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THE QUALITY POLICY OF THE DEPARTMENT OF PAEDIATRIC LABORATORY MEDICINE

The Department of Paediatric Laboratory Medicine, Children's Health Ireland at Temple Street, Dublin is committed to providing a service of the highest quality and shall be aware and take into consideration the needs and requirements of its patients and users.

In order to ensure that the needs and requirements of users are met, the department will: -

- Operate a quality management system to integrate the organisation, procedures, processes and resources.
- Set quality objectives and plans in order to implement this quality policy.
- Ensure that all personnel are familiar with this quality policy to ensure user satisfaction.
- Commit to the health, safety and welfare of its entire staff.
- Ensure visitors to the department will be treated with respect and due consideration will be given to their safety while on site.
- Uphold professional values and is committed to good professional practice and conduct.

The Hospital Blood Bank & Haemovigilance, Clinical Biochemistry (including the Metabolic Laboratory & the National Newborn Bloodspot Screening Laboratory), Clinical Microbiology (including the Irish Meningitis and Sepsis Reference Laboratory) and Haematology laboratories are all accredited to ISO 15189. The current scope of accreditation is available on the INAB website (INAB number 374MT).

The Department of Paediatric Laboratory Medicine complies with the requirements of ISO 15189:2012, AML-BB Articles 14 & 15, EU Directive 2002/98/EC and Statutory Instruments S.I. 360 of 2005, S.I. 547 of 2006, and S.I. 562 of 2006 to maintain accreditation and is committed to: -

- Staff recruitment, training, development and retention at all levels to provide a full and effective service to its users.
- The proper procurement and maintenance of equipment and other resources as are needed for the provision of the service.
- The collection, transport and handling of all specimens in such a way as to ensure the correct performance of laboratory examinations.
- The safe testing, distribution and transfusion of Blood and Blood Components.
- The use of examination procedures that will ensure the highest achievable quality of all tests performed.
- Reporting results of examinations in ways, which are timely, confidential, accurate and clinically useful.
- The assessment of staff suggestions, user satisfaction, in addition to internal audit and external quality assessment, in order to produce continual quality improvement.

1 INTRODUCTION

Children's Health Ireland at Temple Street is an Acute Paediatric Hospital serving Dublin North City and County and providing a secondary and tertiary referral and care service both regionally and nationally. It is the only inner city children's hospital and as such, its catchment area also includes parts of the south city.

This user manual provides information to facilitate the use of the laboratory services provided by the Department of Paediatric Laboratory Medicine (DPLM) at Children's Health Ireland at Temple Street. It is to be used in association with the Test Requirements Manual. The Tests Requirements Manual (LI-GEN-0001) includes an alphabetical listing of the wide range tests currently available at Children's Health Ireland at Temple Street and those routinely referred to other Laboratories. Both the User Manual and the Tests Requirements Manual may also be accessed on the Internet at www.cuh.ie and on the Hospital intranet.

All the laboratories are accredited to ISO15189:2012 for the scope of tests listed on the INAB website. Internal tests not within the scope of accreditation are marked by ** in the Test Requirements Manual.

Please do not hesitate to contact the relevant laboratory for additional help and advice.

2 LOCATION

The DPLM is located on the first floor of the hospital and is signposted on entry to the hospital. The National Newborn Bloodspot Screening (NNBSL) Laboratory, the Irish Meningitis and Sepsis Reference Laboratory (IMSRL) are located towards the side of the hospital at St Georges Church – also signposted at main hospital entrance.

3 CONTACT DETAILS / ADVICE

Medical and scientific advice on issues within the laboratory's range of interest and competence is available. Information for patients explaining the clinical procedure and any preparation required is available from the relevant clinical areas in the form of Information Leaflets. Key contact staff is listed below. For a direct line please prefix the extension number with 01 878.

Position	Name	Extension	Bleep
Director	Dr Richard Drew	Through switch	
Laboratory Manager	Ms Grace O'Mahony	4364	851
Laboratory Quality Manager	Ms Denise O'Toole	4269	
Laboratory Data Quality Manager	Post vacant	1889	
Point of Care Chief Medical Scientist	Post vacant	1889	
LABORATORY OFFICE			
Results/Enquiries		4266	
CLINICAL BIOCHEMISTRY			
Consultant Chemical Pathologist Consultant Clinical Biochemist Chemical Pathology SpR	Dr Mohamed Elsammak Dr Jennifer Brady	 4270 Through switch	

Position	Name	Extension	Bleep
General Biochemistry Laboratory		4272	
Chief Medical Scientist	Mr James O Dwyer	4272	
Metabolic Laboratory			
Chief Medical Scientist	Ms Patricia Fitzsimons	4670	
Chief Medical Scientist	Ms Gema Urbano	4724	
National Newborn Bloodspot Screening Laboratory (NNBSL)			
Chief Medical Scientist	Ms Loretta O'Grady	4612/4277	
HAEMATOLOGY & HOSPITAL BLOOD BANK			
Consultant Haematologist	Dr Melanie Cotter	Through switch	
Chief Medical Scientist Haematology	Ms Karen Foley	1724	
Chief Medical Scientist Blood Transfusion	Ms Martina Williams	4696	
Haemovigilance Officer	Ms Elizabeth Dillon	1902	857
HISTOPATHOLOGY			
Consultant Histopathologist CHI at Crumlin	Dr John O'Neill Dr Michael McDermott Dr Maureen O Sullivan	409 6100 (CHI at Crumlin switch) 409 6436 (CHI at Crumlin lab)	
Consultant Neuropathologist	Dr Jane Cryan	5512	
Specialist Registrar		4672	
Senior Medical Scientist	Post vacant	4271/4673	
Histopathology Office	Ms Barbara Quinn	4671/4266	
Anatomical Pathology Technician	Mohammad Radiom	4278	719
MICROBIOLOGY			
Consultant Microbiologist (also available "on-call" for clinical and infection control advice and may be contacted *via* the hospital switchboard)	Dr Richard Drew	4859	
	Dr Robert Cunney	4859	
	Dr Alida FeTalento	5597	
	Dr Meaghan Cotter	4859	
Specialist Registrar (Microbiology)			110
Infection Control Nurse Specialist		4389	778
Microbiology Laboratory		4679/4276/4676	
Chief Medical Scientist	Ms Jennifer Cleary	4308	
Irish Meningitis and Sepsis Reference Laboratory (IMSRL)		4432	
Chief Medical Scientist	Ms Edel O'Regan	4876	
PHLEBOTOMY			
Phlebotomists		4280	
MISCELLANEOUS			
Sweat Test Appointments		4266	
Specimen Dispatch		4278	
Laboratory Porter			907

4 DATA PROTECTION POLICY

The DPLM complies with the policy of Children's Health Ireland regarding the legislation pertaining to the rights of the patient and staff and to act in an ethical and responsible manner in maintaining the security and integrity of all personal information (CHI-CORP-1 CHI Data Protection Policy).

5 PROBLEMS / COMPLAINTS

Minor: Please telephone the appropriate section.
Major: Write or e-mail to the Laboratory Manager (grace.omahony@cuh.ie) or the Director of the Department of Paediatric Laboratory Medicine (richard.drew@cuh.ie).

6 DEPARTMENT OF PAEDIATRIC LABORATORY MEDICINE OPENING HOURS

Department	Opening Hours	Cut-off time (for same day processing)
• Biochemistry • Metabolic • Haematology • Microbiology	Mon – Fri: 08.00 – 18.00 Sat: 09.00 – 12.30*	Mon – Fri: 17.00 Sat: 12.00
• Blood Transfusion	Mon – Fri: 08.00 – 18.00 Sat: 09.00 – 12.30	Mon – Fri 16.00 Sat: 11.30
• NNBSL	Mon – Fri: 08.00 - 17.00 Sat : 09.30- 12.30	Mon-Fri 12.00 Sat (Beutlers) 10.00
• IMSRL	Mon – Fri: 09.00 – 17.00	Mon-Fri 11.00
• Histology laboratory	Mon – Fri 09.00 – 17.00	N/A

* Limited service may be provided on Saturdays – see section 6.1 below.

