Kingston Health Sciences Centre

Centre des sciences de la santé de Kingston

Hôpital Hotel Dieu Hospital

KGH Hôpital Général de Kingston General Hospital

Laboratory Users' Handbook

7.8 Edition

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This Manual is Issued

Under The Authority

of

Sandip SenGupta, MD, FRCPC, FCAP

Medical Director, Clinical Laboratory Services

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Kingston Health Sciences Centre

Clinical Laboratory Services
LAB USERS' HANDBOOK

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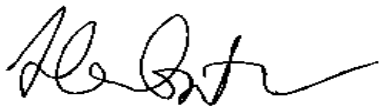
INTRODUCTION

It is my pleasure to be able to offer this important resource to *you*, the "lab user", and hope that it will aid you in caring for your patients through a more expeditious identification of both common and esoteric laboratory tests and services that are offered through the different laboratories that comprise Kingston Health Sciences Centre (KHSC) Clinical Laboratory Services. The manual is intended to provide you with patient preparation, specimen collection containers and specimens handling procedures.

Our primary goal is to ensure that you receive accurate, reliable, meaningful, and timely laboratory results with minimal requirements for repeat testing (e.g. for improper specimen collection). A secondary goal is to promote optimal utilization of laboratory resources through appropriate test ordering practices. We strongly encourage you to consult with us at any time (including "after hours"), especially for unusual situations or special requests. If a "specialty test" is not available locally, yet is important for patient care, then we will make the necessary arrangements to send the specimen to the appropriate reference laboratory, whether it is in Ontario or out-of-province. The Directory in this manual provides our contact numbers.

Our sincere thanks go to all the laboratory staff managers and clinical directors who have made significant contributions to the preparation of this user manual. We would appreciate your taking the time and effort to notify us of any errors, omissions, or missing information so that we may continually improve the services that we provide you. e-mail me at sandip.sengupta@kingstonhsc.ca.



Sandip SenGupta, MD, FRCPC
Medical Director, Clinical Laboratory Services
The Lab Users' Manual Edition 7.8 is presented in table format.

In as much as we endeavour to keep the information as current as possible, changes to specimen requirements and frequency of testing do occur. This document is to be used for reference purposes only.

Reference ranges may change when a method of testing or technology is changed. For this reason, we request the user to refer to the appropriate electronic or paper lab test report for proper interpretation of results.

Selected tests are offered on a STAT basis. Test turnaround times for these tests are usually within an hour. However, we request the users to use this category of test request judiciously and limit the use of STAT request to emergent and urgent situations.

The use of proper specimen collection techniques, specimen container, and appropriate specimen volume are some important pre-analytic factors needed to ensure integrity of test results. Please consult these sections for your guidance. As well, correctly identified specimens are very important to ensure patient safety.

For information regarding any test or procedure not listed in the Manual, please call the appropriate laboratory listed in the Telephone Directory.

Joyce deVette-McPhail
Administrative Director, Clinical Laboratory Services

LABORATORY TELEPHONE DIRECTORY

(Also see KHSC website and www.path.queensu.ca)

ADMINISTRATION

Joyce deVette-McPhail	Administrative Director	613-533-2828
Dr. Sandip SenGupta	Medical Director	613-549-6666 x 4164

ANATOMICAL PATHOLOGY – HISTOLOGY

	Laboratory (Douglas 2)	613-549-6666 x 4037
Colleen Knapp	Laboratory Manager	613-549-6666 x 6065
Dr. Tim Childs	Service Chief	613-549-6666 x 4163
Dr. Jeffrey Tanguay	Clinical Director, Autopsy	613-549-6666 x 6035

CHEMISTRY

	Laboratory (Douglas 1)	613-549-6666 x 7806
Donnah Pocius	Laboratory Manager	613-549-6666 x 4182
Dr. Michael Chan	Service Chief	613-549-6666 x 2836
Dr. Yun Huang	Clinical Biochemist	613-549-6666 x 4137

CYTOGENETICS

	Laboratory (Douglas 4)	613-549-6666 x 4219
Tammy Edwards	Laboratory Manager	613-549-6666 x 6847
Dr. Susan Crocker	Clinical Director	613-549-6666 x 4405

CYTOLOGY

	Laboratory (Douglas 2)	613-549-6666 x 4695
Colleen Knapp	Laboratory Manager	613-549-6666 x 6065
Dr. Marosh Manduch	Clinical Director	613-549-6666 x 4160

HEMATOLOGY

	Laboratory (Douglas 1)	613-549-6666 x 7806
Donnah Pocius	Laboratory Manager	613-549-6666 x 4182
Dr. David Good	Service Chief	613-533-6000 x 32823

HEMOSTASIS

	Laboratory (Douglas 1)	613-549-6666 x 7806
Donnah Pocius	Laboratory Manager	613-549-6666 x 4182
Dr. David Good	Clinical Director	613-533-6000 x 32823

IMMUNOLOGY

	Laboratory	613-549-6666 x 4602
Tammy Edwards	Laboratory Manager	613-549-6666 x 6847
Dr. Graeme Quest	Clinical Director	613-533-6000 x 79616
Dr. Prameet Sheth	Microbiologist	613-549-6666 x 3272

MICROBIOLOGY

	Laboratory	613-549-6666 x 4178
Tammie Taylor	Laboratory Manager	613-549-6666 x 3662
Dr. Lewis Tomalty	Service Chief	613-533-6666 x 4180
Dr. Prameet Sheth	Microbiologist	613-549-6666 x 3272

Public Health Ontario Testing Directory: Test Directory Index

MOLECULAR GENETICS

	Laboratory	613-549-6666 x 4892
Tammy Edwards	Laboratory Manager	613-549-6666 x 6847
Dr. Harriet Feilotter	Service Chief	613-533-0000 x 75796

PHLEBOTOMY

Tammie Taylor	Laboratory Manager	613-549-6666 x 3662

POINT OF CARE TESTING (POCT)

Donnah Pocius	Laboratory Manager	613-549-6666 x 4182
	POCT Technologist	613-549-6666 x 3712
Dr. Yun Huang	Clinical Director	613-549-6666 x 4137

TRANSFUSION MEDICINE

	Blood Bank Laboratory	613-549-6666 x 4188
Donah Pocius	Laboratory Manager	613-549-6666 x 4182
Dr. Graeme Quest	Medical Director Transfusion Medicine	613-549-6666 x 4182

CUSTOMER SERVICE 613-549-6666 x 1332

HOURS OF SERVICE

CORE LAB

Chemistry	Douglas 1	24 hr	7 days
Hematology	Douglas 1	24 hr	7 days
Hemostasis (Coagulation)	Douglas 1	24 hr	7 days
Transfusion Medicine (Blood Bank)	Douglas 1	24 hr	7 days
Microbiology	Douglas 3	0700-2200 hrs	Monday to Friday
		0700-2000 hrs	Saturday, Sunday and statutory holidays
Immunology*	Douglas 4	0800-1600 hrs	Monday to Friday
Histology*	Douglas 2	0630-1700 hrs	Monday to Friday
Cytology*	Douglas 2	0730-1530 hrs	Monday to Friday
Cytogenetics*	Douglas 4	0830-1630 hrs	Monday to Friday
Molecular Genetics*	Douglas 4	0830-1630 hrs	Monday to Friday

* Laboratories closed on statutory holidays

OFF-HOURS CONTACT INFORMATION

On-call services are available to handle problems or additional testing that cannot be handled by the available laboratory staff.

Clinical Chemistry	Contact Core Lab – 613-549-6666 x 7806
Clinical Microbiology	Contact KHSC Switchboard
Cytopathology	Contact KHSC Switchboard
Hematopathology	Contact KHSC Switchboard
Hemostasis	Contact KHCS Switchboard
Transfusion Medicine	Contact KHCS Switchboard
Autopsy Pathology	Contact KHSC Switchboard

TEST AVAILABILITY

STAT

STAT Chemistry and Hematology test are performed 24 hours per day, seven days per week. The tests are performed as soon as possible. Results are usually available within one hour. Use the pink Laboratory Requisition for STAT requests.

STAT Microbiology tests are available during regular hours of service.

DAILY

Tests are performed on day shift and results available seven days a week for samples that are received by 1300 hrs.

WEEKDAYS

Tests are performed each weekday. Depending on the test, results may be available same day or next weekday. Microbiology reports may be issued at different time intervals depending on test requirement.

SPECIFIC DAYS ONLY AND REFERRED OUT TESTS

Tests are not performed every day. Samples may be sent to the laboratory; however they will be stored in the laboratory until the analysis is done. Contact the laboratory if necessary to find when the test will be run.

BY PRIOR ARRANGEMENT ONLY

Special laboratory preparation for testing is required. Contact the laboratory to make arrangements BEFORE obtaining the specimen.

CYTOLOGY EXPECTED TURNAROUND TIME

Non gynecological specimens	3 days	80%
Colposcopy Specimens	5 days	80%
Cancer Clinic Specimens	5 days	80%
All other PAP Smears	14 days	80%

BLOOD COLLECTION TUBES

The following blood collection tubes are used routinely and are designated by stopper colour in this Handbook.

Red top	Plastic tube – no gel, generally used for Chemistry
Gold top	SST (serum separator tube with gel) – generally used for Chemistry
Light Green top	Lithium heparin, plasma separator tube with gel (PST) – generally used for Chemistry
Dark Green top	Used in Chemistry, i.e. Lactate
Green top	Sodium heparin – Cytogenetics uses only Sodium heparin tubes
Lavender top	Potassium EDTA – generally used for Hematology and Genetics
Light blue top	Sodium citrate – generally used for Coagulation Tests
Royal blue top	K2-EDTA – generally used for all trace metals
Black top	Sodium citrate/citric acid – generally used for Hematology
Grey top	Potassium oxalate or Sodium fluoride
Yellow top	ACD (acid citrate dextrose solution A or B)
Pink top	Spray coated with Potassium EDTA – generally used for Transfusion Medicine

For skin puncture blood collection, 2 types of microtainer tubes are available:

Lavender top	Disodium EDTA
Green top	Lithium heparin

ORDER OF DRAW

Blood samples must be collected in appropriate tubes with attention given to the order-of-draw table below.

All Blood tubes (except Red and Gold tops) have additive to prevent clotting. These tubes **must be gently inverted** eight times after collection.

Order of Draw Table

1	Blood Culture Bottles	Blood Cultures
2	Light Blue Top	Hemostasis (Coagulation) – Must collect a full tube
3	Black Top	Sedimentation Rate
4	Gold or Red Top	Serum for Chemistry
5	Light Green Top/Dark Green Top	Light Green top-Plasma for Chemistry
6	Dark Green Top	Dark Green top-Sodium Heparin – Lymphocytes for Immunology Dark Green top-Lithium Heparin – example Lactate
7	Lavender Top	Hematology, Molecular Genetics and Flow Cytometry
8	Pink Top	Transfusion Medicine
9	Royal Blue Top (K2 EDTA)	Trace Metals
10	Grey Top	Referred in Glucose Tolerance Tests
11	Yellow Top (ACD)	Immunology

MINIMUM BLOOD VOLUMES – CHEMISTRY

1. Any combination of the following tests can be performed on a single 4.5 mL sample of blood drawn into a Light Green top PST tube or two full green top microtainers:

   Sodium, potassium, chloride, TCO2, glucose, urea, Creatinine, calcium phosphate, total bilirubin, direct bilirubin, total protein, albumin, cholesterol, triglyceride, uric acid, AST, ALT, Troponin, CK, ALP, GGT, amylase, iron, beta-hydroxybutyrate, magnesium.

2. Please contact the Core laboratory for minimum volumes for other test combinations.

THERAPEUTIC DRUG MONITORING

Trough drug levels

Trough (pre-dose) drugs levels are mostly used in therapeutic drug monitoring. Blood is collected for trough values within 45 minutes of next dose. Samples collected at other times may lead to inappropriate changes in dosages.

Peak drug levels

Peak (post-dose) blood levels are useful in specific circumstances only. Peak drug levels are available only for a few drugs and must be specifically ordered. Timing is critical.

24-HOUR URINE COLLECTION

1. Obtain the proper urine container for the test requested.

2. The patient should be instructed of the presence of corrosive chemicals in the bottle and the importance of these preservatives to the analysis.

3. Instruct the patient NOT to remove any tablets or liquid preservatives that may be in the bottle and to note any warnings or instructions that may be printed on the outside of the urine container.

4. In the morning (for example 7:00 am), the patient is to completely empty the bladder and **discard the urine**. Record the exact time of the first void on the bottle. This is the start time.

5. All urine that is voided over the following 24-hr period must be collected and added to the container.

6. If a patient is to have a bowel movement, patient should first empty the bladder and add urine to the container. This precaution will avoid loss or urine.

7. Exactly 24 hr later (in this case, 7:00 am of the following day) the patient must completely empty the bladder and add this specimen to the container. This is the last specimen and completes this 24-hr collection. Record the exact time of the last void on the bottle. This is the end time.

8. The 24-hr collection bottle must be kept in a cool place.

9. The 24-hr collection should be sent to the laboratory as soon as possible.

SPECIMEN IDENTIFICATION

All specimens must be clearly identified with a label securely affixed to the specimen container at the time of collection. Labels must include patient last name, first name and patient ID #. The date and time of collection and the identification of the person collecting the specimen must be noted on the accompanying requisition.

The appropriate requisitions must accompany all specimens, must be fully completed and must match the specimens. Requisitions are available from KHSC stores unless otherwise indicated. **Pink Requisitions should only be used for STAT requests for Core Laboratory**.

REJECTION OF LABORATORY SPECIMENS

Demographic information on the requisition MUST match that on the specimen. Hospital policy and Institute for Quality Management in Healthcare require that unlabeled specimens or specimens with labels that do not match the requisition be rejected.

The submitting location will be notified to collect a repeat specimen and the laboratory will record the incident in safe reporting.

In circumstances where a repeat irretrievable specimen cannot be obtained, a laboratory physician, scientist or manager may authorize the individual who procured the specimen to attest, in writing, as to the origin of the specimen. The identifier of the specimen will have to sign the lab requisition and the information will go into the laboratory information system as a permanent record. The individual must be prepared to attend the laboratory concerned to label the specimen within 2 hrs of notification. The incident and steps taken to label the specimen will be recorded by the laboratory and noted on the laboratory report.

Specimens will also be rejected due to inappropriate referral, inappropriate sample type or anticoagulant, or when presence of clots, tissue autolysis, necrosis, fixative precludes reliable investigation, or expired acutainer tubes.

The SIX Rights of Specimen Collection

1	Right **PATIENT**
2	Right **REQUISITION**
3	Right **TEST**
4	Right **ORDER OF DRAW**
5	Right **TUBE**
6	Right **LABELING**

TRANSPORTATION OF SPECIMENS

Specimens are sent to the Laboratory either via the pneumatic tube system or by porter. Specimens should be packaged in biohazard plastic bags. Place the matching requisition in the pouch outside the specimen bag. Place the specimens in a container separate from the mail for porter pick-up. The following specimens can be sent via the pneumatic tube system: Blood samples for the Core Lab and Blood Bank, Microbiology blood culture bottles (no more than 2 per tube) and Microbiology Vacutainer samples.

For more detailed information, consult the Infection Control Manual and KHSC Administrative Policy Manual. The link is provided below.

REFERENCES:

Infection Control Manual: Management & Transportation of Specimens Policy # 2-45
Administrative Policy Manual: Pneumatic Tube System Policy #10-60

ADDITIONAL INFORMATION

Please see KHSC website, and www.path.queensu.ca for additional contacts and latest laboratory information:

- Further information on Six 'Rights' of Specimen Collection: Information sessions 'Clinical Labs and Clinical Nurses: *Working Better Together"*
- Management and Transportation of Specimens: Infection Control Manual 2-45 (http://kgh/infection_control/ic_publications/2-45.pdf)
- Venipuncture for Obtaining a Blood Sample: Advanced Competency (AC) for Nurses (Registered and Registered Practical Nurses) Policy B-4580
- Order of Draw information is incorporated on the Core Lab requisition.

- **ALPHABETICAL LISTING OF TESTS**

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
7 Dehydrocholesterol	Red top tube or light green top tube	6 mL blood. 3 mL serum/plasma. Fasting specimen preferred. Protect specimen from light. Specimen must be labelled inside and outside light-protecting wrap. Store and send frozen.	Specific Days Only (Referred Out)	Chemistry
11 Deoxycortisol	Red top tube Lavendar EDTA	2 mL blood. 1 mL serum/plasma, store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
17-Hydroxyprogesterone (17-OH Progesterone)	Light green top tube or red top tube	4 mL of blood. Referrals: 2 mL of plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
ABO Rh Group Confirmation	1-Pink Top Tube or 1-Lavender Top Tube	Collect peripheral blood. Label tubes using Blood Bank Collection Labels. Do not draw above on I.V. line. Complete Blood Bank Transfusion Collection Label with the collection date and time and phlebotomist's signature. The sample must be a separate, independent collection from the initial Type and Hold draw.	24 hr/7d STAT TAT; 10 minutes	Transfusion Medicine (Blood Bank)
Acanthamoeba	Sterile container	Place specimen in sterile saline.	Daily	Microbiology
Acetaminophen, Serum	Red top tube	3 mL of blood. Referrals: 1 mL of serum. In overdose cases, the first measurement should not occur before 4 hrs; follow-up measurements should be done at 8, 12, 24 hr.	Daily or STAT	Chemistry
Acetylcholine Receptor Antibodies, Serum	Red top tube	2 mL of blood. Referrals: 1 mL of serum. Store frozen. Ship on dry ice.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	TurnaroundTime/ Availability	LABORATORY
Acetylcholinesterase Electrophoresis, Amniotic Fluid	Sterile plastic tube	1.0 mL amniotic fluid. (Test is only performed on samples with an elevated Amniotic Fluid AFP or an increased risk of open neural tube defect).Store refrigerated. Ship on frozen cool pack in an insulated container via overnight courier.	Specific Days Only (Referred Out)	Chemistry
Acetylprocainamide (NAPA) Serum	Red top tube (no gel)	See: N-Acetylprocainamide	Specific Days Only (Referred Out)	Chemistry
Acetylsalicylic Acid (ASA)	Red top tube	See: Salicylate	Daily or STAT	Chemistry
Acid-Fast Stain, Mycobacteria – STAT Request	Sterile container	Acid-fast smear can be performed in the Microbiology Laboratory by STAT request. A concentration procedure which is required to increase sensitivity of acid-fast staining/culture will be performed only at Public Health Laboratories.	Daily	Microbiology
Activated Partial Thromboplastin Time (APTT or PTT)	1 Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice. ALSO NOTE: For patients receiving unfractionated heparin it is essential that samples be processed within one hour of draw.	24 hr/7d Turnaround time 1 hour	Hemostasis

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Activated Partial Thromboplastin Time 50/50 Mix	1 Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice.	24 hr/7d Turnaround time 1 hour	Hemostasis
Acylcarnitine Profile, Plasma or Serum	Gold or Light green top tube or red top tube	2 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
ADAMTS-13 Activity	2 Light Blue top tubes	4.5 mL draw. Minimum 2 tubes. Venipuncture preferred. Proper filling and mixing of tube is very important. Overfilled and underfilled tubes and clotted samples are unsuitable. Include diagnosis, medications and recent results for platelet count, Hemoglobin, RBC morphology, LD on requisition. Sample is only stable up to 4 hours after collection. The plasma must be double centrifuged to ensure the plasma is platelet poor (plt ct <10 x10^9/L). Separate into four 1mL aliquets and freeze immediately. Ship frozen on dry ice.	Weekdays (Referred Out)	Hemostasis

