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Laboratory Users' Handbook

7.5 Edition
October 2014

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Note: Most recent version of the Handbook is available on http://kgh/clinical_laboratory_services/LabUserManual.pdf or http://intranet.hdh.net/

This Manual is Issued

Under The Authority

of

Sandip SenGupta, MD, FRCPC, FCAP

Medical Director, Clinical Laboratory Services

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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 KGH 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 Canada or the U.S. The Directory in this manual provides our contact numbers.

Our sincere thanks go to all the laboratory staff 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 sengupts@kgh.kari.net.

Sandip SenGupta, MD, FRCPC
Medical Director, Clinical Laboratory Services, Kingston General Hospital

The Lab Users' Manual Edition 7.5 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
Kingston General Hospital

LABORATORY TELEPHONE DIRECTORY

(Also see KGH 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	613-549-6666 x 4037
Colleen Knapp	Manager	613-549-6666 x 6065
	Pathologists	613-549-6666 x 4199
CHEMISTRY		
	Laboratory (Douglas 1)	613-549-6666 x 7806
Donnah Pocius	Manager	613-549-6666 x 4182
Dr. Michael Chan	Clinical Chemist	613-549-6666 x 2836
CYTOGENETICS		
	Laboratory	613-549-6666 x 4219
Tammy Edwards	Manager	613-549-6666 x 6847
Dr. Susan Crocker	Cytogeneticist	613-549-6666 x 4405
CYTOLOGY		
	Laboratory	613-549-6666 x 4695
Colleen Knapp	Manager	613-549-6666 x 6065
HEMATOLOGY		
	Laboratory (Douglas 1)	613-549-6666 x 7806
Donnah Pocius	Manager	613-549-6666 x 4182
Dr. David Good	Hematopathologist	613-533-6000 x 32823

HEMOSTASIS		
	Laboratory (Douglas 1)	613-549-6666 x 7806
Donnah Pocius	Manager	613-549-6666 x 4182
Dr. David Good	Hematopathologist	613-533-6000 x 32823
IMMUNOLOGY		
	Laboratory	613-549-6666 x 4602
Tammy Edwards	Manager	613-549-6666 x 6847
Dr. Lois Shepherd	Hematopathologist	613-533-6000 x 79616
MICROBIOLOGY		
	Laboratory	613-549-6666 x 4178
Cathie Trayner	Manager	613-549-6666 x 3662
Dr. Lewis Tomalty	Microbiologist	613-549-6666 x 4180
MOLECULAR GENETICS		
	Laboratory	613-549-6666 x 4892
Tammy Edwards	Manager	613-549-6666 x 6847
Dr. Harriet Feilotter	Director of Molecular Diagnostics	613-533-6000 x 75796
POINT OF CARE TESTING (POCT)		
Donnah Pocius	Manager	613-549-6666 x 4182
	POCT Technologist	613-549-6666 x 3712
TRANSFUSION MEDICINE		
	Blood Bank Laboratory	613-549-6666 x 4188
Donnah Pocius	Manager	613-549-6666 x 4182
Dr. Lois Shepherd	Director of Transfusion Medicine	613-533-6000 x 79616
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 KGH Switchboard
Cytopathology	Contact KGH Switchboard
Hematopathology	Contact KGH Switchboard
Hemostasis	Contact KGH Switchboard
Transfusion Medicine	Contact KGH Switchboard
Autopsy Pathology	Contact KGH 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.

"R" indicates that the test is referred to another laboratory for testing.

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. 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 KGH 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 Ontario Laboratory Accreditation 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 vacutainer 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 KGH 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 KGH website, HDH intranet 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 Manuel 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	AVAILABILITY (R) = Referred Out	LABORATORY
7 Dehydrocholesterol	Red top tube	Full tube. Fasting specimen preferred. Protect specimen from light. Specimen must be labelled inside and outside light-protecting wrap. Store and send frozen.	Specific Days Only (R)	Chemistry
11 Deoxycortisol	Red top tube	Full tube. 1 mL serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
14-3-3 Protein Assay	CSF Tube	See: Creutzfeldt-Jakob Disease	Contact Microbiology Laboratory and Infection Control prior to testing	Microbiology
17-Hydroxyprogesterone (17-OH Progesterone)	Light Green top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (R). Contact Clinical Chemist (613-533-2820) if analysis is required on an urgent basis.	Chemistry
Absolute Numbers	Blood - Lavender top tube; Bone Marrow/aspirate in Green stoppered media tube provided by the Lab; Lymph node/tissue in media tube provided by the Lab	See: Markers, Cell surface	Monday to Thursday 0800-1600 Turnaround time: Preliminary results 2 days Hematopathologist interpretation 5 days	Immunology
Acanthamoeba	Sterile container	See**:** Culture: Acanthamoeba (Corneal Ulcer Scrapings, Fluid, Biopsy, Tissue)	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	1 mL of blood. Referrals: 2 mL of serum. Store frozen. Ship on dry ice.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 (R)	Chemistry
Acetylprocainamide (NAPA) Serum	Red top tube (no gel)	See: N-Acetylprocainamide	Specific Days Only (R)	Chemistry
Acetylsalicylic Acid (ASA)	Red top tube	See: Salicylate	Daily or STAT	Chemistry
Acid-Fast Stain, Mycobacteria - STAT Request	Sterile container	2 mL of fluid or small piece of tissue. Appropriate specimen for smear is the same as for culture. See Culture, Mycobacteria for details. The specimen can be divided for fungal culture and KOH preparation, mycobacterium culture and smear, and routine bacterial culture and Gram stain, only if the specimen is adequate volume and is accompanied by a properly completed requisition for each of the above. Acid-fast smear can be performed in the Microbiology Services 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 Turnaround time 24 hr	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	AVAILABILITY (R) = Referred Out	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	2 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Store and ship frozen.	Specific Days Only (R)	Chemistry
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 a 12x75 mm polypropylene tube 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 (R)	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
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	AVAILABILITY (R) = Referred Out	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	Gold or Light Green top tube	See: Ethanol, Plasma or Serum	Daily or STAT	Chemistry
Aldosterone	Light Green top tube	2 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (R)	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 (R)	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	1 mL blood. Referrals: 0.5 mL serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Alkaline Phosphatase, Iso-enzymes	Red top tube	2 mL blood. Iso-enzymes will not be done if Alkaline Phosphatase total is within the reference interval. Referrals: 1 mL serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
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 (R)	Chemistry
Alpha Fetoprotein (AFP), Maternal Serum	Gold top tube	See: Maternal Serum Screen	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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) 1-Red top tube (Serum)	A1AT testing is performed in two stages: Stage 1: Red tube tope (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.	Stage 1-5-10 working days Stage 2-30 days	Chemistry
Alpha-2-Macroglobulin	Red top tube	Full tube.	Specific Days Only (R)	Chemistry
Aluminum, Plasma	Royal Blue tube top with EDTA	7 mL of blood in a 7 mL royal blue tube with EDTA	Specific Days Only (R)	Chemistry
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 (R)	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 (R)	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 (R)	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 (R)	Chemistry
Amiodarone, Serum	Red top tube (no gel)	3 mL of blood. Collect blood just prior to dose. Referrals: 1.0 mL of serum. Store and send refrigerated.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Amitriptyline, Serum	Red top tube (no gel)	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 (R)	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.	Daily and STAT	Chemistry
Amoebiasis	Red top tube/sterile container/SAF transport media	See: Parasite Serology/Parasite Exam	Daily	Microbiology
Amylase	Light Green top tube	3 mL blood. Referrals: 0.5 mL of serum. Store and ship refrigerated.	Daily or STAT	Chemistry
Amylase, Urine	24 hr urine collection container	20 mL of a 24 hr specimen collected without preservatives. Refrigerated during collection. Referrals: 5 mL of urine. Store and ship frozen. Include urine volume and collection time on requisition.	Daily	Chemistry
Amyloidosis	EDTA	15 mL of blood. No special instructions.	Weekdays 0830-1600	Molecular Genetics
Androstenedione, Serum	Gold top tube	4 mL of blood. Fasting sample preferred. (For women, collect 1 week prior to or following menses). Referrals: 2 mL of serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Angiotensin Converting Enzyme (ACE), CSF	CSF tube	1 mL of spinal fluid. Referrals: Store and ship frozen.	Specific Days Only (R)	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 (R)	Chemistry
Antenatal Testing (Includes ABO, Rh, Antibody Screen)	Pink top tube	Adult: 7 mL 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 date of confinement. 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)

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Anti-Adrenal Antibodies, Serum	Gold top tube	3 mL of blood. Referrals: 1 mL of serum. Store and ship refrigerated.	Specific Days Only (R)	Chemistry
Antibody Identification on Red Cells	2 - Pink top tube	(This order will usually be initiated by the Blood Bank). Do not draw above an IV line. Sample must not be hemolyzed. Complete Blood Bank Requisition. This information must coincide exactly with the requisition or the specimen will not be accepted.	Daily Turnaround time Urgent 8 hrs (R) 24 hr	Transfusion Medicine (Blood Bank)
Antibody Screening, Serum	Gold or Red top tube	See: Panel Reactive Antibodies (PRA)	Bimonthly Turnaround time 60 days	Immunology
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)
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 (R) 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 (R)	Chemistry
Anti-Histone Antibody	Red top tube	3 mL of blood. Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Anti-HLA Antibodies, Serum	Gold top tube	See: Panel Reactive Antibodies (PRA)	Bi-monthly Turnaround time 60 days	Immunology
Anti-Mitochondrial Antibodies, Serum	Gold or Red top tube	5 mL of blood. Sample must not be hemolyzed. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection.	Weekly Turnaround time 10 days	Immunology
Anti-native DNA Antibodies, Serum	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.	Weekly Turnaround time 10 days	Immunology
Anti-nDNA Antibodies	Gold or Red top tube	See: Anti-native DNA Antibodies, Serum	Weekly Turnaround time 10 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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 (R). 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. Serum must not be hemolyzed. Freeze serum if testing cannot be performed within 24 hr of collection.	Weekly Turnaround time 10 days	Immunology
Anti-Smooth Muscle Antibodies, Serum	Gold or Red top tube	5 mL of blood. Hemolyzed samples are not acceptable. Referrals: 2 mL of serum. Freeze serum if testing cannot be performed within 24 hr of collection.	Weekly Turnaround time 10 days	Immunology
Anti-Streptolysin O (ASO), Serum	Red top tube	6 mL of blood. Test is qualitative. Request semi-quantitative testing if required. Avoid excessive hemolysis.	Daily Turnaround time 24 hr	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	Gold top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin	Specific Days Only (R)	Chemistry
Apoliprotein A1	Red top tube	5 mL of blood. Referrals: 2 mL of serum separated from cells within 4 hours of collection, store and send frozen.	Specific Days Only (R)	Chemistry
Apolipoprotein B	Red top tube	5 mL of blood. Referrals: 2 mL of serum separated from cells within 4 hours of collection, store and send frozen.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Arboviruses	Red top tube	See: Viral Serology	Daily (R)	Microbiology
Argomome Vasopressin	Pre-chilled Lavender tube for plasma ADH and Gold top tube for osmolality.	See: Antidiuretic Hormone	Specific Days Only (R) This test is available to Endocrinologists and Nephrologists. All other requests must be approved by a Clinical Chemist.	Chemistry
Arsenic, Whole Blood	Royal Blue EDTA tube	1 Full Royal Blue EDTA tube	Specific Days Only (R)	Chemistry
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.	Specific Days Only (R)	Chemistry
Arterial Lines, Culture	Sterile container	See: Culture, Arterial lines	Daily	Microbiology
Arysulfatase A, WBC	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) 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 of serum or heparinized plasma.	Daily or STAT	Chemistry
Aspergillosis Precipitins	Red top tube	Complete Public Health Laboratories' requisition. 6 mL blood in a Red top tube.	Specific Days Only (R) Turnaround time 1 week	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Aspiration Large Gauge Needle (FNA) for Cytodiagnosis of Malignancy	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
Aspirin	Gold or Light Green top tube	See: Salicylate	Daily or STAT	Chemistry
Avian Precipitins, Serum (Specify species: Budgie/Parakeet, Canary, Chicken, Cockatiel, Duck, Goose, Parrot, Pigeon or Turkey)	Gold top tube	Referrals: Store and ship refrigerated. 5 mL blood.	Specific Days Only (R)	Chemistry
Barbiturates Screen, Urine	Plastic container	See: Drug Screen, Urine	Daily or STAT	Chemistry
Bartonella	Red top tube	See: Serology for Bartonella, Brucella, Chlamydia, Diphtheria, Lyme Disease, Rickettsia, Q-Fever, Leptospirosis, Tularemia	Daily (R)	Microbiology
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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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 (R). Submit samples ONLY Monday thru Wednesday.	Molecular Genetics
Benzodiazepine Screen, Serum	Red top tube (no gel)	2 mL blood. Referrals: 1 mL serum. Store and ship refrigerated.	Daily	Chemistry
Beta-2-Microglobulin, Serum	Gold top tube	2 mL of blood. Referrals: 0.5 mL of serum. Ship and store refrigerated.	Daily (R)	Chemistry
Beta-Hydroxybutyrate, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of serum or heparinized plasma. 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 (R)	Chemistry
Bilirubin - Direct, Plasma	Light Green top tube	1 mL of blood. Protect sample from Light. Referrals: 0.5 mL of serum or 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 serum or heparinized plasma. Store and ship refrigerated and protected from light.	Daily	Chemistry
BK Virus	2-Lavender top tube	See: Virus Detection PCR	Daily (R)	Microbiology
Blastomycosis	Red top tube/sterile container	See: Fungal Serology See: Fungal Culture	Daily	Microbiology
Blood Culture	Blood aerobic bottle/blood anaerobic bottle/blood peds bottle	See: Appendix VIII Procedure See: Culture, Blood See: Fungal Culture, Blood	Daily	Microbiology
Blood Gases, Arterial	Preheparinized plastic syringe (5 or 3cc), sealed with cap provided.	1.5 mL of blood. DO NOT SEND NEEDLES. Expel any air, place sample 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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Blood Gases, Venous	Preheparinized plastic syringe (5 or 3cc), sealed with cap provided.	1.5 mL of blood. DO NOT SEND NEEDLES. Expel any air, place sample 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 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 - may be provided as ward stock.	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)