6.1 Tests Available on Saturday Morning

Department	Saturday morning service	
Biochemistry	▪ Renal profile ▪ Liver profile ▪ Bone profile ▪ Glucose ▪ Lactate ▪ Amylase ▪ CRP ▪ CK ▪ Magnesium ▪ Ammonia ▪ Osmolality ▪ CSF protein ▪ CSF glucose	▪ LDH ▪ Urine chemistry ▪ Blood gas ▪ TDM (except Tacrolimus - by prior arrangement) ▪ Gentamicin ▪ Vancomycin ▪ Tobramicin ▪ NT-pro-BNP (referred to MMUH) ▪ Troponin (referred to MMUH) ▪ C3/C4 (referred to CHI at Crumlin - PICU ONLY) ▪ Ferritin ▪ Procalcitonin
Metabolic service	• Beutler Test (NNBSL) samples need to be in laboratory by 10am • For other metabolic tests a limited emergency on-call service only is provided.	
Haematology	Full service available	

Department	Saturday morning service
Blood Transfusion	Full service is available when required. NOTE: The Haemovigilance Service on Saturday morning is covered by the Medical Scientist on duty in the Blood Transfusion Laboratory.
Microbiology	▪ A limited service is available. Limited order entry is performed. ▪ Faeces culture as per testing criteria ▪ Norovirus testing on request (samples must arrive in the laboratory by 10am) Nasopharyngeal aspirates/swabs for investigation for respiratory viruses. ▪ Urine microscopy results available on iLAB. If a phoned report is required, this must be requested.
Histology / Post Mortem	• Post mortem examinations are performed following consultation with the Consultant Histopathologist.

Note:
Tests outside of the above lists may on occasion be performed. This may require calling the scientist or the Consultant from the relevant department for authorisation to proceed before the sample is taken.

6.2 Urgent Samples

- Requests from ICU and ED are deemed to be urgent (urgent Microbiology specimens must be brought to the attention of the laboratory staff)
- Other urgent specimens must be **phoned** to the laboratory. The request form should also be marked as urgent.
- Neuropathology frozen sections are processed urgently after prior consultation with the Consultant Neuropathologist– 24 hours notice is required. If frozen section is anticipated or needed for any other tissue types, surgery should be transferred to Crumlin. In the event that a need for frozen section arises unexpectedly during an operation in Temple Street, please contact the on duty Histopathologist in CHI at Crumlin (via the Crumlin switch) for advice.Many specialised laboratory procedures are performed in Children's Health Ireland at Temple Street. Such procedures may be performed on a weekly basis or have a long processing time. Urgent requests for such tests must be **phoned** to the laboratory staff by the requesting doctor.
- It is the policy of the Hospital Blood Bank to accept an advanced phone call in urgent situations only for additional tests. However, signed request forms must be submitted before reports are issued.

7 OUT OF HOURS 'ON-CALL' SERVICE

Day	On call hours
Monday – Thursday:	18:00 – 08:00 (next morning)
Friday:	18:00 – 09:00 (Saturday morning)
Saturday:	12:30 – 09:00 (Sunday morning)
Sunday & Bank Holidays:	09:00 – 08:00 (next morning)

7.1 Service Provision

There are three on call rosters in operation, with each rostered session being staffed by a single Medical Scientist:

- Biochemistry
- Multidisciplinary (Blood Transfusion, Haematology, Microbiology)
- Metabolic

Consultant clinical advice is available on call for:

- Biochemistry, includes newborn bloodspot screening and metabolic
- Haematology/Blood Transfusion
- Microbiology
- Histopathology

7.2 Accessing the On Call Service /Sample delivery

- Service Users should refer to Section 7.4 below prior to contacting the Medical Scientist on-call to ensure that the test(s) requested are included in the scope of service.
- Service Users should refer to the laboratory Test Requirements Manual before taking a sample to ensure the correct sample is collected.
- The Medical Scientist on-call should only be contacted after the sample has been collected and is being delivered to the laboratory.
- The appropriate Medical Scientist on-call should be contacted through Switchboard with requests for on-call investigations.
- Emergency on call Microbiology samples should be delivered to the Haematology laboratory for processing by the Multidisciplinary Medical Scientist on-call. All other Microbiology samples must be delivered by hand to the fridge in the Microbiology media room.
- The on call Medical Scientist is not available to look up results. All authorised results are available electronically
- The appropriate Laboratory Consultant should be contacted through the Switchboard for clinical advice.

7.3 Definition of Emergency On-Call Investigations

- Emergency on-call investigations are defined as: **tests the result of which will have a direct and immediate influence on patient management and/or treatment.**
- The Medical Scientist on-call has the right to refer the request to the appropriate Laboratory Consultant if sufficient clinical information is not provided to warrant emergency processing or should he/she believe that the results of the investigations could wait until the next routine working day.

7.4 On Call Scope (Tests Available)

Sample/Test	
Biochemistry	
▪ Ammonia ▪ Amylase ▪ Anti-epileptic drugs ▪ Blood gas (ionized calcium) ▪ Bone profile ▪ Carboxyhaemoglobin ▪ C3/C4 (referred to CHI at Crumlin - PICU ONLY) ▪ CK ▪ CRP ▪ CSF Protein/Glucose ▪ Ferritin ▪ Glucose	▪ Lactate (lactic acid) ▪ Lactate dehydrogenase (LD) ▪ Liver profile ▪ Magnesium ▪ NT-pro-BNP (referred to MMUH) ▪ Hypoglycaemic work-up ▪ Osmolality (blood/urine) ▪ Procalcitonin ▪ Renal profile ▪ Uric Acid ▪ Urine Chemistry ▪ Troponin (referred to MMUH)
Blood Transfusion	
A full service is available for **emergency** on-call investigations[1]	
Haematology	
▪ Coagulation screen (including APTT, PT, fibrinogen)	▪ Full blood count
▪ Sickle cell screen (urgent samples (i.e. telephoned urgent request or otherwise indicated)	▪ Malaria rapid diagnostic test (RDT). Full screen on call if RDT positive ▪ D-Dimers
Metabolic	
▪ Laboratory consultant approval (contact through switch) is required for full amino acids profile requests made by clinicians other than the Metabolic team. ▪ Organic acids and acylcarnitine are not provided on-call.	▪ Beutler assay in response to a specific telephoned request from the NNBSL or appropriate clinician. ▪ Follow-up amino acids from NNBSL or family history (sibling, child, double cousin) of known metabolic patient with PKU, MSUD or HCU. Please note: Maternity Hospitals must follow the recommendations in The Practical Guide to Newborn Bloodpsot screening in Ireland (section 6.4) for Metabolic Laboratory analysis/follow-up testing for Newborn screening.
Microbiology	
• Blood Culture[2]	▪ Pus
▪ CSF	▪ Supra-pubic Aspirate
▪ Fluid (CAPD, Pleural, Joint and any other sterile fluids)[3]	▪ Wound/abscess swab from theatre
▪ Naso-pharyngeal Aspirate/Swabs[4]	▪ Tissue
▪ Needlestick samples[5]	▪ Urine[5]

[1] Routine pre-admission / pre-operative assessment samples are not processed by the emergency on-call service unless prearranged or approved by the Haematology Registrar/Consultant Haematologist. If samples are

received out of hours, the Medical Scientist will inform the relevant clinical users that the sample will be processed first thing the next routine working day. Samples from patients due in theatre 8-9am the following morning are regarded as emergency samples, which if not processed on call, would lead to a risk to the patient. Hence these samples automatically have Consultant approval for processing on-call. Theatre lists may be consulted to check the patient's position on the theatre list. **All efforts should be made to ensure that samples for surgical patients are received during normal working hours; a** full investigation will be performed to determine root cause for delay and corrective action implemented to ensure this is not a reccurrence.

[2] Bottle will be loaded onto the analyser at regular intervals, and at least every 4 hours. Samples should be delivered to the haematology laboratory. Positive BCs are unloaded and processed and reported to the Consultant Microbiologist up to midnight.

[3] Fluids from theatre are deemed critical samples and should be processed as soon as possible (NOT refrigerated). Always contact the medical scientist on call when sample taken out of hours and deliver to the haematology laboratory.