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Adrenocorticotropic Hormone (ACTH), Plasma, ACTH Stimulation Test (See Appendix I)	2 pre-chilled Lavender top tubes	5 mL of blood. Collect specimen between 0800-1000 hrs, record exact time. Send to Chemistry immediately on ice. Referrals: 2 mL of EDTA plasma. Collect blood in an ice-chilled Lavender top tube. Separate plasma in a refrigerated centrifuge within 30 minutes of collection. Transfer plasma to 2 12x75 mm polypropylene chilled tubes, and freeze immediately and store in the freezer. Ship on dry ice. Please order CORTISOL along with ACTH to facilitate interpretation of the result. NOTE: ACTH interpretive Guide: Morning ACTH peak falls by half through the day. Interpret ACTH with simultaneous cortisol analysis and other clinical findings. NOTE: For ACTH stimulation it is actually cortisol that is being measured.	Specific Days Only (Referred Out)	Chemistry
Adrenoleukodystrophy Linkage Testing	Lavender (EDTA)	15 mL blood in EDTA. Samples required from appropriate family members including at least one affected individual. Accurate pedigree details to accompany blood sample.	Consult Lab Director Results may be available after 6 weeks.	Molecular Genetics
Aerobic Culture: Sterile Body Site – Body Fluid, Pleural, Peritonel, Pericardial, Synovial, Vitreous/Eye Fluid, Aspirated Body Fluid, etc.	Sterile Container	Submit specimen in sterile container.	Daily	Microbiology
Alanine Transaminase (ALT), Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma.	Daily	Chemistry
Albumin, Plasma	Light green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Albumin to Creatinine Ratio (ACR)	Urine collection container	Random urine or 24 hr urine collected without preservatives. Referrals: Random urine, or 15 mL from 24 hr urine. Record total urine volume on requisition. Store refrigerated up to 7 days. Freeze for longer storage. NOTE: ACR can be elevated with recent major exercise, fever, UTI, CHF, menstruation or acute severe elevations of blood pressure or glucose. Thus screening for albuminuria should be delayed during these conditions. Intravascular volume contraction or any acute illness can transiently lower kidney function, thus eGFR for screening purposes should also be delayed until such conditions resolve. 2008 Canadian Diabetes Guidelines.	Daily	Chemistry
Alcohol, Plasma	Light Green top tube	See: Ethanol, Plasma	Daily or STAT	Chemistry
Aldosterone	Light green top tube or red or gold top tube	2 mL of blood. Referrals: 1 mL of serum or plasma. Store and ship frozen. Indicate if patient was upright or recumbent	Specific Days Only (Referred Out)	Chemistry
Aldosterone, Urine	24 hr urine collection container	20 mL aliquot of a 24 hr urine specimen. Identify all drugs administered within previous 2 weeks. Referrals: 20 mL aliquot of a 24 hr urine specimen. Store and ship frozen. Urine volume and serum and urine electrolytes required.	Specific Days Only (Referred Out)	Chemistry
Alkaline Phosphatase (ALP), Plasma	Light Green top tube	1 mL of blood. (GGT is the preferred test to identify liver (vs. bone) origin of increased ALP in most cases). Referrals: 1 mL of plasma. Store and ship refrigerated or frozen.	Daily	Chemistry
Alkaline Phosphatase, Bone-Specific	Gold top tube or red top tube	2 mL blood. Referrals: 1 mL serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Alkaline Phosphatase, Iso-enzymes	Red top tube	6 mL blood. Iso-enzymes will not be done if Alkaline Phosphatase total is within the reference interval. Referrals: 3 mL serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Alpha Fetoprotein (AFP), Amniotic Fluid	Sterile plastic tube	1 mL amniotic fluid. Include age, weight, gestational age (between 15 and 22 weeks gestation only) on requisition. Ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Alpha Fetoprotein (AFP), Maternal Serum	Gold top tube	See: Maternal Serum Screen (MSS)	Specific Days Only (Referred Out)	Chemistry
Alpha Fetoprotein (AFP), Serum (Tumour Marker)	Gold top tube	2 mL of blood. Referrals: 1 mL of serum.	Daily	Chemistry
Alpha-1-Antitrypsin (A1AT)	1-EDTA (Whole Blood) 2-gold top tube (Serum)	A1AT testing is performed in two stages: Stage 1: Gold tube top (serum) test only-A minimum of 2 mL of serum is required. Stage 2: Genotyping: EDTA (whole blood) and red tube top (serum)-A minimum of 2 mL of serum is required. All patients will have Stage 1 testing done. Stage 2 will only be performed at the request of the ordering physician and upon receipt of the complete site specific requisition Note: This does not require the MOH pre-approved process notification. It is recommended that Stage 2 genotyping testing be done on all Stage 1 results of less than 1.4. THIS IS NOT A REFLEXIVE TEST.	Specific Days Only (Referred Out) Note: Both A1AT Tests (Activity and Phenotyping) are sent to referring laboratories for testing	Chemistry
Alpha-2-Macroglobulin	Red top tube	Full tube. Minimum 2 mL blood. 1mL serum.	Specific Days Only (Referred Out)	Chemistry
Aluminum, Plasma	K2 EDTA	7 mL of blood in K2 EDTA. 3 mL plasma, separate immediately into a polypropylene tube.	Specific Days Only (Referred Out)	Chemistry
Aluminum - Urine	New unwashed plastic container (metal free) with no metal lid or flued insert	24 hr or Random. Referrals: send 15 mL aliquot of urine collected as stated. State urine collection date, time and total volume or indicate "Random". Store and ship refridgerated. Diet restrictions.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Amikacin, Serum	Plain Red top tube (no gel)	2 mL of blood. Mark the time drawn on the requisition and indicate if the sample is Trough or Peak. Trough level: Collect blood prior to dose. Peak Level: 1 hour following IM dose 30 minutes following 30 min IV 15 minutes following 60 min Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Amino Acids, Plasma	Light Green top tube	1 mL of blood. Fasting samples are preferred. State hours since last feeding. Place on ice. Include clinical findings and medications on Genetics requisition. Referrals: 1 ml heparinized plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Amino Acids, Urine	Urine collection container	10 mL random urine. Referrals: Store and ship refrigerated or frozen. (Include diagnosis and medications on Genetics requisition).	Specific Days Only (Referred Out)	Chemistry
Aminolevulinic Acid (ALA), Urine	Random or 24 hr urine collected in dark bottle or wrap container with foil, protecting from light	See: Porphyrin Precursors (ALA & PBG)	Specific Days Only (Referred Out)	Chemistry
Amiodarone, Serum	Red top tube (no gel) or Plasma Heparin	6 mL of blood. Collect blood just prior to dose. Referrals: 3.0 mL of serum. Store and send frozen.	Specific Days Only (Referred Out)	Chemistry
Amitriptyline, Serum	Red top tube (no gel) or EDTA Plasma	5 mL of blood collected prior to morning dose or 10-12 hrs after last dose. Referrals: 3.0 mL of serum. Separate serum from cells within 3 hrs of drawing. Store and send refrigerated.	Specific Days Only (Referred Out)	Chemistry
Ammonia, Plasma	Lavender top tube	3 mL of peripheral blood in a 5 mL Lavender top tube. Transport to lab immediately ON ICE. Referrals: 1 mL of EDTA plasma. Freeze immediately. Ship frozen on dry ice. Delay in separation of sample and quick freezing by more than 15 minutes may cause an increase in final results.	Daily and STAT	Chemistry
Amylase	Gold top or light green top tube	3 mL blood. Referrals: 1 mL of serum or plasma (lithium herparin). Separate within 2 hours.Store and ship refrigerated.	Specific Days Only (Referred out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Amylase, Urine	24 hr urine collection container	20 mL of a 24 hr specimen collected without preservatives. Refrigerated during collection. Referrals: 5mL of urine. Store and ship frozen. Include urine colume and collection time on requisition.	By prior arrangement only	Chemistry
Amyloidosis	EDTA	15 mL of blood. No special instructions.	Weekdays 0830-1600	Molecular Genetics
Anaerobic Culture: Sterile Body Site-Fluid, Tissue, Aspirate	Anaerobic transport media	Tissue samples; place a 5mm piece of tissue/purulent material into the gel of anaerobic transport media	Daily	Microbiology
Androstenedione	Red top tube Or Plasma	4 mL of blood. Fasting sample preferred. (For women, collect 1 week prior to or following menses). Referrals: 2 mL of serum or plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Angiotensin Converting Enzyme (ACE), CSF	CSF tube	1 mL of spinal fluid. Referrals: Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Angiotensin Converting Enzyme (ACE), Serum	Red top tube	1 mL of serum. Collect after overnight fast to avoid interference from lipemia. Referrals: Store and ship frozen. WARNING: Drugs targeting the Renin-Antigotensin system confound interpretation of ACE in relation to Sarcoidosis.	Specific Days Only (Referred Out)	Chemistry
Antenatal Testing (Includes ABO, Rh, Antibody Screen)	2-Pink Top Tubes	7 mL Tubes of blood. Blood Bank (Transfusion Services) requisition must be fully completed. Tube labels must coincide exactly with the requisition or the specimen will not be accepted. Please record the estimated due date. Direct Coombs will be done if antibody screen is positive. If the presence of atypical antibodies is suspected upon testing, the Blood Bank will identify the antibody.	Weekdays Turnaround time 24 hr	Transfusion Medicine (Blood Bank)
Anti-Adrenal Antibodies, Serum	Red top tube	3 mL of blood. Referrals: 1 mL of serum. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Antibody Titration	2 – Pink top tube	7 mL tubes of blood. Samples must not be hemolyzed.	Weekdays Turnaround time 24 hr	Transfusion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Antidiuretic Hormone (ADH), Plasma	Pre-chilled Lavender tube for plasma ADH and Gold top tube for osmolality.	7 mL of blood drawn for plasma ADH and for serum Osmolality. Collect after 12h fast with patient recumbent for 1h prior to collection. Transport to laboratory immediately on ice. Separate plasma in a refrigerated centrifuge as soon as possible. Divide plasma equally into two PRE-CHILLED 12x75 mm polypropylene tubes and FREEZE immediately. Referrals: 3 mL frozen EDTA plasma. Store and ship frozen.	Specific Days Only (Referred Out) This test is available to Endocrinologists and Nephrologists. All other requests must be approved by a Clinical Chemist	Chemistry
Anti-Glomerular Basement Membrane Antibodies, Serum	Gold top tube	5 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Anti-Histone Antibody	Red top tube	3 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Anti-HLA Antibodies	Gold top tube or red	See: Panel Reactive Antibodies (PRA), Serum	Turnaround time 60 days	Immunology
Anti-Mitochondrial Antibodies	Gold or Red top tube	5 mL of blood. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection. Ship frozen.	Turnaround time 10 days	Immunology
Anti-native DNA Antibodies	Gold or Red top tube	5 mL of blood. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection. Ship frozen.	Turnaround time 10 days	Immunology
Anti-Neutrophil Cytoplasmic Antibodies (ANCA), Serum	Gold top tube	5 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated. Includes both P-ANCA (Perinuclear/MPO) and C-ANCA (Cytoplasmic/PR3) unless otherwise specified on the requisition.	Specific Days Only (Referred Out) Contact Clinical Chemist if STAT analysis is required.	Chemistry
Anti-Nuclear Factor, Serum ANF or Anti-Nuclear Antibodies ANA	Gold or Red top tube	5 mL of blood. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection. Ship frozen.	Turnaround time 10 days	Immunology
Anti-Smooth Muscle Antibodies	Gold or Red top tube	5 mL of blood. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection. Ship frozen.	Turnaround time 10 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Anti-Streptolysin O (ASO)	Red top tube	6 mL of blood. Test is qualitative. Request semi-quantitative testing if required.	Daily	Microbiology
Anti-Xa Activity -Standard Unfractionated Heparin -Low Molecular Weight Heparin	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice NOTE: For patients receiving unfractionated heparin it is essential that samples are processed within one hour of draw. For LMW heparin please collect sample 4 hours after administration.	Weekdays (STAT testing available with prior consultation) Turnaround time for STAT testing = 3 hrs	Hemostasis
Antithrombin (Functional)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	Weekdays	Hemostasis
Antithyrotropin Receptor	Red top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin, Serum	Specific Days Only (Referred Out)	Chemistry
Apolipoprotein A1	Red top tube Plasma EDTA	5 mL of blood. Referrals: 2 mL of plasma or serum separated from cells within 4 hours of collection, store and send frozen. NOTE: 12-14 hour fast recommended.	Specific Days Only (Referred Out)	Chemistry
Apolipoprotein B	Red top tube or Plasma EDTA	5 mL of blood. Referrals: 2 mL of serum or plasma separated from cells within 4 hours of collection, store and send frozen.	Specific Days Only (Referred Out)	Chemistry
Arsenic, Whole Blood	Royal Blue EDTA tube (K2 EDTA)	1 Full Royal Blue EDTA tube (6 mL) Store and Send cold.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Arsenic – Total, Urine	New unwashed plastic container (metal free) with no metal lid or glued insert	24 hr or Random urine. Referrals: Send 15 mL aliquot of urine collected as stated. State urine collection date, time and total volume, or indicate "random". Store and ship refrigerated. Avoid seafood consumption for five days prior to collection. If total arsenic is elevated, inorganic arsenic analysis will be performed and billed in addition when total arsenic is elevated.	Specific Days Only (Referred Out)	Chemistry
Arysulfatase A, WBC	Green top tube (no gel) 1-7 mL	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
ASA	Red top tube	See: Salicylate	Daily or STAT	Chemistry
Aspartate Transaminase (AST), Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL heparinized plasma.	Daily or STAT	Chemistry
Aspiration Large Gauge Needle (FNA) for Cytodiagnosis	See Handling Procedure	1. Aspirate the cyst under negative pressure using a syringe with a large gauge needle until no more fluid can be obtained. 2. Equalize the pressure in the syringe prior to withdrawal. 3. Expel fluid from syringe into container with tight fitting lid. 4. Send labelled container to laboratory. 5. If a significant mass remains after this procedure, a fine needle aspiration of the mass may be attempted if clinically appropriate (see Aspiration Fine Needle). Any large tissue fragments obtained during the procedure will be automatically separated and forwarded to the histology laboratory for histologic processing.	Weekdays 0800 – 1600	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Aspirin	Red top tube	See: Salicylate	Daily or STAT	Chemistry
Avian Precipitins, Serum (Specify species: Budgie/Parakeet, Canary, Chicken, Cockatiel, Duck, Goose, Parrot, Pigeon or Turkey)	Red top tube	Referrals: Store and ship refrigerated. 5 mL blood.	Specific Days Only (Referred Out)	Chemistry
Barbiturates Screen, Urine	Plastic container	See: Drug Screen, Urine	Daily or STAT	Chemistry
Batroxobin Time (Reptilase Time)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Referrals: If sample will be delayed > 4 hrs. Separate and freeze immediately. Ship frozen on dry ice.	Weekdays	Hemostasis
BCR/ABL Gene Fusion, Qualitative	Blood – Lavender top tube (EDTA) Bone Marrow – EDTA	PCR based analysis for the presence of the BCR/ABL gene fusion mRNA product. Use Molecular Genetics Oncology requisition (available from lab). NOTE: Specimen must be received by the laboratory within 24 hr.	Weekdays 0830-1600. Results available in 3-7 days.	Molecular Genetics
BCR/ABL Gene Fusion, Quantitative	Lavender top tube	PCR based quantitative analysis of the BCR/ABL gene fusion mRNA product. Use Molecular Genetics Oncology requisition (available from lab). NOTE: Transport specimen to lab IMMEDIATELY – must be received at the Banting Institute in Toronto within 24 hr of collection.	Specific Days Only (Referred Out) Submit samples ONLY Monday thru Wednesday.	Molecular Genetics
Beta-2-Glycoprotein	Red top tube Or SST	Separate serum into three aliquots. Freeze immediately. Store and send frozen. If the specimen thaws, it is unsuitable for analysis	(Referred out)	Chemistry
Beta-2-Glycoprotein 1 Antibody	Red Serum 1mL	Centrifuge, separate and freeze immediately. Store and send frozen. If the specimen thaws, it is unsuitable for analysis	Specific Days Only (Referred Out)	Chemistry
Beta-2-Microglobulin, Serum	Gold top tube	2 mL of blood. Referrals: 0.5 mL of serum. Ship and store refrigerated.	Daily (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Beta-Hydroxybutyrate, Serum	Gold top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily or STAT	Chemistry
Bile Acids, Total	Red top tube	Collect fasting specimen. Plasma is not acceptable. Referrals: Store and send frozen.	Specific Days Only (Referred Out)	Chemistry
Bilirubin – Direct, Plasma	Light Green top tube	1 mL of blood. Protect sample from Light. Referrals: 0.5 mL of heparinized plasma. Protect from Light. Store and ship refrigerated.	Daily	Chemistry
Bilirubin Scan, Amniotic Fluid	Wrap in aluminum foil to protect from light	5 mL amniotic fluid (minimum 3 mL). Phone Core Lab to advise that sample is being collected. Gross blood or meconium may invalidate the analysis. Include gestational age of fetus on requisition. (Test not valid before 28 weeks gestation). Referrals: Protect from light. Store and ship refrigerated.	Daily Notify laboratory to expect sample at 613-548-1332.	Chemistry
Bilirubin, Total, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated and protected from light.	Daily	Chemistry
BK Virus: Quantitative PCR	Lavender top tube (EDTA)	6mL of blood.	Weekly	Microbiology
Blood (Culture)	Blood aerobic bottle/blood anaerobic bottle/blood peds bottle	Appendix VIII - Blood Culture Collection	Daily	Microbiology
Blood Gases, Arterial	Whole blood collected in a Pre-heparinized syringe (5 or 3cc), sealed with cap provided and well mixed.	Minimum volume is 1.5 mL of blood. DO NOT SEND NEEDLES. Expel all air from syringe. Place sample on ice (NOT IN ICE) and deliver immediately to the laboratory. Pneumatic tube transport is NOT recommended as it can have a noticeable effect on PO2. List FiO2 concentration and patient temperature if other than normal. Syringe MUST be properly labelled.	STAT 24hr/7d	Chemistry
Blood Gases, Capillary	Pre-heparanized capillary tube with flea and capped at both ends (100 uL) (for Pediatric/Low volume samples)	Pre-heparinized capillary tube must be full, with no bubbles (mix thoroughly immediately after collection) Transport blood to the laboratory horizontally on ice. Hand delivered transport ONLY Sample stability: testing within 5 minutes is preferred : testing within 30 minutes acceptable	STAT 24 hr/7d	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Blood Gases, Venous	Whole blood collected in a Pre-heparinized plastic syringe (5 or 3cc), sealed with cap provided and well mixed.	Minimum volume is 1.5 mL of blood. DO NOT SEND NEEDLES. Expel all air from syringe. Place sample on ice (NOT IN ICE) and deliver immediately to the laboratory. List FiO2 concentration and patient temperature if other than normal. Syringe MUST be properly labelled.	STAT 24hr/7d	Chemistry
Blood Group Genotyping		Refer to https://www.blood.ca/en/hospitals/ottawa-reference-laboratory Pack and ship samples within 14 days of collection at 4 ° C to 30 C. Use Canadian Blood Services Laboratory Test Request form F040047.	Weekdays between 08:00-16:00. Turnaround time 2-3 weeks Sample is sent to CBS Laboratory.	Transfusion Medicine (Blood Bank)
Blood Products (5% Serum Albumin or 25% Albumin or IVIg or Factor Concentrate)	Not applicable	Complete and forward Blood Bank requisition. Notify Blood Bank of orders to transfuse.	STAT 24hr/7d	Transfusion Medicine (Blood Bank)
Blood Products (Cryoprecipitate or Fresh Frozen Plasma (FFP) or Random Platelets or HLA Platelets)	Not applicable	A current transfusion service sample must be on hand. Complete and forward Blood Bank requisition. Notify Blood Bank of orders to transfuse as soon as possible since availability of product is sometimes limited.	STAT 24hr/7d	Transfusion Medicine (Blood Bank)
BNP	Plasma EDTA	1 mL Blood. Grossly hemolysed samples are unsuitable for analysis. Referreals: 0.5 mL of plasma. Store and ship frozen.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Body Cavity Fluids for Cytology Applies to Paracentesis, Pleural Fluid, Thoracentesis, Pericardial Fluid, Peritoneal Fluid, Ascites, Ascitic Fluid, Peritoneal Washings	Plastic cup with tight fitting lid or in Green or Lavender top tubes	Minimum Volume – 10mL Maximum Volume – 100 mL 1. Collect up to 80 cc – 100 cc mid portion aspiration. 2. Add heparin to specimen to stop the fluid from clotting. For every 100 mL of fluid add 1 mL of heparin and gently mix. Labelling, ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, Patient demographics. Rejection Criteria: Unlabelled/mislabelled requisitions/specimen containers. Specimens collected in vacuum bottles. Special Instructions: DO NOT SEND FLUID SPECIMENS IN VACUUM BOTTLES. If this test is not for malignancy please indicate the reason on the requisition. If there will be a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Transport Requirements: Transport time-ASAP. Method-hand delivered. Temperature requirements-refrigerate if delay in transporting to lab TAT – regular testing 3 days, STAT 24 hours. Name of Requisition Form – Non Gynecological Cytology After Hours – send specimen to the core lab	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Bone Marrow Examination	Bone marrow collection kit provided by lab	1. Pediatric Hematology and all Non-Hematology/Oncology patients: Available by appointment only Monday – Friday (ext. 7806) Nursing units must have the appropriate materials for the performance of the test (aspirate/biopsy needles/sterile collection tray, etc.). The lab must be informed when physician is ready to being (ext. 6038 or 4183). The technologist will attend the beside to collect the appropriate sample vials/prepare slides and transport to the appropriate lab. 2. Hematology/Oncology patients: Samples may be collected using the BM collection kit provided by Core Lab. All samples are returned to the bag and forwarded to the Core Lab immediately after collection. 3. Samples from Outreach Locations: BM aspirate and biopsy samples (including prepared unstained smears and samples for DNA, cytogenetics or flow cytometry) are forwarded to Core Lab for processing as soon as possible after collection. NOTE: CBC/Diff results and 2 unstained peripheral blood smears should accompany the sample. 4. Bone Marrow Consults Outside Hospitals: Bone marrow aspirates and/or biopsy slides and/or paraffin blocks may be sent along with a consultation request.	Monday – Friday 0800 – 1600 hrs After-hours by pre-approval only Turnaround time – up to 1 week	Hematology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Brain Biopsy	See Handling Procedure	See: Tissue Examination, Brain Biopsy	Frozen Sections: Weekdays 0800-1700. Contact Histology lab prior to sending specimen (x4172). After hours contact the Pathology Resident on call through KGH switchboard (call at least one hour ahead to allow call back of staff). Turnaround time 20 minutes. Routine processing: Weekdays 0800-1600. Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Breast Biopsy and/or Biomarkers (ER, PgR, HER-2)	See Handling Procedure	See: Tissue Examination, Routine	Weekdays 0800-1700. Contact histology lab prior to sending specimen (KGH ext. 4172). Call at least 30 minutes ahead for Hotel Dieu Hospital breast specimens for tumour. After hours contact the pathology resident on call through the KGH switchboard (call at least one hour ahead to allow Callback of staff). Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Breast Cancer (BRCA) Genetics Tests	Lavender top tube	See: Familial Breast and Ovarian Cancer (BRCA 1, BRCA 2)	Weekdays 0830-1600. Requests for testing can only be made by the Familial Oncology Program at the Kingston Regional Cancer Centre, or through Genetic Services at Provincial Outreach Programmes.	Molecular Genetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Breast Nipple Discharge for Cytology	Microscope slides and plastic slide mailers	1. Gently massage breast towards nipple until secretion forms. 2. Place 50ml conical tube with CytoLyt under nipple to capture any fluid. Securely cap conical tube and mix by gently inverting tube. Labelling ID: with Patient's first and last name and one other unique identifier i.e. CR#, DOB, HCN Required Information: clinical information, Patient demographics Rejection Criteria: Unlabelled/Mislabelled requisitions/slides If the test is not for malignancy, please indicate the reason on the requisition Transport Time-ASAP Method-hand delivered TAT: Regular Testing – 3 days, STAT testing – 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology
Bronchoalveolar Lavage (BAL)	Sterile cup	1. Place aspirated fluid in a Sterile cup (minimum volume). 2. Fill out pink BAL requisition including diagnosis. 3. Forward sample (at room temperature) to the CoreLab immediately after collection. Note: Samples must be received in lab before 1300 hours to obtain optimim cell preservation and to allow sufficient time for processing.	M – F 0800-1600	Hematology
Bronchoscopy for Cytology	Washings: Specimen Container with tight fitting lid Brushings: 50 mL tube with CytoLyt (cytolyt is supplied by the cytology lab)	Bronchial brushing or washing Minimum Volume: 1 mL 1. Collect specimens during bronchoscopy by aspiration of secretions and/or brushing lesions. 2. Place brushes in 50 mL tube with 30 mL of CytoLyt added. Ensure brush is completely submerged in the CytoLyt.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Bronchoscopy for Cytology ***(continued from previous page)***	Washings: Specimen Container with tight fitting lid Brushings: 50 mL tube with CytoLyt (cytolyt is supplied by the cytology lab)	3. Collect washes in specimen cup with tight fitting lid. 4. Complete a requisition or order entry for each specimen. 5. Label specimen container(s) with patient's first and last name and one other unique identifier. Labelling ID: Label specimen container(s) with patient's first and last name and one other unique identifier, i.e. CR#, HCN, DOB. Indicate laterality on specimen and requisition. Required Information: Clinical information, patient demographics, laterality Rejection Criteria: Mislabelled/Unlabelled requisition/specimen container(s). Special Instructions: Do not allow brushes to air dry. Place them directly into the 50 mL tube containing CytoLyt. If the brush is allowed to dry the cells will not be diagnostic and the sample will be unsatisfactory for cytological evaluation. If the test is not for malignancy, indicate the reason on the requisition. There are specific procedures for processing specimens for opportunistic infections or asbestos. It is optimum to collect separate specimens for Cytology and Microbiology or any other lab. This will help to expedite results. Transport Time: ASAP. It is optimal to submit separate specimen containers for each lab. This will help expedite results. Method- hand delivered. Temperature requirements: Refrigerate if not immediately delivered to the cytology laboratory. TAT- Regular testing – 3 days, STAT testing – 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
C1 Esterase Inhibitor (Immunological), Serum	Red top tube	5 mL of blood. Referrals: 2 mL of serum. Store and ship refrigerated. Separate as soon as possible.	Specific Days Only (Referred Out)	Chemistry
C1 Esterase Inhibitor, Functional Assay, Serum	Blue top tube	1 mL of plasma. Separate plasma and freeze as soon as possible. Store and send frozen. Referrals: 1.0 mL of plasma (citrated). Freeze immediately. Store and ship frozen.	Specific Days Only (Referred Out) also see C1 Esterase Inhibitor-Immunological	Chemistry
C1Q Complement Component	EDTA Plasma	3 mL of blood. Send to laboratory immediately. Referrals: 1.0 mL plasma. Separate plasma from cells and freeze as soon as possible. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
CA 15-3, Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and send frozen.	Daily	Chemistry
CA-125, Serum	Gold top tube	2 mL of blood. Separate serum from clot as soon as possible. Referrals: 1 mL serum. Store and send frozen. NOTE: Two or three fold increase over the upper limit may be seen during menses. There is no value above which ovarian cancer is certain. High CA-125 occurs in many benign and malignant conditions.	Daily	Chemistry
CA 19-9, Serum	Gold top tube	2 mL of blood. Separate serum from clot as soon as possible. Referrals: 1 mL serum. Store and send refrigerated. NOTE: CA19-9 results must be interpreted in light of other clinical information. CA19-9 is not specific for pancreatic cancer.	Daily	Chemistry
Cadmium, Whole Blood	Royal Blue EDTA tube	1 Full Royal Blue EDTA tube. Store and send cold.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cadmium, Urine	New unwashed plastic container (metal free) with no metal lid or glued insert, no preservatives	24 hr OR random. Must state collection date, time and total volume or indicate "random". Store and ship refrigerated. Referrals: 15 mL urine required.	Specific Days Only (Referred Out)	Chemistry
Cadaveric Donor typing	ACD, Solution A	16 mL of blood , 2 tubes	As needed	Immunology
Calcitonin, Serum	Red top tube (no gel)	3 mL of blood. Collect sample FASTING to avoid interference from lipemia. Hemolyzed specimens are not acceptable for analysis. Plasma is not suitable for analysis. Place tube on ice immediately and send to lab on ice. Referrals: 2 mL of serum collected in a non-barrier gel tube. Separate serum from cells immediately in a refrigerated centrifuge and freeze at -20°C or lower. Ship on dry ice.	Specific Days Only (Referred Out)	Chemistry
Calcium, Ionized, Serum	Gold top tube	One full tube with separator gel collected without stasis. Tube must be full and unopened. Referrals: 1 full, unopened Gold tube. Centrifuge but do not remove stopper. Store and ship at room temperature or refrigerated.	Daily	Chemistry
Calcium, Ionized, Whole Blood	Pre-heparinized Blood gas syringe or Dark Green Lithium Heparin Vacutainer Tube or Pre-heparinized Blood Gas Capillary Tube (for Pediatric/Low Volume Samples)	Blood gas Syringe minimum volume is 1.5 mls. Dark green lithium heparin tube must be full and well mixed. Transport to laboratory at room temperature within one hour of collection. DO NOT remove cap or stopper prior to analysis – anaerobic conditions imperative.	STAT 24h/7d	Chemistry
Calcium, Plasma	Light green top tube	1 mL of blood collected without stasis. Referrals: 0.5 mL of heparinized plasma.	Daily or STAT	Chemistry
Calcium, Urine	Container available from chemistry	24 hr urine collected in bottle containing 20 mL of 6M HCL. Referrals: 6 mL of urine. Must state collection date, time and total volume or indicate "Random". Final pH2 Random Urine will be acidified by the Laboratory.	Weekdays	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Calculi, Urinary	Urine container	Calculi (intact or fragments). State origin of stone on the requisition. Referrals: Store refrigerated. Specimen may be shipped at room temperature for periods of 1 – 2 days.	Specific Days Only (Referred Out)	Chemistry
Calprotectin	Urine Container	Send fecal specimen in a screw-capped, plastic container. Do not add preservative. Store and send cold. Provide collection date and time. Regrigerated specimen must be received Monday-Wednesday within 48 hours of collection.	Specific Days Only (Reffered Out)	Chemistry
Caput Blood Gas	Full heparinized (no bubbles) capillary tube with flea (clintubes ref#942-892 100 µℓ)	Connell needs to call when ready and MLT will come to Connell 5 desk (if available) to pick up sample. Connell 5 staff will collect insert flea and seal ends with rubber caps and mix sample until MLT arrives.	STAT 24 hr/7 d	Chemistry
Carbamazepine, Serum	Red top tube (no gel)	1 mL of blood. Collect at trough concentration (pre dose). Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily	Chemistry
Carbon Dioxide Content (CO2), Plasma	Light Green top tube	1 mL of blood. Referrals: Send a 0.5 mL heparinized plasma in a full, tightly-capped plastic vial. Ship at room temperature or refrigerated. DO NOT FREEZE.	Daily or STAT	Chemistry
Carboxyhemoglobin (Carbon Monoxide), Blood	Dark green top lithium heparin acutainer tube Pre-heparinized blood gas syringe sealed with the cap provided Pre-heparinized blood gas capillary tube sealed on both ends with caps provided	Dark green lithium heparin acutainer tube must be at least half full. Pre-heparinized blood gas syringe must have at least 1.5 mL of blood. **DO NOT SEND NEEDLES.** Pre-heparinized blood gas capillary tube must be full (100 uL). Transport blood to the laboratory at room temperature but can be transported on ice water as well.	STAT 24hr/7d	Chemistry
Carcinoembryonic Antigen (CEA), Serum (Tumour Marker)	Gold top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cardiac Biopsy	See Handling Procedure	See: Tissue Examination, Endomyocardial Biopsy	Weekdays 0800-1600. Contact Histology lab 30 minutes prior to sending specimen (KGH ext. 4172). To ensure optimal specimen handling, deliver specimens to Histology lab before 4:00 PM. The lab is not staffed after 5:00 PM and arrangements for specimen handling after that time require contacting the pathology resident on call through the KGH switchboard. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Cardiolipin Antibodies (IgG and IgM)	Gold or Red top tube	5 mL of blood. Hemolyzed samples will not be tested. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection. Ship frozen.	Expected turnaround time 10 days	Immunology
Carnitine, Serum (Total and Free)	Gold or red top tube	2 mL of blood. Referrals: 1 mL of serum. Store frozen, ship on dry ice.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Carotene, Serum	Red top tube	7 mL of blood. Blood should be collected after an overnight fast. Avoid hemolysis. Referrals: 4 mL of serum. Collect specimen after patient has fasted overnight. Protect sample from Light. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Catecholamine, Plasma	Collect one Lavender top tube	Patient must be supine for at least 15 minutes prior to and during specimen collection. Collect after overnight fast (water and non-caffeinated drinks permissible). Catechol drugs may interfere, including alpha methyldopa, alpha-methyl-para-tyrosine, isoproteronal, docutamine and carbidopa. Provide list of medications. Specimen should be kept cold and spun in a cold centrifuge as soon as possible, within 60 minutes of collection. Freeze immediately. If the specimen thaws, it is unsuitable for analysis.	(Referred Out)	Chemistry
Catecholamines, Urine	24 hr urine collection container from Chemistry department.	24 hour urine collection in bottle containing 25mL of 6m HCL. Urine catecholamine analysis has largely been replaced by urine metanephrines. Please contact Chemist if there is a specific requirement for this test. Final pH between 2 and 4. Diet, Drug & Nicotine restrictions only tested if UMETS are abnormal high.	(Referred Out)	Chemistry
Catheter Tip (Culture)	Sterile container	5cm arterial line or catheter tip. Tips must be accompanied with a peripheral blood culture. Aseptically prepare insertion site. Remove line without contact with adjacent skin and send only intra-arterial segement in as sterile container.	Daily	Microbiology
CD3	Lavender top tube	See: T- cell Subsets (CD4/CD8)	As needed	Immunology
CD34 Enumeration	Lavender top tube	2.5 mL of blood. MUST be kept at room temperature.	Weekdays 0800-1600. Turnaround time 2 hrs	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
CDG Transferrin	Gold top tube	See: Transferrin Isoforms for CDG Syndrome, Plasma or Serum	Specific Days Only (Referred Out)	Chemistry
Cell Count and Differential, Body Fluid	Lavender top tube	Requires sterile preparation of the aspiration site. Place 1-2 mL in the vacutainer tube and transport to Core Laboratory. Do not delay in transit or refrigerate sample. Samples must not contain excessive particulate matter.	Daily Turnaround time 1 day (24 hr)	Hematology
CSF – Cell count and differential. Bacteriology Analysis (Gram stain and culture)	Sterile CSF tube	Tubes should be numbered in sequence (#1, #2, #3, #4); tube 1# being the first portion of the sample collected. Culture: KGH Microbiology Cell Count and differential: Core Lab	STAT	Microbiology/ Core Lab
Cell Surface Markers		See: T- cell Subsets (CD4/CD8) for Blood Disorders.		Immunology
Cerebrospinal Fluid (CSF), for Cytology	CSF Collection tube	Cerebrospinal fluid Any volume can be processed but more is desirable. 1. Collect as much fluid as possible during spinal tap. 2. Label CSF tube with patient's first and last name and one other unique identifier. 3. Complete a Non Gynecological requisition or order entry in PCS. 4. Transport fresh specimen to laboratory immediately. If a delay more than 8 hours is anticipated the specimen must be refrigerated and/or have CytoLyt solution added for the Cytology test. Labelling ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Rejection Criteria: Mislabelled/ acutaine requisition/ specimen containers	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cerebrospinal Fluid (CSF), for Cytology ***(Continued from previous page)***	CSF Collection tube	Special Instructions: CJD-If the patient is known or suspected Creurzfeld-Jacob Disease, a cytopathology test CANNOT be processed and the specimen will be rejected. If the test is not for malignancy please indicate the reason on the requisition. There are specific procedures for processing specimens for opportunistic infections. If leukemia/lymphoma is suspected a separate CSF specimen is required for Flow Cytometry. DO NOT refrigerate or add CytoLyt to the flow specimen. Transport Time- ASAP Method- Hand delivered Temperature Requirements: If a delay more than 8 hours is anticipated the specimen must be refrigerated and/or have CytoLyt solution added for the Cytology test. Regular Testing – 3 days STAT Testing – 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0800-1600	Cytology
Ceruloplasmin, Serum	Red top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Chloride, CSF	Sterile CSF tube	0.5 mL of spinal fluid. Referrals: Store and ship refrigerated.	Daily or STAT	Chemistry
Chloride, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and send refrigerated.	Daily or STAT	Chemistry
Chloride, Urine	Without preservatives	2 mL fresh random urine or 24 hr urine. Referrals: Record total 24 hr urine volume on the requisition. Store refrigerated. Send 5 mL urine aliquot refrigerated or frozen.	Daily	Chemistry
Chlorpromazine, Serum	Red top tube (no gel)	5 mL of blood. Referrals: 2 mL serum collected gel free. Store and ship frozen.	(Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cholesterol, HDL, Plasma	Light Green top tube	1.5 mL of blood. Sample should be drawn after a 14 hr fast. Referrals: 0.5 mL of heparinized plasma. Store and send refrigerated.	Daily	Chemistry
Cholesterol, LDL, Plasma	Light Green top tube	1mL of blood drawn after an overnight (14 hr) fast. Referrals: 0.5 mL of heparinized plasma. Store and send refrigerated.	Daily	Chemistry
Cholesterol, Plasma	Light Green top tube	1 mL of blood. (Elevated results obtained on random specimens should be confirmed by analysis of a 14 hr fasting specimen). Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Daily	Chemistry
Cholinesterase Phenotyping, Serum	Red top tube	4 mL of blood. DO NOT draw sample within 24 hr of surgery. Referrals: 2 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Chromium, Whole Blood	Royal Blue EDTA tube	1 full Royal Blue EDTA tube of blood. SODIUM heparin is unacceptable. Store and send cold.	Specific Days Only (Referred Out)	Chemistry
Chromogranin A	Lavender top tube	Min. Vol. 1 mL EDTA Plasma [Paediatric Min. Vol. 250 uL.] Patient must abstain from proton pump inhibitors for two weeks prior to collection. Store and send frozen. If specimen thaws, it is unsuitable for analysis.	Specific Days Only (Referred Out)	Chemistry
Chromosome Analysis, Amniotic Fluid	Sterile container	Use KGH Cytogenetics Requisition ONLY. Pertinent medical history must accompany request. Include names, age, suspected diagnosis, gestational age by ultrasound and indication for referral. 15-20 mL of amniotic fluid in sterile container. Transfer specimen to labeled sterile tubes. (Tubes available in Fetal Assessment Unit – Kidd 5). Must be delivered to the Cytogenetics Laboratory at room temperature within 24 hr of collection by STAT porter.	Monday –Thursday (0830-1630) and Fri. (0830-1200) with advance notification. Results available in 3-4 weeks. Indicate URGENT cases	Cytogenetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Chromosome Analysis, Bone Marrow	Sodium Heparinized acutainer tube	Bone marrow (1-2 mL) aspirated. Use KGH Cytogenetics Requisition ONLY. Pertinent medical history MUST accompany request. Include suspected diagnosis and history of previous malignancies. Send to laboratory by STAT porter.	Monday – Thursday (0830-1630) and with advance notification on Friday (0830-1200). Results available in 3-4 weeks. Indicate URGENT Cases	Cytogenetics
Chromosome Analysis, Chorionic Villi Sample (CVS)	Contact the Cytogenetics Laboratory and request Transport Medium	Use cytogenetics requisition only. Deliver specimen at room temperature to the KGH Cytogenetics Laboratory (0830 – 1630) within 24 hr of collection. NOTE: This is a referred out test.	Prior arrangement with the referral laboratory is required before any material is submitted (CHEO cytogenetic laboratory: 613-737-7600 x 2276)	Cytogenetics
Chromosome Analysis, Fluorescent In Situ Hybridization (FISH) – All Specimens Except Tissue Sections	Sodium Heparinized acutainer tube for Bone Marrow and Peripheral Blood specimens. For the remaining tissue types refer to Chromosome Analysis for specimen collection for each tissue type.	Use KGH Cytogenetics Laboratory Requisition ONLY. Indicate on requisition the specific FISH test being requested. FISH can be performed for the following specimen types: amniotic fluid, bone marrow, fibroblasts, peripheral blood, and products of conception. See: Chromosome Analysis for specimen collection for each tissue type.	Weekdays 0830 – 1630 Results available in 2-4 weeks Amniotic Fluid F.I.S.H. Aneuploidy screen – results available in 1-5 days.	Cytogenetics
Chromosome Analysis, Fluorescent In Situ Hybridization (FISH) – Tissue Sections Only	Formalin-fixed paraffin-embedded tissue	Use KGH Cytogenetics Laboratory Requisition ONLY. Submit formalin-fixed paraffin-embedded tissue sections – slides prepared as pathology requirements using charged slides. Tumour tissue within tissue section MUST be preselected. HER-2/neu FISH analysis: ten 4 µm tissue sections. C-MYC FISH analysis: five 4 µm and five 2 µm tissue sections. Deliver to Cytogenetics laboratory.	Weekdays 0830 – 1630 Results available in 2-3 weeks	Cytogenetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Chromosome Analysis, Peripheral Blood	Sterile sodium heparin vacutainer	Collect 5 mL blood. Use KHSC Cytogenetics Requisition only. A pertinent clinical history MUST be provided with the sample including phenotypic description and referring diagnosis. Clotted or hemolyzed samples are unsatisfactory. Deliver specimen to Cytogenetics Laboratory at room temperature with 24 hr of collection during the hours 0830-1630. Specimen may be stored overnight at room temperature.	Weekdays 0830 – 1630 Results available in 3-10 weeks Indicate URGENT Cases	Cytogenetics
Chromosome Analysis, Products of Conception	Sterile container with either normal saline or tissue culture medium	Complete a KHSC Cytogenetics Requisition which includes a pertinent clinical history-obstetrical history, relevant family history and LMP. All available products of conception should be placed in a labeled sterile container with normal sterile saline or tissue culture medium. The specimen must be kept moist and not allowed to dry out. Submit specimen to the Anatomical Pathology Laboratory (APL-Lab Hours 0630-1700) for assessment. Two tissues will be selected by APL and submitted to the Cytogenetics Laboratory with the completed requisition.	Weekdays 0830-1630. Results available in 4-6 weeks. **For weekend collection**, store specimen in sterile container with sterile saline or tissue culture medium at 4^0C and deliver to APL on Monday morning.	Cytogenetics
Chromosome Analysis, Skin, Tumour	Sterile container with either normal saline or tissue culture medium	Use KHSC Cytogenetics Requisition only. Pertinent clinical history MUST be provided. Using sterile collection methods, place 1-3 mm of tissue in a labeled sterile container containing normal saline or tissue culture medium. Do not allow the tissue to dry out. Deliver to Cytogenetics Laboratory at room temperature within 24 hr of collection during the hours 0830-1630. Specimen may be stored overnight at 4°C.	Weekdays 0830 – 1630 Results available in 3-6 weeks	Cytogenetics
Citrate, Urine	Container available from Chemistry	24 hr or Random urine. No preservation required. Referrals: 10 mL from 24 hr urine. Store and ship refrigerated or frozen. State urine collection date, time and total volume or indicate "Random".	Specific Days Only	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Clobazam, Serum	Red top tube (no gel)	2 mL of blood. Draw sample just prior to the next dose. Referrals: Aliquot 1 mL serum into a plastic vial within 3 hours of drawing. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Clomipramine, Serum	Red top tube (no gel)	5 mL of blood. Draw sample just prior to morning dose or 12 hrs after last dose. Referrals: Aliquot 3 mL serum into a plastic screw-cap vial within 3 hrs of drawing. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Clonazepam, Serum	Red top tube (no gel)	5 mL of blood. Collect specimen at trough concentration (pre dose). Referrals: Aliquot 3 mL serum into a plastic vial within 3 hrs of drawing. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Clostridium difficile (CDIFF) Toxin	Sterile container	Specimens are initially screened using the Glutamate Dehydrogenase (GDH) assay. GDH negative results do not support a laboratory diagnosis of C. difficile. GDH positive specimens are confirmed by PCR. Repeat testing of GDH negative specimens will only be performed after 72 hours. Repeat testing of positive C. difficile requires the approval of the Microbiologist on-call.	Daily	Microbiology
CMV PCR: Quantitative PCR Test	Lavender top tube	6 mL of blood.	Testing preformed once per week. Contact Microbiologist for STAT testing.	Microbiology
C-MYC		See: Chromosome Analysis: Fluorescence in-situ hybridization (FISH) – Tissue sections		Cytogenetics
Cobalt, Whole Blood	Royal Blue top tube EDTA	7 mL of blood in a 7mL royal blue tube with EDTA.	Specific Days Only (Referred Out)	Chemistry
Codeine, Urine	Plastic container	See: Drug Screen, Urine	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cold Agglutinin Titre	2-Pink top tubes	Consultation with Transfusion Medicine Medical Director is required. Requests for Cold Agglutinin Titre will be screened using the Direct Antiglobulin Test. The Cold Agglutinin Titre will not be performed if Direct Antiglobulin test (DAT) is negative for compliment (C3d). Peripheral blood must be collected BY LABORATORY STAFF and kept at 37C throughout transportation and sample processing.	By Prior Arrangement Only. Appointment required.	Transfusion Medicine (Blood Bank)
Complement C3, Serum	Gold top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Complement C4, Serum	Gold top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Complement Component C1Q, Serum	Lavender top tube	5 mL blood. Referrals: 2 mL plasma. Separate into two 1 mL aliquots. Store and send frozen. If the specimen thaws, it is unsuitable for analysis. Assay will only be performed if a preliminary Total Hemolytic Complement (CH50) is low.	Specific Days Only (Referred Out)	Chemistry
Complement, Total Hemolytic (CH50), Serum	Red top tube	3 mL of blood. Transport to lab immediately. Referrals: 2 mL of serum. Plasma, grossly lipemic & grossly lemolysed specimens are not suitable for analysis. Clot at room temperature, for 30-60 minutes. Centrifuge, remove serum, and freeze. Ship frozen. CH50 may be decreased by: delayed separation of serum, insufficient clotting, prolonged storage at room temperature, use of plasma, presence of immune complexes, cryoglobulins, bacteria and particulates.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Complete Blood Count (CBC), Including Differential	Lavender top tube	mL of blood. Includes hemoglobin, leukocyte count, erythrocyte count, MCV, platelet count, calculation of HCT, MCH and MCHC RDW, and automated leukocyte differential count. Referrals: sample MUST be analyzed within 24 hr. Only one differential performed per day unless full clinical justification is provided.	STAT or 24 hr/7d Turnaround time <2 hrs STATS < 30 min	Hematology
Conjunctival Culture	Swab in transport media	Superficial specimens should be submitted as a swab.	Daily	Microbiology
Copper, Plasma	Royal blue EDTA	7 mL of blood. Transfer 3 mL plasma as soon as possible to a metal-free polypropylene vial. Store and send cold.	Specific Days Only (Referred Out)	Chemistry
Copper, Urine	New unwashed plastic container without preservatives (metal free) with no metal lid or glued insert.	24 hr or Random urine collected without preservatives into a new unwashed plastic container (metal free) with no metal lid or glued insert. Referrals: 24 hr or Random urine (30 mL). Must state collection date, time and total volume or indicate "random". Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Coproporphyrin, Urine Random	Random urine collected in dark bottle or wrap container with foil, protecting from light	See: Porphyrins Quantitation	specific Days Only (Referred Out)	Chemistry
Cord Blood (ABO Grouping, Rh, Direct Coombs)	1-Pink top tube	7 mL of umbilical cord blood.	24 h/7 d Turnaround time 8 hrs	Transfusion Medicine (Blood Bank)
Cord Blood Gases	A small portion of 5-10 inches of umbilical cord which has been clamped at both ends.	Umbilical cord is sent to the Core lab via the pneumatic tube system at ambient temperature. Umbilical cord vein and artery samples are collected in pre-heparinized blood gas syringes.	STAT 24 h/7 d	Chemistry
Cortisol, Free, Urine	Without preservatives	24 hr or Random urine collected. Referrals: 10 mL aliquot from 24 hr urine collected without preservative. Store and ship refrigerated or frozen. Must state collection date, time and total volume or indicate "Random".	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cortisol	Green lithium heparin top tube	2 mL of blood. Referrals: 1 mL of plasma. Store and ship refrigerated or frozen. Please add to order: Cortisol a.m. (00:01-12:00) Cortisol p.m. (12:01-00:00)	Daily	Chemistry
C-Peptide, Serum	Red top tube	5 mL blood. Fasting specimen is recommended. Deliver to laboratory without delay. Referrals: 1 mL of serum Do not use gel-separator tubes. Collect after an overnight fast. Freeze immediately. Store and send frozen. If the specimen thaws, it is unsuitable for analysis.	Specific Days Only (Referred Out)	Chemistry
C-Reactive Protein (CRP), Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store refrigerated. Ship refrigerated if sending from outside city limits. Ship at room temperature if delivery time is less than 2 hrs.	Daily	Chemistry
Creatine Kinase (CK), Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Daily	Chemistry
Creatinine Clearance	24H Urine – without preservative Blood – Gold top tube	24 hr urine collected and 1 mL of blood. THE BLOOD SAMPLE SHOULD BE DRAWN DURING THE 24 HR COLLECTION. Referrals: 24 hr urine and 1 mL of serum. Send aliquot of 24 hr urine specimen collected without preservative. Record total 24 hr urine volume on the requisition. The blood sample should be drawn during the 24 hr collection.	Daily	Chemistry
Creatinine, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Creatinine, Urine	Without preservatives	Random or 24 hr urine collected without preservatives. Referrals: 6 mL from random or 24 hr urine collection. Store and ship refrigerated. Must state collection date, time and total volume or indicate "Random".	Weekdays or STAT	Chemistry
Creutzfeldt-Jakob Disease Detection (14-3-3)	CSF Tube	14-3-3 Protein testing. Complete National Microbiology Laboratory, Health Canada requisition (available from Microbiology Laboratory)	Contact Microbiology Laboratory and Infection Control prior to testing Turnaround time up to 3 weeks	Microbiology
Crossmatch, Blood for Transfusion	2-Pink top tubes	7 mL tubes of blood. Crossmatched units of blood are held for 24 hr, and then automatically canceled. They may be held longer on request. MUST be labeled with Blood Bank collection labels. Do not draw blood above I.V. line. Sample must not be hemolyzed. **NOTE:** If a current Type and Screen is in Blood Bank, the immediate spin crossmatch is available in 10 minutes (if there are no irregular findings). Specimens acceptable for cross-matching. Patients transfused or pregnant within past 3 months – Sample held for 96 hours. Pre admission testing – patient not pregnant and not transfused within the past 3 months – up to six weeks. S.B.O.S (Surgical blood ordering schedule) will be followed unless the Blood Bank is specifically notified on the reasons for exceeding guidelines.	24 hr/7d STAT TAT = 45 minutes; Urgent TAT = 60-90 Minutes; Routine TAT = 4 hours	Transfusion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cryofibrinogen	2-Red top tubes and 2-Lavender top (EDTA) tubes	Collect warm 2 red top and 2 EDTA tubes. Immediately post collection, maintain warm by placing under arm pit. Deliver to lab warm. Clot red tubes at 37˚C. Spin warm tubes at room temperature. Immediately remove serum and plasma from cells (minimum volume required is 3 mL of serum and 3 mL of EDTA plasma). Store serum and plasma aliquots at 4 – 8ºC until shipped. Ship at 4 – 8ºC. Where possible collect and ship same day.	Weekdays (Referred Out) Turnaround time 7 days	Hemostasis
Cryoglobulins, Serum	Red top tube (no gel)	10 mL of blood collected. NOTE: Clot blood at 37ºC and separate or deliver immediately to Core Lab in warm water. Referrals: 5 mL of serum. Clot blood at 37ºC. Centrifuge at room temperature. Cool samples and hemolyzed samples will not be tested.	Weekdays – Notify Laboratory Prior to Collection (613-549-6666 x 7806)	Chemistry
Cryptococcus neoformans Latex Agglutination Test; Serum or CSF	CSF Sterile tube blood Red top tube	6 mL of blood or 1 mL of CSF	Daily	Microbiology
Crystals, For Gout or Pseudogout		See: Tissue Examination, Crystals See: Synovial Fluid, Crystals		Histology Cytology
CSF – Cell count and differential Bacteriology Analysis (Gram stain and culture)	Sterile CSF tube	Tubes should be numbered in sequence (#1, #2, #3, #4); tube #1 beibng the first portion of the sample collected. Culture: Microbiology Cell Count and differential: Core Lab		Microbiology /Core Lab
CSF (Cerebrospinal Fluid) – Shunt or Ventriculostomy	Swab container	1 mL of spinal fluid, CSF from shunt, or ventriculostomy fluid. Send to Microbiology immediately. DO NOT REFRIGERATE.	Daily	Microbiology
C-Telopeptide (Beta Crosslaps)	Lavender Top tube	Adult: 1 mL of EDTA plasma. Pediatric: 0.5 mL of EDTA plasma.	Specific Days Only (Referred Out)	Chemistry
Cyclic Citrullinated Peptide Antibodies (CCP)	Red top tube	Referred out. Requires 1 mL serum.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Cyclosporin	Lavender top tube	Whole Blood. Minimum volume: 1.5 mL. Referrals: At least 1.5 mL of blood collected in lavender tube (EDTA). Transport blood with cold pack. Approximately 60 pharmaceutical drugs were tested and found to have no significant interference (< 10%) in the cyclosporin immunoassay. However, Heparin (high MW), Kanamycin B Sulfate, Lidocaine, Mycophenolic Acid, Mycophenolic Acid Glucuronide, Phenobarbital, Spectinomycin and Vancomyin demonstrated slight interference. Potential interfering endogenous substances include: triglycerides (9.0 mmol/L), total protein (30 g/L) and cholesterol (12.9 mmol/L).	Daily	Chemistry
Cystine, Urine	Random urine container	5-20 mL of fresh random urine (preferably 1st morning specimen). Referrals: Store and ship frozen. Urine cysteine is for monitoring cystinuric patients. For diagnosis and classification of cystinuric order urine aminoacids.	Specific Days Only	Chemistry
Cytochemical Stains, Bone Marrow or Whole Blood	Bone Marrow collection kit or Lavender top tube	Stains may include non-specific esterase (alpha-naphthyl butyrate), chloroacetate esterase, Sudan Black B, Peroxidase.	By Prior Arrangement Only Turnaround time 1 day (24 hr)	Hematology
Cytotoxic Antibodies	Gold or Red top tube	See: Panel Reactive Antibodies (PRA), Serum	Turnaround time 60 days	Immunology
D Dimer (Quantitative)	1 Light Blue top	Venipuncture Preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice.	24 hr/7d Turnaround time < 1 hour	Hemostasis
Dehydroepiandrosterone Sulfate (DHEAS), Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and send refrigerated.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Desipramine, Serum	Red top tube (no gel) or lavender top tube	6 mL of blood. Draw trough (pre dose) sample or 10-12h after last dose. Referrals: 3.0 mL of serum. Separate serum ASAP.	Specific Days Only (Referred Out)	Chemistry
Diazepam, Serum	Red top tube (no gel)	7 mL of blood. Referrals: 3 mL of serum. Store and ship frozen. Collect trough specimen immediately before next dose.	Specific Days Only (Referred Out)	Chemistry
Digoxin, Serum	Red top tube (no gel)	1 mL of blood. Draw sample pre-dose ≤ 1 hour prior to next dose or more than 6-8 hrs. after last dose. State time of last dose on requisition. Referrals: 0.5 mL serum. Store refrigerated. DO N OT FREEZE.	Daily	Chemistry
Dilute Russell Viper Venom Time (dRVVT)		See: Lupus Anticoagulant (LA) Test		Hemostasis
Diphenhydramine (Gravol, Benadryl)	Urine	Urine Random specimen minimum volume 2mL	Specific Days Only (Referred Out)	Chemistry
Direct Antiglobulin Test	1-Pink Top Tube	Collect peripheral blood. Label tube using Blood Bank Collection Labels. Do not draw above on I.V. line.	24 hr/7d STAT TAT = 45 minutes; Urgent Turnaround time = 60-90 minutes; Routine Turnaround time = 4 hrs	Transfusion Medicine (Blood Bank)
Donath Landsteiner	2-Red Top Tubes, no gel	Consultation with the Transfusion Medicine Medical Director is required. Peripheral blood must be collected BY LABORATORY STAFF into pre-warmed tubes and kept and 37C throughout transport and specimen processing.	By Prior Arrangement Only (Referred Out) 3 – 5 business days	Transfusion Medicine (Blood Bank)
Donor Specific Antibodies, DSA	Gold or Red top tube	5 mL of blood – 2mL of serum	As needed	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Doxepin	Red top tube (no Gel) or lavender top tube	3 mL of blood. Avoid gel separator tubes. Draw trough specimen (pre-dose) or at least 12 hrs after last dose. State time of last dose on requisition. Referrals: 3 mL of serum. Separate serum as soon as possible from cells. Ship frozen. Submit trough specimen (i.e. collected within 1 hour prior to next dose or at least 12 hours after last dose). Assay includes Desmethyldoxepin	Specific Days Only (Referred Out)	Chemistry
Drug Screen, Urine	Plastic container	10 mL urine. Referrals: Store and send refrigerated. Urine immunoassay drug screen includes Oxycodone, Amphetamines, Benzodiazepines, Tricyclic Antidepressants, Barbituates, Methylenedioxymethamphetamine, Methadone, Morphine, Methamphetamines, Cocaine & Marijuana. NOTE: Please indicate clinical/medication history. If drug overdose is suspected please indicate drug(s) in question. This is an unconfirmed result. Immunoassay screens are subject to false positive and false negative results. Please consult duty biochemist if confirmatory testing required. If urine is dilute, creatinine <2 umol/L false negative results may occur.	Daily or STAT	Chemistry
Ear (Culture)	Swab in transport media	Submit specimen as a swab.	Daily	Microbiology
Electrolytes, Plasma	Light green top tube	See: Sodium and Potassium and Chloride	Daily or STAT	Chemistry
Electrolytes, Urine	Plastic container	24 hr or Random urine collected without preservative. Referrals: 6 mL from Random or 24 hr urine collection. Ship and Store refrigerated. Must state collection date, time and volume or indicate "Random"	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Endomyocardial Biopsy	See Handling Procedure	See: Tissue Examination, Endomyocardial Biopsy	Weekdays 0800-1600. Contact Histology lab 30 minutes prior to sending specimen (KGH ext. 4172). To ensure optimal specimen handling, deliver specimens to Histology lab before 4:00 PM. The lab is not staffed after 5:00 PM and arrangements for specimen handling after that time require contacting the pathology resident on call through the KHSC switchboard. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Eosinophil Smear	Slide or urine collection container	10 mL freshly voided urine	Weekdays Turnaround time 1 day (24 hr)	Hematology
Eosin-5-maleimide (EMA) for Hereditary Spherocytosis (HS)	Lavender tube	4 mL of blood. Sent to lab immediately after collection. Store @ 4 C. Must also order CBC Differential.	Referred out Monday – Wednesday in am (only) TAT – 1 week	Hematology
Epstein - Barr virus (EBV) PCR: Quanitative PCR Test	Lavender top tube	6mL of blood.	Weekly (Please contact Microbiologist for STAT testing)	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Erythropoietin (EPO), Serum	Red top tube	3 mL of blood – Plasma is not suitable. Avoid hemolysis. Referrals: 2 mL of serum. Store and ship frozen. NOTE: If patient is receiving recombinant erythropoietin, analysis may not be valid and reference ranges are not applicable	Specific Days Only (Referred Out)	Chemistry
Estradiol	Light Green lithium heparin top tube	2 mL of blood. Referrals: 1 mL of plasma. Separate from gel within 24 hr. Store and ship refrigerated.	Daily	Chemistry
Ethanol, Plasma	Light Green top tube	Blood. Tube must be filled and tightly stoppered. Use soap and water to clean venipuncture site. Referrals: Send 1 full Green top tube. Store and send refrigerated.	Daily or STAT	Chemistry
Ethosuximide, Serum	Red top tube (no gel)	2 mL of blood collected at trough level (predose). Referrals: 1.0 mL of serum collected in a gel-free tube. Separate serum from cells within 3 hrs.	Specific Days Only (Referred Out)	Chemistry
Ethylene Glycol, Plasma or Serum	Gold or Light Green top tube	See: Volatiles, Serum or Plasma (Methanol, Ethanol, Isopropanol, Ethylene Glycol, other Alcohols and Glycols, Acetone)	GC/MS Analysis by arrangement only. For STAT analysis contact the Clinical chemist on call. Test is usually performed only when the Osmolar Gap is abnormal. NOTE: Results are not for medico-legal purposes	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Euglobulin Clot Lysis Time (ECLT)	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice.	Weekdays	Hemostasis
Extractable Nuclear Antigens (ENA) Antibodies, Serum	Red top tube	1 mL serum required. Specimen will be tested for antibodies to 13 nuclear antigens and the results compared to pre-established cutoffs for systemic autoimmune disease. Numeric results for the antibodies will only be reported when one antibody or more exceed the cutoff. Every report will include an interpretive Medical Decision Support System (MDSS) comment. DNA antibodies are available by an alternate method.	Specific Days Only (Referred Out)	Chemistry
Factor Assay (FII, FV, FVII, FVIII, FIX, FX, FXI, FXII)	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice. Heparin contamination or samples from patients on heparin therapy are unsuitable.	Weekdays. All other times by special arrangement. Specific assay or assays must be indicated on requisition. STAT testing = < 2 hrs	Hemostasis
Factor V Leiden Variant	Lavender EDTA	15 mL of blood (EDTA). Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround time 2-3 weeks	Molecular Genetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Factor IX (Chromogenic)	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately. Ship frozen on dry ice. Heparin contamination or samples from patients on heparin therapy are unsuitable.	Weekdays. Turnaround time – 14 days STAT testing must be approved by hematopathologist	Hemostasis
Factor XIII Quantitative	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately.	Weekdays	Hemostasis
Familial Breast and Ovarian Cancer (BRCA 1, BRCA 2)	Lavender top tube	30 mL blood. Use Provincial Familial Breast/Ovarian Cancer requisition. Specimen must be received in the laboratory within 5 days of collection. NOTE: Patient must receive genetic counseling and referral through Provincial Predictive Cancer Genetic Services. Testing involves direct mutation analysis of the BRCA1 and BRCA 2 genes.	Weekdays 0830-1600. Requests for testing can only be made by the Familial Oncology Program at the Kingston Regional Cancer Centre, or through Genetic Services at Provincial Outreach Programs. Turnaround time 4-6 months	Molecular Genetics
Fatty Acids, Long Chain	Red top tube	Minimum volume of serum required is 1.5 mL. Spin and aliquot serum and freeze immediately and send to the lab. Preferably patient should be fasting.	Specific Days Only (Referred Out)	Chemistry
Fecal Fat, Quantitative 72 hr	Fecal fat collection container	Test performed by GI Function Laboratory at HDH site. Consult GI Lab for collection procedure (HDH 613-544-3400)	Specific Days Only	GI Lab