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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
Bone Marrow, for Microbiologic Culture	Green top tube	See: Culture, Bone Marrow; Fungal Culture, Bone Marrow	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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
Bordetella Detection	Swab or aspirate in Bordetella Kit	Complete Public Health Laboratories' requisition. Transport to the Microbiology Laboratory immediately. Specimen container: Bordetella pertussis kit. Transport media are available in the Microbiology Laboratory. After hours transport media stored in the Core Laboratory.	Daily (R). Test includes culture and PCR testing. Turnaround time 24 hr PCR, up to 5 days culture	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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.	Histopathology
Breast Biopsy and/or Biomarkers (ER, PR, 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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Breast Nipple Discharge for Cytology	Microscope slides and plastic slide mailers	Direct smear(s) of nipple discharge. 1. Label the frosted end of a microscope slide with Patient's first and last name and one other unique identifier i.e. CR#, HCN, DOB. 2. Gently massage breast towards nipple until a drop of secretion forms 3. Touch the slide to the secretion making a smear 4. FIX IMMEDIATELY with Cytology spray fixative by spraying 10-12 inches away from the slide 5. Allow the spray fixative to dry on slide before enclosing in plastic slide container Labelling ID: Label slide(s) 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 Special Instructions: SPRAY FIX SLIDES IMMEDIATELY AFTER PROCURING SPECIMEN. 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)	Submit sample in a sterile container. Bronchial brush in sterile screw cap tube with 1 mL sterile saline.	See: Culture: Bronchoscopy samples	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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. 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
Bronchoscopy Sample, For Microbiologic Culture	Submit sample in a sterile container. Bronchial brush in sterile screw cap tube with 1 mL sterile saline.	See: Culture: Bronchoscopy Samples	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Brucella Serology	Red top tube	See: Serology	Daily (R)	Microbiology
C1 Esterase Inhibitor (Immunological), Serum	Gold top tube	5 mL of blood. Referrals: 2 mL of serum. Store and ship refrigerated. Shipping at room temperature is permitted if delivery time is less than 2 hrs. Hemolyzed samples will not be tested.	Specific Days Only (R)	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 (R) also see C1 Esterase Inhibitor-Immunological	Chemistry
C1Q Binding, Serum	Red top tube (no gel)	3 mL of blood. Send to laboratory immediately. Referrals: 1.0 mL serum. Separate serum from cells and freeze within an hour of clotting. Store and ship frozen.	Specific Days Only (R)	Chemistry
CA 15-3, Serum (Tumour Marker)	Gold top tube	2 mL of blood. Referrals: 0.5 mL of serum. Store and send frozen.	Specific Days Only (R)	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.	Specific Days Only (R)	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.	Specific Days Only (R)	Chemistry
Cadmium, Whole Blood	Royal Blue EDTA tube	1 Full Royal Blue EDTA tube	Specific Days Only (R)	Chemistry
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.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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: 1 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 (R)	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, Plasma	Light green top tube	1 mL of blood collected without stasis. Referrals: 0.5 mL of serum or heparinized plasma.	Daily or STAT	Chemistry
Calcium, Urine – 24h	Container available from chemistry	24 hr urine collected in bottle containing 20 mL of 6M HCL. Referrals: 2 mL of urine. Collect 24 hr urine in a bottle containing 20 mL of 6M HCl. Record total 24 hr urine volume on the requisition. Store and ship refrigerated.	Weekdays	Chemistry
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 (R)	Chemistry
Candida/Vincent's, Mouth Swab	Swab in sterile container	Gram stained smear only. Refrigerate if storage exceeds one hour.	Daily Turnaround time 24 hr	Microbiology
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 full, unopened, centrifuged phlebotomy tube (with barrier gel separating red cells from plasma), OR send serum or heparinized plasma in a full, tightly-capped plastic vial. Ship at room temperature or refrigerated. DO NOT FREEZE.	STAT 24 hr/7 d	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Carboxyhemoglobin (Carbon Monoxide), Blood	Dark green top lithium heparin vacutainer 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 vacutainer 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
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.	Histopathology
Cardiolipin Antibodies (IgG and IgM), Serum	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.	Weekly Turnaround time 5 days	Immunology
Carnitine, Plasma or Serum (Total and Free)	Gold or Light Green top tube	2 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Store frozen, ship on dry ice.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Carotene, Serum	Gold top tube	7 mL of blood. Blood should be collected after an overnight fast. Avoid hemolysis. Referrals: 2 mL of serum. Collect specimen after patient has fasted overnight. Protect sample from Light. Store and ship frozen.	Specific Days Only (R)	Chemistry
Catecholamine Fractionation, Plasma	Lavender top tube	Consultation with a Clinical Chemist is required. Collect 5 mL of blood after patient has been at rest in a supine position for 30 minutes. No smoking, tea or coffee prior to the procedure. Immediately place specimen on ice. Separate and freeze immediately. Store and send frozen. If the specimen thaws, it is unsuitable for analysis.	By Prior Arrangement Only (R)	Chemistry
Catecholamines, Urine	Container available from chemistry	Urine catecholamine analysis has largely been replaced by urine metanephrines. Please contact Chemist if there is a specific requirement for this test.	By Prior Arrangement Only (R)	Chemistry
Catheter Tip Culture	Sterile container	See: Culture: Arterial lines, Catheter tips	Daily	Microbiology
CD34 Enumeration, Blood	Lavender top tube	2.5 mL of blood. MUST be kept at room temperature.	Weekdays 0800-1600. Results available in 2-3 hrs. Turnaround time 3 hrs	Immunology
CD4 CD4 Count	Blood - Lavender top tube; Bone Marrow/aspirate in Green stoppered media tube provided by the Lab; Lymph node/tissue in media tube provided by the Lab	See: Markers, Cell surface	Monday to Thursday 0800-1600 Turnaround time: Preliminary results 2 days Hematopathologist interpretation 5 days	Immunology
CDG Syndrome	Gold top tube	See: Transferrin Isoforms for CDG Syndrome	Specific Days Only (R)	Chemistry
Cell Count and Differential, Body Fluid	Lavender top tube	Requires sterile preparation of the aspiration site. Place 1-2 mL in 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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Cell Count and Differential, CSF	Sterile CSF tube	1 mL of spinal fluid collected from a sterile aspiration site. Tubes should be numbered in sequence (#1, #2, #3, #4); tube #1 being the first portion of the sample collected. The cell count will routinely be done on the last tube collected. The CSF should be sent to the Microbiology Lab STAT. Microbiology laboratory is open from 0700 – 2200 hrs, Monday – Friday, and 0700 – 2000 hrs Saturday/Sunday. Outside of these hours sample is delivered to CORE lab. Cell counts on specimens which have been refrigerated or specimens which are delayed in transit will not be accurate. Referrals: Place CSF in a sterile CSF tube and deliver to lab immediately.	STAT or 24 hr/7d (TAT < or = 1 hour) Special Time Considerations This test is performed in the Hematology Laboratory Turnaround time (telephone report within 1 hour of arrival time); < 4 hrs from collection time	Microbiology/ Hematology
Cell Surface Markers	Blood - Lavender top tube; Bone Marrow/aspirate in Green stoppered media tube provided by the Lab; Lymph node/tissue in media tube provided by the Lab	See: Markers, Cell Surface (Elective Immunophenotyping)	Monday to Thursday 0800-1600 Turnaround time: Preliminary results 2 days Hematopathologist interpretation 5 days	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/unlabelled requisition/ specimen containers	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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	Gold top tube	2 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated or frozen.	Specific Days Only (R)	Chemistry
Cervical Culture	Cervical swab in transport media Blue swab (male) Pink swab (female)	See: Culture: Genital, Cervical See: Neisseria gonorrhoeae NAT testing	Daily	Microbiology
Chlamydia	Kits available from Microbiology Lab	See: Serology/Chlamydia Detection	Daily (R)	Microbiology
Chlamydia Detection	Kits available from Microbiology Lab	Testing includes: C. trachomatis: direct (NAT) or culture C. pneumoniae NAT Complete Public Health Laboratories' requisition. Specimens may include genital, eye, urine (first catch: urine preservative transport kit or sterile container), rectal, respiratory in neonates. Special kits are available from Microbiology Laboratory: Endocervical/urethral GEN-PROBE unisex collection kit; Chlamydia culture transport media. Detailed instructions are provided with the kit. (Culture may be mandatory for medical-legal purposes. Concurrent testing of Neisseria gonorrhoeae and chlamydia is recommended).	Daily (R) Turnaround time: C. pneumoniae NAT 5 days C. trachomatis NAT 3 days C. trachomatis culture 5 days	Microbiology
Chloride, CSF	Sterile CSF tube	0.5 mL of spinal fluid. Referrals: Store and ship refrigerated.	Daily or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Chloride, Serum or Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of serum or 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 -10 mL of blood. Referrals: 2 mL serum collected gel free. Store and ship frozen.	By Prior Arrangement Only (R)	Chemistry
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 serum or 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 serum or 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 serum or heparinized plasma. Store and ship refrigerated.	Daily	Chemistry
Cholinesterase Phenotyping, Serum	Gold top tube	2 mL of blood. DO NOT draw sample after administration of succinylcholine (within 24 hr). Referrals: 1 mL of serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Chromium, Whole Blood	Royal Blue EDTA tube	1 full Royal Blue EDTA tube of blood. SODIUM heparin is unacceptable.	Specific Days Only (R)	Chemistry
Chromogranin A	Lavender top tube	Submit two 1 mL aliquots. Store and send frozen. If the specimen thaws, it is unsuitable for analysis. This test is for "Research Use Only".	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Chromosome Analysis, Bone Marrow	Sodium Heparinized vacutainer 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 vacutainer 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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Chromosome Analysis, Peripheral Blood	Sterile sodium heparin vacutainer	Collect 5 mL blood. Use KGH 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 KGH 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 KGH 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 24h	Container available from Chemistry	24 hr urine collected containing 20m^b HCL. Referrals: 10 mL from 24 hr urine. Record total 24 hr volume on the requisition. Store and ship refrigerated or frozen.	Specific Days Only	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
CKMB or CK2, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of serum or heparinized plasma. Store frozen and ship on dry ice.	Daily or STAT (This test has been replaced by Troponin I, and should only be used for investigation of possible re-infarction).	Chemistry
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 (R)	Chemistry
Clomipramine, Serum	Red top tube (no gel)	5 mL of blood. Draw sample just prior to morning dose or 10-12 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 (R)	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 (R)	Chemistry
Clostridium difficile (CDIFF) Toxin	Stool container with tight fitting cap without transport media	5 mL of stool. Collect only one specimen per day. Testing is most appropriate in patients with diarrheal stools 3 times/day. If a positive specimen has been received, a repeat test will not be done for 2 weeks. Toxin can persist in stool for weeks and is not an indication of infectiousness. Repeat testing for C. difficile toxin is not helpful in determining end of treatment or the discontinuation of infection control precautions. Transport immediately to prevent rapid deterioration of toxin.	Daily Turnaround time 24 hr	Microbiology
CMV PCR: Real Time Quantitative PCR Test	1-Lavender top tube	6 mL of blood.	Specific Days Only (twice/week) Turnaround time <7 days	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 (R)	Chemistry
Coccidioidomycosis	Red top tube/sterile container	See: Fungal Serology See: Fungal Culture	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Codeine, Urine	Plastic container	See: Drug Screen, Urine	Daily or STAT	Chemistry
Cold Agglutinins, Blood	2-Pink top tubes	7mL tubes of blood. Complete Blood Bank Requisition. Sample must not be hemolyzed. Store at room temperature.	Daily (0900-1600 hours) Turnaround time 24 hr	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	Gold top tube	5 mL blood. Referrals: 2 mL serum. 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 (R)	Chemistry
Complement, Total Hemolytic (CH50), Serum	Red top tube	3 mL of blood. Collect blood without hemolysis. Transport to lab immediately. Referrals: 2 mL of serum. Collect blood without hemolysis. Clot at room temperature, centrifuge without delay, remove serum, and freeze at -10^{o}C or lower. 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 (R)	Chemistry
Complete Blood Count (CBC), Including Differential	Lavender top tube	2.5 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	Hematology
Conjunctival Culture	Swab in transport media	See: Culture: Conjunctival, Routine	Daily	Microbiology
Copper, Plasma	Royal blue EDTA	7 mL of blood. Transfer 2 mL plasma as soon as possible to a metal-free polypropylene vial. Store and send cold.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Copper, Urine	New unwashed plastic container without preservatives	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 (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 (R)	Chemistry
Copper, Whole Blood	Royal Blue top tube with EDTA	7 mL blood in royal blue top tube with EDTA. Store and ship refrigerated.	Specific Days Only (R)	Chemistry
Coproporphyrin	Random urine collected in dark bottle or wrap container with foil, protecting from light	See: Porphyrins	specific Days Only (R)	Chemistry
Cord Blood (ABO Grouping, Rh, Direct Coombs)	Pink top tubes	5 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.	From the cord sample-venous and arterial samples are drawn with 3 mL syringes rinsed with prepared heparin.	STAT 24 h/7 d	Chemistry
Cortisol, Free, Urine 24h	Without preservatives	24 hr urine collected and refrigerated during the collection. Referrals: 10 mL aliquot from 24 hr urine collected without preservatives but refrigerated during the collection. Record total 24 hr urine volume on the requisition. Store and ship refrigerated or frozen.	Weekdays	Chemistry
Cortisol	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. 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 (no gel)	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. Separate at 4ºC and freeze immediately. Store and send frozen. If the specimen thaws, it is unsuitable for analysis. If ordering Insulin as well, submit a separate frozen specimen for each test.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
C-Reactive Protein (CRP), Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of serum or 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 serum or 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 serum or heparinized plasma. Store and ship refrigerated.	Daily or STAT	Chemistry
Creatinine, Urine 24h	Without preservatives	Random or 24 hr urine collected without preservatives. Refrigerate during collection period. Referrals: 2 mL from random or 24 hr urine collection. Store and ship refrigerated. Record total 24 hr urine volume on the requisition.	Weekdays or STAT	Chemistry
Creutzfeldt-Jakob Disease Detection	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 of blood. Crossmatched units of blood are held for 24 hr, and then automatically canceled. They may be held longer on request. Turn-around Time: 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). MUST be labeled with Blood Bank collection labels. Do not draw blood above an I.V. line. Sample must not be hemolyzed.	24 hr/7d	Transfusion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 (R) 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	Blood - Red top tube; CSF - sterile tube	6 mL of blood or 1 mL of CSF. Referrals: 1 mL of serum. Storage of CSF/serum: refrigerate (< 1week), freeze at -20C (> 1 week). Ship on ice.	Daily Turnaround time 24 hr	Microbiology
Crystals, For Gout or Pseudogout		See: Tissue Examination, Crystals See: Synovial Fluid, Crystals		Histopathology Cytology
CSF (Cerebrospinal Fluid), For Culture	Sterile CSF tube	See: Cell count and differential, CSF See: Culture: CSF	Daily	Microbiology/ Hematology
C-Telopeptide (Beta Crosslaps)	Lavender Top tube	Adult: 1 mL of EDTA plasma. Pediatric: 0.5 mL of EDTA plasma.	Specific Days Only (R)	Chemistry
Culture: Arterial Lines, Catheter Tip	Sterile container	Use: To help distinguish between skin flora and a possible source of bacterium. 5 cm 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 segment in a sterile container.	Daily Turnaround time: Preliminary report 24-48 hrs Final report 48-72 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Acanthamoeba (Corneal Ulcer Scrapings, Fluid, Biopsy, Tissue)	Sterile container	Corneal ulcer scrapings: Store aseptically in 0.5-1.0 mL warm saline. Other specimens (fluid, biopsy, tissue, contact lens/cases): Place in sterile container. Transport samples to Microbiology ASAP.	Daily - Contact laboratory prior to collection. Test includes wet mount preparation and culture Turnaround time 10 days	Microbiology