[4] During RSV/Flu season ONLY or samples from ICU, immunocompromised or CF inpatients up to 11pm ONLY. Processed in batches.

[5] Refer to Occupational Health protocol. On-call staff dispatch to NVRL ONLY.

[6] If patient is commencing antibiotic therapy or being admitted. Up to 12 midnight ONLY. Urgent urines after midnight will be processed on request for neonates (<3 minths). Urines on patients >3 months require microbiology consultant approval

7.4.1 Notes

a) Samples received for investigations not listed above will be processed the next routine working day. The Medical Scientist on-call will handover any outstanding work to the routine staff, leaving written instructions where necessary.

b) Routine samples taken early morning prior to shift changes (~07:00) will be processed during the routine working day from 08:00 unless they are urgent and the Medical Scientist has been contacted.
Note: pre-dialysis patients can only be processed between 08:00 to 09:00hrs on Saturday and Sunday if a phone call is received from the Consultant Nephrologist On-Call requesting testing to be done.

c) Service Users requiring investigations not listed above must contact the appropriate Laboratory Consultant in the first instance and obtain approval on a case-by-case basis prior to requesting the Medical Scientist to analyse the sample.

d) If a test not normally performed on-call requires dispatch to an external hospital, the requesting Service User must contact the referral laboratory. The role of the Medical Scientist on-call is limited to specimen dispatch only.

8 PREPARATION OF THE PATIENT

Patient information leaflets are available to users of the service (and on request) in relation to their own preparation before primary sample collection.

9 REQUEST FORMS

- The request form is the basis of the contract between the clinician and the Laboratory.
- There are request forms available covering all laboratory disciplines. A request form is also available for GP requests. Please contact laboratory to organise delivery of forms as required. Note that the IMSRL Request Form and Metabolic Investigations Request Form (External)

asterisked below are available to download from the laboratory internet page https://www.cuh.ie/healthcare-professionals/departments/laboratory/

Ref.: LF-BIO-0066 Biochemistry Request Form
LF-GEN-0056 Dispatched (General) Laboratory Request Form
LF-GEN-0057 GP Request Form
LF-HAEM-0035 Haematology Request Form
LF-HIST-0045 Histology Request Form
LF-IMSRL-0162 IMSRL Request Form*
LF-META-0085 Metabolic Request Form
LF-NNS-0096 Newborn Bloodspot Screening Request form
LF-META-0108 Metabolic Investigations Request Form (External)*
LF-MICRO-0039 Microbioloby Request Form
LF-MICRO-0040 Virology Request Form

* Forms are available for download from the laboratory internet page - https://www.cuh.ie/healthcare-professionals/departments/laboratory/

- **It is the responsibility of the requesting clinician and person collecting patient specimens to ensure that samples and forms are correctly labelled.**
- Please take great care in completing the request forms. Tests cannot be processed if there is insufficient or incorrect information on the form.

Note: Refer to section 9.2 for Blood Transfusion Request forms.

9.1 Completing the Request Form

9.1.1 Children's Health Ireland at Temple Street Requests

The following information should be documented in a legible manner on all sheets of the request form:

- **Patient's Hospital Number (where Hospital number is not available, patient address and date of birth must be provided)[1]**
- **Surname[1]**
- **Forename (initials are not acceptable) [1]**
- **Patient date of birth[2]**
- Patient gender[3]
- Patient location (ward)
- Patient consultant / GP (GP address must be included)
- Date and time of sample collection (completed by person taking sample)
- Specimen type / anatomical site (for Microbiology and Histology)
- Name and bleep number of the requesting clinician
- Name and bleep number of the person taking the sample
- Examination(s) required

[1] minimum requirements for acceptance of samples. Request forms not meeting minimum requirements will be rejected (see section 11 for Laboratory policies on sample rejection).

[2] DOB is a minimum requirement if the patient has not been named (i.e. for 'Baby' requests)

[3]please note that if the gender of the patient is not specified on the request form, it may not be possible to quote a reference range for the requested test(s)

Other Useful Information (important for interpretative reporting):

- Clinical Details (**mandatory for Metabolic investigations**)
- Family history relevant to NNBSL screening profiles

- Medication/ diet
- Previous Operations (Histopathology)
- Ethnic Group (for Haematology)
- Date of first feeds and type of feeds for NNBSL samples
- Transfusion details: date of first or last transfusions for NNBSL samples

Please remember that inadequately completed request forms can cause delays in issuing reports and in contacting clinicians in the case of urgent or unexpected results.
The use of addressograph labels on request forms is recommended. Addressogrpah labels must be placed on the front and back copies of request forms.

9.1.2 Referring Hospital Requests

The following information should be documented in a legible manner on all sheets of the request form

- **Patient's Hospital Number[1]**
- **Surname[1]**
- **Forename (initials are not acceptable) [1]**
- **Patient date of birth[1]**
- Patient gender[2]
- Patient address[1]
- Patient location (ward)
- Patient consultant / GP (GP address must be included)
- Date and time of sample collection (completed by person taking sample)
- Specimen type / anatomical site (for Microbiology and Histology)
- Name and bleep number of the requesting clinician
- Name and bleep number of the person taking the sample
- Examination(s) required
- Local health office for NNBSL samples

[1] minimum requirements for acceptance of samples. Request forms not meeting minimum requirements will be rejected (see section 11 for Laboratory policies on sample rejection).
[2] please note that if the gender of the patient is not specified on the request form, it may not be possible to quote a reference range for the requested test(s)

Other Useful Information (important for interpretative reporting):

- Clinical Details (**mandatory for Metabolic investigations**)
- Medication/ diet
- Previous Operations (Histopathology)
- Ethnic Group (for Haematology)
- Date of first feeds and type of feeds for NNBSL samples
- Transfusion details: date of first or last transfusions for NNBSL samples
- Family History relevant to NNBSL screening profile

Please remember that inadequately completed request forms can cause delays in issuing reports and in contacting clinicians in the case of urgent or unexpected results.
The use of addressograph labels on request forms is recommended. Addressogrpah labels must be placed on the front and back copies of request forms.

9.1.3 GP Requests

The following information should be documented in a legible manner on all sheets of the request form

- **Surname**[1]
- **Forename (initials are not acceptable)** [1]
- **Patient date of birth**[1]
- Patient gender[2]
- Patient address[1]
- Patient location (ward)
- Patient consultant / GP (GP address must be included)
- Date and time of sample collection (completed by person taking sample)
- Specimen type / anatomical site (for Microbiology and Histology)
- Name and bleep number of the requesting clinician
- Name and bleep number of the person taking the sample
- Examination(s) required

[1] minimum requirements for acceptance of samples. Request forms not meeting minimum requirements will be rejected (see section 11 for Laboratory policies on sample rejection).

[2] please note that if the gender of the patient is not specified on the request form, it may not be possible to quote a reference range for the requested test(s)

Other Useful Information (important for interpretative reporting):

- Clinical Details (**mandatory for Metabolic investigations**)
- Medication/ diet
- Previous Operations (Histopathology)
- Ethnic Group (for Haematology)

Please remember that inadequately completed request forms can cause delays in issuing reports and in contacting clinicians in the case of urgent or unexpected results.
The use of addressograph labels on request forms is recommended. Addressograph labels must be placed on the front and back copies of request forms.

9.2 Blood Transfusion Request Forms

Incorrectly labelled Blood Transfusion request forms which do not meet the legal completion criteria for processing may have to be discarded and subsequently repeated in order to be accepted for processing. Addressograph labels may be used on Blood Transfusion request forms.
Ref.: LF-BT-0068 Blood Transfusion Request Form

Ensure that the Blood Transfusion request form contains the following information:

- Patient's surname
- Patient's forename
- Patient's date of birth
- Gender
- Patient's address
- Patient's hospital number *(in the absence of the hospital number, the phlebotomist does not perform venepuncture)*
- Primary Diagnosis
- Patients weight
- Ethnic origin
- Location - ward/departmentConsultant's name

- Date and time required
- Clinical details (i.e chemotherapy) / Reason for request
- Transfusion history i.e. transfusion within last 3 months
- Tests requested
- Routine or emergency request
- Products required (ordered in mLs preferable)
- Signature of requesting doctor and Bleep/Extension.
- Label generated from the Blood Track PDA, which includes details of the sample taker and the time of sampling. If the PDA is not used, this information ('taken by' signature and date & time) must be handwritten on the request form.