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Ferritin	Light Green lithium heparin top tube	1 mL of blood. Referrals: 0.5 mL of plasma. Store and ship refrigerated.	Daily	Chemistry
Fetus for Cytogenetic Testing	See Handling Procedure	See: Tissue Examination, Fetus for Cytogenetic Testing	Weekdays 0800-1700. Turnaround time 3 days to 2 weeks depending on complexity	Histology
Fibrinogen (Clottable)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	24 hr/7d Turnaround time 1 hour	Hemostasis
Fibronectin, Fetal (FFN)	Adeza Specimen Collection Kit designed for FFN	Patients must be 24-34 weeks gestation and symptomatic for pre-term labour, and less than 3 cm dilated. PPROM must be ruled out. (Testing is not done if within the past 24 hr there has been a culture swab, use of lubricant gel, vaginal exam, ultrasound or probe, or sexual intercourse). Use ONLY the Adeza Specimen Collection Kit designed for FFN. The specimen should be obtained from the posterior fornix of the vagina during a sterile speculum examination. The Dacron swab provided in the kit should be inserted into the vagina and lightly rotated across the posterior fornix for approximately 10 SECONDS to absorb the cervicovaginal secretions. Carefully remove the swab from the vagina and immerse the Dacron tip in the tube provided with the kit. Break the shaft off even with the top of the tube. Ensure proper seal. The test will only be performed when a FULLY COMPLETED Fetal Fibronectin Requisition is submitted.	STAT 24h/7d	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Fine Needle Aspiration Biopsy (FNA) for Cytology Applies to Aspiration Biopsy Cytology without imaging techniques: Breast Mass Aspiration Cytology, Lymph Node Aspiration Cytology, Neck Mass Aspiration, Thyroid Needle Aspiration. Also applies to Aspiration Biopsy with imaging techniques: Abdominal Mass Aspirations, Liver Needle Aspirations, Lung Needle Aspirations, Mediastinal Mass Aspirations, Pancreatic Needle Aspirations, Retroperitoneal Needle Aspirations, Transthoracic Needle Aspirations	50 mL conical tube containing CytoLyt (CytoLyt is supplied by the Cytology lab)	Aspiration techniques vary according to personal preferences, characteristics and site of the lesion usually using 21-25 gauge needles. **SUPERFICIAL LESIONS, PALPABLE MASSES** 1. Hold the mass firmly with one hand and insert the needle into the mass. 2. The plunger of the syringe is pulled back, exerting suction. This is done with the thumb. The needle is moved through the mass 3 or 4 times in different directions. 3. With the needle still in the mass, slowly release suction. Remove the needle from the mass. 4. Remove the syringe from the needle and add a little air to the syringe. Reconnect the needle to the syringe and expel contents into the 50 mL conical tube containing CytoLyt. 5. To rinse the needle and syringe of any remaining specimen, aspirate approximately 2cc of CytoLyt through the needle into the syringe. Express the fluid in the syringe into the conical tube. Repeat this procedure two more times. Tightly recap conical tube. 6. Label specimen container with patient's first and last name and at least one other unique identifier i.e. CR#, HCN, DOB. Complete order entry or requisition stating the specific site that was aspirated. **INTERNAL or DEEP LESIONS** Internal or deep lesions are aspirated under an imaging technique i.e. ultrasound or CT. Aspiration techniques vary according to personal preferences, characteristics and site of the lesion usually using 21-25 gauge needles.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Fine Needle Aspiration Biopsy (FNA) for Cytology (continued from previous page)	50 mL conical tube containing CytoLyt (CytoLyt is supplied by the Cytology lab)	**INTERNAL or DEEP LESIONS – (continued from previous page)** 1. The procedure should be performed by using sewing machine-like excursions, while applying minimal negative pressure (no more than 0.55 cc of suction is needed) 2. Expel the contents of the needle barrel into the CytoLyt. 3. To rinse the needle and syringe of any remaining specimen, aspirate approximately 2cc of CytoLyt through the needle into the syringe. Express the fluid in the syringe into the conical tube. Repeat the procedure two more times. 4. Tightly recap the conical tube. 5. Label specimen container with patient's first and last name and at least one other unique identifier i.e. CR#, HCN, DOB. Complete order entry or requisition stating the specific site that was aspirated. Labeling ID: Label specimen container(s) with patient's first and last name and one other unique identifier, i.e. CR#, HCN, DOB. Required Information: clinical information, patient demographics. Special Instructions: Specimens from different sites should never be combined. Sterile techniques must be used on all patients. Gloves are to be worn for personal safety. Dispose of all needles/syringes in sharps containers. Any tissue fragments obtained will be submitted as a cell block. If the test is not for malignancy, indicate the reason on the requisition. Transport Time: ASAP Method: Hand delivered Regular Testing: 3 days STAT Testing: 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
FISH		See: Chromosome Analysis: Fluorescence in-situ hybridization (FISH) – Tissue sections See: Chromosome Analysis: Fluorescence in-situ hybridization (FISH) – All Specimens Except Tissue sections.		Cytogenetics
Flow Crossmatch	ACD, Solution A	Live Donor = 25 mL, Cadaver Donor = 50 mL	As needed	Immunology
Flow Cytometry		See: T- cell Subsets (CD4/CD8) or Immunophenotyping for Blood disorders		Immunology
Fluoxetine, Serum	Red top tube (no gel) Or Plasma (heparin)	2 mL blood. Draw trough specimen before next dose is administered. Referrals: 1 mL serum. Store and send refrigerated.	Specific Days Only (Referred Out)	Chemistry
Fluvoxamine	Urine	2 mL urine. Urine Drug Screen Testing.	Specific Days Only (Referred Out)	Chemistry
Folic Acid, Serum	Gold top Tube	0.5 mL of blood. Samples for serum folate should be obtained fasting as serum folate reflects recent dietary folate intake. Samples Should be protected from light. Red-cell folate is a preferable test as it is independent of recent dietary intake. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Follicle Stimulating Hormone (FSH)	Light Green Lithium Heparin	1 mL of plasma. Store and send refrigerated.	Daily	Chemistry
FPSA	Gold or Light Green top tube	See: Prostate Specific Antigen, Free	Daily	Chemistry
Fragile X (FMR1 Gene Analysis)	Lavender top tube	15 mL of blood (EDTA). Direct testing of the FMR1 gene CGG repeat size. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround time 4 weeks	Molecular Genetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Free Fatty Acids	Red top tube	Collect after a 12 h fast. 3 mL of blood. Referrals: 1 mL serum separate and freeze immediately. Store and send frozen. If the specimen thaws, it is unsuitable for analysis. Specimens containing heparin are unsuitable for analysis-heparin plasma or patients receiving heparin therapy are unsuitable for analysis.	Specific Days Only (Referred Out)	Chemistry
Free Light Chains, Serum	Red top tube	5 mL of blood. Referrals: 3 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Free PSA	Gold top tube	See: Prostate Specific Antigen, Free (FPSA)	Daily	Chemistry
Free Triiodothyronin (Free T3)	Red top tube (no gel) Or Plasma (LiHep/or EDTA)	Full tube Referrals: 1ML serum or plasma	Specific Days Only (Referred Out)	Chemistry
Fresh Tissue	Clean jar (NO FIXATIVE)	See: Tissue Examination, Fresh Tissue	Weekdays 0800-1700. Contact Histology lab prior to sending specimen (KGH ext. 4172). Call at least 30 minutes ahead for Hotel Dieu Hospital fresh tissue. After hours contact the pathology resident on call through KGH switchboard (call at least one hour ahead to allow callback of staff)	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Frozen Section	Clean jar, no fixative	See: Tissue Examination, Frozen Section	Weekdays 0800-1700. Contact the Histology lab prior to sending (KGH ext. 4172). Call 30 minutes ahead for Hotel Dieu Hospital frozen sections. After hours contact the pathology resident on call through KGH switchboard (call at least 1 hour ahead to allow callback of staff). Turnaround time 20 minutes.	Histology
FT4	Light Green top tube	See: Thyroxine (T4), Free	Daily	Chemistry
Fucosidase (Alpha-Fucosidase), WBC – Fucosidosis	Green top tube (no gel) 1-7 mL	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out)	Chemistry
Fungal Culture (Dermatophyte), Skin, Hair, Nails	Black paper container	Enclose hair specimens, skin scrapings, or nail scrapings in black paper envelopes (available through the Microbiology Laboratory). Label them with patient's name. Enclose these envelopes in larger heavy paper envelopes. STORE at RT until transported to lab.	Daily Preliminary report 7 days	Microbiology
Fungal Culture (other than Dermatophyte)	Sterile container	If only yeast culture is required – do not order fungal culture.	Daily Turnaround time: Preliminary report 7 days Final report 21-28 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Fungal Culture, Blood	Blood aerobic bottle	Includes recovery of yeast and FILAMENTOUS FUNGUS (Molds	Daily Turnaround time: Preliminary report 1 week Final report 4 weeks (Molds)	Microbiology
Fungal Culture, Bone Marrow	Dark green top tube (heparin)	Submit in a Heparin tube and submit as a STAT specimen.	Daily Turnaround time: Preliminary report 7 days Final report 28 days	Microbiology
G6PD Screen	Lavender top tube Pediatric Samples – lavender microcontainer tube	See: Glucose-6-Phosphate Dehydrogenase	Daily Turnaround time 1 – 7 days	Hematology
Gabapentin	Red top tube Or Plasma (Hep green top or Lavendar)	Submit trough specimen collected just prior to next dose or post-dose. At a time >75% of the dosing interval. Referrals: store and send frozen 2ml serum.	Specific Days Only (Referred Out)	Chemistry
Galactosidase (Beta-Glucocerebrosidase), WBC Gaucher Disease	Green top tube (no gel) 1-7 mL	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out)	Chemistry
Galactosidase (GM1-Ganglioside-Beta-Galactosidase), WBC	Green top tube (no gel) 1-7 mL	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out)	Chemistry
Ganglioside Antibody (GM1)	Red top tube (no gel)	5 mL of blood. Referrals: Separate into two 1 mL aliquots. Store and ship frozen. Do not use gel-separator tubes.	Specific Days Only (Referred Out)	Chemistry
Gamma Glutamyl Transferase (GGT), Plasma	Light Green top tube	0.5 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Daily	Chemistry
Gastric Parietal Cell Antibodies	Gold or Red top tube	5 mL of blood. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection. Ship frozen.	Turnaround time 10 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Gastrin, Serum	Red top tube Or SST (Serum)	Overnight fasting is required, preferably 12 hours or more. Dietary Supplements containing biotin may interfere in assays and may skew analyte results to be either falsely high or falsely low. For patients receiving the recommended daily doses of biotin draw samples at least 8 hours following the last biotin supplementation. For patients on mega-doses of biotin supplements, draw samples at least 72 hours following the last biotin supplementation. Store and send frozen. Min. volume serum required for testing is 0.5 mL Rejection Criteria: Gross hemolysis, lipemia,icteric or received thawed.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Gastro-Intestinal Tract Washings and Brushings for Cytology	Brushing-50 mL tube containing CytoLyt solution Washing- Specimen container	Minimum Volume: 1 mL 1. Collect secretions or brushings of lesions during endoscopy/colonoscopy. 2. Place brush directly into 50 mL tube containing CytoLyt, ensuring the brush is submerged in the solution. 3. Complete a Non Gynecological requisition or order entry in PCS for each specimen. 4. Transport fresh washing(s) specimen to laboratory immediately. If a delay is anticipated the specimen must be refrigerated and/or have CytoLyt solution added. Labeling ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, patient demographics Rejection Criteria: Unlabelled/mislabeled requisition/specimen containers If this test is not for malignancy, please indicate the reason on the requisition. Transport Time: ASAP. It is optimal to submit separate specimen containers for each lab. This will help to expedite results. Methord: Hand delivered Temperature Requirements: Refrigerate if delayed in transporting to the lab. Regular Testing: 3 days STAT Testing: 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology
Genital (Vaginal) for Bacterial Vaginosis		Gram Stain and Wet Mount Examination (Vaginosis Screen). If non-vaginosis testing is appropriate, consult with the laboratory Microbiologist on-call.	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Gentamicin, Serum (Pre or Post)	Red top tube	2 mL of blood. Mark the time drawn on the requisition and indicate if the sample is PRE or PEAK. Peak levels are drawn 1 hour following I.M. dose, 30 min following 60 min I.V. or 15 min following 30 min I.V. Referrals: 1 mL of serum. Mark time blood was drawn on the requisition. Store and ship refrigerated or frozen.	Daily	Chemistry
Gliadin Antibodies (Deaminated)	Red top tube	Full red top tube. Referrals: 1 mL serum. Ship and store frozen.	Specific Days Only (Referred Out)	Chemistry
Glucose Meter Check	Light Green top tube or Gray tube	Full tube	Daily	Chemistry
Glucose Tolerance – Gestational Diabetes Screen, 50 Gram Glucose Oral Load	Light Green top tube	Test applies to pregnant patients at 24 – 28 weeks gestation. Obtain blood for plasma glucose 1hour post 50 gram oral glucose load. Referrals: Grey top tube.	Weekdays	Chemistry
Glucose Tolerance Test During Pregnancy, 75 Gram Glucose Oral Load	Light green top tube	Obtain blood for fasting plasma glucose, and plasma glucose at 1hour and 2 hrs post 75 gram oral glucose load.	Weekdays	Chemistry
Glucose Tolerance Test, Non-Pregnant Adults and Children, 75 Gram Glucose Oral Load	Light Green top tube	Obtain blood for fasting plasma glucose, and plasma glucose at 2 hrs post 75 gram oral glucose load. Referrals: Grey top tube.	Weekdays	Chemistry
Glucose, CSF	CSF tube	0.5 mL of spinal fluid. Referrals: 0.5 mL of CSF. Store and ship frozen.	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Glucose, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated. Sample will be identified as RANDOM unless fasting state is indicated. Diagnosis of Diabetes: FPG ≥7.0 mmol/L Fasting = no caloric intake for at least 8 hours Or 2hPG in a 75 g OGTT ≥ 11.1 mmol/L Or Random PG ≥ 11.1 mmol/L Random = any time of the day, without regard to the interval since the last meal 2018 Canadian Diabetes Guidelines	Daily or STAT	Chemistry
Glucose-6-Phosphate Dehydrogenase (G6PD) Screen, Blood	Lavender top tube Pediatric – microtainer tube	2.5 mL of blood. Referrals: 2.5 mL of EDTA whole blood. Store and ship refrigerated.	Daily Turnaround time 1-7 days	Hematology
Glucose-6-Phosphate Dehydrogenase (G6PD), Quantitative, Erythrocyte	Lavender top tube	Quantitative G-6-PD test will be performed only on patients with abnormal or inconclusive results on screening test. This test should not be performed on patients with reticulocytosis. 3 mL of blood. Store and ship refrigerated. DO NOT FREEZE. DO NOT CENTRIFUGE.	Specific Days Only (Referred Out) Turnaround time 1-2 weeks	Hematology
Glutamic Acid Decarboxylase Antibodies (GAD)	Red top tube	3 mL of blood. Referrals: 1 mL of serum. Separate immediately. Store and ship frozen. If the specimen thaws, it is unsuitable for analysis.	Specific Days Only Referred Out	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Gram Stain (Smear Only – No Culture)	Sterile container, sterile tube or prepared smear in covered container etc.	Mouth swab, urethral smear etc. in a sterile container, sterile tube, or prepared smear in covered container. Requisition MUST state specific site of specimen. Gram stain for Vincents, Yeast is available if requested .	Daily Turnaround time 24 hr	Microbiology
Group and Hold	2-Pink top tubes (7 mL tubes)	See: Type and Hold	24 hr/7d	Transfusion Medicine (Blood Bank)
Group B Streptococci	Transport Media	Please indicate penicillin allergy status.	Daily	Microbiology
Growth Hormone, Serum	Red top tube	2 mL of blood from FASTING patient. Serum Glucose should also be ordered. Referrals: 1 mL of serum. Store and ship frozen. Indicate protocol used for stimulation or suppression.	Specific Days Only (Referred Out)	Chemistry
Haloperidol	Green top tube (no gel) Or Serum	1 mL of blood. Separate plasma or serum from cells within 2 hrs. Referrals: 1 mL of heparinized plasma or serum. Store and ship frozen. Submit trough specimen.	Specific Days Only (Referred Out)	Chemistry
Haptoglobin, Plasma	Light Green top tube	1 mL of blood. Hemolysis must be avoided. Any sample with gross mechanical hemolysis must be recollected. Fasting samples are preferable. Referrals: 0.5 mL plasma and send refrigerated.	Daily	Chemistry
HCG, Blood	Light Green Lithium Heparin top tube	See: Human Chorionic Gonadotropin (HCG), Blood	Weekdays or STAT	Chemistry
HCG, Urine	Random urine collection container	See: Pregnancy Test, Urine	Daily or STAT	Chemistry
Heat Stability Test for Unstable Hemoglobin	3-Lavender top tube (2.5 each)	See: Hemoglobinopathy Investigation – Heat Stability Test	By Consultation Only (Referred Out)	Hematology
Heinz Body Production Test, Blood	Green top tube	Consultation with a hematopathologist is required for this test. Call lab to book test. Must be received in a.m. only. 3 mL. Deliver to lab immediately.	Weekdays by Consultation Only Turnaround time 24 hr	Hematology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Heinz Body Stain, Blood	Lavender or Green top tube	3 mL. (If Heinz Body Production Test is also required, a Green top tube must be sent).	Weekdays Turnaround time 24 hr	Hematology
Helicobacter pylori Antibodies, Serum	Red top tube	One tube of clotted blood.	Daily	Microbiology
Hemochromatosis (HFE Gene Analysis)	Lavender top tube	15 mL of blood (EDTA). Analysis includes testing of the C282Y and H63D variants. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround time 2-8 weeks	Molecular Genetics
Hemoglobin – Sickle Cell Screen, Blood	Lavender top tube	2.5 mL of blood. Screening test not recommended until 6 months of age. See: Hemoglobinopathy Investigation, Blood	Daily Turnaround time 1 day	Hematology
Hemoglobin A1C, Blood	Lavender top tube	2 mL of blood. Referrals: Store and send refrigerated.	Weekdays	Chemistry
Hemoglobin Electrophoresis, Blood	2-Lavender top tube (2.5 each)	See: Hemoglobinopathy Investigation	By Consultation Only Turnaround time 1-2 weeks	Hematology
Hemoglobin, Plasma	Dark green top tube Sodium Heparin	Referrals: 1 mL of heparinized plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Hematology
Hemoglobinopathy Investigation – Heat Stability Test for Unstable Hemoglobin	1-Lavender top tube EDTA, Blood	By prior arrangement only. Call lab to book at ext. 4183. Must be received in lab before noon. Ethnic origin should be indicated. Referred in samples: Include a copy of CBC, Diff. and Retic results and a Wright's stains peripheral blood smear.	Monday – Wednesday in a.m. only (Referred Out) Turnaround time – 1 week	Hematology
Hemoglobinopathy Investigation – Isopropanol Precipitation Test for Unstable Hemoglobin	1-Lavender top tube EDTA, Blood	By prior arrangement only. Call lab to book at ext. 4183. Must be received in lab before noon. Ethnic origin should be indicated. Referred in samples: Include a copy of CBC, Diff. and Retic results and a Wright's stains peripheral blood smear.	Monday – Wednesday in a.m. only (Referred Out) Turnaround time – 1 week	Hematology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Hemoglobinopathy Investigation, Blood	2-Lavender top tube (2.5 each)	5 mL of blood. Testing may include Electrophoresis, HPLC quantitation of HbF and HbA2, and Hb H stain. Ethnic origin of patient should be indicated on requisition. Patient should not have been transfused within the past 3 months. Referrals: Include a copy of the CBC, Diff and Retic results, a Wright's stained peripheral blood smear as well as serum ferritin result.	Turnaround time 1-2 weeks	Hematology
Hemophilia A (Factor VIII Deficiency)	Lavender top tube	20 mL of blood (EDTA). Testing includes direct or indirect testing for inheritance of mutations of the FVIII gene. Testing for severe Factor VIII Deficiency (61% activity) is done by inversion testing in the Molecular Genetics Laboratory TAT 1 month. Reflex testing for inversion negative cases is to the research lab with appropriate consent. Mild Fact VIII Deficiency testing is done in the research lab with appropriate consent. Contact the Genetics Office for details. Testing may be done on blood, amniotic fluid or CVS. Samples required from appropriate family members including at least one affected individual. Accurate pedigree details to accompany blood sample should be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround time 2 weeks – 6 months	Molecular Genetics
Hemophilia B (Factor IX Deficiency)	Lavender top tube	15 mL of blood in EDTA. Testing includes direct or indirect testing for inheritance of mutations of the Factor IX gene. Testing may be done on blood, amniotic fluid or CVS. Samples required from appropriate family members including at least one affected individual. Accurate pedigree details to accompany blood sample. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround Time is 2 weeks – 6 months	Molecular Genetics
Hemosiderin, Urine	Plastic urine container	10 mL freshly voided urine.	Weekdays Turnaround time 1 day	Hematology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Heparin Induced Thrombocytopenia (HIT)	2 Red top tube, 2 Light Blue top tube	Collect 2 x 4 mL red top tube, Collect 2 x 2.7 mL Light Blue Top tube	Weekdays (Referred Out)	Hemostasis
HER-2/neu	Formalin-fixed paraffin-embedded tissue	See: Tissue Examination, Routine See: Breast Biopsy	Weekdays 0830-1630 Results available in 2-3 weeks	Histology
Herpes (Alpha) PCR (HSV-1, HSV-2, VZV)	Sterile Container	CSF Specimen (0.5mL)	Test Monday, Wednesday, Friday	Microbiology
Hexosaminidase, Plasma – TSD, Sandhoff, Mucolipidosis II or III	Green top tube (no gel)	See: Lysosomal Enzymes, Plasma	Specific Days Only (Referred Out)	Chemistry
Hexosaminidase, Plasma or Serum	Green top tube (no gel)	See: Lysosomal Enzymes	Specific Days Only (Referred Out)	Chemistry
Hexosaminidase, WBC – TSD, Sandhoff	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out)	Chemistry
HIAA, Urine (5-HIAA)	Dark bottle containing 25 mL of 6N HCL	See: Hydroxyindole Acetic acid, Urine	Specific Days Only (Referred Out)	Chemistry
Histoplasmosis (culture)	Sterile Container	Culture and direct detection.		Microbiology
HLA Antibody Screening (for Kidney Transplants)	Gold or Red top tube	See: Panel Reactive Antibodies (PRA)	Turnaround time 60 days	Immunology
HLA Typing	Lavender top tube	See: Tissue Typing	Turnaround time 10 days	Immunology
HLA-B27 Typing	Lavender top tube	5 mL of blood.	Turnaround time 10 days	Immunology
HLA –B57	Lavender top tube	5 mL of blood.	Turnaround time 10 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Homocysteine, Plasma	Lavender top tube	5 mL of blood. Blood must be placed on ice or transported to the laboratory for centrifugation without delay in order to prevent in vitro increase in homocysteine concentration. Referrals: Minimum volume 2 mL EDTA plasma. Place specimen on wet ice and separate plasma within 4 hours. If not placed on wet ice, separate plasma within one hour. Store and send Frozen. A fasting collection is preferred but not mandatory.	Specific Days Only (Referred Out)	Chemistry
Homovanillic Acid (HVA), Urine	Dark bottle containing 20 mL of 6N HCL; 15 mL for children	This test is used for the investigation of Neuroblastoma in Children. Testing on adults is available only after consultation with a clinical chemist. 24 hr urine collected. Container is available from Clinical Chemistry. Referrals: 20 mL from 24 hr urine collection. Store and ship refrigerated or frozen. CAUTION: Preservative causes skin burns on contact. Must state collection date, time and volume or indicate "Random". Final pH: between 2 & 3	Specific Days Only (Referred Out)	Chemistry
Human Chorionic Gonadotropin (HCG), Blood	Light Green Lithium heparin top tube	Intact molecule and free beta HCG assay. 1 mL blood in a Light Green Lithium Tube. Referrals: 0.5 mL plasma. Store and send refrigerated.	Daily or STAT	Chemistry
Human Chorionic Gonadotropin, Urine	Random urine container	See: Pregnancy Test, Urine	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Huntington Disease (HD Gene Analysis)	Lavender top tube	15 mL of blood in EDTA. Direct testing of the Huntington gene CAG repeat. For pre-symptomatic predictive testing a genetic consult is required. Please contact Clinical Genetics at KGH x4283. **Diagnostic testing is ONLY** provided for patients with a movement disorder symptomatic of Huntington's disease. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround time 2-8 weeks	Molecular Genetics
HVA	Dark bottle containing 20 mL of 6N HCL; 15 mL for children	See: Homovanillic Acid (HVA), Urine	Specific Days Only (Referred Out)	Chemistry
Hydroxyindole Acetic Acid (5-HIAA), Urine	Dark bottle containing 25 mL of 6N HCL	24 hr or Random urine collected in a dark bottle containing 25 mL of 6N HCL. Container is available from Chemistry. Diet should be free of avocados, bananas, tomatoes, plums, walnuts, pineapples and eggplant for 3 days prior to collection. Patient should be off interfering drugs for 3 days (Guaiacol, Acetaminophen, Naprosyn and Relafen). Referrals: 20 mL from 24 hr urine. Store and ship refrigerated or frozen. Must state collection date, time and volume or indicate "Random". Final pH: <4	Specific Days Only	Chemistry
Hydroxyproline, Urine	20 mL of 6N HCL	Test discontinued. C-Telopeptide (plasma) is recommended as substitute.	Specific Days Only (Referred Out)	Chemistry
IFE	Gold top tube	See: Protein Electrophoresis (Immunofixation will be done as required)	Specific Days Only	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
IgA, Anti IgA Testing	Refer to the Canadian Blood Services Website for specimen requirements and requisition	Testing must be approved by the Transfusion Medicine Medical Director. Use Canadian Blood Services Laboratory Test Request Form F800014. www.blood.ca/en/hospitals/toronto-centre/test-request-forms Pack and ship samples FROZEN to CBS Laboratory.	Weekdays, Monday to Thursday	Transfusion Medicine (Blood bank)
IgA, Serum	Gold top tube	1 mL of blood. Referrals: 1 mL of serum. Store and ship refrigerated.	Daily	Chemistry
IgE, Serum	Gold top tube	1 mL blood. Referrals: 0.5 mL of serum. Store and ship frozen.	Daily	Chemistry
IgG, Serum	Gold top tube	1mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
IgH and TCR-beta Gene Rearrangement Studies (Oncology)	Blood – Lavender top tube (EDTA) Bone Marrow – EDTA	15 mL of blood. Testing may be done on blood, bone marrow, fresh or frozen tissues. Use Molecular Genetics Oncology Requisition. Specimen must be received in the laboratory within 5 days of collection.	Monday – Thursday 0830-1630 Turnaround time 2-8 weeks	Molecular Genetics
IgM, Serum	Gold top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Imipramine, Serum	Red top tube (no gel) or lavender top tube	5 mL of blood. Referrals: 3.0 mL of serum or EDTA plasma. Submit trough specimen. Separate serum from cells as soon as possible. Transfer to plastic screw-cap vial and refrigerate.	Specific Days Only (Referred Out)	Chemistry
Immunofixation (IFE)	Gold top tube	See: Protein Electrophoresis (Immunofixation will be performed on specimens for electrophoresis whenever required).	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Immunophenotyping for Blood disorders	Blood – Lavender top tube; Bone Marrow aspirate in Green top tube (sodium heparin) Lymph node/tissue in saline. Body fluids/CSF in sterile container	5 mL of blood.Note: Samples in Lithium herparin will be rejected. Blood and bone marrow must be kept at room temperature. Tissue and body fluids should be sent ASAP to the Immunology lab.	Monday to Thursday 0800-1600 Friday 0800-1300	Immunology
Infertility Analysis Semen Analysis	Specimen Container	A period of 3 days abstinence from sexual activity is recommended before collecting the specimen. Semen – collected by masturbation not more than 1 hour prior to delivery.The entire specimen is to be collected in the specimen container. Place the labelled specimen container in the center section of the plastic biohazard bag and the completed requisition in the outside pocket. While transporting the specimen to the Cytology laboratory it should be kept warm. Place in a pocket close to the body. Must be hand delivered within 1 hour. Labeling, ID: Patient's first name and last name and another unique identifier i.e. Date of Birth, CR number, Health Card Number. Required information: Patient demographics and relevant clinical information. Instruct patients to complete requisition: date/time of collection and partner's name, etc.	Turnaround time 3 days and STAT Testing 24 hours Only accepted Monday – Thursday 0800-0900 hrs Closed on statutory holidays	Cytology
Infectious Mononucleosis Screening Test (Heterophile Antibodies), Serum	Red top tube	6 mL of blood.	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Influenza A/B PCR	Nasopharyngeal swab/Nasal aspirates	NP swabs are the preferred specimen.	Daily during Influenza season	Microbiology
Insulin Antibodies	Red top tube	Full tube	Specific Days Only (Referred Out)	Chemistry
Insulin	Red top tube	2 mL of blood collected after an overnight fast (12 hr). Hemolyzed samples are not acceptable. Store and ship frozen. Tubes to be kept closed at all times. Serum should be separated from cells within 2 hours of collection time. NOTE: Patients treated with monoclonal mouse antibodies or insulin (porcine or bovine) may have antibodies that may interfere in this assay.	Daily	Chemistry
Insulin-like Growth Factor 1 (IGF1), aka Somatomedin C Serum	Red top tube Gold top tube acceptable	5 -10 mL of blood. Transport to laboratory without delay. Referrals: Centrifuge and separate serum from cells as soon as possible. Refrozen specimens are unacceptable. Store and ship frozen. This test is available to Endocrinologists only. All other requests must be cleared by a Clinical Chemist.	Specific Days Only (Referred Out)	Chemistry
Intrinsic Factor Antibodies, Serum	Red top tube	4.5 mL blood. Avoid injection of Vitamin B12 for 48 hrs prior to drawing specimen. Referrals: 3 mL serum. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Iron, Plasma	Light Green top tube	1 mL of blood. (Early morning sample preferred due to diurnal variation. Iron levels are highest in early morning and may decrease by up to 30%). Referrals: 0.5 mL of plasma. Store and send refrigerated.	Daily	Chemistry
Isohemagglutinin Test	1-Pink Top Tube	Collect peripheral blood. Label tubes using Blood Bank Collection Labels. Do not draw above on I.V. line.	Monday to Friday 24 hours	Transufsion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Isopropanol Stability Test for Unstable Hemoglobin	2-Lavender top tubes (2.5 each)	See: Hemoglobinopathy investigation, Isopropanol Precipitation test for Unstable Hemoglobin	Monday – Wednesday in a.m. only (Referred out) Turnaround time – 1week	Hematology
Isopropanol, Plasma or Serum	Gold or Light Green top tube	See: Volatiles, Serum or Plasma (Methanol, Ethanol, Isopropanol, Ethylene Glycol, other Alcohols and Glycols, Acetone)	GC/MS Analysis by arrangement only. For STAT analysis, contact the Clinical chemist on call. Test is usually performed only when the Osmolar Gap is abnormal. NOTE: Results are not for medico-legal purposes.	Chemistry
JAK-2	Lavender top tube	15 mL of blood (EDTA). Includes only detection analysis of the V617F mutation in the JAK2 gene. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround time 7 days	Molecular Genetics
Kidney Biopsy	See Handling Procedure	See: Tissue Examination, Renal Biopsies	Weekdays 0800-1600 (By Prior Arrangement). Consult Renal Pathologist (KGH ext. 4172). Turnaround time 3 days to 1 week depending on complexity.	Histology
Kleihauer Betke	1-Lavender top tobe	5 mL blood. Collect peripheral blood. Label tubes using Blood Bank Collection Labels. Do not draw above I.V. line.	24h/7d	Transfusion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Lactate Dehydrogenase (LD), Serum	Gold top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Lactate Dehyrogenase (LD) Isoenzymes. Plasma	Gold top tube	1 mL of blood. Sample must not be hemolysed. Referrals: 0.5 mL serum. Store and send at ROOM temperature. (Test can also be done on Pleural Fluid).	Specific Days Only (Referred Out)	Chemistry
Lactate (Lactic Acid), Whole Blood	Dark Green Lithium Heparin Vacutaner tube or Pre-heparinized Blood Gas Syringe or Pre-heparinized Blood Gas Capillary tube (100mL) (for pediatric/low volume samples)	Avoid clenching of the hands and use of tourniquet if possible. Collect a full dark green lithium tube and mix well. Minimum volume requirement for Blood gas syringe is 1.5 mL. Blood gases and lactate may be analyzed in the same blood gas syringe if blood gases are normally done by the Core Lab. Place collection tube or syringe on ice immediately, as lactate concentration changes rapidly at room temperature. Transport to the Lab within 15 minutes of collection. Analyse immediately upon receipt in the Lab.	STAT 24 hr/7d	Chemistry
Lactic Acid, CSF	CSF tube	0.5 mL of CSF. Place on ice and transport to lab immediately. Referrals: 0.5 mL of CSF. Store and ship frozen.	Daily	Chemistry
Lamotrigine	Red top tube	Full tube	Specific Days Only (Referred Out)	Chemistry
LATS	Red top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin, Serum	Specific Days Only (Referred Out)	Chemistry
Lead, Urine	New unwashed plastic container with no metal or glued insert	24 hr or random urine. Referrals: 24 hr or random urine (15 mL) collected without preservatives into a new unwashed plastic (metal-free) container with no metal lid or glued insert. Must state collection date, time and total volume or indicate "random". Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Lead, Whole Blood	Royal blue tube top with EDTA	7 mL Whole blood (heparin) EDTA Analysis includes Zinc Protoporphyrin (ZPP) unless "Lead only" is specified. ZPP must be ordered separately.	Specific Days Only (Referred Out)	Chemistry
Lidocaine, Serum	Red top tube	3 mL of blood. To monitor therapy, collect at least 30 min following administration of drug bolus. Send to laboratory immediately. Referrals: 1.0 mL of serum. Separate serum from cells within 3 hrs of drawing. Transfer to plastic screw-cap vial. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Lipase	Light Green top tube	3 mL of blood. Referrals: 1.0 mL of heparinized plasma. Store and ship refrigerated. Patients should be fasting before the specimen is drawn. Avoid collection tubes with stoppers lubricated with glycerol.	Daily or STAT	Chemistry
Lithium	Red top tube	1 mL of blood. Draw blood 12 hrs after evening dose (trough level). State time of last dose on requisition. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Long QT Syndrome (Romano-Ward Syndrome, Brugada Syndrome)	Lavender top tube – EDTA 3 – 10 mL, whole blood	Test can be ordered by Clinical Genetics or through cardiac clinics. Temperature requirements: ambient. Tube address 31. Requisition - http://www.kgh.on.ca/sites/default/files/kgh_molecular_genetics_long_qt_requisition.pdf	Turnaround time is 6 weeks, STAT 2 weeks	Molecular Genetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Lupus Anticoagulant (LA) Testing (dRVVT and PTTFSL)	2-Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. The plasma must be double centrifuged to ensure the plasma is platelet poor (plt ct <10 x 10^9/L). Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice. NOTE: 1. As Heparin therapy affects test results, a thrombin time will be performed on all samples in house prior to testing. 2. High levels of unfractionated heparin may produce misleading results in the dRVVT. 3. Anticoagulant therapy may compromise interpretation in LA Testing. 4. PT/INR result will be performed if not provided. 5. If INR >3.0, sample unsuitable for testing. 6. A PTT will be performed.	Weekdays Weekly batch testing. STAT testing available on request	Hemostasis
Luteinizing Hormone (LH)	Light Green Lithium Heparin	2 mL of blood. Referrals: 1 mL plasma. Store and ship refrigerated or frozen.	Daily	Chemistry
Lymph Node Biopsy	See Handling Procedure	See: Tissue Examination, Lymph Node Biopsy	Weekdays 0800-1600. After hours please contact the pathology resident on call through KGH switchboard.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Lymphoma	Clean jar (no fixative)	See: Tissue Examination, Lymph Node Biopsy See: Tissue Examination, Fresh Tissue	Weekdays 0800-1600. After hours contact the pathology resident on call through KGH switchboard (call at least one hour ahead to allow callback of staff). Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Lysosomal Enzymes – Gaucher Disease – glucocerebrosidase	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Lysosomal Enzymes – Mannosidosis	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Lysosomal Enzymes – Fucosidosis	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Lysosomal Enzymes – GM1 Gangliosidosis	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Lysosomal Enzymes – Krabbe Disease Galactocerebrosidase / B-galactosidose	1 -7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Lysosomal Enzymes – Metachromatic Leukodystrophy – Aryl Sulfatase A	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC See: Sulfatide, Urine	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Lysosomal Enzymes – Mucolipidosis II	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes. Plasma	Specific Days Only (Referred Out)	Chemistry
Lysosomal Enzymes – Mucolipidosis III	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, Plasma	Specific Days Only (Referred Out)	Chemistry
Lysosomal Enzymes – Plasma – Tay Sach Carrier Testing	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes. Plasma	Specific Days Only (Referred Out)	Chemistry
Lysosomal Enzymes – Sandhoff Disease	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, Plasma	Specific Days Only (Referred Out)	Chemistry
Lysosomal Enzymes- Fabry Disease / galactosidase	1-7 mL Green top tube (no gel)	5 mL blood. Blood samples can be accepted Mon.-Thurs. 0600-1300 hrs ONLY. Enzyme assay: WBC alpha-galactosidase. Contact clinical chemist if urgent analysis is required. See also Trihexoside, Urine	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Lysosomal Enzymes, Plasma – Hexosaminidase, Plasma Carrier – for pregnant females only	1-7 mL Green top tube (no gel) Diagnostic – Red top tube for male and non-pregnant females	Applies to detection of Tay Sach, Sandhoff, Mucolipidosis II or III, TSD carrier detection 3 mL of blood. Send to Chemistry immediately on ice. (If patient is pregnant, on oral contraceptives, or diabetic, contact a Clinical Chemist for an alternate analysis). Referrals: 2 mL serum. Separate and freeze as soon as possible. Store and send frozen. If the specimen thaws, it is unsuitable for analysis. Indicate patient's date of birth, gender and race. For female patient indicate if pregnant or on oral contraceptives and submit 2 mL Plasma (heparin) instead of serum.	Specific Days Only (Referred Out)	Chemistry
Lysosomal Enzymes, WBC	1-7 mL Green top tube (no gel)	10 mL fresh blood. Samples will be accepted Monday – Thursday 0600-1300 hrs ONLY in order to meet shipping deadlines. Analyses may include Tay Sachs, Sandhoffs, GM1 gangliosidosis, Metachromatic Leukodystrophy, Gauchers, Fucosidosis, alpha-Mannosidosis, Krabbes. Arrangements for testing must be booked in advance (contact Clinical Chemist at 613-549-6666 x 4180). The specific lysosomal disorder or enzyme must be indicated on the requisition.	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Magnesium, Plasma	Light Green top tube	1 mL of blood in a Light Green top tube. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Daily or STAT	Chemistry
Magnesium, Urine	24 hr urine container	24 hr or Randon urine collected in 20 mL 6N HCL. Referrals: 6 mL aliquot of 24 hr urine specimen collected with HCL as above. Store and ship refrigerated. Must state collection date, time and total volume or indicate "Random".	Weekdays	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Malarial Parasites, Blood	2-Lavender top tube (3 mL each)	6 mL of blood. Send specimen to lab IMMEDIATELY as smear preparation must be performed WITHIN ONE-HOUR OF BLOOD COLLECTION. Include patient history of past malarial infection, present symptoms of fever/chills. Indicate whether patient has recently traveled to a country where malaria is endemic. A rapid screening test and parasite count where relevant will also be performed.	Daily Final report (1 day) Turnaround time 24 hr Preliminary report sent 1-2 hrs	Hematology
Manganese	Royal Blue top tube with EDTA	1 Full Royal Blue EDTA tube. Transfer into polypropylene vial after separating as soon as possible.	Specific Days Only (Referred Out)	Chemistry
Manganese, Urine	New unwashed plastic container (metal free) with no metal lid or glued insert	24 hr or Random. Referrals: send 15mL aliquot of urine collected as stated. State urine collection date, time and total volume or indicate "Random". Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Mannosidase (Alpha-Mannosidase), WBC – Mannosidosis	1-7 mL Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (Referred Out) Monday – Thursday 0600-1300	Chemistry
Maprotiline, Serum	Red top tube (no gel)	5 mL of blood. To monitor therapy, draw trough specimen prior to next dose or 10 – 12 h after last drug administration. Referrals: 3.0 mL of serum. Separate serum from cells within 3 hrs of drawing. Transfer to plastic screw-cap vial. Store and send refrigerated.	Specific Days Only (Referred Out)	Chemistry
Maternal Serum Screen (MSS)	Gold top tube	5 mL blood. Tests include alpha-fetoprotein, human chorionic gonadotropin, and unconjugated estriol. Complete Green M.S.S. form including age, weight, and expected date of delivery. Gestational age must be 15 to 21 weeks.	Daily	Chemistry
Mercury, Blood	Royal Blue EDTA (Whole Blood)	1 Full Royal Blue EDTA tube	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Mercury, Urine	Random urine collection container or 24 hr urine collection container (metal free)	Random urine or 24 hr urine without preservatives into a new unwashed plastic container (metal free) with no metal lid or glued insert. Referrals: 24 hr or random urine (13 mL) collected as suggested. Must state collection date, time and total volume or indicate "random". Store and ship refrigerated. Avoid seafood consumption for three days prior to collection.	Specific Days Only (Referred Out)	Chemistry
Metabolic Screen	Random urine collection container	Order specific tests required rather than Metabolic Screen. See: Organic Acids (GC/MS), Urine See: Mucopolysaccharides, Urine See: Oligosaccharides, Urine	Phone Clinical Chemist at 613-549-6666 x 4180 for information on additional tests if required	Chemistry
Metanephrines, Urine, 24h	Dark bottle containing 25 mL of 6N HCL (use 15 mL for a child)	Urine Metanephrines is the recommended screening test for Pheochromocytoma. Urine catecholamines and VMA do not improve detection rates and are not recommended. 24 hr urine collected in a dark bottle containing 25 mL of 6N HCL (use 15mL for a child). Restrict caffeine, nicotine and alcohol 24 hr prior to collection. Discontinue Methyldopa (Aldomet) at least 5 days prior to collection. Other drugs do not usually interfere with the assay. Referrals: 10 mL from 24 hr urine collected as above. Record total 24 hr volume on the requisition. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Methanol, Plasma or Serum	Gold or Light Green top tube	See: Volatiles, Serum or Plasma (Methanol, Ethanol, Isopropanol, Ethylene Glycol, other Alcohols and Glycols, Acetone)	GC/MS Analysis by arrangement only. For STAT analysis, contact the Clinical chemist on call. Test is usually performed only when the Osmolar Gap is abnormal. NOTE: Results are not for medico-legal purposes.	Chemistry
Methemoglobin, Blood	Dark Green top lithium heparin vacutainer tube or Pre-heparinized Blood Gas Syringe sealed with cap provided or Pre-heparinized Blood Gas Capillary tube sealed on both ends with cap provided (pediatric/low volume samples)	Full Dark green lithium heparin tube, well mixed. Pre-heparinized blood gas syringe minimum volume is 1.5 mL. Pre-heparinized blood gas capillary tube must be full. Place sample on ICE and transport immediately to the laboratory. .	STAT 24 hr/7d	Chemistry
Methicillin-Resistant Staphylococcus Aureus (MRSA)	Nasal/perianal swab in transport media	MRSA Culture	Daily	Microbiology
Methotrexate	Red top tube	Protect from light by covering with foil. Specimen must be labeled inside and outside light-protecting wrap. Patients who have received glucarpidase (carboxypeptidase G2) as a high-dose methotrexate rescue therapy should not be tested for at least 48 hours following the last dose of glucarpidase.		Chemistry
Methylmalonic Acid	Lavender top tube	Send plasma. Separate within 6 hours of collection	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Microalbumin	Random urine container or 24 hr urine container	See: Albumin to Creatinine Ratio (ACR)	Daily	Chemistry
Mitochondrial Disorder, Muscle Biopsy	See: Handling Procedure	See: Tissue Examination, Muscle Biopsy for Mitochondrial Disorder.	Weekdays 0800-1530 (by prior arrangement). Contact Histology Lab 3-4 days before biopsy date. **Mitochondrial Testing Requisition** will then be faxed to the ordering Physician/Department. Contact Histology Lab 2 hours before biopsy time. **Please Note: Timing is critical. Rapid delivery of the Muscle Biopsy to the Technologist is essential.** Turnaround time 3 days to 4 weeks depending on complexity.	Histology
Mogadon	Red top tube (no gel)	See: Nitrazepam	Specific Days Only (Referred Out)	Chemistry
MPS, Urine	Random urine collection container	See: Mucopolysaccharide screen, Urine	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
MTHFR	Lavender top tube	See: MTHFR Thermolabile Variant	Weekdays 0830-1599	Molecular Genetics
MTHFR Thermolabile Variant	Lavender top tube	15 mL of blood in EDTA. Analysis includes only the common thermolabile variant. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround Time is 2-8 weeks	Molecular Genetics
Mucopolysaccharide Screen (MPS), Urine	Random urine collection container	Consult Clinical Biochemist for a more detailed MPS investigation if clinical findings are suggestive of Mucopolysaccharidosis. 5 mL of a fresh random urine collection. Referrals: 10 mL urine. Avoid first morning collection. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Muscle Biopsy	See Handling Procedure	See: Tissue Examination, Muscle Biopsy (Skeletal)	Weekdays 0800-1530 (by prior arrangement). Contact Histology lab 2 hours before biopsy time. FAPC Clinic muscle biopsies contact lab 3-4 days before biopsy date. Please Note: Timing is critical. Rapid delivery of the Muscle biopsy to the technologist is essential. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Mycophenolate	Lavender top tube	2 mL blood. Referrals: 1.5 mL EDTA plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Myoglobin Screen, Urine	Plastic urine container	Test is a qualitative screen for urine myoglobin at elevated levels (greater than 15 mg/L) that are associated with risk for acute renal failure. Serum for CK should be ordered at the same time as urine myoglobin. 10 mL random urine in plastic urine container. Referrals: Store and ship refrigerated.	Daily	Chemistry
Na (Sodium), Plasma	Light green top tube	1 mL of Blood. Referrals: 0.5 mL of heparinized plasma. Store and send refridgerated.	Daily or STAT	Chemistry
N-Acetylprocainamide (NAPA), Serum	Red top tube (no gel)	2 mL of blood in a Plain Red top tube (NO GEL). Collect specimen at trough (pre dose) concentration. Referrals: 1.0 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Nasal Sinus (Culture)	Sterile container	Test includes gram stain and aerobic culture. Samples include: nasopharynx aspirate, antral washings, maxillary/nasal sinus aspirate. NOTE: Submit a separate request if fungal culture is requested.	Daily	Microbiology
Neisseria gonorrhoeae (Culture)	Swab in transport media	Culture in addition to NAAT is recommended to determine Antibiotic susceptibilities.	Daily	Microbiology
Neisseria gonorrhoeae (Cervical, Urethral, Anorectal, Pharyngeal) NAAT	Cervical swab in transport media GEN_PROBE Collection kit	NAAT test is available from Public Health Laboratories (use Public Health Laboratories requisition). Concurrent testing for Neisseria gonorrhoeae and Chlamydia is recommended. DO NOT REFRIGERATE. Sample must be transported to the laboratory within 2 hrs of collection. N. gonorrhoeae NAAT is available through Provincial Health Laboratory. For NAT, use GEN-PROBE collection kits as used for Chlamydia NAT.	Daily	Microbiology (Public Health Ontario)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Neonatal Alloimmune Thrombocytopenia (NAT)		Refer to McMaster Website to print collection instructions www.fhs.mcmaster.ca/plateletimmunology/index.html Testing MUST be authorized by Transfusion Medicine Medical Director. Courier overnight shipping. Samples must be received within 5 days of draw. Keep at room temperature.		Transfusion Medicine (Blood bank)
Nerve Biopsy, Peripheral Nerve	See Handling Procedure	See: Tissue Examination, Peripheral Nerve Biopsy	Weekdays: 0800-1530 (by prior arrangement) Contact Histology Lab 2 hours before biopsy time. Please note: Timing is critical. Rapid delivery of the Peripheral Nerve Biopsy to the technologist is essential. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Newborn ABO Rh and Direct Antiglobulin Test	1-Pink Top Tube	Minimum 1 ml Collect peripheral blood. Label tubes using Blood Bank Collection Labels. Do not draw above on I.V. line.	24 h/7d Turnaround time 8 hrs	Transfusion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Newborn Screen	Newborn Screening kit	Collect neonatal blood using Ontario Newborn Screening kit. Requisition must be fully completed. Follow all collection instructions carefully. Send directly to CORE LAB. Collect neonatal blood using Ontario Newborn Screening kit. Requisition must be fully completed. Follow all collection instructions carefully. Send directly to CORE LAB.	Daily (Referred Out)	Chemistry
Nickel, Blood	Royal blue EDTA tube (Whole blood or Plasma)	1 Full Royal Blue EDTA tube	Specific Days Only (Referred Out)	Chemistry
Nitrazepam, Serum	Red top tube (no gel)	See also: Benzodiazepine Screen, Serum for qualitative test 3 mL blood. To monitor therapy, draw trough specimen prior to next dose. Referrals: 1 mL serum. Store and send refrigerated.	Specific Days Only (Referred Out)	Chemistry
Nocardia (Culture)	Sterile container	Test includes Gram stain and culture. Samples include: bronchoalveolar lavage (BAL), lung tissue, subcutaneous biopsy, or sterile body fluids.	Daily Final Report 21 days	Microbiology
Nortriptyline, Serum	Red top tube (no gel) or lavender top tube	6 mL of blood. Draw trough (pre dose) sample or 10-12h after last dose. Referrals: 3.0 mL of serum. Separate serum from cells within 3 hrs of drawing. Transfer to plastic screw-cap vial. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
N-Telopeptide, Urine (Bone Loss Marker) – Discontinued		Replaced by C-telopeptide (beta crosslaps)		Refer out
Occult Blood, Stool	Occult blood Envelope/Kit	DO NOT REFRIGERATE Test should not be used to test gastric samples.	Daily	Microbiology
Olanzapine	Red top tube	Submit trough specimen collected just prior to next dose or post-dose. At a time > 75% of the dosing interval. Do not use gel-separator tubes. Referrals: store and send frozen 2ml serum.	Specific Days Only (Referred Out)	Chemistry
Oligoclonal Banding	Red top tube and CSF tube	See: Protein Electrophoresis, Spinal fluid	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Oligosaccharides, Urine	Random urine collection container	10 mL fresh random urine. Referrals: 10 mL of fresh random urine. Store and ship refrigerated or frozen. Please provide age gender and clinical history to facilitate interpretation of analytical findings and recommendation of further testing or consultation.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Oral Cavity/Skin Scrapings for Cytology Applies to Lip, Gingiva, Floor of Mouth, Buccal Mucosa, Hard Palate, Soft Palate, Tonsils, Tongue, Oropharynx, Oral Scraping, Pemphigus Smear, Tzanck Cell Preparation	Glass microscope slide, spray fixative and slide container	Direct smears from lesions. 1. Have patient rinse mouth with water prior to collecting samples. 2. Label frosted end of slide with patient's first and last name plus one other unique identifier. 3. Scrape lesion with metal spatula. 4. Spread material evenly on glass slide and fix immediately with spray fixative from a distance of 10-12 inches from slide. 5. If the lesion has a necrotic or inflammatory surface, dip a non-absorbent cotton swab in saline. Gently moisten lesion and remove debris from surface. Proceed from Step 3. 6. If the lesion presents as leuoplakia remove surface layers with a sharp curette until a pink base in exposed. Proceed from Step 3. 7. After the spray fixative has dried on the slide, place the glass slide in a plastic slide holder. Labeling ID: Label specimen slide(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, patient demographics Rejection Criteria: Unlabelled/mislabeled requisition/slides Special Instructions: If multiple slides are prepared place each slide in a separate plastic slide holder. Do not allow slides to adhere to one another. Do not allow slides to dry before spraying with fixative. This will render the specimen unsatisfactory for evaluation. If the test is not for malignancy, please indicate the reason on the requisition. Transport Time: ASAP Method: Hand delivered, pneumatic tube Tube Address: 22 Regular Testing: 3 days STAT Testing: 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Organic Acids, Urine	Random urine collection container	Analysis by GC/MS. 10 mL of fresh random urine. Complete Biochemical Genetics requisition including diagnosis and all medications. Referrals: 10 mL urine. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Osmolality	Light Green top tube	1 mL of blood in a Light Green top tube. Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily or STAT	Chemistry
Osmolality, Urine	Random urine collection container or 24 hr urine collection container	2 mL of fresh random urine or 24 hr urine collected without preservatives. Referrals: 5 mL aliquot from a fresh random urine or from a 24 hr urine specimen collected without preservatives. Store and ship refrigerated.	Daily or STAT	Chemistry
Osmotic Fragility (Quantitative), Blood See EMA - testing	Lavender top tube	By prior arrangement only. Call lab to book at ext. 4183. Samples must be sent to lab on ice immediately after collection. Must be received by noon. Referred in samples: Include a copy of CBC, Diff. and Retic results and a Wright's stained peripheral blood smear. Note: Test now referred out to Hamilton (MUMC) must be received at MUMC within 24 hours of collection.	Monday – Wednesday in a.m. only (Referred Out) Turnaround time – 1 week	Hematology
Ovarian Cancer (BRCA Testing)	Lavender top tube	See: Familial Breast and Ovarian Cancer (BRCA 1, BRCA 2)	Weekdays 0830-1600. Requests for testing can only be made by the Familial Oncology Program at the Kingston Regional Cancer Centre, or through Genetic Services at Provincial Outreach Programs.	Molecular Genetics

