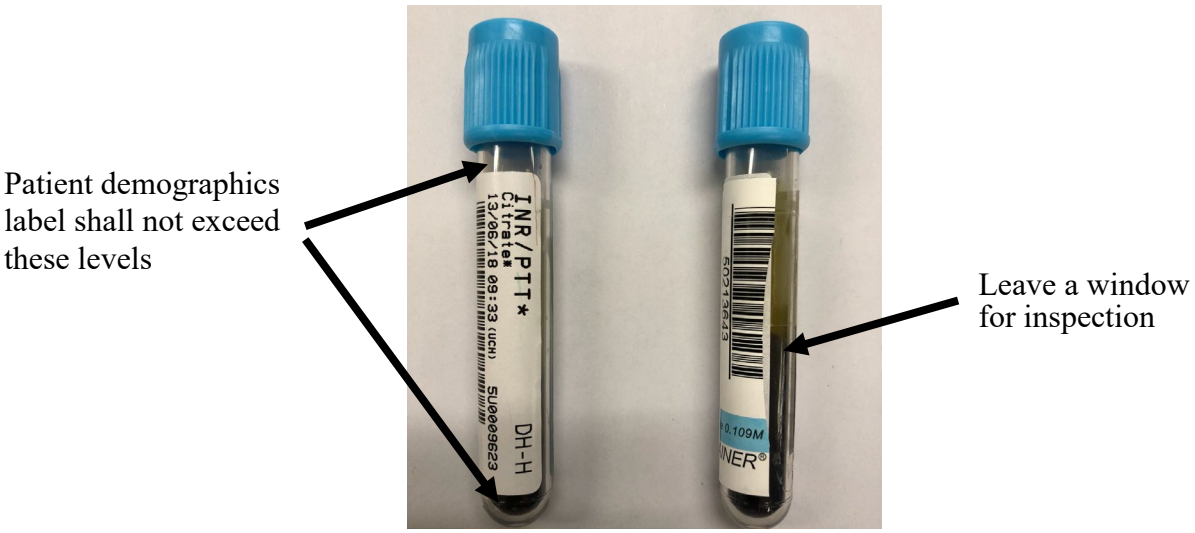
For DH clinics:

Type of tube/container	**Label required**	**Remarks**
Tube with barcode (gel/plain/EDTA/fluoride/ plain urine)	HKID number (or other ID number) **	DO NOT write over/mask the bar codes
EDTA tube without barcode: For **Blood grouping** only	Name, HKID no. (or other ID no.), clinic name/code & clinic's reference no.	*Blood grouping specimens must be labelled with 4 entries
Citrate tube	Name and HKID number	2 entries are required
Plastic container / bottle and other special container	Name and HKID number	2 entries are required for non bar-coded tube

* Specimen for **Blood grouping** using EDTA tube <u>with or without bar code</u>: the label requirement is the same - Name, HKID no. (or other ID no.), clinic name/code & clinic's reference no.

** <u>Guidelines for sticking patient demographics label on collection tubes with bar code:-</u>

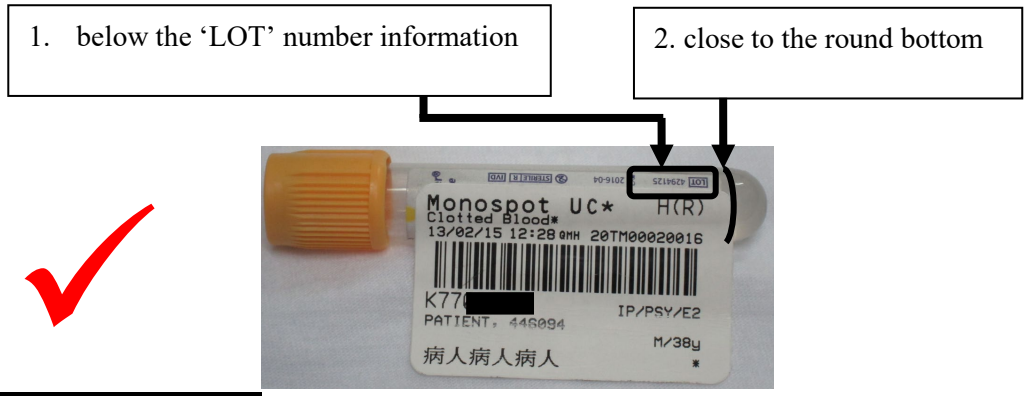
1. Stick the patient demographics label along the collection tube, exposing **BOTH** bar code and number, and leaving a window for inspection of the sample. (Please refer to the picture below)
2. **DO NOT** use glossy tape to stick the patient demographics label.
3. **DO NOT** write over / mask the bar code and the number.
4. The length of the patient demographics label shall not cover the round end or the cap of the tubes.