Culture: Aerobic - Biopsy, Tissue, Sterile Body Site	Sterile container without preservative NOTE: Tissue samples, place a 5 mm piece of tissue, purulent material into the agar of anaerobic transport media	Specimens must be transported to the laboratory immediately. DO NOT REFRIGERATE. Collect samples from a prepared site using sterile technique. Contamination with normal flora from skin, rectum, vagina, or other body surfaces must be avoided. Surgical tissue, biopsy, sterile body site sample, or other sample (aspirate of abscess, corneal ulcer/scraping, pacer tip, epidural tip, etc.). See Culture: Anaerobic if anaerobic culture is requested.	Daily Turnaround time: Preliminary report 24-48 hrs Final report 4-5 days	Microbiology
Culture: Aerobic - Body Fluid (Pleural, Peritoneal, Pericardial, Synovial, Vitreous/Eye Fluid, Aspirated Body Fluid, etc.)	Sterile container	0.5 - 10 mL fluid from a STERILE aspiration site. Specimen must be transported to the Microbiology laboratory within 30 minutes of collection. Transport eye fluid STAT. DO NOT REFRIGERATE. Between 2300 and 0730 hrs, a portion of the specimen should be inoculated into blood culture bottles and taken to the CORE laboratory. The remainder of the specimen should be stored in a sterile container. AVOID contamination with normal flora from skin, rectum, vaginal tract or other body surface. Requisition must include specific site of aspiration, current antibiotic therapy, and clinical diagnosis. See Culture: Anaerobic if anaerobic culture is requested. See Culture: CSF.	Daily Turnaround time: Preliminary report 24-48 hrs Final Report 4-5 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Anaerobic (Fluid, Tissue, Aspirate)	Anaerobic transport media NOTE: Tissue samples; place a 5 mm piece of tissue, purulent material into the agar of anaerobic transport media.	Specimens will not be cultured ANAEROBICALLY UNLESS SPECIFICALLY REQUESTED AND SUBMITTED IN ANAEROBIC TRANSPORT MEDIA. Specimens from sites which have anaerobic bacteria as normal flora will routinely be rejected. i.e. throat, feces, colostomy stoma, rectal swabs, bronchial washes, cervical vaginal mucosal swabs, sputa, skin and superficial wounds, voided or catheterized urine. 0.5 mL in anaerobic transport media. DO NOT REFRIGERATE SAMPLES. Some anaerobes will be killed by contact with molecular oxygen for only a few seconds. Overlying and adjacent areas must be carefully prepared to eliminate isolation of surface (inconsequential) anaerobes. Ideally, pus obtained by needle aspiration through intact surface, which has been cleaned with antiseptic, is put directly into anaerobic media or sent directly to the laboratory. Sampling of open lesions is enhanced by deep aspiration using a sterile plastic catheter. Curettings of base of an open lesion are optimal. If irrigation is necessary, non-bacteriostatic sterile normal saline may be used. Specimens are to be collected from a prepared site using sterile technique. Contamination with normal flora from respiratory, skin, rectum, vaginal tract, or other body surfaces must be avoided. Requisition must state specific site of specimen, current antibiotic therapy, clinical diagnosis, and time of collection. Specimen should be transported immediately to the lab.	Daily Turnaround time: Preliminary report 48 hrs Final report 5-7 days	Microbiology
Culture: Beta-Hemolytic Streptococci Group B (BHS Screen)	Transport Media	Place swabs of vagina, rectum, vaginal/rectum in transport media. Send directly to the microbiology laboratory. Please indicate penicillin allergy status.	Daily Turnaround time 48 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Blood	Blood aerobic bottle/blood anaerobic bottle/blood peds bottle	See: Appendix IX	Daily Blood cultures should be drawn prior to the initiation of antimicrobial therapy. Test includes isolation of both anaerobic and aerobic bacteria and susceptibility testing. Turnaround time: Preliminary report 24 hr Final report 5 days	Microbiology
Culture: Bone Marrow	Green top container	Test includes Gram stain and aerobic culture. Include separate requisition for Fungus or Anaerobes. Include Public Health Laboratories' requisition if TB is requested. 1 mL (minimum) Bone Marrow in a Green top (heparinized) vacutainer. Mix well to ensure that specimen does not clot. Transport to Microbiology Laboratory immediately. DO NOT REFRIGERATE.	Daily Turnaround time: Preliminary report 24-48 hrs Final report 4-5 days	Microbiology
Culture: Bronchoscopy Samples	Submit sample in a sterile container. Bronchial brush in sterile screw cap tube with 1 mL sterile saline.	Test includes: 1. Gram stain and routine aerobic culture for bronchial washings. 2. Gram stain and quantitative aerobic culture for BALs and protected brushes Submit separate requisition if Quantitative Anaerobic culture is requested. Other Tests: (include separate requisition for each request) Legionella (Public Health Laboratories req.) Mycoplasma detection and viral isolation/detection (Public Health Laboratories) Acid-Fast stain/ TB culture (Public Health Laboratories) PCP DFA Nocardia culture Nocardia MAF stain DO NOT REFRIGERATE. Transport to laboratory immediately. Include Clinical Diagnosis and Patient Risk Factors (i.e. Immune compromised, steroids, ICU, etc.).	Daily Turnaround time: Preliminary report 24-48 hrs Final report 48-72 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Conjunctival, Routine	Swab in transport media	Cleanse skin around eye with mild antiseptic. Gently remove makeup and ointment with sterile cotton and saline. Collect the specimen by swabbing; pass moistened swab 2 times over lower conjunctiva. Avoid eyelid border and lashes.	Daily Turnaround time: Preliminary report 24-48 hrs Final report 48-72 hrs	Microbiology
Culture: CSF (Cerebrospinal Fluid)	Sterile container	1 mL of spinal fluid, CSF from shunt, or ventriculostomy fluid. Send to Microbiology immediately. DO NOT REFRIGERATE. Tubes should be numbered in sequence #1, #2, #3, #4; tube #1 being the first portion of sample collected.	Daily Turnaround time: Preliminary report 24 hr Final report 96 hrs	Microbiology
Culture: Ear, Routine	Swab in transport media	Cleanse collection site to reduce the background contamination levels and transport to laboratory immediately. Avoid contamination with topical agents. NOTE: See CULTURE: STERILE BODY FLUIDS for ear fluid aspirated through ear drum (tympanocytosis fluid).	Daily Turnaround time: Preliminary report 24-48 hrs Final report 48-72 hrs	Microbiology
Culture: Genital, Cervical	Cervical Swab in transport media	Neisseria gonorrhea culture NAT test is available from Public Health Laboratories (use Public Health Laboratories requisition). Culture may be mandatory for medical-legal purposes. Concurrent testing of Neisseria gonorrhoeae and Chlamydia is recommended. DO NOT REFRIGERATE. Sample must be transported to the laboratory within 2 hrs of collection. NOTE: For NAT testing, use GEN-PROBE collection kits as used for Chlamydia NAT.	Daily Turnaround time: Preliminary report 48 hrs Final report 72 hrs (if positive forwarded to Public Health Laboratories)	Microbiology
Culture: Genital, Vaginal	Vaginal swab	Gram Stain and Wet Mount Examination (Vaginosis Screen). If non-vaginosis testing is appropriate, consult with the laboratory. Place vaginal swab in transport media.	Daily Turnaround time 24 hr	Microbiology
Culture: Legionella	Sterile container	Complete Public Health Laboratories' requisition. Includes culture for all Legionella species including direct fluorescent testing. NOTE: Urine antigen detection should be ordered on all suspected cases of Legionellosis. Samples include: lung tissue, pleural fluid, transtracheal aspiration, bronchial washings, bronchial alveolar lavage, bronchial brush, sputum. (NOTE: Saline is inhibitory to the growth of Legionella)	Daily Turnaround time: Legionella Antigen up to 5 days Legionella Culture/DFA 2 weeks	Microbiology
Culture: MRSA or Staphylococcus aureus	Swab in transport media	Submit sample in transport media. Indicate if MRSA or S. aureus culture. Send directly to microbiology laboratory. See also MRSA Screen (PCR) for nasal swabs.	Daily Turnaround time 48-72 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Mycobacteria	Sputum - sterile sputum container; Blood and bone marrow - Green top tube; other - sterile container	Complete Public Health Laboratories' requisition. Test includes concentration of specimen for culture and a stained smear for acid-fast bacilli (AFB). Place at least 2 mL of sample in an appropriate container. Other samples include: bronchial aspirate, biopsy, body fluids, CSF, stool, urine. Refrigerate specimen if delay in delivery (exception: Blood/Bone Marrow - hold at room temperature). NOTE: The specimen can be divided for fungus culture and KOH preparation, mycobacteria culture and smear, and routine bacterial culture and Gram stain only if the specimen is accompanied by a properly completed requisition or each of these procedures and if the specimen is of adequate volume for all tests requested.	Daily Turnaround time 8 weeks, earlier if positive	Microbiology
Culture: Nasal Sinus	Sterile container	Test includes gram stain and aerobic culture. Samples include: nasopharynx aspirate, antral washings, maxillary/nasal sinus aspirate. NOTE: Submit a separate requisition If fungal culture is requested. See also Culture, Fungal.	Daily Turnaround time: Preliminary report 24-48 hrs Final report 48-72 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Neisseria gonorrhoeae (Cervical, Urethral, Anorectal, Pharyngeal)	Cervical swab in transport media GEN-PROBE Collection kit	NAT test is available from Public Health Laboratories (use Public Health Laboratories requisition). Culture may be mandatory for medical-legal purposes. Concurrent testing for Neisseria gonorrhoeae and Chlamydia is recommended. Place cervical, rectal, urethral, throat, or bartholin gland swab in transport media. Do not collect urethral specimens until at least one hour after urinating. Collection directly from male urethra discharge is desirable. Collect anorectal specimens from the crypts just inside the anal ring; anoscopy useful. DO NOT REFRIGERATE. Sample must be transported to the laboratory within 2 hrs of collection. N. gonorrhoeae NAT is available through Provincial Health Laboratory. For NAT, use GEN-PROBE collection kits as used for Chlamydia NAT.	Daily Turnaround time: Preliminary report 48 hrs Final report 72 hrs (if positive forwarded to Public Health Laboratories)	Microbiology
Culture: Nocardia	Sterile container	Test includes Gram stain and culture Samples include: bronchoalveolar lavage (BAL), lung tissue, subcutaneous biopsy, or sterile body fluids. Send immediately to microbiology laboratory.	Daily Turnaround time: Preliminary report 7 days Final report 21 days	Microbiology
Culture: Peritoneal Dialysis Fluid	Blood culture bottles and/or Sterile container	Requisition must state specific site of specimen and current antibiotic therapy. Transfer 50 mL peritoneal dialysis fluid using sterile technique. Contamination with normal flora from skin or other body surfaces must be avoided. Specimen must be transported to the lab immediately. Between 2300 and 0730 hrs, a portion of the specimen should be inoculated into blood culture bottles and taken to the CORE laboratory. The remainder of the specimen should be stored in a sterile container.	Daily Turnaround time: Preliminary report 24-48 hrs Final report 4-5 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Skin/Subcutaneous	Sterile tube or transport media	Test includes gram stain and aerobic culture. Prepare collection site for sterile collection. Avoid contamination with normal flora from skin, rectum, vaginal tract, or other body surfaces. Place pus or other material properly obtained from a wound site in a sterile tube or in transport media. (Specimens not received in sterile containers will be rejected). Requisition MUST state specific site of specimen, current antibiotic therapy, clinical diagnosis, and time of collection. Transport specimen must to the laboratory as soon as possible (MUST be within 6 hrs of collection).	Daily Turnaround time: Preliminary report 24-48 hrs Final report 48-96 hrs	Microbiology
Culture: Sputum, Routine	Sterile sputum container or sputum trap	Test includes Gram stain and aerobic culture. (For CF patients an Aspergillus culture is also performed). Testing may be done on sputum, NTT/ETT sample, Bronchial washing. (For CF patients: sputum or throat swab). Sputum - first morning specimen (2-10 mL). The patient should be instructed to remove dentures, rinse mouth, and gargle with water. The patient should then be instructed to cough deeply and expectorate sputum into a sterile sputum container or sputum trap. Specimen must be transported to the laboratory within 4 hrs of collection. Requisition MUST state current antibiotic therapy, clinical diagnosis, and time of collection. NOTE: If the specimen is microscopically consistent with saliva it will be rejected.	Daily Turnaround time: Preliminary report >24 hr Gram stain report Final report 48-72 hrs	Microbiology
Culture: Staphylococcus aureus, Nasal Swab	Swab in transport media	See: Culture: MRSA or Staphylococcus aureus	Daily Turnaround time 48 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Stool	Enteric transport media	Specimen will be screened for Salmonella, Shigella, Yersinia enterocolitica, Campylobacter, and E. coli 0157:H7. Diagnosis of amebic dysentery requires an order for parasite examination. C. difficile requires stool NOT in transport media and separate requisition/request. See: CLOSTRIDIUM DIFFICILE if patients develops diarrhea after 3 days hospitalization. 5 mL fresh random stool or rectal swab. Stool collected in a sterile bedpan must NOT be contaminated with urine or residual soap or disinfectants. Specimens will be rejected if insufficient volume contaminated with urine or water. Only one specimen will be tested per day.	Daily Turnaround time 72-96 hrs	Microbiology
Culture: Throat	Swab in transport media	Culture for Beta-Hemolytic Streptococci Group A ONLY. Swab both tonsillar pillars and the oropharynx. (Specimens will be rejected if not in appropriate container). Transport to laboratory within 6 hrs of collection. See: Virus Isolation	Daily Turnaround time: Preliminary report 24 hr Final report 48 hrs	Microbiology
Culture: Urine	Sterile urine container	Includes routine culture for aerobic organisms. 10 mL urine (mid-stream, indwelling catheter, in/out catheter, bladder). (Samples will be rejected if not in appropriate container). Include current antibiotic therapy on requisition. Thoroughly instruct the patient for proper collection of "clean catch" specimen. Do not collect urine from the drainage bag when an indwelling catheter is in place, because growth of bacteria can occur in the bag itself. Rather, clean catheter with an alcohol sponge, puncture with sterile needle, and collect in sterile syringe. Catheter tips are contaminated by the urethra as they are withdrawn; do not culture them. REFRIGERATE sample unless transported to the laboratory immediately. NOTES: Early morning specimens yield the highest bacterial counts from overnight incubation in the bladder, and may be the best specimens. Forced fluids dilute the urine and may cause reduced colony counts.	Daily Turnaround time: Preliminary report 24 hr Final report 24-72 hrs	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Culture: Urogenital Mycoplasma/Ureaplasma Isolation	Mycoplasma kit	Complete Public Health Laboratories' requisition. Includes culture of urogenital Mycoplasma and Ureaplasma urealyticum. Routine culture of genital Mycoplasma and Ureaplasma is not performed without relevant clinical information. Submit in Mycoplasma kit for urine, fluid, genital samples, tissue, or respiratory secretions. Send samples to Microbiology laboratory without delay.	Daily Turnaround time 2 weeks	Microbiology
Culture: Vancomycin-Resistant Enterococci (VRE)	Sterile container or rectal swab in transport media	Send to Microbiology laboratory without delay. Previously positive patients will only be retested once per month.	Daily Turnaround time 24-72 hrs	Microbiology
Culture: Yeast	Blood - aerobic blood culture bottle; Swabs - transport media; Other - sterile container	Other samples include: fluids, aspirates, esophageal brush. Send to Microbiology laboratory without delay.	Daily Turnaround time 1-5 days	Microbiology
Cyclic Citrullinated Peptide Antibodies (CCP)	Red top tube	Referred out.	Specific Days Only (R)	Chemistry
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.	Daily	Chemistry
Cysticercosis	Red top tube/SAF transport media	See: Parasite Serology/Parasite Exam	Daily (R)	Microbiology
Cystine, Urine	Random urine container	5-20 mL of fresh random urine (preferably 1st morning specimen). Referrals: Store refrigerated and ship on ice or dry ice.	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, Serum	Gold or Red top tube	See: Panel Reactive Antibodies (PRA)	Bimonthly 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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Dehydroepiandrosterone Sulfate (DHEAS), Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and send refrigerated.	Daily	Chemistry
Dermatophyte	Black paper container	See: Fungal culture, Dermatophyte	Daily	Microbiology
Desipramine, Serum	Red top tube (no gel)	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 send refrigerated.	Specific Days Only (R)	Chemistry
Diazepam, Serum	Red top tube (no gel)	7 mL of blood. Referrals: 3 mL of serum. Store and ship refrigerated or frozen.	Specific Days Only (R)	Chemistry
Digoxin, Serum	Red top tube (no gel)	1 mL of blood. Draw sample pre-dose or at least 12 hrs after last dose. State time of last dose on requisition. Referrals: 0.5 mL serum. Store refrigerated. DO NOT FREEZE.	Daily	Chemistry
Dilute Russell Viper Venom Time (dRVVT)		See: Lupus Anticoagulant (LA) Test		Hemostasis
Diphenhydramine (Gravol, Benadryl)	Red top tube	7 mL of blood in red top tube. Referrals: 3 mL of serum. Store and ship refrigerated or frozen.	Specific Days Only (R)	Chemistry
Donath Landsteiner	3-Pink top tubes and 1-Red top tube	Peripheral blood must be collected BY LABORATORY STAFF into prewarmed tubes and kept at 37C throughout transportation and testing.	By Prior Arrangement Only. Appointment required.	Transfusion Medicine (Blood Bank)
Doxepin	Red top tube	3 mL of blood. 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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Drug Screen, Urine	Plastic container	10 mL urine. Referrals: Store and send refrigerated. Urine immunoassay drug screen includes Methadone, Benzodiazepines, Acetaminophen, Amphetamines, Cannabinoids, Cocaine, Opiates, and Tricyclics. 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	See: Culture: Ear	Daily	Microbiology