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Oxalate, Urine	Container available from Chemistry	24 hr or Random urine collected in a bottle containing 20 mL 6N HCL Container available from Chemistry. Referrals: 20 mL urine. Collect 24 hr specimen with 20 mL of 6 mol/L (6N) HCL or acidify aliquot within the 24 hr of collection. Final pH should be less than 3. Random acidified within 24 hours of collection.	Specific Days Only (Referred Out)	Chemistry
Panel Reactive Antibodies (PRA)	Gold or Red top tube	5 mL blood. 2 mL of serum. Ship frozen. Freeze serum if sample cannot be performed in 24 hrs.	Expected turnaround time 60 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
PAP Test ***Thin Prep, Cervical Smear, Colposcopy,*** Gynecological***, Pap***	Thin Prep Vial and collection device(s)	Minimum Volume: 20 mL **SPATULA/ENDOCERVICAL BRUSH** 1. Obtain an adequate sampling from the ectocervix by rotating the plastic spatula 360 degrees. 2. Rinse the spatula as quickly as possible in vial by swirling the spatula vigorously 10 times. Discard the spatula. 3. Obtain an adequate sampling from the endocervix using the endocervical brush. Insert brush into the cervix until only the bottom bristles are visible. Slowly rotate ¼ to ½ turn in one direction. DO NOT OVER-ROTATE. 4. Rinse the brush as quickly as possible in the vial by rotating the brush 10 times while pushing against the side of the vial. Swish vigorously to release further material. Discard the brush. Proceed to Step 5. **BROOM LIKE DEVICE – PAPETTE** 1. Obtain an adequate sampling from the cervix by inserting the bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. 2. Push gently and rotate the broom in one direction five times. 3. Rinse the broom as quickly as possible by pushing the broom into the bottom of the vial 10 times, forcing the bristles apart. 4. As a final step, swirl the broom vigorously to further release material. Discard the broom. Proceed to Step 5. **HORMONAL ASSESSMENT-MATURATION INDEX** 1. Obtain a specimen from the upper third of the vaginal wall with the reverse end of the spatula. 2. Rinse spatula in vial by swirling the spatula vigorously 10 times. Discard spatula. Proceed to Step 5.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
PAP Test Thin Prep, Cervical Smear, Colposcopy, Gynecological, Pap (continued from previous page)	Thin Prep Vial and collection device(s)	**Step 5**. Tighten the cap so the torque line on the cap passes the torque line on the vial. 6. Label the vial with the patient's first and last name and one other unique identifier. DO NOT COVER OPAQUE SECTION OF VIAL WITH LABEL. 7. Complete requisition or order entry in PCS. Labeling ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB. Required Information: Clinical information, patient demographics Rejection Criteria: Unlabelled/mislabeled slides/requisitions /vials Special Instructions: The patient should be tested 2 weeks after last menstrual period and not when she is menstruating. The patient should not use vaginal medication, vaginal contraceptives or douches 48 hours prior to the exam. Lubricant jellies should not be used to lubricate the speculum. Use warm water if necessary for lubrication. Remove excess cervical mucous before taking the sample. This should gently be removed with gauze pad or cotton tip applicator. Additional Information: Lubricant jellies can compromise the test and possibly lead to an unsatisfactory result. Excess cervical mucus or inflammatory exudate is devoid of cellular material and when present in the sample vial may yield a slide with little or no diagnostic material present. The cervix should not be washed with saline or it may result in a relatively acellular specimen. The sample should be obtained before application of acetic acid. Transport Time: ASAP Method: Hand delivered, pneumatic tube Tube Address: 22 Regular Testing: 5 days STAT Testing: 24 hours Name of Form: Gynecological Cytology	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Paraneoplastic Antibodies	Red top tube	1 mL serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Parasites, Blood other than Malaria including, Babesia Trypanasomes and Microfilariae	2 lavender tubes	Please send to the lab immediately after collection. Include patient history fo past parasitic infection, present symptoms and travel history. A parasite count will be performed if relevant.	Daily Turnaround time 24 hrs Preliminary report 1-2 hrs	Hematology
Parathyroid Hormone (PTH)	Lavender top tube	1 mL of blood. Referrals: 1 mL of EDTA plasma. Refrigerate immediately. Store and ship refrigerated or frozen.	Daily	Chemistry
Paroxysmal Nocturnal Hemoglobinuria (PNH)	Lavender top tube 3 mL of blood.	Call Immunology Lab at 4602 – Test referred out. Testing must be sent same day as blood draw. Special Note: Required Information – Transfusion History, Current CBC, One stained blood smear.	Referred out to University Health Network, Toronto, ON Flow Hematology Lab	Immunology
Pathology Report		Check CPR. If report not finalized contact Pathology secretaries (KGH ext. 4166 or 6035) on Douglas 2, Rm 8-216, KGH site.	Weekdays 0630-1700. Turnaround time 3 days to 2 weeks depending on complexity	Histology
PCP (PJP) / Pneumocystis DFA	Sterile container	Bronchial wasings are more sensitive that sputum.	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Pericardial Fluid Body Fluid	Lavender or green top tube Specimen container with tight fitting lid.	DO NOT SEND fluid specimens in vacuum bottles. If the test is not for malignancy please indicate the reason on requisition. If there is a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Hand deliver to lab. Minimum Volume–10mL Maximum Volume– 100 mL 1. Collect up to 80 cc – 100 cc mid portion aspiration. 2. Add heparin to specimen to stop the fluid from clotting. For every 100 mL of fluid add 1 mL of heparin and gently mix. Labelling, ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, Patient demographics. Rejection Criteria: Unlabelled/mislabelled requisitions/specimen containers. Specimens collected in vacuum bottles. Special Instructions: DO NOT SEND FLUID SPECIMENS IN VACUUM BOTTLES. If this test is not for malignancy please indicate the reason on the requisition. If there will be a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Transport Requirements: Transport time-ASAP. Method-hand delivered. Temperature requirements-refrigerate if delay in transporting to lab TAT – regular testing 3 days, STAT 24 hours. Name of Requisition Form – Non Gynecological Cytology After Hours – send specimen to the core lab	Turnaround time 3 days or STAT 24 hrs Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Peritoneal Fluid Body Fluid	Lavender or green topped tube Specimen container with tight fitting lid.	DO NOT SEND fluid specimens in vacuum bottles. If the test is not for malignancy please indicate the reason on requisition. If there is a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Hand deliver to lab. Minimum Volume – 10mL Maximum Volume – 100 mL 1. Collect up to 80 cc – 100 cc mid portion aspiration. 2. Add heparin to specimen to stop the fluid from clotting. For every 100 mL of fluid add 1 mL of heparin and gently mix. Labelling, ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, Patient demographics. Rejection Criteria: Unlabelled/mislabelled requisitions/specimen containers. Specimens collected in vacuum bottles. Special Instructions: DO NOT SEND FLUID SPECIMENS IN VACUUM BOTTLES. If this test is not for malignancy please indicate the reason on the requisition. If there will be a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Transport Requirements: Transport time-ASAP. Method-hand delivered. Temperature requirements-refrigerate if delay in transporting to lab TAT – regular testing 3 days, STAT 24 hours. Name of Requisition Form – Non Gynecological Cytology After Hours – send specimen to the core lab	Turnaround time 3 days of STAT 24 hours Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Peritoneal Dialysis Fluid (Culture)	Blood culture bottles and Sterile container	Submit in a sterile container.	Daily	Microbiology
Peritoneal Washing Body Fluid	Specimen container, suction canister Specimen container with tight fitting lid.	Instill 50-200 mL of physiological solution into several areas of the abdomen. Aspirate the fluid and collect in Suction Canister. Add heparin to specimen to stop the fluid from clotting. For every 100 mL of fluid add 1mL of heparin and gently mix. Separate specimens for each lab are desirable and will expedite results. Hand deliver to lab. Labelling, ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, Patient demographics. Rejection Criteria: Unlabelled/mislabelled requisitions/specimen containers. Specimens collected in vacuum bottles. Special Instructions: DO NOT SEND FLUID SPECIMENS IN VACUUM BOTTLES. If this test is not for malignancy please indicate the reason on the requisition. If there will be a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Transport Requirements: Transport time-ASAP. Method-hand delivered. Temperature requirements-refrigerate if delay in transporting to lab Name of Requisition Form – Non Gynecological Cytology	Turnaround time 3 days, STAT testing 24 hrs Monday – Friday 0730-1530 After Hours – send specimen to the core lab	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
pH, Fluid	Pre-heparanized blood gas syringe	Collect fluid anaerobically in a pre-heparinized blood gas syringe. Expel all air from syringe. Minimum volume is 1.5 mLs in syringe. Transport to lab at room temperature within 30 minutes of collection	24 hr/7d	Chemistry
Phenobarbital, Serum	Red top tube (no gel)	1 mL of blood. Collect specimen at trough (pre-dose) concentration. Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily	Chemistry
Phenytoin	Red top tube (no gel)	1 mL of blood. Blood should be collected at trough (pre-dose) concentrations. Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily	Chemistry
Phosphate (PO4), Plasma	Light Green top tube	1 mL of blood. Referrals: 1 mL of heparinized plasma. Store and send refrigerated.	Daily	Chemistry
Phosphate, Urine	collection container from Chemistry Department	24 hour or Random urine collected in bottle containing 20 mL of 6N HCL. Referrals: 6 mL urine aliquot from a 24 hr urine specimen. Store and ship refrigerated. State urine collection date, time and total volume or indicate "Random".	Weekdays	Chemistry
Phospholipid Antibodies	Gold or Red top tube	See: Cardiolipin Antibodies	Turnaround time 5 days	Immunology
Placenta for Cytogenetic Testing	See Handling Procedure	See: Tissue Examination, Placenta for Cytogenetic Testing.	Weekdays 0800 - 1700 Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Plasminogen	Light Blue top tube	4.5 mL of blood. Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	Weekdays Referred out	Hemostasis
Platelet Aggregation Studies	Contact Core Laboratory at Ext 7806 to obtain blood collection kit.	Please discuss with the laboratory. Platelet Aggregations MUST be booked ahead with the Hemostasis lab. Arrangements must be made for patient blood to be drawn at FAPC. A Platelet Function Test: Medication Questionnaire must be completed, by the patient, on the day the sample is drawn and accompany the completed requisition. Ensure patient has not taken antiplatelet drugs in the last 10 days. Do NOT transport to lab via pneumatic tube. Call lab for pickup.	By prior arrangement only Turnaround time 1 day	Hemostasis
Platelet Antibody Testing		Refer to McMaster website to print collection instructions. www.fhs.mcmaster.ca/plateletimmunology/index.html Testing MUST be authorized by Transfusion Medicine Clinical Director. Sample must be received within 5 days of draw. Sample is couried with overnight shipping.		Transfusion Medicine (Blood bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Platelet Function Studies		See: Platelet Aggregation Studies	By prior arrangement only	Hemostasis