Remember to obtain positive patient identification when completing request forms and taking blood samples. Good documentation is essential.
Please refer to CP-HV-0001 Pre-Transfusion Sampling, Request and Prescription of Blood and Blood Products if further clarification is required.

9.2.1 Blood/Blood Products

This is an abbreviated list of the most common Blood/Blood Products available within the hospital. It includes but is not limited to the following:

Red Cells	• Red Cell Concentrate (SAG-M) (minus plasma and clotting factors) • Pedi-Packs (SAG-M) for small top-up transfusions only
Platelets	• Apheresis – single donor units; (50ml satellite packs available) • Pooled – 3 - 4 donors per unit
Frozen Plasma	• Octaplas LG

Full list of all blood products are detailed in the haemovigilance procedures which are available on the hospital intranet.

Note: Hard copies of the haemovigilance procedures are only available in ED, ICU and Nursing Administration.
If any requested products are unavailable from the IBTS, advice must be sought from the Consultant Haematologist.

NB. In the interest of patient safety, all unused units of blood in the blood issue fridge(s) **MUST** be returned to the Transfusion Laboratory or to stock fridge (by Medical Scientist) the following morning.

10 COLLECTION OF SPECIMENS

10.1 General Instructions for Drawing and Labelling Samples

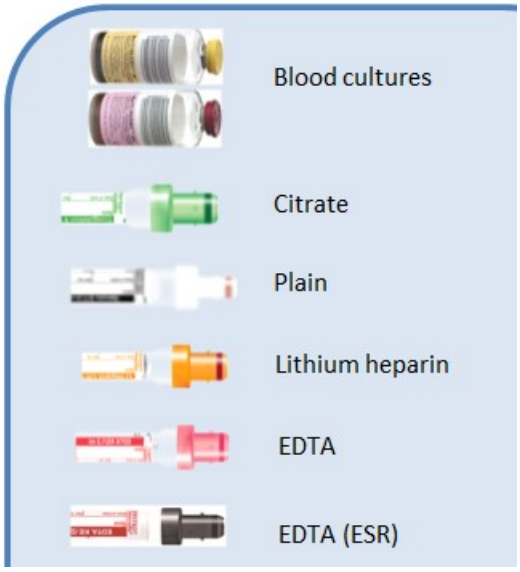
All steps for drawing and labelling specimens must be performed at the patient's bedside.

a) Identify that the patient is the correct patient before drawing any specimens. If the patient is conscious – identify patient by verbal communication ask for the **full** name and DOB.
   - If the patient is unconscious or unable to communicate – check patients wrist band and confirm DOB and full name with parent or guardian if avaiable
   - Ensure request form is correctly labelled and reflects the wrist band and verbal checks made as above.

b) Draw specimen into appropriate plastic leak proof containers with a screw top lid (see section 10.2 for order of draw guidelines and section 16 for phlebotomy guidelines).
c) The specimen is labelled at the patient's bedside with patient information and date as detailed below. Confirm patient details once again as indicated above.
Please note that there are specific requirements for labelling of samples for Blood Transfusion (please refer to section 10.3.2 of this User Manual and Haemovigilance procedure CP-HV-0001 Pre-Transfusion Sampling, Request and Prescription of Blood and Blood Products)
d) Place the completed request form with the specimen into a dispatch bag before sending to the laboratory
e) Dispatch sample to the Laboratory – if this is an urgent request ensure the laboratory is informed.

Note - Steps a) to c) above MUST be performed at the patient's bedside.
Specimens accompanied by their appropriate request forms must reach the laboratory with **minimum delay**.

10.2 Order of Draw



10.3 Minimium Sample Labelling Criteria

Please take great care when labelling sample containers. Samples will be rejected if labelling does not comply with the labelling criteria for samples as follows:

10.3.1 All Samples with the Exception of Samples for Blood Transfusion and Genetic Testing

- Patient Full Name (Surname and Forename), do not use initials
- Hospital Number **or** Date of Birth
- The use of addressograph labels is encouraged
- Where possible the date/time of collection of sample and sample type should also be identified on the sample container.

10.3.2 Blood Transfusion Samples

- Blood Transfusion samples should be labelled using labels printed from the Blood Track Personal Digital Assistant at the bedside at the time of sampling only (labels must NOT be kept for later

use). Please note that these are the only type of printed labels permitted for Blood Transfusion (as they are printed at the bedside).

- If the PDA-generated label is not used, International Standards require that Blood Transfusion sample label **must** be **clearly handwritten** with the following:
  - Patient Surame and Forname
  - Date of Birth
  - Hospital Number
  - Date & Time of sampling
  - Signature of person taking sample
- Incorrectly labelled Blood Transfusion specimen containers which do not meet the legal completion criteria for processing will be discarded and a repeat sample will be required if deemed clinically necessary.

Please refer to CP-HV-0001 Pre-Transfusion Sampling, Request and Prescription of Blood and Blood Products if further clarification is required

10.3.3 Minimum Sample Labelling Criteria for Samples for Genetic Testing

- Patient Full Name (Surname and Forename) , do not use initials
- Hospital Number
- Date of Birth

11 DRIED BLOODSPOT CARDS

11.1 Dried BloodSpot Cards for Metabolic Laboratory (Acylcarnitines, Phenylalanine, Tyrosine)

11.1.1 Equipment required

- Sterile lancet (metered tip no more than 2.5 mm in depth)
- Latex free gloves
- Gauze
- Metabolic Blood Spot Request Form – card must be in date
- Envelope for dispatch to lab, water resistant and tear-proof (Tyvek or equivalent envelope)

11.1.2 Completion of the Metabolic Blood Spot Request Form

Ensure that the request form has been completed in full and that all the information is correct and legible, including the name of the patient.
Ref.: LF-META-0096 Metabolic Blood Spot Request Form

11.1.3 Technique for Sample Collection

a) Ensure the finger is warm
b) Cleanse the finger thoroughly with warm (to touch) soapy water. Air dry the heel or wipe dry with gauze. Avoid using alcohol wipes to clean the skin as this may interfere with the formation of a blood drop.
c) Rub the skin for 1-2 minutes to increase blood supply.
d) Squeeze skin taut.
e) Puncture finger firmly with lancet.
   Wipe away the first drop of blood. Obtain the second hanging drop touch the ciricles marked on the card gently to the hanging drop of blood so that the blood soaks through

from the back of the card to the front:

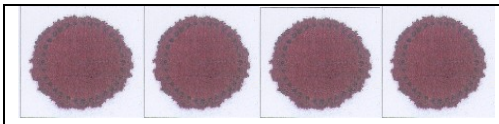
- blood drops must soak through from the back to the front of the card, filling all circles completely;
- check that the blood has soaked completely through the circle on the front as well as the rear of the card;
- do not press/squeeze the bloodspot to 'force' it through the card as this can compress the blood cells and may require repeat.

f) **Allow blood to dry at room temperature for at least 2 hours.** Do not use excessive heating as this may invalidate the test. Failure to fully dry the bloodspot before placing it in the envelope may result in serum rings, invalidating the sample and thus requiring a repeat sample to be taken.
g) Place yellow addressograph label on card
h) Fill in **DATE OF COLLECTION** on card
i) Place card in Tyvex envelope
j) Affix pre-addressed label and a stamp to envelope and post.
k) Ensure that the lancet is safely disposed. Never enclose the lancet in the envelope with the card.