Echinococcosis	Red top tube sterile container	See: Parasite serology/Parasite Exam	Daily (R)	Microbiology
Electrolytes	Light green top tube or Gold top tube	See: Sodium and Potassium and Chloride	Daily or STAT	Chemistry
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 KGH switchboard. Turnaround time 3 days to 2 weeks depending on complexity.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Enterovirus	Sterile container, viral transport media EDTA tube	See: Virus Detection PCR (NOTE: PCR may be method of choice) See: Virus Isolation	Daily (R)	Microbiology
Eosinophil Smear	Slide or urine collection container	Nasal SMEAR or 10 mL freshly voided urine.	Weekdays Turnaround time 1 day (24 hr)	Hematology
Epstein-Barr Virus	Red top tube	See: Viral Serology	Daily (R)	Microbiology
Erythropoietin (EPO), Serum	Gold top tube	3 mL of blood. 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 (R)	Chemistry
Estradiol, Plasma or Serum	Gold top tube or Light Green	2 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Separate from gel within 24 hr. Store and ship refrigerated.	Daily	Chemistry
Ethanol, Plasma or Serum	Gold or Light Green top tube	Blood. Tube must be filled and tightly stoppered. Use soap and water to clean venipuncture site. Referrals: Send 1 full Gold or 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 (R)	Chemistry
Ethylene Glycol, Plasma or Serum	Gold or Light Green top tube	See: Volatiles, Serum or Plasma	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	AVAILABILITY (R) = Referred Out	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	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 (R)	Chemistry
Eye Culture	Swab in transport media	See: Culture, Conjunctival	Daily	Microbiology
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
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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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 BRCA2 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 (R)	Chemistry
Fecal Fat, Quantitative 72 hr	Fecal fat collection container	Test performed by GI Laboratory at HDH. Consult GI Lab for collection procedure (HDH 613-544-3400)	Specific Days Only	GI Lab
Ferritin, Plasma or Serum	Gold or Light Green top tube	1 mL of blood in a Gold or Light Green top tube. Referrals: 0.5 mL of serum or heparinized 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	Histopathology
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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Fine Needle Aspiration Biopsy (FNA) for Cytology (PREFERRED METHOD) 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.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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** 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. 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	AVAILABILITY (R) = Referred Out	LABORATORY
Fine Needle Aspiration Direct Smear(s) Cytology	Microscope slides, plastic slide mailers, spray fixative	**SUPERFICIAL LESIONS, PALPABLE MASSES** **This is not the preferred method of collection for Fine Needle Aspirations. See Fine Needle Aspiration Biopsy for Cytology collection method.)** Aspiration techniques vary according to personal preferences, characteristics and site of the lesion usually using 21-25 gauge needles. 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 2-3 drops onto clean glass microscope slide(s). Touch 2 slides together gently pull the slides apart spreading the specimen. 5. Fix immediately by spraying with Cytology fixative from a distances of 10-12 inches. Allow slides to dry before encasing in plastic slide holders. 6. Label slides with patient's first and last name and at lease 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. 1. The procedure should be performed by using sewing machine-like excursions, while applying minimal negative pressure (no more than 0.5 cc of suction is needed) 2. Remove the syringe from the needle and add a little air to the syringe. Reconnect the needle to the syringe and expel 2-3 drips onto clean glass microscope slide(s). Touch 2 slides together gently pull the slides apart spreading the specimen. 3. Fix immediately by spraying with Cytology fixative from a distance of 10-12 inches. Allow slides to dry before encasing in plastic slide holders.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Fine Needle Aspiration Direct Smear(s) Cytology ***(continued from previous page)***	Microscope slides, plastic slide mailers, spray fixative	4. Label slides with patients' 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 slides 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/specimens Special Instructions: Specimens from different sites should never be combined. Sterile technique must be used on all patients. Gloves are to be worn for personal safety. Dispose of all needles/syringes in sharps containers. Allowing smears to air dry before fixation will result as unsatisfactory for cytologic evaluation. If the test is not for malignancy, indicate the reason on the requisition. Transport Time: ASAP Method: Hand delivered or 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	AVAILABILITY (R) = Referred Out	LABORATORY
Fine Needle Aspiration Biopsy (FNA) for Cytodiagnosis of Malignancy - Method A	50 mL tube containing cytolyt preservative (container available from the Cytology Lab)	Aspiration techniques vary according to personal preference, characteristics and site of the lesion. Syringe size range 10 or 20 mL are common with 22 gauge or smaller needle with clear hub. 1. Expel the contents of the needle barrel into the cytology preservative. 2. Aspirate approximately 2cc of preservative into the syringe, through the needle, to rinse the needle and syringe of any remaining specimen. Express into the specimen container. Repeat this procedure two times. 3. Tightly re-cap the specimen container. 4. Send labelled specimen container in a biohazard bag with a completed requisition in the outside pouch immediately to the cytology lab.	Weekdays 0800-1601	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Fine Needle Aspiration Biopsy (FNA) for Cytodiagnosis of Malignancy - Method B	Clear Microscope Slide with frosted end (available in medical stores) with plastic slide holder (available from Cytology)	If desired, slides may be prepared before sending to laboratory by following the instructions below: 1. Obtain slides, plastic slide holders, and cytology fixative (spray of 95% ethanol) from the cytology laboratory. 2. Using a lead pencil, label frosted end of glass slides with the patient's first and last name plus one other identifier (i.e. HN#, CR#, DOB). 3. After performing the aspirate expel 2 or 3 drops of specimen onto a clean glass slide. Place a second slide over the specimen and allow it to spread evenly between the two slides. Gently pull the slides apart with an easy sliding motion. 4. Fix immediately by spraying with Cytology fixative the distance between the slide and spray fixative should be 10" – 12". 5. Repeat steps 3 to 4 until the desired number of slides has been obtained. 6. After the spray fixative has dried place the slide in the plastic slide holder. Send the completed cytology requisition in the appropriate portions of the cytology envelope or biohazard bag to the cytology laboratory. NOTES: 1. Allowing a smear to dry before fixation will render it unsatisfactory for cytologic evaluation. 2. Breast cyst aspirates should be labeled as to left or right breast aspiration. 3. Any large tissue fragments obtained during the procedure will be automatically separated and forwarded to the Histology laboratory for histologic processing.	Weekdays 0800-1602	Cytology
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 Cytometry	Blood - Lavender top tube; Bone Marrow/aspirate in Green stoppered media tube provided by the Lab; Lymph node/tissue in media tube provided by the Lab	See: Markers, Cell Surface	Monday to Thursday 0800-1600 Turnaround time: Preliminary results 2 days Hematopathologist Interpretation 5 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Fluoxetine, Serum	Red top tube (no gel)	2 mL blood. Draw trough specimen before next dose is administered. Referrals: 1 mL serum. Store and send refrigerated.	Specific Days Only (R)	Chemistry
Fluvoxamine, Serum	Red top tube (no gel)	2 mL blood. Draw trough specimen before next dose is administered. Referrals: 1 mL serum. Store and send refrigerated.	Specific Days Only (R)	Chemistry
Folic Acid, RBC	Lavender top tube	3 mL of blood. Referrals: 3 mL of EDTA whole blood. Perform a hematocrit and record result on the requisition. Store and send refrigerated.	Daily	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. 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), Plasma or Serum	Gold and Light Green	1 mL of blood. Referrals: 1 mL of serum. Plasma from heparinized blood is also acceptable. 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
Free Fatty Acids	Red top tube	Collect after a 12 h fast. 3 mL of blood. Referrals: 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 (R)	Chemistry
Free Light Chains, Serum	Gold top tube	5 mL of blood. Referrals: 3 mL of serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Free PSA	Gold top tube	See: Prostate Specific Antigen, Free	Daily	Chemistry
Free Triiodothyronin (Free T3)	Red top tube	Full tube	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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)	Histopathology
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.	Histopathology
FT4	Light Green top tube	See: Thyroxine, Free	Daily	Chemistry
Fucosidase (Alpha-Fucosidase), WBC - Fucosidosis	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Fungal Culture (Dermatophyte), Skin, Hair, Nails	Black paper container	Requisition MUST state site of specimen. Pluck fluorescent hairs or non-fluorescent hairs which are broken off and appear diseased with sterile forceps. If diseased hair stubs are not apparent, scrape the edges of a scalp lesion with a sterile scalpel. Cleanse skin lesions first with 70% alcohol to reduce bacteria and saprophytic fungi. Scrape from the outer edges of skin lesions. In infections of the nails, scrape out the friable material beneath the edge of the nails, or scrape abnormal appearing nail and submit for examination and culture. 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. NOTES: Do not put specimens in cotton plugged tubes because the specimen may become trapped among the cotton fibers and lost. Do not put specimen into closed container, such as rubber stoppered tubes as this keeps the specimen moist and allows overgrowth of bacteria and saprophytic fungi. Do not use plastic containers because the scrapings adhere to the container. SPECIFY fungal species suspected. DO NOT send nail clippings; laboratory unable to perform microscopic exam on nail clippings. Send nail scrapings or entire nail. STORE at RT until transported to lab.	Daily Turnaround time: Preliminary report 7 days Final report 21 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Fungal Culture (other than Dermatophyte)	Sterile container	Using sterile technique place sample (sputum, CSF, BAL, Bronchial washing, Tissue, sterile body fluid, aspirate, nasal sinus, corneal scrapings, urine, gastric washings etc.) in a sterile tube or sterile container. (Swabs are the least appropriate specimen). If only yeast culture is required, refer to yeast culture – do not order fungal culture. The specimen can be divided in the laboratory for fungal culture and fluorescent KOH preparation, mycobacteria culture and smear, and routine aerobic and anaerobic bacterial cultures, and Gram stain, if the specimen is accompanied by a properly completed requisition for each of these procedures and if the specimen is of adequate volume for all tests requested. NOTES Requisition MUST state SITE of specimen and fungal SPECIES suspected. Transport immediately to Microbiology Laboratory. DO NOT REFRIGERATE.	Daily Turnaround time: Preliminary report 7 days Final report 21-28 days	Microbiology
Fungal Culture, Blood	Blood aerobic bottle	Includes recovery of yeast and FILAMENTOUS FUNGUS (Molds). If "yeast only" is requested, see Culture: Yeast 10 mL blood inoculated directly into an aerobic blood culture bottle. Draw blood as for bacterial culture. Same bottles may be used for fungal culture as long as separate requisitions are sent. Transport blood cultures to Microbiology Laboratory (After 2330 hrs Mon-Sat, and after 2000 hrs Sunday send to Core Lab). Requisition Notes: Specify the fungal species suspected State clinical diagnosis	Daily Turnaround time: Preliminary report 1 week Final report 4 weeks	Microbiology
Fungal Culture, Bone Marrow	Green top tube (heparin)	Using sterile technique place bone marrow (1.5 mL or as much as possible). Requisition MUST state site of specimen and fungal species suspected. Transport to lab immediately. DO NOT REFRIGERATE.	Daily Turnaround time: Preliminary report 7 days Final report 28 days	Microbiology
Fungal Serology (Histoplasmosis, Blastomycosis, Coccidioidomycosis, Paracoccidiomycosis, and Aspergillus Precipitins)	Red top tube	10 mL of blood. Complete Public Health Laboratories requisition. Farmer's Lung and Thermophilic actinomycetes testing are no longer available through Public Health Laboratories.	Daily Turnaround time 1 week, *6 weeks *Paracoccidiomycosis	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
G6PD	Lavender top tube	See: Glucose-6-Phosphate Dehydrogenase	Daily Turnaround time 1-5 days	Hematology
Gabapentin	Red top tube	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 (R)	Chemistry
Galactosidase (Beta-Glucocerebrosidase), WBC Gaucher Disease	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Galactosidase (GM1-Ganglioside-Beta-Galactosidase), WBC	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1301	Chemistry
Ganglioside Antibody (GM1)	Red top tube	5 mL of blood. Referrals: Separate into two 1 mL aliquots. Store and ship frozen. Do not use gel-separator tubes.	Specific Days Only (R)	Chemistry
Gamma Glutamyl Transferase (GGT), Plasma	Light Green top tube	0.5 mL of blood. Referrals: 0.5 mL of serum or heparinized plasma. Store and ship refrigerated.	Daily	Chemistry
Gastric Parietal Cell Antibodies, Serum	Gold or Red top tube	5 mL of blood. Sample must not be hemolysed. Freeze serum if testing cannot be performed within 24 hr. Referrals: 2 mL of serum	Weekly Turnaround time 10 days	Immunology
Gastrin, Serum	Red top tube	2 mL of blood after an overnight fast. Referrals: 2 mL of serum. Collect after a 14 h fast or prior to next feeding in infants. Store and send frozen. Freeze serum within 4 h of separation.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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
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 (R)	Chemistry
Glucose Meter Check	Light Green top tube or Gray tube	Full tube	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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	Grey 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	AVAILABILITY (R) = Referred Out	LABORATORY
Glucose, Plasma or Serum	Light Green top tube, Blood in a Red or Grey top tube	1 mL of blood. Referrals: 0.5 mL of serum or heparinized plasma. Store and ship refrigerated. Sample will be identified as RANDOM unless fasting state is indicated. Diagnosis of Diabetes: Fasting glucose >= 7.0 mml/L (fasting = no caloric intake for at least 8 hrs Or Random glucose .= 11.1 mmol/L plus symptoms of diabetes (classic symptoms of diabetes = polyuria, polydipsia and unexplained weight loss) Or 2 hr glucose during a 75 g OGRR >= 11.1 mmol/L NOTE: A confirmatory laboratory glucose test (one of the above) must be done in all cases on another day in the absence of unequivocal hyperglycemia accompanied by acute metabolic decompensation. However, in individuals in whom type 1 diabetes is a possibility (younger individuals and lean, older individuals), to avoid rapid deterioration, confirmatory testing should not delay initiation of treatment. 2008 Canadian Diabetes Guidelines	Daily or STAT	Chemistry
Glucose-6-Phosphate Dehydrogenase (G6PD) Screen, Blood	Lavender top tube	2.5 mL of blood. Referrals: 2.5 mL of EDTA whole blood. Store and ship refrigerated.	Daily Turnaround time 1-5 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. 5 mL of blood. Store and ship refrigerated. DO NOT FREEZE. DO NOT CENTRIFUGE.	Specific Days Only (R) 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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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)
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.	Specific Days Only (R)	Chemistry
Haloperidol, Plasma	Green top tube (no gel)	1 mL of blood. Separate plasma from cells within 2 hrs. Referrals: 1 mL of heparinized plasma. Store and ship frozen.	Specific Days Only (R)	Chemistry
Hantavirus	Red top tube	See: Viral Serology	Daily (R)	Microbiology
Haptoglobin, Serum	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 serum and send refrigerated.	Weekdays	Chemistry
HCG, Serum	Gold top tube	See: Human Chorionic Gonadotropin	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 Turnaround time 24 hr	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
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	This test should by used for individuals symptomatic for a Helicobacter pylori infection.	Daily Turnaround time 24 hr	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Helminth Identification	Saline or 70% alcohol in screw cap container	Submit worm (or portion) in saline or 70% alcohol in screw cap container. Specimens in formalin are unsuitable. Do not submit specimens from toilet bowls, soil, or other environmental sources. Only specimens from stool and other clinical sources can be identified.	Daily Turnaround time 72 hrs	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. See Hemoglobin S by Electrophoresis for infants less than 6 months of age. Screening test not recommended until 6 months of age.	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, Fetal (Kleihauer-Betke)	Blood - Lavender top tube; Amniotic fluid - plastic tube with cap.	5 mL blood OR 5 mL amniotic fluid.	24h/7d	Transfusion Medicine (Blood Bank)
Hemoglobin, Plasma	Dark green top tube No Heparin	Referrals: 1 mL of heparinized plasma. Store and ship frozen.	Specific Days Only (R)	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 (R) 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 (R) Turnaround time – 1 week	Hematology
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.	Specific Days Only Turnaround time 1-2 weeks	Hematology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Heparin Induced Thrombocytopenia (HIT)	Light Blue, Gold or Red top tube	1 Light Blue top tube (0.105M, 3.2% equivalent Sodium citrate) 1 Gold or Red top	Weekdays (R)	Hemostasis