For HA GCRS e-ordering clinics, GCRS specimen labels should be used.

<u>Guidelines for sticking GCRS barcode label on specimen collection tube:</u>

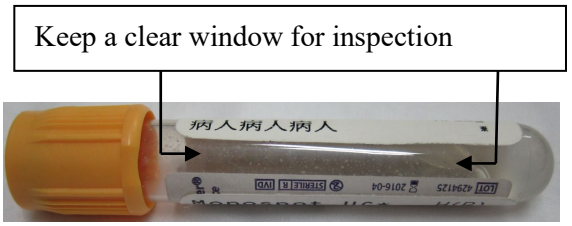
1. Stick the top margin of the label just below the 'LOT' number information
2. Stick the right margin of the label close to but not beyond the round bottom of the tube.



3. Pay attention to the orientation of the label. (see diagram)

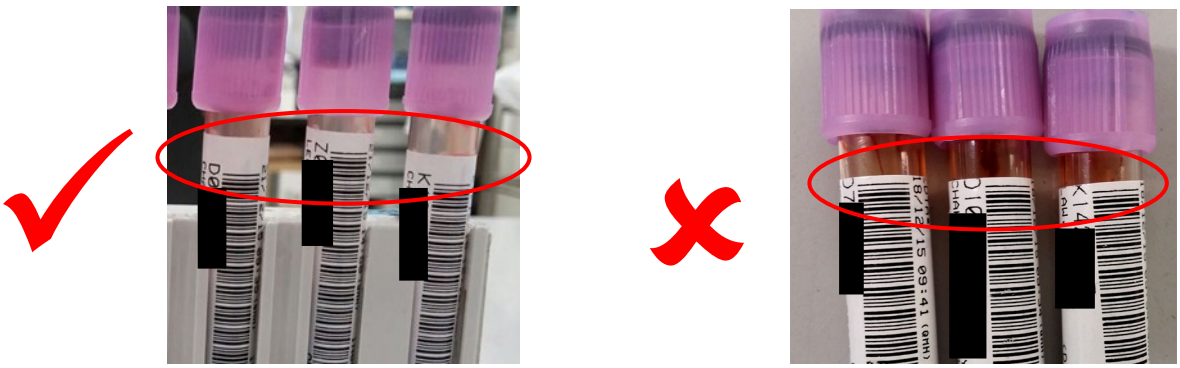
4. Roll the label along the surface of the tube as shown. Crease on label is not acceptable.

5. Keep a clear window for sample inspection**.**



6. **DO NOT** put glossy tapes on top of labels.

7. To ensure effective barcode reading by CPHD analysers, the first alphabet of HKID should be fully and clearly shown on the GCRS label.



5 Packing and dispatch

(a) With effect from September 2016, no request forms are required for HA GCRS users, while request forms are still in use for DH and other users.

(b) Check that the specimens match with the tests ordered.

(c) Fold the request form twice without creasing the bar code(s) on the form.

(d) Place the specimen(s) of the client together with the folded request form in one medium-sized plastic zip-bag.

(e) Firmly seal the zip-bag to hold the request form and the corresponding specimen(s) in one pack.

(f) Gather all the medium-sized zip-bags in one large plastic bag, which bears a green "CPHD" label, and dispatch it to Chemical Pathology & Haematology Division at Public Health Laboratory Centre (PHLC), Shek Kip Mei. Stamp clinic name on the green "CPHD" label for identification of sender.

(g) Ensure that the "CPHD" bag does not contain specimens for Virology, Bacteriology, VDRL, Cytology, TB tests. **The "CPHD" bag should also be separated from other lab specimen bags on delivery.**

(h) In case there is unavoidable delayed delivery of specimens, e.g. suspension of service due to Typhoon signal no. 8, keep these specimens in one single pack and label date of collection clearly on the green "CPHD" label before dispatch upon resumption of service.

(i) Do not insert ice-chilled specimen in the bag that contains other specimens i.e. the ice-chilled device should not be allowed to come in direct contact with other specimens otherwise cell lysis may be induced. There shall be a sturdy outer carrier for the ice-chilled specimen during transportation, e.g. a small size cooler or a plastic carrier. With proper labelling, the carriers will be returned, if necessary, to clinics for re-use.