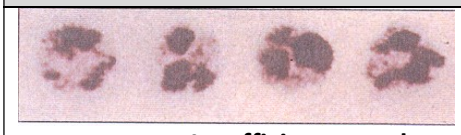
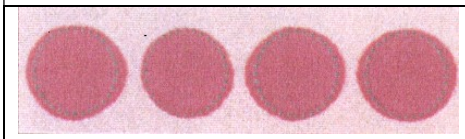
11.1.4 Quality of the Bloodspot Sample

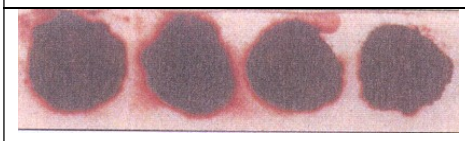
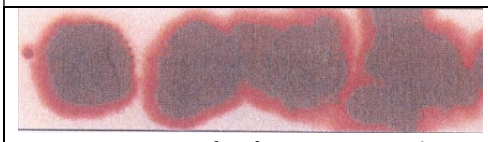
Please ensure that there is an adequate amount of blood on the card that completely fills each circle. An inadequate amount of blood or a poor quality dried bloodspot will require the procedure to be repeated.

GOOD QUALITY BLOODSPOTS

 **Good quality blood sample with enough blood should a test need to be repeated**	Sufficient amount of blood to soak through to completely fill all circles **N.B**.: 3.2 mm punches are taken from the card, all assay parameters are based on a completely filled punch , this is why a fully saturated spot is essential

POOR QUALITY BLOODSPOTS

Quality of Dried Bloodspot	Possible Causes/Comments
 **Insufficient sample**	• Insufficient blood collected • Blood should be soaked through from back to front to provide sufficient sample for analysis
 **Sample received wet**	• Sample sent to laboratory before completely dry • Wet samples can give a false result and pose a health and safety risk to staff

Quality of Dried Bloodspot	Possible Causes/Comments
 **Sample over saturated/layered**	• Applying layers of blood to card • Applying blood to both sides of card
 **Sample appears contaminated**	• Squeezing area surrounding puncture site • Allowing card to come in contact with gloved hands or substances such as milk, hand lotion etc. • Blood spot sample being compressed, causing cells to separate resulting in a diluted sample in the centre of spot
 **Sample shows serum rings**	• Allowing card to come in contact with liquids e.g. hand lotion, water, milk. • Drying specimen incorrectly, or dispatching to laboratory when still wet

11.2 Newborn Screening BloodSpot cards

Please refer to the Practical Guide to Newborn Bloodspot Screening in Ireland at https://www.hse.ie/eng/health/child/newbornscreening/newbornbloodspotscreening/practicalguide.pdf

12 SPECIMEN REJECTION

- The laboratory reserves he right to reject specimens that are improperly labelled or are accompanied by request forms that are incompletely filled. Consistent practices for specimen rejection are employed across the laboratory.
- **The following constitute improper labelling**
  - Minimum labelling requirements for request form and sample are not met (as defined in sections 9 and 10 of this document);
  - Discrepancies between details on the sample and request form;
  - Use of correction fluid on sample or request form;
  - Alterations to sample labelling that are not initialled by the person taking the sample;
  - Patient details written on the sample by more than one person
- The laboratory recognises that, in certain cases where the specimen is less common, involves an invasive procedure, or could not otherwise be easily recollected, it may be acceptable to apply an exception to sample rejection. Exceptions are applied using strict and explicit criteria in accordance with established procedures. The person who collected the sample will be required to sign a waiver assuming responsibility for the identification of the specimen. Reports relating to such samples will carry a disclaimer.

The laboratory may also reject samples that are leaking on arrival in the laboratory.

Bloodstained forms will not be accepted by the laboratory and will be returned to the requester to complete a new form.

13 SAMPLE TRANSPORTATION

13.1 Health & Safety

- It is the policy of the DPLM to treat all samples as potentially infectious or high risk. Therefore, we advise that universal precautions are taken in the collection process, packaging, and delivery of specimens to the laboratory for analysis.
- Specimens should always be placed in the transport bag attached to the request form and the bag should be sealed. Multiple specimens should be transported in rigid transport containers and should not be carried by hand or in plastic bags.

13.2 Specimen Delivery within the Hospital

- Specimens may be sent to the laboratory via the Pneumatic Tube System (PTS).
  The following samples must **never** be sent in the PTS:
  - Histology specimens
  - CSFs
  - Ammonia
  - Blood gas samples
- When sending urinesamples in the PTS please ensure the lid has been securely factened prior to placing in the specimen bag. This bag should be sealed prior to placing in the PTS carrier to ensure any spill is contained in the event that one does occur.
- Blood tubes should not be bloodstained when sending to the laboratory. Clean up contaminated tubes prior to sending.
- There is a regular collection service from ward areas by the Laboratory Porter.

13.3 Specimen Delivery from Outside the Hospital

It is the responsibility of all persons sending samples to the laboratory to adhere to national and international regulations ensuring that specimens sent to the laboratory do not present a risk to anyone coming in contact with them during transportation or on receipt in the laboratory. Carriage of goods by road must compy with the European Agreement Concerning the International Carriage of Dangerous Goods by Road Regulations (2007) (see http://www.unece.org/trans/danger/publi/adr2007/07ContentsE.html for details)

Instructions:

1. The packaging shall be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport. Packaging shall be constructed and closed to prevent any loss of content that might be caused under normal conditions of transport.
2. The packaging shall consist of three components:
   a. **A primary receptacle**
      Samples must be placed in a securely closed, watertight primary container such as a test tube, vial, etc.
   b. **Secondary packaging**
      This must be durable and watertight. Several primary containers may be enclosed in a single secondary container. If multiple fragile primary receptacles are placed in a single secondary container, they should be either individually wrapped or separated so as to prevent contact between them. The primary container(s) shall be packed in secondary packaging in such a way that under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging.

Please note that **dried blood cards** must be completely dry before being placed into a tearproof, water-resistant package such as a Tyvek envelope or equivalent. Cards must be completely dry before being placed in the secondary packaging (at least 3 hours at room temperature)

c. Outer packaging

The secondary container shall be secured in outer packaging with suitable cushioning material. Any leakage of contents shall not compromise the integrity of the cushioning material or of the outer packaging.

3. All samples are considered to be danger of infection and should be treated as such. Clinical information/patient details must be concealed from view.
4. The name and address of the sender is put on the back of the licensed container in case of damage or leakage.
5. For transport the mark "UN 3373" and "Biological Substances Category B" shall be displayed on the external surface of the outer packaging in a diamond on a background of a contrasting colour and shall be clearly visible and legible. The width of the line shall be at least 2 mm; the letters and number shall be at least 6 mm high.

Note: Infectious substances are divided into the following categories:

Category A	An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease to humans or animals.
Category B	Any infectious substance that does not meet the criteria for inclusion in Category A. These are assigned to UN 3373, with the exception of cultures, which are assigned UN 2814 or 2900 as appropriate. Samples of materials such as blood, tissue, excreta, secreta etc collected from humans or animals are considered, as a minimum, Category B infectious substances. For example, samples from otherwise healthy individuals or where there is no reason to suspect that they are suffering from a severe infectious disease. However, if there is evidence to suggest otherwise, e.g., on the basis of known medical history, local endemic conditions or professional judgement concerning the circumstances of the source material, then such material should be assigned to Category A.

14 SPECIMEN RETENTION POLICY

Specimen retention times are in accordance with

- Royal College of Pathologists Guidelinse (The Retention and Storage of Pathological Records and Archives)
- National Pathology Accreditation Advisory Council Retention of Laboratory Record and Diagnostic Material
- Guidelines on Specimen Retention produced by the HSE.

There are separate storage facilities for:

- Clinical material
- Blood and blood products

Storage facilities are in accordance with current legislation, regulations and guidelines.

Please note that while the samples are retained for the times detailed below, they may not be suitable for analysis / re-analysis (depends on test required). The laboratory will advise on sample suitability for re-analysis (also see section 16.2 below).

When the laboratory receives a request to retain samples, these will be held for a defined period and then disposed of according to laboratory policy. The period for which these samples are held will be advised to the requesting clinician in the form of a comment on the corresponding laboratory report.