Hepatitis B DNA	Red top tube	See: Hepatitis C RNA/Hepatitis B DNA	0800-1600 hrs	Microbiology
Hepatitis C RNA/Hepatitis B DNA (HCV RNA) Qualitative/Quantitative/Genotyping, HBV DNA	Red top tube	Complete Public Health Laboratories' requisition and Public Health Laboratories Information form. Collect 6 mL of blood in a red top tube. Specify tests required for HCV RNA provide previous HCV antibody results, treatment history, liver function tests, risk factors, symptoms. For HBV DNA/HCV RNA the collection time must be indicated, label requisitions STAT, and transport STAT to microbiology laboratory.	0800-1600 hrs Turnaround time 12 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Hepatitis Testing (A, B, C, D, or E)	Red top tube	6 mL blood. Complete Public Health Laboratories' requisition. Specify tests requested on requisition. Indicate if testing for diagnosis or immunity.	Daily (R) Turnaround time up to 14 days	Microbiology
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 Simplex Virus Type 1 & 2 (HSV)	Red top tube/viral transport media/sterile container/EDTA tube	See: Viral Serology See: Viral Isolation See: Virus Detection PCR	Daily (R)	Microbiology
Heterophile Antibodies	Red top tube	See: Infectious Mononucleosis	Daily (R)	Microbiology
Hexosaminidase, Plasma - TSD, Sandhoff, Mucolipidosis II or III	Green top tube (no gel)	See: Lysosomal Enzymes, Plasma	Specific Days Only (R)	Chemistry
Hexosaminidase, Plasma or Serum	Green top tube (no gel)	See: Lysosomal Enzymes	Specific Days Only (R)	Chemistry
Hexosaminidase, WBC - TSD, Sandhoff	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R)	Chemistry
HIAA, Urine (5-HIAA)	Dark bottle containing 20 mL of 50% HCL	See: Hydroxyindole Acetic acid, Urine	Specific Days Only (R)	Chemistry
Histoplasmosis	Red top tube/sterile container	See: Fungal Serology See: Fungal Culture	Daily	Microbiology
HIV - PCR	Yellow ACD or EDTA x1, plus red top tube in virus H kit	Complete Public Health Laboratories' HIV requisition. Label requisition STAT. HIV Kit and requisition available from Microbiology. Collect one Yellow top ACD (acid-citrate-dextrose) tubes OR one +6 mL Lavender top (EDTA) tubes (ACD tube preferred). Also submit HIV Kit with a 6 mL Red top tube. Transport to Microbiology IMMEDIATELY. DO NOT refrigerate, freeze, or separate sample.	Acceptable Monday to Thursday 0800-1600 hrs Notify Lab Prior to Collecting Sample Turnaround time 10 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
HIV - Viral Load	Lavender top tube x2(1 x 10 mL or 2 x 6 mL)	Test is only available on patients known to be positive.Complete Public Health Laboratories' - HIV Viral Load requisition available from Microbiology. Collection time must be indicated. Label requisition STAT. Collect two 6 mL Lavender (EDTA) top tubes (or 1 10 mL EDTA tube). Transport to Microbiology IMMEDIATELY.	0800-1600 hrs Turnaround time up to 2 weeks	Microbiology
HIV/HTLV Serology (HIV 1/2 and HTLV 1/2 Antibody), Serum	Red top tube	Testing may include HIV 1 and 2, HTLV I and II, p24 antigen. Complete Public Health Laboratories HIV Requisition. Screening results available in 3 days. An additional week for supplemental tests and for HTLV 1/2 testing. 6 mL blood aseptically. The patient must not eat for at least 1 hour prior to having blood drawn as lipids will affect the results. Appropriate HIV Serology will be carried out according to the information provided. Reactive screen tests will be further tested with supplemental testing and western blot. Additional testing (p24 antigen) is available.	Daily (R) Turnaround time up to 6 days	Microbiology
HLA Antibody Screening (for Kidney Transplants), Serum	Gold or Red top tube	See: Panel Reactive Antibodies (PRA)	Bimonthly Turnaround time 60 days	Immunology
HLA Typing	Contact Laboratory at Ext 4602	See: Tissue Typing	By Prior Arrangement Only Turnaround time 10 days	Immunology
HLA-B27 Typing, Blood	Lavender top tube	2.5 mL blood in a Lavender EDTA top tube.	Monday - Thursday 0800-1600 Turnaround time daily	Immunology
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: 2 mL of plasma. Plasma must be separated from cells without delay (within 1 hour). Store and ship refrigerated or frozen. *Prior approval required	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Homovanillic Acid (HVA), Urine	Dark bottle containing 20 mL of 50% 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: 50 mL from 24 hr urine collection. Record total 24 hr volume on requisition. Store and ship refrigerated or frozen. CAUTION: Preservative causes skin burns on contact.	Specific Days Only (R)	Chemistry
Human Chorionic Gonadotropin (HCG), Serum or Plasma	Gold top tube	Intact molecule assay 1 mL blood in a Gold top tube. Referrals: 0.5 mL serum. Store and send refrigerated. (Contact Clinical Chemist to arrange for serial dilutions if a choriocarcinoma is suspected - extremely high levels may appear near normal).	Weekday or STAT	Chemistry
Human Chorionic Gonadotropin, Urine	Random urine container	See: Pregnancy Test, Urine	Daily or STAT	Chemistry
Human Herpes Virus Type 6 (HHV6)	Sterile container/EDTA tube	See: Virus Detection PCR	Daily (R)	Microbiology
Human Immunodeficiency Virus (HTLV I/II)	Red top tube	See: HIV/HTLV Serology	Daily (R)	Microbiology
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 50% HCL; 15 mL for children	See: Homovanillic Acid	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Hydroxyindole Acetic Acid (5-HIAA), Urine, 24H	Dark bottle containing 20 mL of 50% HCL	24 hr urine collected in a dark bottle containing 20 mL of 50% 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 (Guaicol, Acetaminophen, Naprosyn and Relafen). Refrigerate during collection period. Referrals: 10 mL from 24 hr urine. Store and ship refrigerated or frozen. Record total 24 hr urine volume on the requisition.	Specific Days Only	Chemistry
Hydroxyproline, Urine	20 mL of 6 mol/L HCL	Test discontinued. C-Telopeptide (plasma) is recommended as substitute.	Specific Days Only (R)	Chemistry
IFE	Gold top tube	See: Protein Electrophoresis (Immunofixation will be done as required)	Specific Days Only	Chemistry
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.	Specific Days Only	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 serum refrigerated. Ship refrigerated if sending from outside city limits. Shipping at room temperature is permitted if delivery time is less than 2 hrs.	Daily	Chemistry
Imipramine, Serum	Red top tube (no gel)	5 mL of blood. Referrals: 3.0 mL of serum or EDTA plasma. Separate serum from cells within 3 hrs of drawing. Transfer to plastic screw-cap vial and refrigerate.	Specific Days Only (R)	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	AVAILABILITY (R) = Referred Out	LABORATORY
Immunophenotyping	Blood - Lavender top tube; Bone Marrow/aspirate in Green stoppered media tube provided by the Lab; Lymph node/tissue in media tube provided by the Lab	See: Markers, Cell surface	Monday to Thursday 0800-1600 Turnaround time: Preliminary results 2 days Hematopathologist interpretation 5 days	Immunology
Infectious Mononucleosis Screening Test (Heterophile Antibodies), Serum	Red top tube	6 mL of blood. Referrals: 3 mL of serum.	Daily Turnaround time 24 hr	Microbiology
Influenza A Virus Direct Detection	Aspirate in a sterile container. Swab in viral transport media	See: Viral Direct Detection - Influenza A/B	Daily or STAT	Microbiology
Influenza A/B	Red top tube/viral transport media/sterile container	See: Viral Direct Detection, Influenza A/B See: Virus Isolation See: Viral Serology	Daily (R)	Microbiology
Insulin Antibodies	Red top tube	Full tube	Specific Days Only (R)	Chemistry
Insulin	Gold 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	Gold top tube	5 -10 mL of blood. Transport to laboratory without delay. Referrals: Centrifuge and separate serum from cells as soon as possible. If possible divide serum into 2 equal aliquots and store in screw-capped plastic vials in freezer. Avoid freeze/thaw cycles. Store and ship frozen. This test is available to Endocrinologists only. All other requests must be cleared by a Clinical Chemist.	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Intrinsic Factor Antibodies, Serum	Gold 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 (R)	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 serum or plasma. Store and send refrigerated.	Daily	Chemistry
Isopropanol Stability Test for Unstable Hemoglobin	2-Lavender top tubes (2.5 each)	See: Hemoglobinopathy investigation, Isopropanol Precipitation test for Unstable Hemoglobin	By Prior Arrangement Only Turnaround time 1 day	Hematology
Isopropanol, Plasma or Serum	Gold or Light Green top tube	See: Volatiles, Serum or Plasma	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
JC Virus	Sterile container/EDTA tube	See: Virus Detection PCR	Daily (R)	Microbiology
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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Lactate Dehydrogenase (LD)	Light green top tube or Red top tube	1 mL of blood. Referrals: 0.5 mL of serum or plasma. Store at room temperature. Do NOT refrigerate or freeze.	Daily	Chemistry
Lactate Dehyrogenase (LD) Isoenzymes. Plasma	Light Green top tube	1 mL of blood. Sample must not be hemolysed. Referrals: 0.5 mL heparinized plasma. Store and send at ROOM temperature. (Test can also be done on Pleural Fluid).	Specific Days Only (R)	Chemistry
Lactate (Lactic Acid), Plasma	Dark Green Lithium Heparin tube Blood Gas Syringe (Lithium Heparin) Blood Gas Capillary (for pediatric samples) (Lithium Heparin)	Avoid clenching of the hands and use of tourniquet if possible. Dark green vacutainer tube must be at least half full. Minimum volume requirement for blood gas syringes is 1.5 mL. Blood gases and Lactate may be done in the same blood gas syringes if blood gases are normally done by the Core Lab. As lactate concentration changes rapidly at room temperatures, place collection tube or syringe on ice and transport to lab within 15 minutes of collection. Referrals: Minimum 0.5 mL of plasma. Collect blood in dark green lithium heparin tube and mix well. Centrifuge promptly in a refrigerated centrifuge. Aliquot plasma and ship frozen along with the original vacutainer tube.	Daily	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
Lactic Acid, Fluid (Synovial, Pleural, Ascitic)	Grey top tube	0.4 mL of synovial fluid. Place on ice and transport to lab immediately. Referrals: 0.4 mL of synovial fluid. Store and ship frozen.	Daily	Chemistry
Lamotrigine	Red top tube	Full tube	Specific Days Only (R)	Chemistry
LATS	Gold top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin	Specific Days Only (R)	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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Lead, Whole Blood	Green top tube	7 mL Whole blood (heparin) Collect heparin whole blood in contaminant-free tube. Send in metal-free polypropylene vial. Analysis includes Zinc Protoporphyrin (ZPP) unless "Lead only" is specified.	Specific Days Only (R)	Chemistry
Legionella	Red top tube/sterile container	See: Culture, Legionella See: Legionella Antibodies See: Legionella Antigen	Daily	Microbiology
Legionella Antibodies, Serum	Red top tube	1 tube of blood. Complete Public Health Laboratories' requisition. Send directly to microbiology laboratory. See also Legionella antigen, Urine (should be ordered on all suspected cases).	Daily (R) Turnaround time up to 14 days	Microbiology
Legionella, Antigen, Urine	Sterile container	Complete Public Health Laboratories' requisition. Send directly to microbiology.	Daily (R) Turnaround time up to 5 days	Microbiology
Leptospirosis	Red top tube	See: Serology	Daily (R)	Microbiology
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 (R)	Chemistry
Lipase	Gold or Light Green top tube	3 mL of blood. Referrals: 1.0 mL of serum or heparinized plasma. Store and ship refrigerated. Patients should be fasting before the specimen is drawn. Avoid collection tubes with stoppers lubricated with glycerol.	Daily (R) or STAT	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
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. 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), Plasma or Serum	Gold or Light Green top tube	2 mL of blood. Referrals: 1 mL of serum or heparinized plasma. Store and ship refrigerated or frozen.	Daily	Chemistry
Lyme Disease	Red top tube	See: Serology	Daily (R)	Microbiology
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.	Histopathology
Lymphocytic Choriomeningitis (LCM)	Red top tube	See: Viral serology	Daily (R)	Microbiology
Lymphocytotoxic Antibodies, Serum	Gold or Red top tube	See: Panel Reactive Antibodies (PRA)	Bimonthly Turnaround time 60 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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.	Histopathology
Lysosomal Enzymes - Gaucher Disease - glucocerebrosidase	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes - Mannosidosis	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes - Fucosidosis	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes - GM1 Gangliosidosis	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes - Krabbe Disease Galactocerebrosidase / B-galactosidose	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes - Metachromatic Leukodystrophy – Aryl Sulfatase A	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC See: Sulfatide, Urine	Specific Days Only (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes - Mucolipidosis II	2-Green top tube (no gel)	See: Lysosomal Enzymes. Plasma	Specific Days Only (R)	Chemistry
Lysosomal Enzymes - Mucolipidosis III	2-Green top tube (no gel)	See: Lysosomal Enzymes, Plasma	Specific Days Only (R)	Chemistry
Lysosomal Enzymes - Plasma - Tay Sach Carrier Testing	Green top tube (no gel)	See: Lysosomal Enzymes. Plasma	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Lysosomal Enzymes - Sandhoff Disease	Green top tube (no gel)	See: Lysosomal Enzymes, Plasma	Specific Days Only (R)	Chemistry
Lysosomal Enzymes- Fabry Disease / galactosidase	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 (R) Monday - Thursday 0600-1300	Chemistry
Lysosomal Enzymes, Plasma - Hexosaminidase, Plasma Carrier – for pregnant females only	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 (R)	Chemistry
Lysosomal Enzymes, WBC	2-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 (R) Monday - Thursday 0600-1300	Chemistry
Magnesium, Plasma	Light Green top tube	1 mL of blood in a Light Green top tube. Avoid hemolysis. Referrals: 0.5 mL of serum or heparinized plasma. Store and ship refrigerated.	Daily or STAT	Chemistry
Magnesium, Urine	24 hr urine container	24 hr urine collected in 20 mL 50% HCl. Referrals: 5 mL aliquot of 24 hr urine specimen collected with HCl as above. Record total 24 hr volume on the requisition. Store and ship refrigerated.	Weekdays	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Malarial Parasites, Blood	2-Lavender top tube (3 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 (R)	Chemistry
Mannosidase (Alpha-Mannosidase), WBC - Mannosidosis	2-Green top tube (no gel)	See: Lysosomal Enzymes, WBC	Specific Days Only (R) 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 (R)	Chemistry
Markers, Cell Surface	Blood - Lavender top tube; Bone Marrow/aspirate in Green stoppered media tube provided by the Lab; Lymph node/tissue in media tube provided by the Lab	Test Includes 1. Absolute numbers on HIV positive patients. 2. Markers for leukemia/lymphoma differentiation Specimen 1. 2.5 mL venous blood. 2. Bone Marrow, add 0.5 mL of bone Marrow Aspirate to media tube provided by Immunology Lab. Please call ext 4602. 3. Lymph nodes or tissue must be transported to Immunology Lab in a media tube provided by Immunology Lab. Ext. 4602. 4. Clinical diagnosis, CBC and differential are required as well as a slide stained and cover slipped. Interpretation included with result.	Monday to Thursday 0800-1600 Turnaround time: Preliminary results 2 days Hematopathologist interpretation 5 days	Immunology
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
Measles	Red top tube/viral transport media	See: Viral Serology See: Virus Isolation	Daily (R)	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Mercury, Blood	Royal Blue EDTA (Whole Blood)	1 Full Royal Blue EDTA tube	Specific Days Only (R)	Chemistry
Mercury, Urine	Random urine collection container or 24 hr urine collection container	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 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. Avoid seafood consumption for three days prior to collection.	Specific Days Only (R)	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 50% 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 50% 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 (R)	Chemistry
Methanol, Plasma or Serum	Gold or Light Green top tube	See: Volatiles, Serum or Plasma	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	AVAILABILITY (R) = Referred Out	LABORATORY
Methemoglobin, Blood	Dark Green top lithium heparin vacutainer tube Pre-heparinized Blood Gas Syringe sealed with cap provided Pre-heparinized Blood Gas Capillary tube sealed on both ends with cap provided	Dark green lithium heparin vacutainer tube must be a least half full. Pre-heparinized blood gas syringe must have at least 1.5 mL of blood. **PLEASE DO NOT SEND NEEDLES.** Pre-heparinized blood gas capillary tube must be full (100 uL). Blood samples must be transported to the laboratory on ice water as soon as possible after collection.	STAT 24 hr/7d	Chemistry
Methicillin-Resistant Staphylococcus Aureus (MRSA)	Nasal swab in transport media	See: MRSA (PCR) See: Culture, MRSA	Daily	Microbiology
Methylmalonic Acid	Lavender top tube	Send plasma. Separate within 6 hours of collection	Specific Days Only (R)	Chemistry
Microalbumin	Random urine container or 24 hr urine container	See: Albumin to Creatinine Ratio (ACR)	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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.	Histopathology
Mogadon	Red top tube (no gel)	See: Nitrazepam	Specific Days Only (R)	Chemistry
Mononucleosis	Red top tube	See: Infectious Mononucleosis Screening Test	Daily	Microbiology
Mouth Candida/Vincent's	Swab in sterile container	See: Candida/Vincent's	Daily	Microbiology
MPS, Urine	Random urine collection container	See: Mucopolysaccharide screen, Urine	Specific Days Only (R)	Chemistry
MRSA Screen (PCR), Nasal Swab	Nasal swab in transport media	Single nasal swab of both nares. Send directly to microbiology laboratory.	Weekdays Turnaround time 24-36 hrs	Microbiology
MTHFR	Lavender top tube	See: MTHFR Thermolabile Variant	Weekdays 0830-1599	Molecular Genetics