6 Reports

(a) The users who receive the laboratory reports at their fax machine via our Laboratory Information System (LIS) should note the followings:

(1) The fax machine is ON and there is adequate paper in the machine to receive the fax reports in batches after office hours (scheduled LIS-fax).
(2) Urgent/critical results will be sent by fax as soon as possible.
(3) Turnaround time (TAT) of report depends on the mix of tests requested. The TAT in Appendices 1 and 2 refers to the specific test(s) only.

(b) Clinics/units will receive the LIS-reports in batches within the turnaround time.. For enquiries, contact laboratory staff at 2319 8472.

(c) Biological reference intervals of tests requested are provided on laboratory reports for interpretation of laboratory results. The reference intervals may be revised as needed. The information will be indicated on the laboratory report.

(d) For clinics that are also receiving reports in an electronic format, if there is any discrepancy between the fax report and the electronic version, the fax report version shall prevail.

7 Additional notes for sending specimens

(a) Generally, one request form (DH2456) is for ordering multiple tests of Chemical Pathology, Haematology & Serology, which are packed together with the specimens in one medium-sized zip-bag.

However, 2 request forms are required for ordering Antenatal screening and ABO, Rh(D)

Use separate DH2456 request form for

Tests that require ice-chilled specimen, e.g. PTH
Specimen other than blood, e.g. urine, faeces

(b) 2 EDTA-specimens are required when:

- HbA1c and Hb pattern are requested
- G6PD and CBC are requested

Appendix 1 - Chemical Pathology - List of tests and notes

TEST (Blood)	Volume of blood	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
Active B12	4 mL	P	Fasting blood preferable.	3
Alanine aminotransferase (ALT)	3.5 mL	GT		2
Albumin	3.5 mL	GT		2
Alkaline phosphatase	3.5 mL	GT		2
Alkaline phosphatase, heat stable isoenzyme	3.5 mL	GT		7
Alpha-fetoprotein (AFP)	4 mL	P		3
Amylase	3.5 mL	GT		2
^Antitrypsin, alpha-1	4 mL	P		12
Aspartate aminotransferase (AST)	3.5 mL	GT		2
Bicarbonate	3.5 mL	GT		2
Bilirubin, direct	3.5 mL	GT		2
Bilirubin, total	3.5 mL	GT		2
^ Ceruloplasmin	4 mL	P		12
Calcium	3.5 mL	GT		2
Carbamazepine (Tegretol)	4 mL	P	Take blood immediately before next dose.	5
Carcinoembryonic antigen (CEA)	4 mL	P		3
Chloride	3.5 mL	GT		2
Cholesterol (total)	3.5 mL	GT	Fasting and non-fasting reporting available. For fasting lipids, 12-hour fasting is required.	2
Cholesterol, high density lipoprotein (HDL-cholesterol)	3.5 mL	GT	Fasting and non-fasting reporting available. For fasting lipids, 12-hour fasting is required.	2
Pseudocholinesterase	3.5 ml	GT	For insecticide (organophosphates) poisoning.	2
Complement C3	4 mL	P		5
Complement C4	4 mL	P		5
Cortisol	4 mL	P	Take blood at 07:00 - 09:00 hour, 16:00 - 18:00 hour.	5
Creatine kinase (CK)	3.5 mL	GT	CK is not a valid test for the investigation of chest pain or cardiac related disorders.	2
C-Reactive protein (CRP)	4 mL	P		5
Creatinine	3.5 mL	GT	eGFR will be calculated for adults. Please note that creatinine-based estimates of GFR are less accurate in certain population eg. subjects with extreme body size, pregnant women, amputees, and cautious interpretation is required.	2
^ Digoxin	4 mL	P	Take blood > 6 hours post dose.	7
Ferritin	3.5 or 4 mL	GT / P		3
Folate (serum)	4 mL	P	Fasting blood preferable. Protect from light.	3
^ Follicle stimulating hormone (FSH)	4 mL	P		12
Fructosamine	3.5 mL	GT	Should be interpreted with care when there is abnormal serum protein concentration.	2
Gamma-glutamyl transferase (GGT)	3.5 mL	GT		2
Glucose	2 mL	F	If the blood is drawn after fasting overnight, indicate "*fasting*".	2
Glucose-6-phosphate dehydrogenase (G6PD)	3 mL	EDTA	Due to issues with specimen stability, specimen submitted on the day before holidays lasting for four days or longer (inclusive of Saturday and Sunday) may be cancelled.	4