14.1 Specimens and Preparations

Specimens and Preparations	Retention Time
IMSRL Samples	
Samples (blood, CSF,aspirates/fluids, bone, tissue, pus and isolates)	Negative samples held for 1 month. Negative DNA extracts held for 6 months Positive DNA extracts held permanently. Isolates held permanently.
Swabs	24 hours
Haematology	
EDTA samples	1 week @ 4°C in specimen fridge
Citrate samples	24 hours
Blood films	3 months minimum
Bone Marrow Aspirates Slides	Stained & unstained held permanently
Blood Transfusion Samples*	
Blood Transfusion – Primary samples	1 month
Separated plasma	4 months

14.1.1 Post Mortem Material

Retention and disposal of post mortem material is currently undertaken in accordance with the family's wishes. Following the post mortem, any retained organ is stored in the mortuary in formalin fixative until all results are finalised and post mortem report complete (generally for about 12 weeks). Depending on the wishes of the parents, retained organs are stored in the PM room until returned to them for burial or cremation. Otherwise they are disposed of according to hospital practice.

With explicit parental consent, material may be retained for possible future research.

14.1.2 Residual Samples for Research Purposes

The use of residual or surplus samples for research must first be discussed with the relevant Laboratory Consultant. Approval must then be sought from and granted by the hospital Ethics Committee or appropriate body. Ethical approval must be sought independently for every proposed study. If used, all samples must be anonymised. With certain unique samples e.g. biopsy, only a portion of the sample must be used. Sufficient sample must be retained in the event of further investigations being required.

Policy on use of residual samples for research purposes is under constant review by Hospital Ethics Committee.

14.1.3 Newborn Screening Cards

Please refer to the Practical Guide to Newborn Bloodspot Screening in Ireland at https://www.hse.ie/eng/health/child/newbornscreening/newbornbloodspotscreening/practicalguide.pdf and to the parent information leaflet attached to the NBS screening card (LF-NNS-0096).

15 REPORTS

- It is the responsibility of the laboratory to ensure that tests are performed to the highest possible standard and reported in the time specified within the Department of Paediatric Laboratory Medicine Test Requirements Manual.
- It is the responsibility of the requesting clinician to follow up on the test results.
- The main method of reporting results is by the production of a printed report. Each department has its own distinctive reports.
- ***Please note that results marked with * on the Report Form indicate abnormal results***
- ***If a report is printed over more than 1 page, 'CTD' is printed at the bottom of each page where a continuation page exists. The absence of 'CTD' indicates the end of the report at that page.***
- Performance specifications and indications of uncertainty of measurement for internal tests are available from the individual laboratories (where appropriate) on request.
- Reports received following the referral of tests to outside laboratories are entered on to the LIS (iLab), and the original report dispatched to the requesting clinician/ward.
- The laboratory does NOT fax reports. The laboratory will email encrypted reports (CTERA) or using Healthmail.

15.1 Phoning of Results

- Results are telephoned in the following circumstances:
  - When previously arranged, e.g. on "Urgent" samples with prior verbal notification
  - When asked to do so on the request form from ICU and ED and if appropriate
  - When results are abnormal or may be of relevance to immediate clinical management.
- The laboratory policy for phoning of results is as follows:
  - ✓ The scientist identifies themselves
  - ✓ The scientist asks for the identity (surname, first name and grade) of the individual to whom the results are given (this should be a professional directly involved in the patient's care).
  - ✓ The scientist states the reason for the verbal transfer of results, e.g. critical result.
  - ✓ The scientist states the results (including reference range and units) clearly and unambiguously, and any comments associated with the report.
  - ✓ The scientist asks the recipient to repeat the results to establish they have been received correctly.
  - ✓ The scientist reinterates urgency and indicates that the call has been logged.
- A record of all abnormal / critical telephoned reports is maintained in the laboratory information system.

15.2 Faxing of Reports

It is the policy of the DPLM **not** to fax reports.

15.3 Emailing Reports

The laboratory will email reports on request using secure Healthmail or encryption.

15.4 Issuing of Reports during Normal Opening Hours

- Once authorised the results are entered into the LIS (iLab) or for NNBSL reports once authorised are reported electronically by e-reports™ to all locations.
- Results that have been requested to be phoned, plus any unexpected abnormal results are phoned to the appropriate location as soon as they become available.
- Hospital reports are delivered twice a day (Mon-Fri) at 12.15 and 17.15.
- Reports for external hospitals and GPs are dispatched by post to their destination on the first working day after authorisation.
- **Blood transfusion** reports are held in a designated area within the Haematology/Blood Transfusion laboratory for collection by Medical/Nursing staff. Blood Group/Antibody Screen reports may be collected at any time. When blood is being collected, compatibility reports may be collected at the same time. Uncollected reports are sent to the requesting location after one week.

15.5 Issuing of Reports On-Call

- Once authorised, results are entered into the laboratory information system (Ilab).
- All abnormal results will be telephoned to the ward or to the requesting clinician.
- Reports will be placed in the sorting area in the laboratory office from where they can be collected.
- Where emergency on-call requests originate from external hospitals the results are phoned and a written report dispatched on the first working day thereafter.

15.6 Ward Access to Results from LIS (iLab) and Orion (Clinical Portal)

- Results from Microbiology, Haematology and Biochemistry, once authorised, are available on the Laboratory Information System (ilab).

The words "complete or resulted" seen against a microbiology specimen number on iLAB indicates that the examination is still in progreThe Laboratory would ask all staff to remember the principles of confidentiality when accessing laboratory results on the electronic systems. We would like to specifically highlight the follow issues:

- Staff should not look up results on other staff members or patients who are not under their care
- Staff should not approach the lab to obtain their own results which were sent through occ health or GP as lab staff are not permitted to release results to patients
- If you have specific concerns please contact the on-call Consultant for the discipline

15.7 Clinical Advice and Interpretation on Reports

Advice on the selection of examinations and clinical interpretation is available at all times.
If required, please contact individual laboratory section personnel as detailed in Section 3.

16 ADDITIONAL EXAMINATIONS

16.1 Requesting Additional Examinations (Verbal Requests)

- Users of Laboratory services may request additional examinations on specimens already sent to the Laboratory provided that
  - the laboratory has sufficient specimen remaining to perform the additional tests
  - the specimen is still of optimal quality to allow the reporting of accurate and meaningful results.
- Additional requests for examinations may be made verbally over the telephone. The medical scientist receiving the phone call will, if necessary, discuss the additional request with senior personnel before accepting the request. This is to ascertain the benefits of re-testing a sample which may or may not be suitable for re-testing at the time of request.
- The medical scientist in question will record the verbal request on the original request form along with the requestor's name and the time.

16.2 Time Limit for Requesting Additional Tests or Examinations

Department	Time limit for additional tests
General Biochemistry	• Within 24 hours of specimen collection • Discuss all requests for additional testing with senior staff in the Biochemistry Laboratory.
Metabolic Laboratory	• **Plasma / Serum**: within 2 weeks of specimen collection • **Urine:** up to one month after collection (urine organic acid only, unsuitable for urate/creatinine ratio > 5 d and GAG/Creatinine ratio > 2 weeks) • Discuss all requests for additional testing with senior staff in the Metabolic Laboratory.
NNBSL	• Please refer queries to the Director of the National Newborn Bloodspot Screening Laboratory or email info.newbornscreening@cuh.ie
Microbiology	• Because of the inherent difficulties with culture from stored samples (fastidious organisms will not survive, and commensals may overgrow under storage conditions) no hard and fast rule can be made in this area. • Discuss all requests for additional testing and examination(s) individually with senior staff of the Microbiology Laboratory.
Haematology	• Requests for additional testing are dependent on the test being requested. • Coagulation samples are very time-sensitive and are not suitable for analysis more than 2 to 4 hours after being taken. • For other requests, (e.g. infectious mono nucleosis, ESR, Malaria testing, tests sent out for flow cytometry), please discuss individual requests with senior staff of the Haematology and Blood Transfusion Laboratory. • Sickle cell screen and haemoglobinopathy screen requests may be added to up to 1 week after sample collection
Blood Transfusion	• For patients with no history of previous transfusions, samples can be used for compatibility testing for up to 14 days from date of sampling. This may be extended upon request where it is difficult to obtain

Department	Time limit for additional tests
	another sample – in such instances, written confirmation will be required confirming that the patient has not been transfused in the 3 months leading up to the surgery date. • If the patient has been transfused (or pregnant) **within the preceding 3 months** or if such information is uncertain or unavailable, serological studies should be performed using blood collected **no more than 3 days in advance of the actual transfusion**. e.g. If sample is one day old, blood would have to be transfused within 2 days. See table below for rules (Excluding neonates up to 4 months of age). • If the patient is receiving on-going transfusion request a fresh specimen for antibody screening every 72 hours (Excluding neonates up to 4 months of age). • Samples are kept for 4 months in case that a Transfusion Reactions Investigation becomes necessary. • Requests for additional testing and/or further products must be made on a Blood Transfusion Request Form. • In urgent cases to facilitate rapid issue, this may be preceeded by a phone call, but blood products will not be released until a completed request form is received • In the case of a major haemorrhage the Major Haemorrhage request form (CF-HV-0021) may be used to make the request for blood and blood products. Please discuss individual requests with Blood Transfusion Laboratory staff • Service not available for GP requests
Histopathology	All requests for additional testing and examination(s) must be made within 1 month of original examination request.