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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 Chemist 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 (R)	Chemistry
Mumps	Red top tube/viral transport media	See: Viral Serology See: Virus Isolation	Daily (R)	Microbiology
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.	Histopathology
Mycobacteria	Sputum - sterile sputum container; Blood and bone marrow - Green top tube; other - sterile container	See: Culture, Mycobacteria	Daily	Microbiology
Mycophenolate	Lavender top tube	2 mL blood. Referrals: 1.5 mL EDTA plasma. Store and ship frozen.	Specific Days Only (R)	Chemistry
Mycoplasma pneumoniae (PCR), CSF	Sterile tube	See: Mycoplasma pneumoniae detection See: Mycoplasma pneumoniae (PCR)	Daily (R)	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Mycoplasma pneumoniae (Culture and PCR)	Mycoplasma kit	Complete Public Health Laboratories' Requisition. Specimens include: nasopharyngeal aspirates, tracheal aspirates, respiratory samples, bronchial washing. Send directly to microbiology laboratory.	Daily Turnaround time 1-4 weeks	Microbiology
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)	Light green top tube or Gold top tube	See: Sodium and Potassium and Chloride	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 (R)	Chemistry
Nasal Sinus, Culture	Sterile container	See: Culture, Nasal Sinus	Daily	Microbiology
Nasal Swab for MRSA	Nasal swab in transport media	See: MRSA Screen PCR See: Culture, MRSA	Daily	Microbiology
Neisseria gonorrhoeae, Urogenital	Urogenital Swab in transport media/GEN-PROBE collection kit	See: Neisseria gonorrhoeae NAT See: Culture, Genital, Cervical	Daily	Microbiology
Neisseria gonorrhoeae, Direct Detection (NAT) Testing	GEN-PROBE collection kit	Complete Public Health Laboratories' requisition. Testing may be requested on the same sample as Chlamydia direct detection (NAT). See: Chlamydia Detection	Daily (R) Turnaround time 3 days	Microbiology
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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 (R)	Chemistry
Nickel, Blood	Royal blue EDTA tube (Whole blood or Plasma)	1 Full Royal Blue EDTA tube	Specific Days Only (R)	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 (R)	Chemistry
Nocardia	Sterile Container	See: Culture, Nocardia	Daily	Microbiology
Norovirus (Norwalk or Norwalk-like)	Sterile Container	See: Virus Isolation	Daily (R)	Microbiology
Nortriptyline, Serum	Red top tube (no gel)	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 (R)	Chemistry
N-Telopeptide, Urine (Bone Loss Marker) - Discontinued		Replaced by C-telopeptide (beta crosslaps)		Refer out