GT: Gel tube P: Plain tube ^:Referral test

TEST (Blood)	Volume of blood	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
Glucose tolerance test (GTT) (75 g anhydrous glucose (MW 180) or 82.5 g monohydrate glucose (MW 198))	2 mL	F	Take normal diet for 3-4 days and then fast overnight before blood taking/glucose loading.	2
^ Growth hormone	4 mL	P	Random samples are of little value. It should be requested as part of a stimulation or suppression test.	12
^ Haptoglobin	4 mL	P		12
^ Human chorionic gonadotrophin (HCG)	4 mL	P		5
Immunoglobulin A (Ig A)	4 mL	P		5
^ Immunoglobulin E (IgE)	4 mL	P		21
Immunoglobulin G (Ig G)	4 mL	P		5
Immunoglobulin M (Ig M)	4 mL	P		5
Immunoglobulins (IgA, IgG, IgM)	4 mL	P		5
Iron & total iron binding capacity (TIBC)	3.5 mL	GT	Morning sample preferable.	2
Iron saturation	3.5 mL	GT	Calculated iron saturation=(Iron / TIBC)*100%	2
Lactate dehydrogenase (LD)	3.5 mL	GT	LD is not a valid test for the investigation of chest pain or cardiac related disorders.	2
Lipid profile (include cholesterol, triglycerides, HDL-cholesterol, calculated LDL-cholesterol and calculated non-HDL-cholesterol)	3.5 mL	GT	Fasting and non-fasting reporting available. For fasting lipids, 12-hour fasting is required.	2
Lithium	4 mL	P	Take blood at 12 hours post dose.	3
Liver function test (LFT) (includes total protein, albumin, total bilirubin, alkaline phosphatase, alanine aminotransferase)	3.5 mL	GT		2
^ Luteinizing hormone (LH)	4 mL	P		12
Magnesium	3.5 mL	GT		2
^ Oestradiol (Estradiol)	4 mL	P		12
Osmolality	4 mL	P	Avoid contamination of blood with ethanol or propanol.	2
^ Parathyroid hormone, PTH	3 mL	EDTA	The specimen should be wrapped in a plastic bag and kept in an ice-chilled box / container during transportation. See additional information in section 5(i) on 'Packing and Dispatch'.	21
^ Phenobarbital (Luminal)	4 mL	P	Take blood immediately before next dose.	7
Phenytoin (Dilantin)	4 mL	P	Take blood immediately before next dose. State the collection time (e.g. 10:30 am) on the request form.	5
Phosphate	3.5 mL	GT	Should arrive at laboratory within 4 hours	2
Potassium	3.5 mL	GT	Should arrive at laboratory within 4 hours	2
^ Progesterone	4 mL	P		12

GT: Gel tube P: Plain tube F: Fluoride tube ^:Referral test

TEST (Blood)	Volume of blood	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
^ Prolactin	4 mL	P		12
Prostate specific antigen (PSA)	4 mL	P		3
^ Protein electrophoresis pattern	3.5 mL	GT		14
Protein, total	3.5 mL	GT		2
Renal function test (includes sodium, potassium, urea, creatinine)	3.5 mL	GT		2
Rheumatoid factor (RF)	4 mL	P		5
Sodium	3.5 mL	GT		2
^ Testosterone	4 mL	P		12
^ Theophylline	4 mL	P	Take blood immediately before next dose. State the collection time (e.g. 10:30 am) on the request form.	7
Thyroid function test	4 mL	P	Laboratory Investigation Protocol : * please refer to Table 2	3
Thyroxine, free (FT4)	4 mL	P	Laboratory Investigation Protocol : * please refer to Table 2	3
Triiodothyronine, free (FT3)	4 mL	P	Laboratory Investigation Protocol : * please refer to Table 2	3
Thyroid stimulating hormone (TSH)	4 mL	P	Laboratory Investigation Protocol : * please refer to Table 2	3
Triglycerides	3.5 mL	GT	Fasting and non-fasting reporting available. For fasting lipids, 12-hour fasting is required.	2
Urate (Uric acid)	3.5 mL	GT		2
Urea	3.5 mL	GT		2
Valproate (Valproic acid)	4 mL	P	Take blood immediately before next dose. State the collection time (e.g. 10:30 am) on the request form.	5