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Pleural Fluid Body Fluid	Lavender or green topped tube Specimen container with tight fitting lid.	DO NOT SEND fluid specimens in vacuum bottles. If the test is not for malignancy please indicate the reason on requisition. If there is a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Hand deliver to lab. Minimum Volume–10mL Maximum Volume–100 mL 1. Collect up to 80 cc – 100 cc mid portion aspiration. 2. Add heparin to specimen to stop the fluid from clotting. For every 100 mL of fluid add 1 mL of heparin and gently mix. Labelling, ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, Patient demographics. Rejection Criteria: Unlabelled/mislabelled requisitions/specimen containers. Specimens collected in vacuum bottles. Special Instructions: DO NOT SEND FLUID SPECIMENS IN VACUUM BOTTLES. If this test is not for malignancy please indicate the reason on the requisition. If there will be a delay in transporting the specimen to the laboratory the specimen must be refrigerated. Separate specimens for each lab are desirable and will expedite results. Transport Requirements: Transport time-ASAP. Method-hand delivered. Temperature requirements-refrigerate if delay in transporting to lab TAT – regular testing 3 days, STAT 24 hours. Name of Requisition Form – Non Gynecological Cytology After Hours – send specimen to the core lab	Turnaround time is 3 days, STAT testing is 24 hrs Weekdays 0730 - 1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Porphobilinogen (PBG), Urine	Random or 24 hr urine collected in bottle, wrap container with foil or paper bag protecting from light	See: Porphyrin Precursors (ALA & PBG)	Specific Days Only (Referred Out)	Chemistry
Porphyrin Precursors (ALA & PBG)	Random or 24 hr urine collected in bottle, wrap container with foil or paper bag protecting from light	Analysis includes Porphobilinogen (PBG) and δ-Aminolevulinic Acid (ALA). Random Urine: Transport to the laboratory IMMEDIATELY for the addition of preservative. Indicate random collection and collection date. 24 hr urine: Collect in plastic bottle, wrap in foil or paper bag. (Container available from Core Lab). Indicate collection date, start and end times. Referrals: Send 20 mL aliquot of urine sample. Indicate if "random" or 24 hr collection (document volume). Store and send frozen.	Specific Days Only (Referred Out)	Chemistry
Porphobilinogen Deaminase, Erythrocyte	Green top tube (no gel)	7 mL of blood collected after a 12-14 hrs fast. The patient should be off medications, if possible, for at least 1 week and should abstain from alcohol for 24 hr. Wrap in foil to PROTECT FROM LIGHT. Referrals: 7 mL of heparinized blood. Include hematocrit on requisition. Store and ship refrigerated. DO NOT Freeze.	By Prior Arrangement Only (Referred Out)	Chemistry
Porphyrinogen, Urine	Random urine collected in bottle, wrap container with foil or paper bag protecting from light	See: Porphyrins, Urine	Specific Days Only (Referred Out)	Chemistry
Porphyrins, Urine Quantitation	Random or 24 hr urine collected in bottle, wrap container with foil or paper bag protecting from light	See: Porphyrins, Screen Container requires 5gm sodium carbonate. Adjust pH to 7-10.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Porphyrins, Screen	Random or 24 hr urine collected in bottle, wrap container with foil or paper bag protecting from light	Random Urine: Transport to the laboratory IMMEDIATELY for the addition of preservative. Indicate random collection and collection date. 24 hr urine: Collect in a plastic bottle protected from light with foil or paperbag, containing 5g sodium carbonate and refrigerated during collection. (Container available from Core Lab). Indicate: collection date, start and end times. Final pH: between 7-10 Referrals: Send 20 mL aliquot of urine sample. Indicate if "random" or 24 hr collection (document volume). Store and send frozen. Porphyrin quantitation is only performed when preliminary screen is positive. This collection is not suitable for ALA/PBG testing.	Specific Days Only (Referred Out)	Chemistry
Post Vasectomy Analysis	Specimen Container	The specimen should be obtained by masturbation. The entire specimen is to be collected in the specimen container provided. Place the specimen container in the center section of the plastic biohazard bag and the completed requisition in the outside pocket. Hand deliver to laboratory. Labeling, ID: Patient's first and last name and another unique identifier i.e. Date of Birth, CR number, Health Card Number. Required Information: Patient demographics and relevant clinical information.	Regular testing 3 days and STAT testing 24 hours Accepted only Monday – Thursday 0800-0900 Cytology laboratory is closed on Satutory holidays	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Potassium, Plasma	Light Green top tube	1 mL of blood. HEMOLYZED samples cause falsely elevated results. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated. NOTE: Serum can be tested; however the reference ranges stated are for plasma. Plasma potassium levels are generally 0.3 mmol/L lower than serum potassium levels.	Daily or STAT	Chemistry
Potassium, Urine	Without preservatives	6 mL fresh random urine or 24 hr urine collected. Referrals: 6 mL aliquot from a fresh random urine or from a 24 hr urine specimen collected without preservatives. Store and ship refrigerated. Must state collection date, time and volume or indicate "Random.	Daily or STAT	Chemistry
Potassium, Whole Blood (primarily ordered on Leukemia patients)	Dark Green Lithium Heparin Vacutainer tube or Pre-heparinized Blood Gas Syringe	Dark Green Lithium Heparin tube must be full and well mixed. Blood gas syringe minimum volume is 1.5 mls. Transport at room temperature. Samples must be walked to the laboratory. DO NOT SEND in the pneumatic tube system, due to the fragility of the leukocytes. Analyze immediately upon receipt in the lab.	STAT 24 hr/7d	Chemistry
Prealbumin, Serum	Gold top tube	1 mL of blood preferably taken after an overnight fast. Referrals: 0.5 mL of serum. Store and ship refrigerated.	By prior arrangement only	Chemistry
Precipitins, Avian	Gold top tube	See: Avian Precipitins, Serum (Specify species: Budgie/Parakeet, Canary, Chicken, Cockatiel, Duck, Goose, Parrot, Pigeon or Turkey)	Specific Days Only (Referred Out)	Chemistry
Pregnancy Test, Urine	Random urine collection container	2 mL of urine (first morning specimen preferred) in a random urine container. Referrals: 10 mL of urine. Specimen may be refrigerated up to 48 hrs. Freeze specimen for longer storage. Gross hemolysis or proteinuria do not interfere.	Daily or STAT	Chemistry
Primidone, Serum	Red top tube (no gel)	2 mL of blood. Collect specimen at trough (predose) concentration. Referrals: 0.5 mL of serum or heparinized plasma. Store and send refrigerated.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Procainamide, Serum	Red top tube (no gel)	See: N-Acetylprocainamide (NAPA), Serum	Specific Days Only (Referred Out)	Chemistry
Progesterone, Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and send refrigerated.	Daily	Chemistry
Prolactin	Light Green Lithium Heparin top tube	2 mL of blood. Referrals: 1 mL plasma. Store and send refrigerated.	Daily	Chemistry
Prostate Specific Antigen (PSA), Total	Gold top tube	2 mL of blood. Obtain specimen prior to prostate examination, or 2 days post examination. Referrals: 1 mL of serum. Store and send refrigerated. Serum for free PSA measurement must be separated from the cells within 2 hrs.	Daily or STAT	Chemistry
Prostate Specific Antigen, Free (FPSA)	Gold top tube	See: Prostate Specific Antigen, Free (FPSA) Serum for free PSA measurement must be separated from the cells within 2 hrs.	Daily or STAT	Chemistry
Protein C	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice. PT/INR result must be included with request.	Weekdays	Hemostasis
Protein Electrophoresis, Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship refrigerated or frozen. (DO NOT submit plasma from heparinized tubes due to interference from fibrinogen).	Weekdays	Chemistry
Protein Electrophoresis, Spinal Fluid (Oligoclonal Banding)	Red top tube + CSF tube	2 mL of spinal fluid (CSF) AND 4 mL of blood. Referrals: Minimum of 1.0 mL of CSF and 1.0 mL of serum. Store and ship frozen. BOTH serum and CSF are required for calculation of the IgG index.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Protein Electrophoresis, Urine	24 hr or Random urine collection container	20 mL of first morning urine for Random sample (50 mL preferred) Referrals: store and ship refrigerated or frozen 20 mL of Random or 24 hr sample (50 mL preferred). State urine collection date, time and total volume or indicate "Random"	Weekdays	Chemistry
Protein S Activity (Functional)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice. PT/INR result must be included with request.	Weekdays (Referred out)	Hemostasis
Protein S Free (Ag)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice. PT/INR result must be included with request.	Weekdays	Hemostasis
Protein S Total (Ag)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice. PT/INR result must be included with request.)	Weekdays (Referred out)	Hemostasis
Protein, CSF	CSF Tube	0.5 mL of spinal fluid. Referrals: Store and ship refrigerated.	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Protein, Total, Plasma	Light Green top tube	1 mL of blood. Avoid prolonged use of tourniquet. Referrals: 1 mL of heparinized plasma. Store and send refrigerated. NOTE: Serum total protein can be measured, however the reference range stated is for plasma measurements. Plasma total protein is approximately 3 g/L higher than serum due to the presence of fibrinogen.	Daily	Chemistry
Protein, Total, Urine	Without preservatives	6 mL random urine or 24 hr urine. Referrals: 6 mL random urine or aliquot of 24 hr urine. Store and ship refrigerated. State uring collection date, time and total volume or indicate "Random".	Daily	Chemistry
Protein to Creatinine Ration, Urine (PCR)	Without preservatives	2 mL random urine Referrals: 2 mL random urine. Store and ship refrigerated.	Daily	Chemistry
Prothrombin 20210 A->G Variant	Lavender top tube	15 mL of blood in EDTA. Clotted and hemolyzed samples are unsuitable. Specimen must be received in the laboratory within 5 days of collection.	Weekdays 0830-1600 Turnaround Time is 2-8 weeks	Molecular Genetics
Prothrombin Time (PT) International Normalized Ratio (INR)	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Referrals: If sample will be delayed > 4 hrs. Separate and freeze immediately. Ship frozen on dry ice.	24 hr/7d Turnaround time 1 hour	Hemostasis
Prothrombin Time 50/50 Mix	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	24 hr/7d Turnaround time 1 hour	Hemostasis
Protoporphyrin, Free, Blood (FEP)	Lavender top tube	Test for detection of light sensitive Erythropoietic Protoporphyria. Wrap with foil to protect from light. Referrals: 7 mL of blood in a Lavender top tube. Protect from light. DO NOT FREEZE. Hematocrit must be provided to allow calculation of result. Store and send refrigerated.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Protoporphyrin-Zinc, Blood (ZPP)	Royal Blue EDTA (Whole Blood)	Referrals: 1 mL of heparinized blood. Protect from light. Store and send refrigerated. See also: Lead, Whole Blood	Specific Days Only (Referred Out)	Chemistry
PTH Related Peptide	Sodium heparin (green top tube)	2 mL of plasma. Separate and freeze as soon as possible within 2 hours of collection. If the specimen thaws it is unsuitable for collection.	Specific Days Only (Referred Out)	Chemistry
Pyruvate Kinase (Quantitative), RBC	Lavender top tube	3 mL of blood. Blood transfusions within the last 3 months invalidate test results.	Specific Days Only (Referred Out) Samples can only be accepted Monday - Thursday Turnaround time 1-2 weeks	Hematology
Quick Section	Clean jar, no fixative	See: Tissue Examination, Frozen Section	Weekdays 0800-1700. Contact the Histology lab prior to sending (KGH ext. 4172). Call 30 minutes ahead for Hotel Dieu Hospital frozen sections. After hours contact the pathology resident on call through KGH switchboard (call at least 1 hour ahead to allow callback of staff). Turnaround time 20 minutes.	Histology
Quinidine, Serum	Red top tube	2 mL of blood in a Plain Red tube (no gel). Collect specimen at trough concentration (predose). Transport immediately to laboratory. Referrals: Centrifuge blood without delay and transfer 0.5 mL serum to a plastic vial. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Radioallergosorbent Test (RAST)	Red top tube	1 mL of serum. Allergen(s) to be tested must be specified on requisition. This assay detects IgE specific antibodies to target allergens. See the List of Allergens that can be tested. http://www.hicl.on.ca/search_tcna.asp?TCString=RADIO. The quoted fee applies for each allergen tested - a surcharge may also apply for some rare allergens. Clinician must determine clinical significance of specific IgE result after correlation with clinical exam and history. Detectable levels are present in patients with allergic disease and in approx. 15% of asymptomatic healthy persons. Some with classic atopic symptoms may not have detectable levels. Specific IgE may decrease with time and lack of exposure to allergens. Use caution when interpreting drug, venom and potential anaphylactic allergen results.		
Renal Biopsy		See: Tissue Examination, Renal Biopsies	Weekdays 0800-1600 (By Prior Arrangement). Consult Renal Pathologist (KGH ext. 4172). Turnaround time 3 days to 1 week depending on complexity.	Histology
Renin, Plasma	Lavender top tube	5 mL of blood. Referrals: 3 mL of EDTA plasma. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Respiratory Syncytial Virus (RSV), Direct Detection	Sterile container/viral transport media	3-4 mL nasopharyngeal washes or aspirate in a sterile container OR nasopharyngeal swab in viral transport media.	Daily	Microbiology
Reticulocyte Count, Blood	Lavender top tube	2.5 mL of blood in a Lavender top tube. Referrals: Analysis must be completed within 24 hr of blood sampling. Must be ordered in conjunction with CBC.	Daily	Hematology
Rheumatoid Factor	Gold top tube	3 mL of blood. Sample must not be hemolyzed. Referrals: 0.5 mL serum. Store and ship refrigerated.	Daily	Chemistry
RhD Genotyping	1-Pink Top or 1 Lavender Top Tube	Minimum 2 mL. Refer to the requisition for RhD Genotyping on the CBS website. Canadian Blood Services Laboratory Test Request Form: LL4910. www.blood.ca/en/hospitals/ab-nwt-center/test-request-forms Pack and ship samples within 14 days of collection at 4° C to 25° C.	Weekdays, Monday to Thursday	Transfusion Medicine (Blood bank)
Rotavirus, Stool (Immunochromatography)	Sterile container	1 mL of stool.	Daily	Microbiology
Salicylate	Red top tube	3 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily or STAT	Chemistry
Salivary Cortisol	Special Kit (obtain from Core Lab)	Follow instructions provided with the kit. Indicate time of collection.	Specific Days Only (Referred Out)	Chemistry
Schillings Test		Direct inquiries to Nuclear Medicine (x4238, x4060)		Chemistry
Sedimentation Rate (ESR) - Adults, Blood	Lavender EDTA tube	3 mL blood. Technique used is Standard Westergren. Analysis must be performed within 8 hrs of blood collection.	Daily Turnaround time 2 hrs	Hematology
Selenium	Royal Blue EDTA tube	Collect K2-EDTA blood in containment-free tube. Store and ship cold.		Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Send out Antibody Identifcation Testing	2-Pink Top Tubes	Minimum 10 mL Refer to the requisition for antibody investigation on the CSB website. Use NIRL Requisition for Antibody Investigation Form F040275. www.blood.ca/en/hospitals/ottawa-reference-laboratory Pack and ship samples within 14 days of collection at 4°C to 25 °C.	Testing turnaround time is 3 days to 1 week. Weekdays, Monday to Thursday Testing is performed at CBS National Immunohematology Reference Laboratory.	Transfusion Medicine (Blood Bank)
Sertraline, Serum	Red tube	5 mL blood. Patient should be on the drug at least one week prior to testing. Collect prior to morning dose.	Specific Days Only (Referred Out)	Chemistry
Sex Hormone Binding Globulin (SHBG), Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Daily	Chemistry
SHBG	Gold top tube	See: Sex Hormone Binding Globulin (SHBG), Serum	Daily	Chemistry
Sickle Cell Screen, Blood	Lavender top tube	See: Hemoglobin - Sickle cell screen	Daily Turnaround time STAT 2 hrs	Hematology
Silver, Urine	Random urine container or 24 hr urine container No preservative	24 hr or Random. Referrals: send 15 mL aliquot of urine. State urine collestion date, time and total volume or indicate "Random". Store and ship refridgerated.	Specific Days Only (Referred Out)	Chemistry
Sirolimus	Lavender top tube (EDTA)	Mix tube gently after collection. Referrals: At least 1.5 mL of blood collected in lavender top tube (EDTA). Transport blood with cold pack.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Skin Biopsies for Immunofluorescent Studies	See Handling Procedure	See Tissue Examination. Skin biopsies for immunofluorescent studies.	Weekdays 0800-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Sodium, Plasma	Light Green top tube	1 mL of blood in a Light Green top tube. Referrals: 0.5 mL of heparinized plasma. Store and send refrigerated.	Daily or STAT	Chemistry
Sodium, Urine	Random urine container or 24 hr urine container	2 mL fresh random urine or 24 hr urine collected without preservatives. Referrals: 5 mL aliquot from a fresh random urine or from a 24 hr urine specimen collected without preservatives. Record total 24 hr urine volume and collection times on the requisition. Store and send refrigerated.	Daily or STAT	Chemistry
Somatomedin C aka: Insulin-like growth factor 1	Red top tube or Gold top tube	See: Insulin-like Growth Factor 1 (IGF1), aka Somatomedin C Serum	Specific Days Only (Referred Out)	Chemistry
Specific Factor Inhibitor Assay (Bethesda Assay)	2-Light Blue top tube 4.5 mL draw	NOTE: Please specify which factor required. (i.e. FVIII Inhibitor). Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hr, separate and freeze immediately.	Weekdays. STAT requests available only after consultation with hematopathologist	Hemostasis