16.3 Requesting Repeat Examinations

On occasion the Laboratory may request a repeat specimen for examination for one of the following reasons:

- Failure of the initial testing process.
- Specimens that are received and are unsuitable for the test(s) requested (e.g. saliva for sputum test, urine for blood tests, sample taken into incorrect collection tube), or if the specimen has been in transit for too long for a valid result, the specimen will be rejected.
- If insufficient specimen is received for all tests requested and the specimen is easily recollectable (e.g. urine, stool, sputum, blood), a repeat collection will be repeated. Test(s) for which there is sufficient specimen will be performed. If the specimen is not easily recollectable (e.g. CSF, fluids), the ordering clinician will be contacted to establish priority order of tests to be performed.
- The necessity for further examinations.
- Concern about the validity of the results relative to recent previous results on specimens from the same patient
- To confirm abnormal findings

17 ADDITIONAL INFORMATION FOR GPs

The Department of Paediatric Laboratory Medicine at Children's Health Ireland at Temple Street provides a service to General Practitioners for children aged sixteen years and younger.

17.1 Request Forms

All requests for laboratory tests MUST be ordered using the official Children's Health Ireland at Temple Street GP request form. These are available from the phlebotomy department. The request form must be completed and signed by the requesting doctor. The request form is the basis of the contract between the clinician and the Laboratory. Parents of patients presenting without the appropriate request form may be referred back to their GP.

17.2 GP and Patient identification

All request forms MUST contain sufficient details to uniquely identify the patient and GP.
The contact details (especially the telephone number) of the GP must be included on the form.

17.3 Clinical and Scientific Advice

The laboratory offers comprehensive advice on the requesting and interpretation of laboratory tests. GPs are encouraged to use this service, especially if non-routine tests are required.

17.4 Clinical Information

It is essential that request forms contain the clinical indications for all tests or profiles ordered. Failure to provide sufficient clinical information may result in some test requests being refused. Urine organic acid and acylcarnitine requests received with no clinical details will have a €25 surcharge and requesting laboratory invoiced.

17.5 Allergy and Immunology Testing

Allergy and Immunology testing are not available in our laboratory and such requests must be referred to outside laboratories. This incurs a cost to the hospital and GPs are asked to only order appropriate tests. Up to 3 allergens from the following list (which has been compiled by the Clinical Allergy team) may be requested if supporting clinical information is supplied.

- Milk
- Egg
- Peanut
- Latex
- Sesame
- Kiwi
- Cod
- Prawn
- Tree mix
- Grass
- House dust mite
- Individual tree nuts
- Individually: cat, dog, horse

17.6 Demand Management

All laboratory analyses are expensive and tests requested by GPs which must be referred to external laboratories are a growing drain on the laboratory budget. Requests for batteries of "Screening" tests are

inappropriate and may be a risk to the patient. Tests that are relevant to the clinical presentation should only be requested and supporting clinical information supplied.

Only tests that are appropriate to primary care are provided to GPs. Patients with suspected genetic or metabolic conditions should be referred to the appropriate clinic for full investigation.

17.7 Reporting

At present the laboratory provides paper and electronic (via Healthlink) reporting. If you wish to have your reports delivered electronically, please register with the National Healthlink Project (www.healthlink.ie)

18 PHLEBOTOMY GUIDELINES

- The importance of collecting an appropriate sample from the correct patient cannot be over emphasised. Patient diagnosis and treatment may be based on the results of specimen analysis and the implications of error are self-evident.
- The work of the phlebotomist involves the collection of blood using aseptic techniques and strictly adhering to standard precautions from patients whose history of infectivity may be unknown.
- These guidelines must be followed when obtaining blood samples from either in-patients, located within the various wards or out-patients and GP referred patients presenting at Phlebotomy.

18.1 General Precautions

1. Standard precautions must be observed when taking blood.
2. Disposable non-sterile gloves must be worn by the phlebotomist when taking blood at all times and are changed between patients.
3. Hands are washed or an anti-microbial gel is applied before and after each procedure and on removal of gloves.
4. When sampling blood from any patient, extreme care must be taken and every patient must be considered as potentially high risk - refer to Section 18.7 .
5. All cuts and abrasions are covered with a waterproof dressing. Protective eyewear (goggles) is available if required.
6. Needle must not be re-sheathed when removed from syringe – it is placed in the sharps container provided. Each user of 'sharps' is responsible for their safe and appropriate use and disposal. 'Sharps' must never be left for a colleague to tidy up.
7. Spillage of blood must be avoided. If a spillage occurs, spillage is cleaned according to Hospital Procedure.
8. Care is taken to prevent needle stick injuries when using and disposing of needles. Refer to hospital policy on needle stick injury

Note:
(i) Avoid touching tip of syringe off the collection tube when filling as this may affect sample results.
(ii) Blood must NEVER be poured from one tube to another since the tubes can have different additives or coatings. Refer to Section **Error! Reference source not found.** of this document.
Ref.: All Hospital Policies and Phlebotomy Procedures are available on Q-Pulse

18.2 Primary Sample Collection

The child (and parent/guardian if appropriate) is greeted by the phlebotomist who identifies him/herself and describes the procedure that will take place. Patient information leaflets are also available. Correct patient identification is MANDATORY.

If an **outpatient,** the parent/guardian MUST confirm the identity of the child and the phlebotomist MUST confirm that all laboratory forms and ultimately the samples are labeled with the appropriate identifying criteria.

If an **inpatient**, seek consent for the procedure and reassure the patient and parent/guardian. If the patient is able to respond, full name and date of birth must be confirmed – the armband must be checked for confirmation.
Note: *Blood must not be drawn if the armband is missing.*

18.3 Procedure for Collection of Blood

1. Assemble all equipment e.g. needles/multifly system, sample tubes, request forms, tourniquet and sharp's container, cotton swabs or gauze dressings.
2. Introduce one's self to the patient and/or parent/guardian, explain the procedure, seek consent for procedure and reassure the patient and parent/guardian.
3. Positively identify the patient with requisition form at the bed-side.
4. Ensure the patient is positioned safely so he/she will not fall in the event of fainting.
5. Verify any patient diet requirements e.g. confirm that the patient is fasting if a fasting specimen is required.
6. Position the patient comfortably e.g. pillow or supporting arm.
7. Confirm information is correct on request forms.
8. Select vein (preferably anti-cubital fossa).
9. Apply tourniquet. Allow time for vein to stand - palpate if necessary. Avoid use of tourniquet for more than 1 minute as prolonged use can alter test results as well as causing discomfort to patients (ionised calcium to be taken without a tourniquet).
10. Perform venepuncture, inserting needle/multifly with bevel edge uppermost.
11. Withdraw blood samples. Release tourniquet before removing needle/multifly from vein to avoid haematoma formation, when task is almost complete.
12. When all samples are obtained, place a clean swab/gauze on venepuncture site and remove needle/multifly and place in the sharps container.
13. Do not flex patients arm after venepuncture. Ask patient or parent/guardian to apply pressure on swab/gauze at puncture site for a couple of minutes.
14. Transfer blood to appropriate sample tubes – refer to section (refer to the Test Requirements Manual for details).
15. Mix specimens by gently inverting two to three times.
16. Label specimen tubes using clear writing e.g. Patient Name, DOB, Hospital Number (for blood transfusion only), label at the patient's bedside. All blood transfusion specimen tubes to be signed by the person taking the specimen. Refer to Section 8.1 for sample labelling and Section 9.2 for request form instructions for blood transfusion.
17. Place specimen tubes in the specimen bag and seal. Specimen tubes are not labelled prior to venepuncture.
18. Check venepuncture site and apply tape to hold swab/gauze in position.
19. Reassure patient and ensure comfortable.