GT: Gel tube P: Plain tube ^:Referral test

* Table 2

Clinical Information	Initial Test	Further Test
Suspected hyperthyroidism	TSH	FT4 +/- FT3 if TSH result abnormal
Hyperthyroidism on treatment	TSH, FT4	FT3 if indicated
Suspected hypothyroidism	TSH	FT4 if TSH abnormal or central hypothyroidism suspected
1° hypothyroidism or post thyroid surgery on thyroxine	TSH, FT4	
Central hypothyrodism	FT4	

TEST (**Urine** – fresh sample required)	Minimum volume of urine	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
Albumin	24 hr (or 3 mL)	24B (or PUB)	Same day delivery unless kept refrigerated. To avoid submission of urine too dilute for measurements, use first morning sample where practicable, and advise patient to refrain from drinking too much water prior to collection. Do not collect specimen after exertion, in the presence of urinary tract infection, during acute illness, immediately after surgery, during menstruation, or after an acute fluid load.	3
^ Bence Jones protein	20 mL	PU	Submit specimen only if protein electrophoresis is positive. Send urine to laboratory immediately.	14
^ Calcium	24 hr	24B (A)		5
Catecholamines	24 hr	24B (A)	Avoid patient stress, exercise, smoking, pain, caffeine products and hypoglycaemia. Some drugs (e.g. calcium channel blockers, clozapine, tricyclic antidepressants, L-dopa, SSRIs, sympathomimetics) may cause false positive results.	14
^ Cortisol	24 hr	24B		12
Creatinine	24 hr	24B	Same day delivery unless kept refrigerated.	3
Creatinine clearance test (Blood and urine creatinine)	24 hr	24B	Same day delivery unless kept refrigerated. Provide height and weight of the patient for calculation.	5
Chyle	10mL	PU	Qualitative test	5
^ 5-Hydroxyindoleacetic acid (5-HIAA)	24 hr	24B(A)	Bananas, pineapples, egg plant, tomatoes, plums, and walnuts must be excluded from diet 1 day prior to and during specimen collection. Phenothiazines should likewise be discontinued. Protect the specimen bottle from light.	14
Osmolality	3 mL	PU	Same day delivery unless kept refrigerated	2
^ Phosphate	24 hr	24B (A)		5
^ Porphobilinogen	10 mL	PU	Wrap the specimen bottle in dark paper to protect from light; send it to laboratory immediately.	12
^ Porphyrins	20 mL	PU	Wrap the specimen bottle in dark paper to protect from light; send it to laboratory immediately.	12
Potassium	24 hr (or 3 mL[@])	24B (or PU[@])	[@] Random urine potassium is useful ONLY when serum potassium is also performed at the same time.	3
Protein, total	24 hr (or 3 mL)	24B (or PUB)	Same day delivery unless kept refrigerated.	3
Sodium	24 hr (or 3 mL[@])	24B (or PU[@])	[@] Random urine sodium is useful ONLY when serum sodium is also performed at the same time.	3

PU: Plain urine bottle PUB: Plain urine bottle with barcode ^: Referral test
24B: 24-hour urine bottle 24B(A): 24-hour urine bottle (Addition of preservative)

TEST **(Other body fluids)**	Minimum volume of fluid	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
Send fresh body fluid to laboratory immediately after collection.				
Chloride	4 mL	P / PB		2
Creatinine	4 mL	P / PB		2
Glucose	2 mL	F		2
Lactate dehydrogenase (LD)	4 mL	P / PB		2
Potassium	4 mL	P / PB		2
Protein, total	4 mL	P / PB		2
Sodium	4 mL	P / PB		2
Urate (Uric acid)	4 mL	P / PB		2
Urea	4 mL	P / PB		2

P: Plain tube PB: Plain bottle F: Fluoride tube

TEST (Miscellaneous)	Volume	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
^ Calculus	Whole portion	PB / Px		12

PB: Plain bottle Px: Plastic container ^: Referral test

TEST **(Faeces)**	Minimum volume of faeces	Specimen container	Notes on collection & storage, remarks (if any)	TAT (day)
Occult blood	5 g	Px	Same day delivery to CPHD is recommended. If not possible, store at 2-8ºC before delivery on the next day. Do not submit more than one specimen per bowel movement. Do not collect specimen during menstruation or diarrhoea. Dietary restriction is not required. This test is not designed for the detection of upper GI bleed.	3