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Sputum for Cytology	Specimen container with tight fitting lid	Sputum, Induced Sputum Minimum volume 1 mL 1. Instruct patient to place hands firmly over abdominal muscles, inhale deeply and cough. 2. Expectorate all sputum into specimen container. **POST BROCHOSCOPY SPUTUM** 1. Give the patient a specimen container before the bronchoscope is withdrawn. I2. Instruct the patient to cough deeply and to expectorate all sputum into the container for one hour. Labeling ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, patient demographics Rejection Criteria: Unlabelled/mislabeled requisitions/specimen containers If this test is not for malignancy please indicate the reason on the requisition. There are specific procedures for processing specimens for opportunistic infections. Transport Time: ASAP. It is optimal to submit separate specimen containers for each lab. This will help to expedite results. Method: Hand delivered Temperature Requirements: Refrigerate if delay in transporting to lab Regular Testing: 3 days STAT Testing: 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology
Sputum, Routine (Culture)	Sterile sputum container	Submit in a sterile container.	Daily	Microbiology
Staphylococcus aureus Culture	Swab in transport media	Indicate if MRSA or S. aureus culture.	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Stem Cells	Lavender top tube	See: CD34 Enumeration	Weekdays 0800-1600. Results available in 2-3 hrs Turnaround time 3 hrs	Immunology
Sterile Body Site/Fluid Tissue (Culture)	Sterile container/ anaerobic transport media	Separate requests for Aerobic and Anaerobic puncture.	Daily	Microbiology
Stool, (Enteric pathogens)	Enteric transport media	Specimen will be screened for Salmonella, Shigella, Yersinia enterocolitica, Campylobacter, and E. coli 0157:H7.	Daily	Microbiology
Stroke Protocol/Resuscitation, Plasma (crea, urea)	Light green Lithium Heparin vacutainer tube	Full tube. Transport immediately to the laboratory at room temperature	STAT 24 hr/7d	Chemistry
Stroke/Resuscitation Protocol, Whole Blood (Na, K, CL, glucose)	Dark Green lithium Heparin Vacutainer Tube or Pre-Heparinized blood gas syringe	Full dark green lithium Heparin vacutainer tube, mixed well or Pre-heparinized blood gas syringe well mixed. Transport immediately to the laboratory at room temperature	STAT 24hr/7d	Chemistry
Sugar Chromatography, Urine	Random urine collection container	Test will be done only if reducing substances are present and not explained by presence of glucose. 10 mL of fresh random urine. Referrals: store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Sulfatide, Urine	Urine collection container	50 mL urine from a first-morning collection. Referrals: Store and ship frozen	Specific Days Only (Referred Out)	Chemistry
Synovial Fluids for Identification of Crystals (Joint Fluid)	Red top vacutainer tube (plain no gel) or Specimen Container or Lavendar top vacutainer tube (EDTA) or Green top (sodium-heparin) vacutainer tube not PST	1 - 5 mL synovial fluid. Send to laboratory immediately.	Weekdays 0730-1530. On call service is available after regular laboratory hours by contacting Pathology Resident through KGH Switchboard	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
T- cell Subsets (CD4/CD8)	Lavender top tube	2.5 mL of blood. MUST be kept at room temperature.	Weekdays 0800-1600 Turnaround time: 2 days	Immunology
T3, Free (Free Tridothyronin)	Red top tube	3 mL blood. Referrals: 1 mL of serum or plasma. Store and send frozen.	Specific Days Only (Referred Out)	Chemistry
Tacrolimus	Lavender top tube	Whole Blood. Minimum volume: 1.5 mL. Referrals: At least 1.5 mL of blood collected in lavender tube (EDTA). Transport blood with cold pack.	Daily	Chemistry
TBG	Red top tube	See: Thyroxine Binding Globulin (TBG) Capacity, Serum	Specific Days Only (Referred Out)	Chemistry
TBII	Red top tube	See: Thyroxine Binding Globulin (TBG) Capacity, Serum	Specific Days Only (Referred Out)	Chemistry
Testosterone-Bioavailable, Serum (Calculated)	Gold top tube	(Includes measurements of Testosterone, SHBG, and Albumin) 2 mL of blood. Referrals: 1 mL serum. Store and ship frozen.	Daily	Chemistry
Testosterone-Total, Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Daily	Chemistry
Tetrahydrocannabinol (THC), Urine	Plastic urine container	See: Drug Screen, Urine	Weekdays	Chemistry
THC, Urine	Plastic urine container	See: Drug Screen, Urine	Weekdays	Chemistry
Theophylline	Red top tube	3 mL of blood. Collect at trough concentration (predose). Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily	Chemistry
Thiocyanate, Serum	Gold top tube or Red top tube	5 mL of blood. Referrals: 2 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Throat Swab	Swab in transport media	Culture for Beta-Hemolytic Streptococci Group A.	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Thrombin Time	Light Blue top tube	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Referrals: If sample will be delayed > 4 hr. separate and freeze immediately. Ship frozen on dry ice.	24 hr/7d Turnaround = 1 hour	Hemostasis
Thrush	Sterile container/swab transport media	Gram stain only.	Daily	Microbiology
Thyrocalcitonin	Red top tube	See: Thyroid Releasing Hormone Stimulation Test Fasting preferred.	Arrangements to be made in consultation with Endocrinologist	Chemistry
Thyroglobulin Antibody, Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Daily	Chemistry
Thyroglobulin, Serum	Gold top tube Or Red top tube	5 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (Referred Out). Contact Clinical Chemist if STAT analysis is required.	Chemistry
Thyroid Stimulating Hormone	Light Green Lithium Heparin top tube	1 mL of blood. Referrals: 1 mL of plasma. Store and ship refrigerated. (TSH is the test of choice when screening for thyroid abnormalities and for following patients on thyroid replacement therapy).	Daily	Chemistry
Thyroid Peroxidase Antibodies, Serum	Gold top tube	1mL of blood in a Gold top tube. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily	Chemistry
Thyrotropin Binding Inhibitory Immunoglobulin, Serum	Gold top tube Or Red top tube	2 mL of blood. Referrals: 1.0 mL of serum. Store and ship frozen. Indicate thyroid status of patient including presence of exophthalmos on requisition.	Specific Days Only (Referred Out)	Chemistry
Thyrotropin Receptor Antibody	Red top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin, Serum	Specific Days Only (Referred Out)	Chemistry
Thyrotropin Releasing Hormone Stimulation Test		Arrangements to be made in consultation with Endocrinology		Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Thyroxine (T4), Free	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated or frozen.	Daily	Chemistry
Thyroxine (T4), Serum	N/A	Thyroxine (T4) is not performed, Thyroxine T4) Free is the recommended test.	Daily	Chemistry
Thyroxine Binding Globulin (TBG) Capacity, Serum	Gold top tube Or Red top tube	1 mL blood in a Gold top tube. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Brain Biopsy	Use sterile container (no fixative) if frozen section is required. Use specimen container filled with 10% formalin for routine paraffin processing	Submit biopsy of brain tissue. For Frozen Section: Place fresh brain biopsy in sterile container (no fixative) if frozen section is required. Send to Lab immediately. For Routine Processing: Place fresh brain biopsy into container of 10% formalin. Fixative do not delay fixation of specimen. As sub cellular structures begin to deteriorate almost immediately upon cessation of circulation in the tissue. The optimal ratio of tissue to fixative should be at least 1:20. Include all relevant information concerning patient history on requisition (please regard this as a 'Consultation Note' to the neuropathologist). Requisition must include patient name, D.O.B., one unique identifier, patient history and clinical diagnosis. The specimen site and any radioactive or extreme biohazard warnings must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition, inadequately labeled specimen, mismatch information. Formalin first aid – see M.S.D.S. for details. Frozen Section: Test includes freezing of tissue for rapid diagnosis and routine paraffin processing. Routine Processing: test includes gross description and diagnosis which may include a microscopic description.	Frozen Sections: Weekdays 0800-1700. Contact Histology Lab prior to sending specimen (KGH x4172). After hours contact the Pathology Resident on call through KGH switchboard (call at least one hour ahead to allow call back of staff). Turnaround time 20 minutes. Routine Processing: Weekdays 0800-1600. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Tissue Examination, Crystals	See Handling Procedure	Submit specimen in Anhydrous Ethanol which may be obtained from the Histology lab on Douglas 2, Rm 8-226, KGH site. Contact lab for additional information (KGH ext. 4172).	Weekdays 0800-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Endomyocardial Biopsy	Sterile container and specimen container filled with 10% formalin.	Test includes processing and sectioning tissue for light and if indicated, electron microscopy, snap freezing tissue for additional studies as required. Call Histology Lab (KGH ext. 4172) and alert technologist 30 minutes before biopsy time. Call the Lab again when porter is notified. Submit one biopsy in sterile saline and the remaining biopsies (typically 4-5) in 10% buffered formalin. The optimal ratio of tissue to fixative should be at least 1:20. NOTE: This type of tissue cannot be left unattended. The Porter MUST be instructed to hand deliver and identify the presence of fresh tissue to histology staff. Fresh tissue MUST NOT be dropped off in the specimen collection basket. Requisition must include patient name, DOB, one unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warnings must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information.	Weekdays 0800-1600. Contact Histology lab 30 minutes prior to sending specimen (KGH ext. 4172). To ensure optimal specimen handling, deliver specimens to Histology lab before 4:00 PM. The lab is not staffed after 5:00 PM and arrangements for specimen handling after that time require contacting the pathology resident on call through KGH switchboard. Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Fetus for Cytogenetic Testing	Specimen container filled with saline (NO FIXATIVE)	Place fresh fetus in saline and send by STAT porter to Histology Lab on Douglas 2, Rm 8-226, KGH. Monday to Friday 0630 to 1700. Specimen container MUST be labeled with SALINE sticker. Requisition MUST indicate that the specimen is in saline AND cytogenetic testing is required. DO NOT PLACE IN ANY FIXATIVE. DO NOT FREEZE. If after 1700, keep specimen REFRIGERATED IN SALINE overnight and send to Histology lab without delay the next morning. Samples of sternal cartilage and pericardium must be collected by histology staff using sterile techniques and placed into RPMI tissue culture medium. Samples will then be sent to the cytogenetics lab for testing. Requisition must include patient name, DOB, one unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warnings must appear on the container, NOT ON THE LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Tests include cytogenetics and routine paraffin processing.	Weekdays 0800-1600. Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Fresh Tissue	Clean jar (NO FIXATIVE)	Fresh tissue must be placed in a clear jar (NO FIXATIVE) and taken IMMEDIATELY to the Histology lab on Douglas 2, Rm 8-226, KGH site. Small biopsies should be placed on saline soaked telfa pad (not gauze) or in a small amount of saline. NOTE: this type of specimen should never be left unattended. It must be hand delivered to laboratory staff. Requisition must include patient name, DOB, one unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive e or extreme biohazard warnings must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Test includes special testing requiring fresh tissue and routine paraffin processing. Referrals: For HDH site fresh tissue: contact Histology lab to arrange for transport (by STAT courier) to Histology lab at KGH site. Ensure container lid is properly secured and place in biohazard bag. Ship all specimens and accompanying requisitions inside transport bag or container.	Weekdays 0800-1700. Contact Histology lab prior to sending specimen (KGH ext. 4172). Call at least 30 minutes ahead for HDH site fresh tissue. After hours contact the pathology resident on call through KGH switchboard (call at least one hour ahead to allow callback of staff)	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Frozen Section	Clean jar, no fixative	Fresh tissue must be placed in a clean jar (NO FIXATIVE) and taken IMMEDIATELY to the Histology lab on Douglas 2, Rm 8-226, KGH site. Small biopsies should be placed on saline soaked telfa pad (not gauze) or in a small amount of saline. This type of specimen should never be left unattended. It must be hand delivered to laboratory staff. Requisition must include patient name, date of birth, one unique identifier, patine history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warnings must appear on ht container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Test includes freezing of tissue for rapid diagnosis and routine paraffin processing. For reporting purposes, note the telephone or intercom number where the surgeon can be reached on the requisition. Referrals: For HDH site Frozen sections: contact Histology lab to arrange for transport of fresh tissue (by STAT courier) to KGH site Histology lab. Ensure container lid is properly secured and place in biohazard bag. Ship all specimens and accompanying requisitions inside transport bag or container.	Weekdays 0800-1700. Contact histology lab prior to sending specimen (KGH ext. 4172). Call at least 30 minutes ahead for HDH site frozen sections. After hours contact the pathology resident on call through KGH switchboard (call at least one hour ahead to allow callback of staff). Turnaround time 20 minutes.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Lymph Node Biopsy	Clean jar (no fixative)	At least 1 gram (1 cubic centimeter) of tissue is required. Fresh tissue should be covered with telfa pad slightly dampened (NOT SOAKED) with saline and taken IMMEDIATELY to the Histology Lab on Douglas 2, Rm. 8-226 KGH site. Note: This type of tissue cannot be left unattended. The Porter must be instructed to hand deliver and identify the presence of fresh tissue to the Histology Personnel. Fresh tissue must not be dropped off in the specimen collection basket. Keep tissue on ice or refrigerated if there is a delay in transporting to the Lab. Requisition must include patient name, D.O.B., one unique identifier, Patient history and clinical diagnosis. The specimen site and **any radioactive or extreme biohazard warnings must appear on the container, not on lid.** Causes for rejection: incomplete requisition, inadequately labeled specimen and mismatched information. The chance of a successful diagnostic outcome is greatest when at least 1 gram of tissue is provided. Test includes processing and sectioning of tissue for light microscopy; submission of tissue for flow cytometry; snap freezing tissues for additional studies as required. Referrals: For HDH site fresh tissue: contact Histology Lab to arrange for transport of fresh tissue (by STAT courier) to KGH site Histology Lab. Ensure container lid is properly secured and place in biohazard bag. Ship specimen and accompanying requisition inside transport bag.	Weekdays 0800-1600. After hours contact the Pathology Resident on call through KGH switchboard (call at least one hour ahead to allow callback of staff). Turnaround time 3 days to 2 weeks depending on complexity	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Muscle Biopsy (Skeletal)	Sterile container **(No Fixative or Saline)**	Call Histology Lab (KGH x4172) and alert Technologist 2 hours before biopsy time. Submit fresh Muscle Biopsy approximately 1-1.5 cm in length and 0.5 cm in width. Muscle Biopsy should be sutured or pinned to its gently "stretched" length onto a segment of a wooden tongue depressor. Fresh muscle tissue should then be placed in an empty sterile container, **do not place specimen in saline.** Call the Lab again approximately 2-3 minutes before rapid delivery of the biopsy specimen to the OR desk. Technologist will pick up specimen from OR desk. **Note:** The tissue sample must be frozen within minutes of removal from the patient. Appropriate freezing of muscle tissue is technically demanding, requiring initial tissue orientation under a dissecting microscope, followed by controlled immersion in isopentane that has been super-cooled in liquid nitrogen. This procedure must be performed by an experienced Laboratory Technologist in the Institute for Quality Management in Healthcare accredited KGH site Histology Laboratory (there is no longer an Institute for Quality Management in Helthcare accredited Histology unit at HDH site). Include all relevant information concerning patient history on requisition (please regard this as a "Consultation Note" to the Neuropathologist). Requisition must include patient name, D.O.B., one unique identifier, patient history and clinical diagnosis. The specimen **site** and any **radioactivity or extreme biohazard warnings must appear on the container, not on lid.** Causes for rejection: incomplete requisition, inadequately labeled specimen or mismatch information. Test includes processing and sectioning tissue for enzyme studies and light and electron microscopy.	Weekdays 0800-1530 (by prior arrangement) Contact Histology Lab KGH site 2 hours before biopsy time. FAPC Clinic Muscle Biopsies contact Lab 3-4 days before biopsy date. **Please Note: Timing is critical. Rapid delivery of the Muscle Biopsy to the Technologist is essential.** Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Muscle Biopsy (Skeletal) for Mitochondrial Disorder	Sterile container **(No Fixative or Saline)**	Call Histology Lab (KGH x4172) and alert Technologist 2 hours before biopsy time. Submit fresh Muscle Biopsy approximately 1-1.5 cm in length and 0.5 cm in width. Muscle Biopsy should be sutured or pinned to its gently "stretched" length onto a segment of a wooden tongue depressor. Fresh muscle tissue should then be placed in an empty sterile container, **do not place specimen in saline.** Submit a Second piece of fresh muscle for mitochondrial studies. Recommended specimen size around 50 mg (for example 4mmx4mmx4mm or 3mmx3mmx6mm). Place fresh tissue in an empty sterile container. **Do not place specimen in saline.** Call the Lab again approximately 2-3 minutes before rapid delivery of the biopsy specimen to the OR desk. Technologist will pick up specimen from OR desk. **Please note: timing is critical**. Rapid delivery of the Muscle Biopsy to the Technologist is **essential**. Delay of only a few minutes can result in autolytic changes that closely mimic pathology. Delay can seriously limit the diagnostic utility of the procedure. Completed Histology requisition and Mitochondrial testing Requisition (see below) must include all relevant information concerning patient history on requisition (please regard this as a "Consultation Note" to the Neuropathologist). Requisition must include patient name, D.O.B., one unique identifier, patient history and clinical diagnosis. The specimen **site** and any **radioactivity or extreme biohazard warnings must appear on the container, not on lid.**	Weekdays 0800-1530 (by prior arrangement) Contact Histology Lab (KGH x4172) 3-4 days before biopsy date. Mitochondrial Testing Requisition will then be faxed to the ordering Physician/Department. Contact Histology Lab 2 hours before biopsy time. **Please Note: Timing is critical. Rapid delivery of the Muscle Biopsy to the Technologist is essential.** Turnaround time 3 days to 4 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Muscle Biopsy (Skeletal) for Mitochondrial Disorder – **(Continued from page 155)**	Sterile container **(No Fixative or Saline**	Causes for rejection: incomplete requisition, inadequately labeled specimen or mismatch Information. Test includes processing and sectioning tissue for enzyme studies, light and electron microscopy. Mitochondrial testing is referred out to the Hospital for Sick Children in Toronto. (Studies do not include pyruvate dehydrogenase (PDH) as the range is too high and they do not have adequate controls. Testing also does not include pyruvate carboxylase (PC) as enzymes die upon freezing). Referred out fresh specimens are shipped early in the week by overnight courier	Weekdays 0800-1530 (by prior arrangement) Contact Histology Lab (KGH x4172) 3-4 days before biopsy date. Mitochondrial Testing Requisition will then be faxed to the ordering Physician/Department. Contact Histology Lab 2 hours before biopsy time. **Please Note: Timing is critical. Rapid delivery of the Muscle Biopsy to the Technologist is essential.** Turnaround time 3 days to 4 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Placenta for Cytogenetic Testing	Specimen container filled with saline (NO FIXATIVE)	Place fresh placenta in saline and send by STAT porter to Histology lab on Douglas 2, Rm 8-226, KGH. Monday to Friday 0630 to 1700. Specimen container MUST be labeled with SALINE sticker. Requisition MUST indicate that specimen is in saline AND cytogenetic testing is required. DO NOT PLACE IN ANY FIXATIVE. DO NOT FREEZE. If after 1700, keep specimen REFRIGERATED IN SALINE overnight and send to Histology lab without delay the next morning. If over weekend, keep specimen REFRIGERATED IN SALINE and send to HISTOLOGY lab without delay Monday morning. Samples of amnion and umbilical cord must be collected by histology staff using sterile techniques and placed in RPMI tissue culture medium. Samples will then be sent to the Cytogenetics lab for testing. Requisition must include patient name, D.O.B., one unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warning must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Tests include cytogenetics and routine paraffin processing.	Weekdays 0800-1600. Turnaround time3 days to 1 week depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Peripheral Nerve Biopsy	Sterile container (no fixative)	Call Histology Lab (KGH x4172) and alert technologist 2 hrs before biopsy time. Fresh nerve tissue (2.5-4 cm) should be laid on a segment of wooden tongue depressor and covered with telfa pad that has been SLIGHTLY dampened with saline (NOT soaked), then placed in a sterile container. Call lab again approximately 2-3 minutes before rapid delivery of the biopsy specimen to the OR desk. Technologist will pick up specimen from OR desk. Please note: Timing is critical. Rapid delivery of the Muscle Biopsy to the technologist is essential. Delay of only a few minutes can result in autolytic changes that closely mimic pathology. Delay can seriously limit the diagnostic ability of the procedure. Include all relevant information concerning patient history on requisition (please regard this as a 'Consultation Note' to the Neuropathologist). Requisition must include patient name, D.O.B., one unique identifier, patient history and clinical diagnosis. The specimen site and any radioactive or extreme biohazard warnings must appear on the container, NOT ON LID. Test includes tissue processing, sectioning for light and electron microscopy.	Weekdays 0800-1530 (By Prior Arrangement) Contact Histology Lab (KGH x4172) 2 hours before biopsy time. Please note: Timing is critical. Rapid delivery of the Peripheral Nerve Biopsy to the Technologist is essential. Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Products of Conception for Cytogenetic Testing	Specimen container filled with saline (NO FIXATIVE)	Place fresh products of conception in saline and send by STAT porter to Histology lab on Douglas 2, Rm 8-226, KGH. Monday to Friday 0630 to 1700. Specimen container MUST be labeled with SALINE sticker. Requisition MUST indicate that specimen is in saline AND cytogenetic testing is required. DO NOT PLACE IN ANY FIXATIVE. DO NOT FREEZE. If after 1700, keep specimen REFRIGERATED IN SALINE overnight and send to Histology lab without delay the next morning. If over weekend, keep specimen REFRIGERATED IN SALINE and send to HISTOLOGY lab without delay Monday morning. Samples of membrane must be collected by histology staff using sterile techniques and place in RPMI tissue culture medium. Samples will then be sent to the Cytogenetics lab for testing. Requisition must include patient name, D.O.B., on unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warnings must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Tests include cytogenetics and routine paraffin processing.	Weekdays 0800-1600. Turnaround time 3 days to 1 week depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Renal Biopsies	Petri Dish with saline moistened telfa pad. REFERRALS: Vial of Michel Transport Medium and specimen container filled with 10% formalin.	Call Histology KGH ext. 4037 prior to sending specimen. Transport specimen on saline moistened telfa pad in a Petri Dish IMMEDIATELY to the laboratory. Hand the specimen DIRECTLY to one of the technologists. Patient ID, Tissue ID and any hazard warnings must appear on the container, NOT THE LID. Include all relevant information concerning patient history on requisition. Test includes routine paraffin processing, immunofluorescent antibody studies and E.M. as determined by the number of glomeruli in the sample. REFERRALS" Call KGH site Histology 613-549-6666 ext. 4037 prior to sending specimen. Submit biopsies in 10% formalin and Michel Transport Medium. Bring Michel Transport Medium to room temperature before use. Place fresh (not frozen) tissue in Michel Transport Medium. Biopsies can be stored in Michels for up to 5 days. Care should be taken to maintain ambient cool temperatures during transport.	Weekdays 0800-1600. Call Histology Lab KGH site 613-549-3333 ext. 4037 prior to sending specimen.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Routine	Ship all specimens and accompanying requisitions inside transport bag or container.	Place surgical specimen immediately into 10% neutral buffered formalin after collection. The optimal ratio of tissue to fixative should be at least 1:20. Do not force large specimens into small containers as adequate fixation will not be achieved. Limb amputations must be refrigerated until taken to the Gross Cutting Room on Douglas 2, Rm. 8 226, KGH site. BREAST SPECIMENS for tumour (mastectomy partial mastectomy, needle-localized excision and lumpectomy) are to be placed into 10% formalin and transported to the lab IMMEDIATELY. These specimens are TIME SENSITIVE. Initial pathologic gross handling must be within one hour of surgical removal. The time specimen was placed in formalin must be noted on container label. Requisition must include patient name, date of birth, one unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warnings must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Formalin first aid, see M.S.D.S. for details. Test includes gross description and diagnosis which may include a microscopic description. For urgent cases requiring next day reporting, include pager or phone number to which report should be called. Referrals: For HDH site Breast specimens: contact histology lab to arrange for transport (by STAT courier) to KGH site Histology lab. Ensure container lid is properly secured and placed in biohazard bag. Ship all specimens and accompanying requisitions inside transport bag or container.	Weekdays 0630-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tissue Examination, Skin Biopsies for Immunofluorescent Studies	Use Vial of Michel's transport media (which may be obtained from the lab) if there will be a delay in transporting to lab. USE Sterile container (NO FIXATIVE) if hand delivered to lab.	Submit one 3-4 mm fresh punch biopsy of skin in Michel's transport media. Biopsy can be stored and transported in Michel's up to 5 days. NOTE: biopsy may be covered with saline dampened telfa pad and placed inside a sterile jar (no fixative) if transported IMMEDIATELY to the Histology lab KGH site on weekdays 0800-1600. If sent to lab fresh the porter MUST be instructed to hand deliver and identify the presence of fresh tissue to the histology staff. Fresh tissue MUST NOT be dropped off in the specimen collection basket. Requisition must include patient name, D.O.B., one unique identifier, patient history and clinical diagnosis. The specimen SITE and any radioactive or extreme biohazard warnings must appear on the container, NOT ON LID. Causes for rejection: incomplete requisition inadequately labeled specimen, mismatch information. Test includes immunofluorescent antibody studies. Referrals: Submit one 3-4 mm fresh punch biopsy of skin in Michel's transport media. Biopsy can be stored and transported in Michel's up to 5 days. Ship specimens and accompanying requisition inside transport bag. Care should be taken to maintain ambient to cool temperatures during transport. Notify Histology lab KGH x4037 when biopsy was shipped and expected time of arrival.	Weekdays 0800-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histology
Tissue Typing, Celiac Disease	Lavender top tube	5 mL blood. Note: Sample will only be tested for DQ2 and DQ8.	Turnaround Time-15 working days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tobramycin, Serum (pre and post)	Red top tube (no gel)	1 mL of blood in a Plain Red top tube (no gel). Collect trough sample prior to dose. Mark time blood was drawn on the requisition. Collect peak sample 1 hr after I.M. dose, 15 min after 60 min I.V. infusion or 30 min. after 30 min I.V. infusion. Indicate if the sample is PRE, POST, or RANDOM, and also if dosing is TRADITIONAL or EXTENDED. Referrals: 1 mL of serum. Separate serum from cells within 3 hrs. Store and ship frozen.	Daily	Chemistry
Topiramate	Red top tube	1 mL required. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Total Protein	Light green top tube	See: Protein, Total	Daily	Chemistry
Transferrin Isoforms for CDG Syndrome, Plasma or Serum	Gold top tube	1 mL blood. Referrals: 0.5 mL serum. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Transferrin, Serum	Light Green top tube	1 mL of blood. Store and ship refrigerated.	Daily	Chemistry
Transfusion Reaction Investigation	2-Pink top tubes	Label with BLOOD BANK COLLECTION LABELS. Test includes ABO; Rh; Antibody Screen; Direct Screen; Repeat Crossmatch C&S of Infusion set (if provided).	24 hr/7d Turnaround time is 4 hrs	Transfusion Medicine (Blood Bank)
Transglutaminase	Red top tube	See: Tissue Transglutaminase Antibody - IgA, Serum	Specific Days Only (Referred Out)	Chemistry
Trazodone, Serum	Red top tube (no gel)	5 mL of blood. Draw specimen 12 hr after last dose following at least 5 days on trazodone. Note: Hemolyzed specimens cannot be analyzed. Referrals: 3 mL of serum. Store frozen, ship on dry ice.	Specific Days Only (Referred Out)	Chemistry
TRH Stimulation Test See: Appendix V for test procedure	Red top tube	See: Thyroid Stimulating Hormone, Serum or Plasma	Arrangements to be made in consultation with Endocrinology	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Tricyclics-Quantitation, Serum	Red or lavender top tube	See: Amitriptyline or Nortriptyline or Imipramine or Desipramine or Doxepin or Trimipramine	Specific Days Only (Referred Out)	Chemistry
Triglycerides, Plasma	Light Green top tube	1 mL of blood in a Light Green top tube drawn after an overnight (14 hr) fast. Referrals: 0.5 mL of fasting heparinized plasma. Store and send refrigerated.	Daily	Chemistry
Trihexoside, Urine (Fabry Disease, Fabry Carrier)	Urine collection container	Test applies to detection of symptomatic female carriers for Fabry Disease. Collect first morning void. Submit entire collection. Referrals: Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Triiodothyronine (FT3), Free	Red top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Triiodothyronine (T3) Total, Serum	Red top tube	1 mL blood. Referrals: 0.5 mL serum. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Trimethoprim, Serum	Red top tube (no gel)	3 mL of blood. Referrals: 1 mL of serum. Separate sample from cells within 3 hrs. Store and ship refrigerated or frozen.	Specific Days Only (Referred Out)	Chemistry
Trimipramine, Serum	Red top tube or lavender top tube	5 mL of blood. DO NOT USE BARRIER GEL TUBES. Referrals: 3.0 mL of serum. Separate serum from cells within 3 hrs of drawing. Transfer to plastic screw-cap vial. Store and ship refrigerated.	Specific Days Only (Referred Out)	Chemistry
Triple Bolus Test, See Appendix VI for procedure		See: HDH Nursing Practice Manual, Section 5, Brock 1 EPACU		Chemistry
Troponin I, Plasma (TnI). See Appendix VII for further information	Lavender top tube	1.0 mL of blood. Referrals: 0.5 mL of plasma. Store and ship refrigerated.	Daily or STAT	Chemistry
Tryptase	Red top tube Or SST	Separate as soon as possible. Store and send frozen. Avoide repeated freeze/thaw cycles. To access anaphylaxis, collect specimen between 15-18 minutes after suspected anaphylactic event. To access systemic mastocytosis or mast cell activation syndrome, collect the specimen at any time.	Specific Days Only (Referred Out)	Chemistry
TSH	Light Green top tube	See: Thyroid Stimulating Hormone	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
TSI	Red top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin, Serum	Specific Days Only (Referred Out)	Chemistry
Type and Hold	2-Pink top tubes	Collect peripheral blood. Label tubes using Blood Bank Collection Labels. Do not draw above on I.V. line. Complete Blood Bank Transfusion Service Request – Indicate Patient's diagnosis, surgical procedure and if pre-admission. Specimens acceptable for cross-matching: Patients transfused or pregnant within past 3 months – Sample held for 96 hours. Pre admission testing – patient not pregnant and not transfused with the past 3 months – up to six weeks.	24 hr/7d STAT TAT = 45 minutes Urgent Turnaround time = 60-90 minutes Routine Turnaround time = 4 hrs	Transfusion Medicine (Blood Bank)
Urine Hemosiderin		See Hemosiderin, Urine		
Urea 1	Light Green top tube	Full tube	Daily	Chemistry
Urea 2	Light Green top tube	Full tube	Daily	Chemistry
Urea 3	Light Green top tube	Full tube	Daily	Chemistry
Urea, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated .	Daily or STAT	Chemistry
Urea, Urine	Without preservatives	6 mL fresh random urine or 24 hr urine collected without preservatives. Referrals: 6 mL aliquot from a fresh random urine or from a 24 hr urine collected without preservatives. Store and ship refrigerated. State urine collection date, time and total volume or indicate "Random"	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Uric Acid, Plasma	Light Green top tube	For patients on Rasburicase, contact Core Lab in advance in order to expedite analysis to ensure reliable results. 1 mL of blood in a Light Green top tube. Referrals: 0.5 mL of heparinized plasma. Store and send refrigerated. SPECIAL PRECAUTIONS are required for patients on RASBURICASE: Rasburicase will cause enzymatic degradation of the uric acid within blood samples left at room temperature, resulting in spuriously low uric acid levels. Plasma samples must be assayed immediately.	Daily	Chemistry
Uric Acid, Urine	Without preservatives	24 hr or Random urine collected in 10 mL NaOH. Referrals: 6 mL aliquot from a 24 hr collected with preservatives. Store and ship refrigerated. State urine collection date, time and total volume or indicate "Random".	Weekdays	Chemistry
Urinalysis, See Appendix IX for further information	Urine collection container	15-25 mL of urine. Note: time voided must be written on the requisition. Microscopic exam will only be performed if stick abnormal or on special request. Referrals: 15 mL of urine. Aliquot 15 mL to plastic screw top container (preferably sterile). Store and ship refrigerated for better preservation of cellular elements.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Urine	Sterile urine container	Submit in a sterile container.	Daily	Microbiology
Urine for Cytology Applies to Urinary Tract Cytology; Bladder Washings and Brushings; Catheter Urine; Renal Pelvic Washings and Brushings; Ureteral Washings and Brushings; Voided Urine	Specimen container with tight fitting lid Brush- 50 mL conical tube containing CytoLyt	Minimum volume: 10 mL **VOIDED URINE** 1. Have patient hydrate by drinking as much as possible for 1.5-2 hours. 2. Discard any urine passed during this time. 3. At the end of the 2 hours have the patient empty their bladder but do not collect this urine. 4. Collect the next voided urine specimen in a specimen container with tight fitting lid. **CYSTOSCOPY URINE** 1. Collect urine/washings/brushings during Cystoscopy. Note on requisition/order entry if the urine is voided /catheterized/cystoscopy. 2. Place brush immediately in conical tube containing CytoLyt. Labeling ID: Label specimen container(s) with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB Required Information: Clinical information, patient demographics Rejection Criteria: Mislabeled/unlabelled requisition/ specimen containers Special Instructions: Do not send first morning voided urine or 24 hour urines to the Cytology laboratory for assessment. Cells in urine degenerate rapidly. This may result in an unsatisfactory cytology report.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Urine for Cytology ***(Continued from previous page)***	Specimen container with tight fitting lid Brush- 50 mL conical tube containing CytoLyt	Additional Information: If the test is not for malignancy please indicate the reason on the requisition. Cellular degeneration occurs rapidly. Send to the laboratory ASAP. If there will be a delay refrigerate or add CytoLyt to the sample. Marked cellular alteration may result from renal, ureteral or bladder calculi or radiation or chemotherapy. Please indicate relevant clinical information on the requisition or in PCS for order entry. Transport Time: ASAP. It is optimal to submit separate specimen containers for each lab/ This will help to expedite results and maintain the integrity of the specimen. Method: Hand delivered Temperature Requirements: If a delay is anticipated the specimen must be refrigerated and/or have CytoLyt solution added for the Cytology test. Regular Testing: 3 days STAT Testing: 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0800-1600	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Uroporphyrin	Random urine collection container in dark bottle or wrap container with foil, to protect from light	See: Porphyrins	Specific days only (Referred Out)	Chemistry
Uroporphyrinogen-1-Synthase	Green top tube (no jel)	See: Porphobilinogen Deaminase Provide hematocrit result.	By Prior arrangement Only	Chemistry
Valproic Acid, Serum	Red top tube	1 mL of blood. Collect specimen at trough level (predose). Referrals: 0.5 mL of serum. Store and send refrigerated.	Daily	Chemistry
Vancomyiin-Resistant Enterococci (VRE)	Rectal Swab in transport media	Rectal swab for VRE screening. If screening other body sites, submit as a swab.	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Vancomycin, Serum (Pre or Post)	Red top tube	Routine levels in adults are not recommended. Pre Dose (trough) levels are recommended ONLY in patients: 1. With renal insufficiency who are receiving an extended (> 2 weeks) course of treatment. 2. With progressively increased serum creatinine, or a sustained increase in serum creatinine of > 40 µmol/L from baseline. 3. Receiving concomitant ototoxic or nephrotoxic drugs. 4. Demonstrating poor response, to ensure trough levels are in therapeutic range. 5. With a documented infection use unusually high minimum inhibitory concentration (MIC) values to ensure trough levels are above the organism's MIC. 6. Receiving prolonged vancomycin therapy (draw at least only weekly). 7. With severe hepatic impairment. PEAK (or POST) levels in adults are not routinely recommended. 2 mL of blood. Draw at steady state whenever possible (this usually corresponds to third dose after initiation of therapy. Collect specimen just prior to a dose. Mark the time drawn on the requisition. Referrals: 1 mL of serum. Store and ship frozen.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Vanillylmandelic Acid, Urine	Container with 25 mL of 6N HCL (use 15 mL for a child)	24 hr or Random urine collected in a container with 25 mL of 6N HCL as a preservative (15 mL of acid for children). Container is available from Clinical Chemistry. Restrict caffeine, nicotine and alcohol 24 hr prior to collection. Discontinue Methyldopa (Aldomet) at least 5 days prior to collection. Other drugs do not usually interfere with the assay. Referrals: 20 mL of 24 hr urine collected as above. Store and ship refrigerated or frozen. State urine collection date, time and total volume or indicate "Random". VMA is recommended for Neuroblastoma screening. Ratio (VMA/CREA) may be higher (up to 50%) in elderly patients (>65 yrs.) with decreased renal function. Metanephrines is recommended for Pheochromocytoma screening.	Specific Days Only (Referred Out)	Chemistry
Vasoactive Intestinal Polypeptide (VIP)	EDTA, Plasma (Lavender top tube)	Patient must be fasting 8 hours. Patients recently receiving radioactive material should not be tested.	Speific Days Only (Referred Out)	Chemistry
Very Long Chain Fatty Acids	Red, gold or light green top tube	3 mL of blood. Sample MUST obtained fasting. Separate from cells and freeze as soon as possible. Store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Vincent's (Mouth Swab)	Swab in sterile container	Gram smear only.	Daily	Microbiology
Viscosity, Plasma	2-Lavender top tube	Minimum 2 tubes. A minimum of 1 mL of EDTA plasma yield is required to perform this test. Sample stable 24 hr post collection. Maintain at room temperature.	24 hr/7d	Chemistry
Viscosity, Serum	Red top tube	A minimum of 1 mL of serum yield is required to perform this test. Sample stable 24 hr post collection. Maintain at room temperature.	24 hr/7d	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Vitamin A	Red top Vacutainer	Protect Specimen from light. 1 mL - separate and freeze immediately. Specimen must be labeled inside and outside light-protecting wrap. Gel-separator tubes not acceptable.	Specific Days Only (Referred Out)	Chemistry
Vitamin B1	Lavender top tube EDTA	Protect Specimen from light. 2 mL whole blood and freeze immediately. Store and ship frozen. Specimen must be labeled inside and outside light-protecting wrap.	Specific Days Only (Referred Out)	Chemistry
Vitamin B6	Lavender top vacutainer	Protect Specimen from light. 2 mL plasma – separate and freeze immediately. Store and ship frozen. Specimen must be labeled inside and outside light-protecting wrap.	Specific Days Only (Referred Out)	Chemistry
Vitamin B12, Serum	Gold top tube	3 mL of blood in a Gold top tube. Referrals: 1 mL of serum. Store and ship frozen.	Daily	Chemistry
Vitamin C	Gold top tube	5 mL of blood. Deliver to laboratory immediately. Referrals: 2 mL serum. Centrifuge blood and freeze without delay. Specimen must be labeled inside and outside light protecting wrap. Store and ship frozen. (Thawed specimens are unsuitable for analysis).	Specific Days Only (Referred Out)	Chemistry
Vitamin D (1,25-Dihydroxy), Plasma or Serum	Red top tube	See 25-hydroxy-vitamin D for assessment of nutritional status. 1-25-dihydroxyvitamin D applies to investigation of renal function under the control of PTH and is available to nephrologists and endocrinologists. Other requests must be arranged with a clinical chemist. 5 mL of blood. Referrals: 2 mL of serum or heparinized plasma. Store and ship frozen.	By Prior Arrangement Only (Referred Out)	Chemistry
Vitamin D (25-Hydroxy), Plasma or Serum	Red top tube	Method measures 25-OH Vitamin D2 and 25-OH Vitamin D3. If unspecified, 25-OH Vitamin (D2+D3) is measured and reported. 2 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Store frozen, ship on dry ice.	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Vitamin E, Serum	Red top vacutainer	2 mL of serum. Protect from light. Specimen must be labeled inside and outside light-protecting wrap. Referrals 2 mL - store and ship frozen.	Specific Days Only (Referred Out)	Chemistry
Vitreous Fluid for Cytology	50 mL conical tube with CytoLyt or specimen container with tight fitting lid	Vitreous Fluid Minimum Volume: Any volume can be processed but more is desirable. 1. Collect specimen. 2. Place in 50 mL conical tube containing CytoLyt or in specimen container. 3. Label specimen container with patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB. Complete order entry or requisition. Labeling ID: Label specimen container(s) with patient's first and last name and one other unique Identifier i.e. CR#, HCN, DOB. Required Information: Clinical information, patient demographics. Rejection Criteria: Mislabeled/unlabelled requisition/specimen containers. Special Instructions: If there is a delay in transporting to the lab collect the specimen in a conical tube with CytoLyt added. Additional Information: If the test is not for malignancy please indicate the reason on the requisition. If there is a delay in transporting to the lab, CytoLyt must be added. Transport Time: ASAP Method: Hand delivered Regular Testing: 3 days STAT Testing: 24 hours Name of Form: Non Gynecological Cytology	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Volatiles, Serum or Plasma (Methanol, Ethanol, Isopropanol, Ethylene Glycol, other Alcohols and Glycols, Acetone)	Gold or Light Green top tube	1 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Store and ship refrigerated.	GC/MS Analysis by arrangement only. For STAT analysis contact the Clinical chemist on call. Test is usually performed only when the Osmolar Gap is abnormal. Note: Results are not for medico-legal purposes.	Chemistry
Von Willebrand Factor Antigen (VWF: Ag)	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs separate and freeze immediately. Ship frozen on dry ice.	Weekdays Results available in 10-14 days. Results available at other times only after consultation with Hematopathologist, KGH Ext 4166.	Hemostasis
Von Willebrand Factor Activity (VWF: G1bM)	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	Weekdays – results available in 10-14 days. Results available at other times only after consultation with Hematopathologist, KGH ext. 4166.	Hemostasis