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Occult Blood, Stool	Occult blood Envelope/Kit	PATIENT PREPARATION Patients should avoid red meat, raw fruits and vegetables, vitamin C in excess of 250 mg per day, aspirin, chemotherapeutic drugs and alcohol. Fecal samples should not be collected if obvious rectal bleeding, such as from hemorrhoids, is present. Pre-menopausal women should avoid collecting samples during or in the first 3 days after a menstrual period. COLLECTION INSTRUCTIONS Using a ball point pen write patient name on the front of each slide 1. With the wooden applicator stick provided in the kit, collect a small sample from the bowel movement, 2. Apply a thin layer of specimen inside Box A. Collect another sample from a different area of the stool and apply a thin layer in Box B. 3. Close the cover flap. Fill in the date on the front of the slide; place the slide in the envelope provided and allow to air dry overnight. 4. Repeat step 2 through 4 for your next 2 bowel movements. After the last completed slide has air dried overnight, immediately return all slides to the laboratory DO NOT REFRIGERATE Test should not be used to test gastric samples.	Daily Turnaround time 24 hr	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 (R)	Chemistry
Oligoclonal Banding	Gold top tube and CSF tube	See: Protein Electrophoresis, Spinal fluid	Specific Days Only (R)	Chemistry
Oligosaccharides, Urine	Random urine collection container	10 mL fresh random urine. Referrals: 10 mL of fresh random urine. Avoid first morning collection. 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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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
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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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	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 (R) 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
Oxalate, Urine	24 hr urine collection container or random	24 hr urine collected in a bottle containing 20 mL 50% HCl Container available from Chemistry. Referrals: 10 mL urine. Collect 24 h specimen with 20 mL of 6 mol/L (6N) HCL or acidify aliquot within the 24 h of collection. Final pH should be less than 3. Submit urine in a conical urine vial. Random acidified within 24 hours of collection.	Specific Days Only (R)	Chemistry
P50	Pre-heparinized Blood Gas Syringe sealed with cap provided	1.5 mL of blood. **DO NOT SEND NEEDLES.** Expel any air, place sample on ice water and deliver immediately to the Core Lab.	STA 24 hrs/7days	Chemistry
Panel Reactive Antibodies (PRA), Serum	Gold or Red top tube	5 mL blood. 2 mL of serum. Ship frozen. Samples must not be hemolyzed. Specimens must be received in the laboratory no later than the 1st day of every even month.	Bimonthly Turnaround time 60 days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
PAP Test **(PREFERRED METHOD)** Thin Prep, Cervical Smear, Colposcopy, Gynecological, Pap	Thin Prep Vial and collection device(s)	**THIS IS THE PREFERRED METHOD** 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. **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.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
PAP Test **(PREFERRED METHOD)** Thin Prep, Cervical Smear, Colposcopy, Gynecological, Pap ***(continued from previous page)***	Thin Prep Vial and collection device(s)	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	AVAILABILITY (R) = Referred Out	LABORATORY
PAP Test Cervico/vaginal Pool for Cytodiagnosis of Dysplasias and Malignancies of the Cervix; Diagnosis of Genital Infections with viruses including Herpes, Human Papilloma Virus (HPV) (Condyloma), Candida, Trichomonas Vaginalis and Actinomyces	Clear Microscope slide with frosted end and plastic slide holder.	VAGINAL POOL SMEAR This may be prepared separately or combined with the cervical smear. If it is used in combination with a cervical smear it should be taken first to avoid contamination from the cervix. ENDOCERVICAL BRUSHING This should be submitted as a separate specimen or may be submitted as a combined spatula-brush smear. Instructions for the preparation of the combined specimens are available from the Cytology laboratory. NOTES: 1. Patient should not douche 24 hr before the procedure as chemicals in the douche may alter cell morphology or wash away cells which may be of diagnostic value. 2. Smears must be taken at least 4 weeks post cautery or biopsy of cervix and curettage of endometrium. These procedures lead to tissue regeneration which may produce marked cytological atypia. 3. Do not repeat smears for minor cervical atypia (dysplasias) until 3-4 weeks have elapsed; otherwise false negative results may occur. 4. Do not lubricate the speculum. Lubricant can distort and partially obscure the cells in a stained smear. If necessary warm tap water may be used to moisten the speculum. 5. Smears should be obtained before bimanual examination as diagnostic cells may be dislodged, traumatic bleeding may contaminate the smear, or the cervix may be contaminated with lubricant.	Weekdays 0800-1600	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
		CERVICAL SMEARS: 1. Using a lead pencil, write patient's first and last name plus one other identifier (i.e. HN#, CR#, DOB) on frosted end of a glass slide. 2. Place fixative (cytospray) in an easily accessible position. 3. Introduce speculum (without lubricant) and expose cervix. 4. Place small end of cervical spatula as far into the cervical canal as possible. 5. Press firmly and rotate spatula through 360 degrees around the external os in order to sample the entire exposed area. 6. Spread the material evenly on the slide. 7. Fix IMMEDIATELY with spray fixative (the distance between the slide and spray fixative should be (10"-12"). 8. After the spray fixative has dried place the slide in the plastic slide holder. Send the completed cytology requisition in the slide holder in the appropriate portions of the cytology envelope or biohazard bag to the cytology laboratory.		