Px: Plastic container

Appendix 2 - Haematology & Serology - List of tests and notes

TEST	Volume of blood	Specimen container	Notes on collection & storage, remarks	TAT (day)
Blood Counts:				
Complete blood count [CBC (± Diff / retics / RBC morphology)]	3 mL	EDTA		2
Antenatal screening (CBC) *excluding blood grouping*	3 mL	EDTA		2
Erythrocyte sedimentation rate [ESR]	3 mL	EDTA	Ensure blood volume reaches the horizontal bar on tube label. Ensure a clear window is kept on the blood tube.	2
Coagulation Studies:				
Prothrombin time (with or without International normalized ratio) [PT (± INR)]	3 mL	Citrate	Blood for coagulation studies must be freshly drawn, filled exactly to the mark of the tube. State the collection time (e.g. 10:30 am). **Should arrive at CPHD within 3 hours. The test will be performed immediately when received by the laboratory.**	2
Activated partial thromboplastin time [APTT]	3 mL	Citrate	Blood for coagulation studies must be freshly drawn, filled exactly to the mark of the tube. State the collection time (e.g. 10:30 am). **Should arrive at CPHD within 3 hours. The test will be performed immediately when received by the laboratory.**	2
Immunohaematology & Serology:				
ABO grouping & Rh (D) typing	3 mL	EDTA (no bar code)	Blood grouping should be on a form separate from other requests. 1 EDTA blood + request form in one medium-sized zip-bag.	3*
^ Direct antiglobulin Test	3 mL	EDTA	Call Laboratory Staff at 2319 8461 for approval and arrangement.	5
^ Indirect antiglobulin Test	4 mL	Plain	Call Laboratory Staff at 2319 8461 for approval and arrangement.	5

*6 days when blood grouping investigation is required

^: Referral test

TEST	Volume of blood	Specimen container	Notes on collection & storage, remarks	TAT (day)
Haemoglobin studies:				
Haemoglobin pattern: Hb electrophoresis, HbA_2 level, HbF level, HbH inclusion demonstration.	3 mL	EDTA	Haemoglobin Pattern test is for cases of "**low** MCV" or clients with family history of haemoglobinopathy. Contact laboratory if there is any other special indication.	8
Haemoglobin A1c level	3 mL	EDTA	HbA1c should not be measured more frequently than every three months under normal circumstances.	4[#]
			[#] 8 days if sample interference is detected	
Immunology:				
Anti-thyroid antibodies: Anti-microsomal (TPO) antibodies & Anti-thyroglobulin antibodies	4 mL	Plain		8
Anti-nuclear antibody [ANA]	4 mL	Plain	For patients with positive ANA, once diagnosis is established, repeat testing is of limited value.	8
Anti-dsDNA	4 mL	Plain	ANA is the recommended first line screening test. Anti-dsDNA can be requested without an accompanying ANA request if there is a previous positive ANA.	8

Appendix 3 - Abbreviations on request form (DH2456)

Abbreviation	***For***
HKID No.	Hong Kong identity card number
DOB	Date of birth
Dr.	Doctor's name
Abbreviation	***Description***
(Test)	(Test)
ALT	Alanine aminotransferase
ANA	Antinuclear antibodies
APTT	Activated partial thromboplastin time
CBC	Complete blood count
CBC & Diff	Complete blood count & differential count
ESR	Erythrocyte sedimentation rate
OGTT	Oral glucose tolerance test
PT/INR	Prothrombin time/International normalized ratio
Retics	Reticulocytes
RF	Rheumatoid factor
TSH	Thyroid stimulating hormone
FT4	Free thyroxine
FT3	Free triiodothyronine

Appendix 4 - Abbreviations on laboratory report

Abbreviation	*Description*
Ab	Antibody/antibodies
APTT	Activated partial thromboplastin time
BASO	Basophil
EOS	Eosinophil
ESR	Erythrocyte sedimentation rate
Estimated GFR	Estimated glomerular filtration rate
G6PD	Glucose-6-phosphate dehydrogenase
Gamma GT	Gamma glutamyl transferase
ALT	Alanine aminotransferase
HCT	Haematocrit
HDL	High density lipoprotein
HGB	Haemoglobin
HPLC	High performance liquid chromatography
INR	International normalized ratio
LDL	Low density lipoprotein
LYMPH	Lymphocyte
MCH	Mean cell haemoglobin
MCHC	Mean cell haemoglobin concentration
MCV	Mean cell volume
MONO	Monocyte
MPV	Mean platelet volume
NEUT	Neutrophil
NRBC	Nucleated red blood cell
PLT	Platelet
RBC	Red blood cell
RDW	Red cell distribution width
RETIC	Reticulocyte
WBC	White blood cell (Leukocyte)