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Von Willebrand Factor Multimer	Light Blue top tube 4.5 mL draw	Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	Weekdays - results available in 10-14 days. Results available at other times only after consultation with Hematopathologist, KGH ext. 4166.	Hemostasis
Von Willebrand Studies - VWF Antigen - VWF Activity - FVIII	2-Light Blue top tubes 4.5 mL draw	Minimum 2 tubes. Venipuncture preferred. Proper filling and mixing of tube is very important. Over filled and under filled tubes, and clotted samples are unsuitable. Include diagnosis and medications on requisition. Sample is only stable up to 4 hrs after collection. Referrals: If sample will be delayed > 4 hrs, separate and freeze immediately. Ship frozen on dry ice.	Weekdays- results available in 10-14 days. Results available at other times only after consultation with Hematopathologist, KGH ext. 4166.	Hemostasis
Wound – Skin/Subcutaneous (Culture)	Sterile tube or transport	Submit specimen as a swab. Tissue or aspirates, submit in a sterile container. Specimen contiguous with the skin are inappropriate for anaerobic culture.	Daily	Microbiology
Yeast	Blood – aerobic blood culture bottle; Swabs – transport media; Others – sterile container	Do not request fungus culture.	Daily	Microbiology
Zinc, Plasma	Royal Blue EDTA tube	1 Full Royal Blue EDTA tube. Separate as soon as possible. Result may be falsely elevated if the specimen is not separated within 30 minutes and/or hemolysis is present.	Specific Days Only (Referred Out)	Chemistry
Zinc Protoporphyrin (ZPP)	Royal Blue top tube with EDTA (Whole blood)	1 Full Royal Blue EDTA tube	Specific Days Only (Referred Out)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	Turnaround Time/ Availability	LABORATORY
Zinc, Urine	Without preservatives into a new unwashed plastic container (metal free) with no metal lid or glued insert or random container	Referrals: 24 hr or random urine (15 mL) collected as above. Must state collection date, time and total volume or indicate "random". Store and ship refrigerated. Urine Zinc is only done on patients with low serum zinc.	Specific Days Only (Referred Out)	Chemistry

Appendix I - ACTH Stimulation Test Procedure

Purpose: To evaluate the hypothalamic pituitary adrenocortical axis
Requisition: Core Laboratory
Order Cortisol on each requisition, as well as ACTH
Patient Preparation:
Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
Ensure that an informed consent is on the patient care record.
Measure and record the patient's height, weight, blood pressure and pulse
Specimen Container: 8 red Serum Tubes, 8 labels
Equipment and materials:

- Cortrosyn 0.25 mg (250 ug)
- 250 mL Normal Saline for Intravenous Use
- Alcohol Preps
- 2 x2 Gauze
- #20 Jelco Catheter
- I.V. Tubing with 1-YSite for Injection
- Micropore Tape
- 3 mL Syringe: 10 mL Syringe
- 3 Way Stopcocks (2)

Specimen Collection Instructions:
1. Set-up the I.V. tubing adding one 3-way stopcock to the end of the tubing.
2. Insert a #20 Jelco catheter into an antecubital vein.
3. Infuse the N/S solution at a rate T.K.V.O.
4. Set up the 2 nd 3-way stopcock with the 3 mL and 10 mL syringes.
5. Using the double stopcock setup, obtain a blood sample for a baseline cortisol and label with patient name, CR number, location etc.
6. Draw up the Cortrosyn .25 mg for I.V. administration.
7. Fifteen minutes after the first blood sample is obtained take a second baseline sample and label with patient name, CR number, location etc.
8. Explain to the patient that there are no side effects at the time the synthetic hormone is injected, or later.
9. Administer the Cortrosyn as a bolus. Obtain the timed blood samples as set out in the ordering physician's protocol (usually 0, 30, 60 minutes) and label with patient name, CR number, location etc. Label the blood samples with the time of collection.
10. At the completion of the test discontinue the I.V. and ensure that the patient is well prior to leaving the Unit.

Recording and Reporting
Document in the Progress Notes:
1.1 patient's height, weight, blood pressure and pulse;
1.2 patient's condition during and after the test; and
1.3 any adverse effects experienced by the patient and actions taken.

Reference Ranges: Normal Baseline >140 nmol/L
Additional Information: Peak Concentration >550 nmol/L

Appendix II - Gonadotropin Releasing Hormone (GRH) Stimulation Test Procedure

Purpose: To distinguish hypothalamic dysfunction from pituitary failure

Patient Preparation:
1. Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
2. Ensure that an informed consent is on the patient care record.
3. Measure and record the patient's height, weight, blood pressure and pulse.

Equipment:

GnRH 100 ug
Normal Saline for intravenous Use 250 mL
Alcohol Preps
2 x 2 Gauze
20 Jelco Catheter
I.V. Tubing with 1-Y Site for injection
Micropore Tape
3 mL Syringe: 10 mL Syringe
3 way Stopcocks (2)
8 Red Serum Tubes
8 Routine Chemistry Requisitions
8 Specimen Labels

Nursing Actions:
1. Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
2. Measure and record the patient's height, weight, blood pressure and pulse.
3. Insert a #20 Jelco catheter into an antecubital vein.
4. Infuse the N/S solution at a rate T.K.V.O.
5. Set up the 2nd 3-way stopcock with the 3 mL and 10 mL syringes.
6. Using the double stopcock setup, obtain a blood sample for LH and FSH.
7. Draw up the GnRH (100 ug) for IV Infusion.
8. Fifteen minutes after the first blood samples is obtained, take a second baseline sample.
9. Reinforce to the patient that there are no anticipated side effects at the time the synthetic hormone is injected, or later.
10. Administer the GnRH as a bolus. Obtain the timed blood sample as set out in the ordering physician's protocol.
11. At the completion of the test discontinue the I.V. and ensure that the patient is well prior to leaving the unit.