20. On wards, leave sample at designated area for delivery to the laboratory. STAT samples are delivered immediately to the appropriate laboratory by the phlebotomist.

18.4 Collection of Blood for Blood Cultures

- Decontaminate the blood culture bottle tops.

Blood culture bottle tops are clean, but not sterile. They must be decontaminated with 70% isopropanol ("mediswab") and allowed to dry before they are inoculated with blood.

- Decontaminate your hands

Blood culture contamination frequently comes from bacteria on the hands of the person taking the blood culture. If hands are visibly clean, alcohol-based hand rub is the most effective method of hand decontamination. If hands are soiled, wash with antiseptic soap ("Hibiscrub") and water, and dry thoroughly.

- Decontaminate the patient's skin

The skin around the site from where the blood culture is being taken is a frequent source of bacterial contamination. After an appropriate site has been chosen, clean the site and surrounding skin with 70% isopropanol and allow to dry (should only take a few seconds)

- Maintain aseptic technique

Inadvertently touching areas that must remain sterile during the procedure, or contaminating your hands by touching a non-sterile area (e.g. the bed side table), can introduce bacterial contamination. Therefore, don't touch critical parts (including the skin following disinfection) and wear sterile gloves.

- Do not take blood via a central or peripheral venous catheter

Catheter hubs are frequently contaminated by bacteria, and attempts to decontaminate them will not prevent contamination of blood cultures. Blood cultures should only be taken via an intravascular catheter if being taken as part of a work up for suspected catheter-related ("line") sepsis.

- Inoculate the blood culture bottle(s) first

If taking blood for other tests, inoculating the blood culture bottle first minimises the risk of cross contamination between sample tubes.

Ref.: INC025 Policy for Taking Blood Cultures

18.5 Special Precautions for Inpatients

1. Do not make more than two attempts to draw blood. Use a sterile needle/multifly on each attempt. In the event that 2 attempts have been unsuccessful on the wards, inform the clinical nurse manager and return the request form.
2. Do not draw blood from in-dwelling lines or cannulae unless one is trained and authorised to do so.
3. Do not draw blood from an arm with an infusion in progress. When infusions are in place on both arms ask staff if one can be switched off for 3 minutes minimum to allow for venepuncture to take place. Advise staff when procedure has been completed. Do not perform venepuncture on a limb which is paralysed or on a limb with evidence of oedema or where surgery on axillary lymph nodes has taken place. Do not perform venepuncture above or below a renal fistula.
4. If taking blood from a patient with an indwelling line – refer to Nursing Policies available on the Hospital Intranet.

18.6 Haemolysed Samples

Factors in performing venipuncture, which may account for haemolysis includes:

- Using an improperly attached needle and syringe so that frothing occurs
- Pulling the plunger of a syringe back too quickly

- Vigorous shaking or mixing
- Forcing blood into a collection tube
- Failure to allow alcohol to dry
- Very slow flow into collection tube
- Drawing blood from indwelling line
- Failure to release tourniquet
- Drawing blood from a bruised area

18.7 Risk of Infection

When sampling blood from any patient extreme care must be taken and every patient must be considered as potentially high risk. Gloves must be worn when taking blood from all patients and these must be changed between each patient draw.
Decontaminate hands thoroughly before proceeding to the next patient and dispose of PPE.

Note: Staff are strongly recommended to accept Hepatitis B vaccination and to complete the course as quickly as possible. Immunisation is free and available from the Occupational Health Department.

18.8 Disposal of Materials used in Sample Collection

Materials used in sample collection in the hospital are disposed of in accordance with Hospital polies, PP-CLIN-IPC-002 and PP-CORP-FM-003.

19 POST MORTEMS

19.1 Patients who die in Hospital

- It is the responsibility of the Medical/Surgical Consultant in charge of the patient's care to obtain consent for a post mortem examination from the parent/next of kin. However, if this responsibility is delegated to medical/surgical registrar, it is imperative that the Medical/ Surgical Consultant in charge of the patient's care is consulted before arranging a hospital post mortem. The Consultant must also be informed before any notification to the Coroner.
- Prior to seeking permission for the performance of post mortems in hospital deaths, it should be first determined if there is any reason why the Coroner should be notified. If not, or if the Coroner declines to take the case, written permission to perform a post mortem must be obtained from the parent/next of kin using the Hospital (non Coroner's) post mortem consent form. This form, together with an information booklet for parents and families regarding post mortem examinations, is available in the hospital.
- Parents/next of kin should not be asked for consent if the death is or has been referred to the Coroner. If the Coroner orders a post mortem examination to be carried out, parents/next of kin are not legally permitted to withhold consent.
- Contact the CHI at Crumlin Consultant Histopathologist (via the CHI at Crumlin switch at 409 6100) to discuss the case and to ensure that it is acceptable for a hospital post mortem examination.

19.2 Coroner's Post Mortems

- Coroner's post mortem examinations are also provided by the Consultant Histopathologist (in CHI at Crumlin).
- Coroner's post mortem examinations are required if the cause of death is unknown or, although if known, is not due to natural causes. The Dublin City Coroner's Office must be notified at the earliest opportunity:
  Dublin City Coroner's office: (01) 874 6684 / 874 3006
- The Coroner must be furnished with the deceased details as follows:
  1. Name
  2. Address
  3. Age/Date of Birth
  4. Family General Practitioner if known
  5. Circumstances surrounding death (see protocol in A/E Department)
- **Deaths Reportable to the Coroner pursuant to Rules of Law include:**
  - All sudden unexpected or unexplained deaths including Sudden Infant Death
  - All unnatural deaths including any suspicious deaths
  - All deaths occurring as a result of an accident
  - All patients brought in dead to the Emergency Room of the Hospital together with all patients who die in the Emergency Room
  - All deaths occurring within 24 hours of admission to hospital
  - All deaths occurring within 24 hours of a surgical/medical/anaesthetic procedure
  - Deaths which are indirectly the result of any surgical/medical treatment or procedure
  - Death of a child in care, or death of a patient in hospital having been recently transferred or discharged from a Nursing Home other residential institution.
  - Any deaths where the appropriate registered medical practitioner cannot sign a medical certificate of the cause of death (i.e. a deceased person not seen or treated within one month before death, or the cause of death is unknown, or if death may be due to unnatural cause).
- In these cases, or when in doubt, inform the Coroner's Office and enter a note to this effect in the deceased's medical records.
- If the Coroner orders a post mortem examination, permission from the parents/next of kin is not necessary and should not be requested. However, the parents/next of kin should be informed by the clinician that a post mortem is taking place and what that entails (see Guide to Post Mortem Examination - Information booklet for families, available on Wards and in the Emergency Department).
- Protocols to be followed in the event of a death of a child in Hospital, or brought in dead, are available in Emergency Department, ICU and Hospital Wards. If in any doubt please contact the CHI at Crumlin Consultant Histopathologist on call (via CHI at Crumlin) switch 409 6100) and/or the Anatomical Pathology Technician on call (through Children's Health Ireland at Temple Street Switch).
- If metabolic tests are equivocal or difficult to interpret, the newborn dried blood spot may be analysed. Written permission from the Coroner is required. All requests should be discussed with Consultant Chemical Pathologist/Director of the Newborn Bloodspot Screening Program

19.3 Post Mortem Reports

- A final anatomical diagnosis incorporating information from clinical history, gross and microscopic examination and special studies is produced usually within 6 weeks for hospital post mortems;

these reports are sent to the requesting consultant. Should special investigations (e.g. neurometabolic, toxicology) be required the interval may be longer.

- Reports concerning Coroner's post mortems are sent directly to the Coroner and a report may not be available for the clinician until after the death certificate has been issued by the Coroner (approximately 3 months).