Recording and Reporting
1. Document in the Progress Notes:
    - **a.** patient's height, weight, blood pressure and pulse;
    - **b.** patient's condition during and after the test; and
    - **c.** any adverse effects experienced by the patient and actions taken.

Appendix III - Gonadotropin Releasing Hormone Infusion Test and TRH Test Procedure

Purpose: To determine if a male patient with a varicocele will benefit from surgery to remove the varicocele.

Patient Preparation:

1. Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
2. Ensure that an informed consent is on the patient care record.
3. Measure and record the patient's height, weight, blood pressure and pulse.

Equipment:

GnRH 100 ug
Normal Saline for intravenous Use 250 mL
2 x 2 Gauze
I.V. Tubing with 1-Y Site for injection
3 mL Syringe: 20 ml Syringe
I.V. Infusion Pump and Tubing
16 Routine Chemistry Requisitions
Alcohol Preps
20 Jelco Catheter
Micropore Tape
3 way Stopcocks (2)
16 Red Serum Tubes
Specimen Labels (19)

Nursing Actions:

1. Set up the I.V. tubing adding one 3-way stopcock to the end of the tubing.
2. Insert a #20 Jelco catheter into antecubital vein.
3. Infuse the N/S solution at a rate T.K.V.O.
4. Set up the 2 nd 3-way stopcock with the 3 ml and 20 mL syringes.
5. Using the double stopcock set up obtain a blood sample for LH, FSH, E2, and TEST.
6. Dissolve GnRH 100 ug in 45 mL N/S and set up infusion pump at 10 ml per hour.
7. Fifteen minutes after the first blood sample is obtained take a second baseline sample.
8. Establish a second I.V. in a forearm vein in the arm opposite to the one with the antecubital I.V.
9. Attach tubing from the infusion pump to the I.V. site and infuse at 10 mL per hour for 4 hrs.
10. Obtain the timed blood samples as set out in the ordering physician's protocol.
11. At the end of 4 hrs remove the I.V. in the forearm vein.
12. Review the side effects of the TRH with the patient (a warm facial flush, transient nausea, a metallic taste and a sudden urgent desire to void).
13. Administer the TRH 200 ug intravenously as a bolus through the remaining I.V.
14. Continue obtaining the timed blood samples as set out in the ordering physician's protocol.

Recording and Reporting

1. Document in the Progress Notes:
    a. patient's height, weight, blood pressure and pulse;
    b. patient's condition during and after the test; and
    c. any adverse effects experienced by the patient and actions taken.

Appendix IV - Insulin Tolerance Test Procedure

Purpose: To measure pituitary GH and adrenal cortisol reserves.

Patient Preparation:
1. Ensure that the patient has been fasting after midnight.
2. Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
3. Ensure that an informed consent is on the patient care record.
4. Measure and record the patient's height, weight, blood pressure and pulse.

Equipment:
- Humulin R Insulin (0.05-0.15 U/Kg of body weight)
- Norma Saline for Intravenous Use 250 mL
- 10% Dextrose in Water 500 mL
- 50% Glucose Injectable
- Alcohol Preps
- 2 x 2 Gauze
- #20 Jelco Catheter
- I.V. tubing with 1-Y Site for Injection
- Micropore Tape
- 3 mL Syringe: 20 mL Syringe
- 3 Way Stopcocks (2)
- 8 Red Serum Tubes; 8 Grey Blood Tubes
- 8 Routine Chemistry Requisitions
- 16 Specimen Labels

Nursing Actions:
1. Set up the I.V. tubing, adding one 3-way stopcock to the end of the tubing.
2. Set up the 2 nd 3-way stopcock with the 3 mL and 10 mL syringes.
3. Infuse the N/S solution at a rate T.K.V.O.
4. Using the double stopcock setup, obtain a blood samples for glucose, cortisol and HGH.
5. Set up the 2 nd 3-way stopcock with the 3 mL and 10 mL syringes.
6. A physician must draw up the insulin based on patient's weight, for I.V. administration.
7. Fifteen minutes after the first blood sample is obtained take a second baseline sample.
8. Explain to the patient that approximately 20-30 minutes after the insulin is inject s/he may begin to feel lightheaded, hungry, sleepy, very warm and diaphoretic. Ask the patient to report these symptoms to you.
9. The physician will then inject the insulin I.V. as a bolus. Obtain the timed blood samples as set out in the ordering physician's protocol.
10. Blood pressure and pulse must be monitored closely after the insulin has been injected. Report significant decreases in blood pressure or increases in heart rate to the physician.
11. At the discretion of the attending physician, the solution of 19% D/W will be established or the 50% glucose injectable will be given when the patient shows signs of hypoglycemia.
12. At the completion of the test, discontinue the I.V. and ensure that the patient is well prior to leaving the Unit.

Recording and Reporting

1. Document in the Progress Notes:
   - **a.** height, weight,
   - **b.** blood pressure and pulse before, during and after the test;
   - **c.** patient condition during and after the test; and any adverse effects experienced by the patient and action taken.

Important Points to Remember:

1. Patients must be fasting after midnight.
2. Accurate weight must be recorded for the determination of insulin dosage.
3. Glucose in the form of 10% dextrose in water I.V. solution and a 50% glucose injectable syringe must be readily available to counteract the hypoglycemia.
4. Ensure that the patient stops to have some food before leaving the hospital.
5. If the patient has a long way to drive after the test, suggest that they make arrangements to have someone drive them home.

Appendix V - Thyroid Releasing Stimulating Hormone Test Procedure

Purpose: To evaluate thyroid-releasing stimulating hormone (TRH) reserves

Patient Preparation:
1. Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
2. Ensure that an informed consent is on the patient care record.
3. Measure and record the patient's height, weight, blood pressure and pulse.

Specimen Collection Equipment:

TRH 200 ug
Normal Saline for Intravenous Use 250 mL
Alcohol Preps
2 x 2 Gauze
#20 Jelco Catheter
I.V. tubing with 1-Y Site for Injection
Micropore Tape
3 ml Syringe: 10 mL Syringe
3 Way Stopcocks (2)
8 Red Stopper Tubes
8 Routine Chemistry Requisitions
8 Specimen Labels

Collection Instructions:
1. Set up the I.V. tubing adding one 3-way stopcock to the end of the tubing.
2. Insert a #20 Jelco catheter into an antecubital vein.
3. Infuse the Normal Saline solution at a rate T.K.V.O.
4. Using the double stopcock set up, obtain a blood sample for TSH and Prolactin.
5. Draw up the TRH (200 ug) for I.V. administration
6. Fifteen minutes after the first blood sample is obtained, take a second baseline sample.
7. Remind the patient of the expected side effects (warm facial flush, a metallic taste, some nausea and a sudden urgent desire to void).
8. Administer the TRH as a bolus. Obtain the timed blood samples as set out in the ordering physician's protocol.
9. At the completion of the test discontinue the I.V. and ensure that the patient is well prior to leaving the unit.

Recording and Reporting
1. Document in the Progress Notes:
   - **a.** patient's height, weight, blood pressure and pulse;
   - **b.** patient's condition during and after the test; and
   - **c.** any adverse effects experienced by the patient and action taken.

Appendix VI - Triple Bolus Test Procedure

Purpose: To assess the functional reserve of the anterior lobe of the pituitary gland.

Patient Preparation:
1. Ensure that the patient has been fasting after midnight.
2. Explain the procedure to the patient, reinforcing the explanation previously given by the physician.
3. Ensure that an informed consent is on the patient care record.
4. Measure and record the patient's height, weight, blood pressure and pulse.

Specimen Collection Equipment:

Novolin Toronto Insulin (0.1-0.15 u/kg of body weight)
TRH 200 ug GnRH 100 ug
Normal Saline for Intravenous Use 250 mL
10% Dextrose in Water 500 mL
50% Glucose Injectable
Alcohol Preps
2 x 2 Gauze

Collection Instructions:
1. Set up the I.V. tubing adding one 3-way stopcock to the end of the tubing.
2. Insert a #20 Jelco Catheter into an antecubital vein.
3. Infuse the N.S solution at a rate T.K.V.O.
4. Using the double stopcock set up, obtain a blood sample for glucose, cortisol, TSH, Prolactin, LH, FSH, and HGH.
5. Set up the 2nd 3 way stopcock with the 3 ml and 10 mL syringes.
6. A physician must draw up the insulin for I.V. administration based on patient weight.
7. Fifteen minutes after the first blood sample is obtained take a second baseline sample.
8. Review the side effects of the TRH with the patient (a warm, facial flush, transient nausea, a metallic taste and a sudden urgent desire to void). Explain to the patient that approximately 20-30 minutes after the insulin is injected s/he may begin to feel lightheaded, hungry, sleepy and very warm, and diaphoretic. Ask the patient to report these symptoms to you.
9. The physician will then inject the insulin, TRH and GnRH I.V. as a bolus. Obtain the timed blood samples as set out in the ordering physicians' protocol.
10. Monitor blood pressure and pulse closely after the insulin has been injected. Report significant decreases in blood pressure or increases in heart rate to the physician.
11. At the discretion of the attending physician, the solution of 10% D/W will be established or the 50% glucose injectable will be given when the patient shows signs of hypoglycemia.
12. At the completion of the test, discontinue the I.V. and ensure that the patient is well prior to leaving the unit.

Recording and Reporting

1. Document in the Progress Notes:
   - **a.** patient's height, weight, blood pressure and pulse;
   - **b.** patient's condition during and after the test; and
   - **c.** patient condition during and after the test; and any adverse effects experienced by the patient and action taken.

Appendix VII - Elevations of Troponin in the absence of overt ischemic heart disease

Cardiac contusion or other trauma including surgery, ablation, pacing, etc.
Congestive heart failure – acute and chronic
Aortic dissection
Aortic valve disease
Hypertropic cardiomyopathy
Tachy- or bradyarrhythmias, or heart block
Apical ballooning syndrome
Rhabdomyolysis with cardiac injury
Pulmonary embolism, severe pulmonary hypertension
Renal failure
Acute neurological disease, including stroke or subarachnoid hemorrhage
Infiltrative diseases, e.g. amyloidosis, hemochromatosis, sarcoidosis, and scleroderma
Inflammatory diseases, e.g. myocarditis or myocardial extension of endo- /pericarditis
Critically ill patients, especially with respiratory failure or sepsis
Extreme exertion

Appendix VIII - Blood Culture Collection

Introduction: Blood cultures are processed in the Microbiology Lab on a daily basis. All positive blood cultures are reported immediately by phone and written report. Negative blood cultures are reported as final after 5 days of incubation.

NOTE: YEAST SPECIES GROW IN ROUTINE BLOOD CULTURES AND A SEPARATE YEAST REQUEST IS NOT NECESSARY.

Principles:
1. Blood cultures should be drawn prior to the initiation of antimicrobial therapy.
2. The test includes isolation of both anaerobic and aerobic bacteria and susceptibility testing.
3. DO NOT REFRIGERATE blood culture specimens.
4. Transport to Microbiology Lab immediately (or to Core when microbiology lab is closed).

Equipment:
Blood culture bottles (see tables below for types and numbers).
70% isopropyl alcohol swabs
2% chlorhexidine with 70% alcohol swabs or 2% chlorhexidine without alcohol (for NICU patients)

Procedure:
Remove caps from blood culture bottles and **wipe rubber bottle tops for 15 seconds with 70% isopropyl alcohol before filling.** Blood should not be drawn until the alcohol has completely dried (30 secs).

VENIPUNCTURE SPECIMENS

- Wash venipuncture site with soap and water if site is visibly soiled.
- Moving from vein outwards, disinfect venipuncture site using a 2% chlorhexidine with 70% alcohol swab for 15 seconds and allow to completely dry.

- **EXCEPTION**
- For NICU patients, disinfect using a 2% chlorhexidine without alcohol swab.
- If palpation of venipuncture site is required after disinfection, use a sterile glove.
- Collect blood specimen(s) according to pediatric and adult tables below using a Vacutainer Safety-Lock blood collection set ("butterfly" set) or IV cannula and the appropriate blood culture adapter.

CENTRAL VENOUS CATHETER

- Carefully cleanse port with 70% isopropyl alcohol for 15 seconds and allow to completely dry. (due to the greater risk of contamination of blood cultures taken from central line ports).
- Collect blood specimen(s) according to pediatric and adult tables below using the appropriate blood culture adapter (see equipment list).

BLOOD CULTURE SPECIMENS

It is preferable to take blood cultures from a peripheral venipuncture site. If unable to obtain the peripheral venipuncture specimen(s) in table below, obtain all specimens from the central venous catheter. **EXCEPTION**: In neonates, blood collection from a PICC line is contraindicated. Blood should never be taken from peripheral IV sites.

Patient's Weight (kg)	**Bottle Type**	**Site #1 (SET #1)**		**Site #2 (SET # 2)**	
		Specimen Volume Aerobic Bottle #1* (mL)	**Specimen Volume Anaerobic Bottle #2* (mL)**	**Specimen Volume Aerobic Bottle #1* (mL)**	**Specimen Volume in Anaerobic Bottle #2* (mL)**
1.0 or less	Pediatric (Yellow top)	2	–	–	–
1.1 to 2	Pediatric	2	–	2	–
2.1 to 13	Pediatric	4	–	2	–
13 to 36	Pediatric	10		10	
More then 36	ADULT (Green & Orange Top)	10	10	10	10

* Recommended maximum volume that can be divided into 2 bottles.

Note: Keep blood culture bottle(s) in an upright position to ensure filling with proper volume(s) and to prevent culture medium from entering blood stream. It is essential to use the markings on the bottle to ensure that the required amount of blood is drawn into the bottle because underfilling may fail to detect a bacteremia, and overfilling may affect the results.

Adult Blood Culture Specimens:

- 1 set = 1 aerobic and 1 anaerobic bottle from 1 site.
- 2 sets of blood cultures are to be taken (for a total of 4 bottles) during a febrile or septic episode per 24 hr period. Collecting just one set (i.e. 2 bottles) is not adequate to detect the presence of bacteremia.

Pediatric Blood Culture Specimens:

- One draw = 1 set

Adult Patients Who Have a Central Venous Catheter: (includes hemodialysis catheters)

1. If unable to obtain the peripheral venipuncture specimen(s) in table below, obtain all specimens from the central venous catheter or hemodialysis catheter.
2. Only one lumen of the central venous catheter needs to be sampled for blood cultures. For hemodialysis catheters use the arterial lumen.
3. If the central venous catheter is removed and the catheter tip is sent to the Microbiology Lab for culture, concurrent blood cultures must be taken or else the central venous catheter tip culture results are not reported (i.e. catheter tip cultures without concurrent blood cultures are of no clinical value).

	Set #1 (from peripheral venipuncture site #1)		Set #2 (from the central venous catheter)*		Set #3 (from a different peripheral venipuncture site #2)	
Central venous catheter (from one lumen only)	10 mL (aerobic)	10 mL (anaerobic)	10 mL (aerobic)	10 mL (anaerobic)	10 mL (aerobic)	10 mL (anaerobic)
Hemodialysis catheter (from arterial lumen)**	10 mL (aerobic)	10 mL (anaerobic)	10 mL (aerobic)	10 mL (anaerobic)	10 mL (aerobic)	10 mL (anaerobic)
Arterial line	Arterial lines should not be used for blood culture collection					

* If more than one catheter is in place, draw a set from each catheter suspected of being infected.

Labels and Requisitions:

1. Do not cover the bar code or sensor located on the bottom of the bottle with the label.

Appendix IX – Urine Dipstick Testing: Point of Care Testing (POCT)

PRINCIPLE

The Siemens dipstick includes glucose, bilirubin, ketones, specific gravity, blood, pH, protein, urobilinogen, nitrite and leukocytes. The strips are intended to assist diagnosis in the following areas: kidney function, urinary tract infections, carbohydrate metabolism, and liver function. The strips also measure physical characteristics including acid-base balance and urine concentration. The strips will determine if microscopic analysis is needed.

POLICY

1. Only certified operators may perform urine dipstick testing.
2. All users must recertify annually.
3. Infection Control practices must be followed.
4. Urine specimens for routine urinalysis will be tested on the nursing unit, unless the physician's order specifies otherwise.
5. Users must follow the Quality Assurance protocols set up by the Point of Care Testing Department.
6. Waste is discarded as per hospital biohazard waste disposal guidelines.
7. A patient care order is required for testing.

EQUIPMENT

Freshly voided urine
Siemens Multistix reagent strips for urinalysis
Siemens Multistix container

SPECIMEN COLLECTION

Collect freshly-voided urine in a clean container and test it as soon as possible. A first-morning specimen is preferred, but random collections are acceptable. Test samples immediately after collection.

PROCEDURE

Only certified operators may perform urine dipstick testing. Certification includes reading this Policy and Procedure and signing the competency statement. Annual recertification includes reviewing this Policy and Procedure as required and signing the competency statement.

1. **a.** Collect a fresh urine specimen in a clean, dry container.
   b. Mix well just before testing.
   c. Remove one strip from the bottle.
   d. Replace the cap.

2. **a**. Dip all the test pads of the strip into the urine.
   b. Immediately remove the strip.
   c. Drag the edge of the strip against the container to remove excess urine.
   d. Start timing.

3. **a.** Compare each test pad to the corresponding row of colour blocks on the bottle label.
   b. Hold the strip close to the colour blocks without touching them.
   c. Read the pads in good light at the time shown on the label, starting with the shortest time.
      i. 30 seconds: glucose and bilirubin
      ii. 40 seconds: ketones
      iii. 45 seconds: specific gravity
      iv. 60 seconds: blood, pH, protein, urobilinogen, and nitrites
      v. 60-120 seconds: leukocytes
   d. Do not read any test pad after 2 minutes. Colour changes after 2 minutes are invalid.

4. Record patient results on the form titled Urinalysis: Point of Care Testing Results. Complete all sections of the form and add it to the patient chart.

LIMITATIONS OF USE

1. Close the container tightly with the desiccant inside immediately after removing a strip. Store all strips in the bottle between 15 and 30 degrees Celsius, out of direct sunlight. Failure to protect the strips from exposure to light, heat and ambient moisture will result in altered reactivity of the reagent. Do not use strips after the printed expiry date.

2. Substances that cause abnormal urine colour may affect the readability of the of the test pads on the reagent strips. These substances include visible levels of blood or bilirubin, drugs containing dyes (e.g. Pyridium, Azo Gantrisin, Azo Gantanol), nitrofurantoin (Macrodantin, Furadantin) or riboflavin.

3. Other interfering substances include: Capoten (captopril), oxidizing agents (e.g. hypochlorite), microbial peroxidase, elevated glucose, cephalexin (Keflex), cephalothin (Keflin), high concentrations of oxalic acid, Tetracycline, contamination by vaginal discharge, ketone bodies, levodopa metabolites, compounds such as mesna (2-mercaptoethane sulfonic acid) that contain sulfhydryl groups, growth of bacteria that converts urea to ammonia, Indican (indoxyl sulphate), metabolites of Lodine (etodolac), p-aminosalicylic acid, sulfonamides, p-aminobenzoic acid, and formalin. See package insert for detailed limitations.

QUALITY ASSURANCE

Each vial of strips will be checked with Quality Control solutions by POCT before being distributed to the floors. Each user is responsible for ensuring the container is labeled with the "QC Passed" sticker. Users are also responsible for ensuring that strips are stored appropriately and not used past the printed expiry date.

TROUBLESHOOTING

For any discrepant or unexpected results, please contact Point Of Care Testing (ext. 3712) or the Core Lab (ext. 7806) and ask to speak to a Chemistry Technologist.

REFERENCE VALUES:

1. All positive blood cultures are reported immediately by phone and written report.

2. Negative blood cultures are reported as final after 5 days of incubation.

RELATED DOCUMENTS

Guide to utilization of the Microbiology Lab, CID 1

REPORTING

1. Glucose – The presence of detectable amounts of glucose in urine is known as glucosuria. Glucosuria occurs whenever the blood glucose level exceeds the reabsorption capacity of the renal tubules.
   Expected Value – negative
   Sensitivity – 4.12 - 6.87 mmol/L

2. Bilirubin – Bilirubin in the urine indicates the presence of hepatocellular disease or intra- or extra hepatic biliary obstruction. When very small amounts of bilirubin are sought (e.g. in the earliest phase of viral hepatitis), Siemens Multistix 10 SG are not sensitive enough.
   Expected Value – negative
   Sensitivity – 6.84 – 13.68 umol/L bilirubin

3. Ketone Bodies – Detectable levels of ketones (acetoacetic acid) may be present in urine during physiological stress conditions such as fasting, pregnancy and strenuous exercise. Ketones may appear in urine at levels of 10mg/dL or higher before serum ketone levels are elevated.
   Expected Value – negative
   Sensitivity – 490 – 980 umol/L acetoacetic acid

4. Specific Gravity – the specific gravity of urine indicates the relative proportion of dissolved solid components to the total volume of the specimen. Under appropriate and standardized conditions specific gravity measures the concentrating and diluting abilities of the kidneys.
   Expected Value - 1.005 to 1.030

5. Blood – Separate color scales are given for erythrocytes and hemoglobin. Scattered or compacted green dots on the test paper are indicative of intact erythrocytes. Hemoglobin, hemolyzed erythrocytes, and myoglobin are indicated by a uniform green coloration of the test patch. Positive amounts can occur during urological, nephrological, and bleeding disorders.
   Expected Value – negative
   Sensitivity – 0.15 – 0.62 mmol/L hemoglobin

6. pH – The kidneys and the lungs are the two major organs that regulate the acid-base balance of the body. The kidney regulates the selective excretion of the various cations in order to maintain normal acid-base balance. Urine becomes increasingly acidic as the amount of sodium retained by the body increases.
   Expected Value – 4.6-8.0

7. Protein – Proteinuria refers to an abnormally increased amount of protein in the urine. Proteinuria is one of the most important indicators of renal disease. Proteinuria may also reflect urological disorders. Excretions may also be a result of strenuous exercise, orthostatic proteinuria, dehydration, urinary tract infections and acute illness with fever.
   Expected Value – negative
   Sensitivity – 150 – 300 g/L albumin (or other proteins)

8. Urobilinogen – Determination of urinary urobilinogen serves as a guide in detecting liver disease, hemolytic disease and biliary obstruction. Larger amounts of bilirubin produce a momentary yellow coloration of the test patch, which may turn green to blue after about 60 seconds. Strip reactivity increases with temperature.
   Expected Value – 3.2 -16 umol/L

9. Nitrite – The reaction reveals the presence of nitrite producing gram-negative organisms in the urine. Pink spots or edges should not be considered positive results. A minimum of four hours of bladder incubation significantly increases the likelihood of obtaining a positive result.
   Expected Value – negative
   Sensitivity – 0.06 – 0.1 mg/dL nitrite ion

10. Leukocytes – An increase of leukocytes (>10/uL) is an indication of pyuria and is found in nearly all diseases of the kidney and urinary tract, however, may also be present in non-infective conditions. If the reaction appears negative at 60 seconds wait and reassess at 120 seconds.
    Expected Value – negative
    Sensitivity – 5 – 15 White blood cells / hpf

RELATED DOCUMENTS

POC 7-10 A-1 Urinalysis POCT Results Documentation Form
POC 7-10 A-2 Urinalysis Certification and Recertification Checklist
POC 1-10 Point of Care Testing Policy
POC 2-10 Non Compliant Operators
U-6800 Urinalysis, Routine: Point of Care Testing (POCT): Advanced Competency (AC) for Nurses (Registered Nurses and Registered Practical Nurse)
Kingston Hospitals Infection Control Manual

REFERENCES

Package Insert for Siemens Multistix 10 SG

Appendix X - Table of Abbreviations

Abbreviation	Test Name
1GF1	Insulin-like Growth Factor 1
5-HIAA	5-Hydroxyindole Acetic Acid
AA	Amino Acids
A1AP	Alpha-1-Antitrypsin
ABG	Blood Gases, Arterial
ACE	Angiotensin Converting Enzyme
ACR	Albumin to Creatinine Ratio
ACTH	Adrenocorticotropic Hormone
ADH	Antidiuretic Hormone
AFB	Acid -Fast Bacillus
AFP	Alpha Fetoprotein, Amniotic Fluid
Al	Aluminum
ALA	Aminolevulinic Acid
ALB	Albumin
ALC	Alcohol
ALP	Alkaline Phosphatase
ALT	Alanine Transaminase
AMM	Ammonia
AMY	Amylase
ANA	Anti-Nuclear Antibodies
ANF	Anti-Nuclear Factor
ANTIXA	Anti-Xa Activity
APTT	Activated Partial Thromboplastin Time
APTT 50/50	Activated Partial Thromboplastin Time 50/50 Mix
As	Arsenic
ASA	Acetyl salicylic acid
ASO	Anti-Streptolysin O
AST	Aspartate Transaminase
AT	Antithrombin
BAL	Bronchoalveolar Lavage
BOHB	Beta-Hydroxybutyrate
BXT	Batroxobin Time
C3	Complement
C4	Complement
Ca	Calcium
CA 125	Cancer Antigen 125
CBC	Complete Blood Count
CCP	Cyclic Citrullinated Peptide Antibodies
Cd	Cadmium
CDIFF	Clostridium Difficile
CEA	Carcinoembryonic Antigen
CHOL	Cholesterol
CK	Creatine Kinase
Cl	Chloride
CMV	Cytomegalovirus
CO	Carboxyhemoglobin
CO2	Carbon Dioxide Content
CrCl	Creatinine Clearance
Creat	Creatinine
CRP	C-Reactive Protein

CRYFIB	Cyrofibrinogen
CSF	Cerebrospinal Fluid
Cu	Copper
DDI	D-Dimer Quantitative
DHEAS	Dehydroepiandrosterone Sulfate
Dig	Digoxin
DRVVT	Dilute Russell Viper Venom Time
ECLT	Euglobulin Clot Lysis Time
EPO	Erythropoietin
ESR	Erytrocyte Sedimentation Rate
FII	Factor II
FV	Factor V
FVII	Factor VII
FVIII	Factor VIII
FIX	Factor IX
FX	Factor X
FXI	Factor XI
FXII	Factor XII
FXIII	Factor XIII Activity Quantitative
FIB	Fibrinogen
Fe	Iron
FISH	Fluorescent In-Situ Hybridization
FNA	Fine Needle Aspiration
FFN	Fetal Fibronectin
FSH	Follicle Stimulating Hormone
FT3	Free Triiodothyronine
FT4	Free Thyroxine
GAD	Glutamic Acid Decarboxylase Antibodies
G6PD	Glucose 6 phosphate dehydrogenase
GGT	Gamma Glutamyl Transferase
GRH	Gonadotrophin Releasing Hormone
GTT	Glucose Tolerance Test
HCG	Human Chorionic Gonadotrophin
HDL	High Density Lipoprotein
Hg	Mercury
HgA1C	Hemoglobin A1C
Hgb	Hemoglobin
HIT	Heparin Induced Thrombocytopenia
HIV	Human Immunodeficiency Virus
HLA	Human Leukocyte Antigen
HVA	Homovanillic Acid
IFE	Immunofixation Electrophoresis
IgA	Immunoglobulin A
IgE	Immunoglobulin E
IgG	Immunoglobulin G
IgM	Immunoglobulin M
INR	International Normalized Ratio
K	Potassium
LA	Lupus Anticoagulant Testing
LAP	Leukocyte Alkaline Phosphatase
LATS	Long Acting Thyroid Stimulator
LD	Lactate Dehydrogenase
LH	Luteinizing Hormone
Li	Lithium
Lytes	Electrolytes
MethHb	Methemoglobin, Blood
Mg	Magnesium
MRSA	Methicillin Resistant Staphylococcus aureus
MSS	Maternal Serum Screen
Na	Sodium

GH	Growth Hormone
Pb	Lead
PBG	Porphobilinogen
PC	Protein C
PAP	Papanicolaou test
PCR	Polymerase Chain Reaction
PE	Protein Electrophoresis
PHNO	Phenobarbital
PK	Pyruvate Kinase
PLTAG	Platelet Aggregation Studies
PO4	Phosphate
POCT	Point of Care Testing
PRA	Panel Reactive Antibodies
PRIM	Primidone
PROC	Procainamide
PSTOT	Protein S Total (Ag)
PSFREE	Protein S Free (Ag)
PSACT	Protein S Activity (Function)
PSA	Prostate Specific Antigen
PT	Prothrombin Time
PT 50/50	Prothrombin Time 50/50 Mix
PTH	Parathyroid Hormone
PTN	Phenytoin
RAST	Radioallergosorbent Test
RF	Rheumatoid Factor, Plasma or Serum
RSV	Respiratory Syncytial Virus
Se	Selenium
SHBG	Sex Hormone Binding Globulin
SPIN	Specific Factor Inhibitor Assay (Bethesda Assay)
T3	Triiodothyronine
T4	Thyroxine
O&P	Ova and Parasites
TBG	Thyroid Binding Globulin
TCA	Tricyclic Antidepressant Screen
TIBC	Total Iron Binding Capacity
TORCH	Toxoplasmosis, Rubella, Cytomegalovirus, Herpes Simplex
TP	Total Protein
TRH	Thyrotropin Releasing Hormone Stimulation Test
TRIG	Triglycerides
TSH	Thyroid Stimulating Hormone
TT	Thrombin Time
UA	Uric Acid, Plasma
VBG	Venous blood gases
VIS	Viscosity, Serum or Plasma
VWAg	Von Willebrand Factor Antigen
VWF:Ag	Von Willebrand Factor Antigen
VWF:Ac	Von Willebrand Factor Activity
VWF:G1bM	Von Willebrand Factor Activity
VWFM	Von Willebrand Multimers
VWS	Von Willebrand Studies
VMA	Vanillylmandelic Acid, Urine
VRE	Vancomycin-Resistant Enterococci
Zn	Zinc
ZPP	Zinc Protoporphyrin