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
PAP Smear - Conventional Includes evaluation of cellular composition of the surface layers of the vaginal squamous epithelium which reflects the balance of estrogen and progesterone effects upon this target tissue	Clear microscope slide with frosted end and plastic slide holder	**THIS IS NOT THE PREFERRED METHOD (see previous)** Pap smear, Maturation Index smear 1. Print patient's first and last name and one other unique identifier on frosted end of slide. 2. Lubricate the speculum with warm water and insert into the vagina ensuring good visualization of the cervix. 3. SPATULA: Rotate 360 degrees keeping constant contact with the cervix. 4. BRUSH: Insert gently into endocervical canal rotating 49-90 degrees. 5. Apply each sample to one half of the slide lengthwise. Spread the spatula specimen in a single uniform motion. Roll the brush in one motion. 6. Fix immediately with spray fixative and allow to dry before closing plastic slide mailer. 7. Complete requisition or order entry into PCS. **MATURATION INDEX-UPPER LATERAL WALL SMEAR** 1. The lateral vaginal wall smear should be obtained before the cervical smear. 2. Print patient's first and last name and one other unique identifier on frosted end of slide. 3. Lubricate the speculum with warm water and insert into the vagina. 4. Gently scrape the upper third of the lateral vaginal wall with the reverse end of the cervical spatula or with a tongue depressor. 5. Fix immediately with spray fixative and allow to dry before closing plastic slide mailer. 6. Complete requisition or order entry in PCS noting specimen is for maturation index (MI). Labeling ID: Label 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 slides/requisitions Special Instructions: The patient should be tested 2 weeks after last menstrual period and not when is menstruating. The patient should not use vaginal medication, vaginal contraceptives or douches 48 hours before the exam. Lubricant jellies should not be used to lubricate the speculum. Use warm water is necessary for lubrication.	Weekdays 0730-1530	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
PAP Smear - Conventional ***(Continued from previous page)***	Clear microscope slide with frosted end and plastic slide holder	Remove excess cervical mucous before taking the sample. This should gently be removed with gauze pad or cotton tip applicator. Endocervical brushes should not be used on pregnant patients. Endocervical brushes should not be used on pregnant patients. A separate specimen/slide is required for hormonal assessment (MI). Additional Information: Post treatment smears should be taken at least 4 weeks after treatment. Smears should be taken before bimanual examination. 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 Cytologyy6`	Weekdays 0730-1530	Cytology
Paraneoplastic Antibodies	Red top tube	1 mL serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Parasite Exam - Duodenal Aspirate, Liver Abscess, Echinococcus, Hydatid Cyst, Skin Snips, Skin Scrapings, Urine (Schistosoma).	Sterile container	Submit appropriate sample. (If Pinworm is suspected, see Pinworm Preparation) NOTE: Include Patient/Travel history. Consult laboratory for collection information if required. Testing may include EIA for Giardia/Cryptosporidium, direct wet mounts, concentration procedures, stained smears as appropriate.	Daily Turnaround time 7 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Parasite Exam - Pinworm (Enterobius vermicularis)	1. Scotch tape 2. Microscope glass slide 3. Covered container	Obtain a glass slide and scotch tape slightly longer than the glass slide. Place the sticky side of the scotch tape on the anal region, and press gently against the perianal region. Remove the scotch tape and press the sticky side onto the glass slide, spreading the scotch tape along the length of the glass slide and folding the excess tape under the slide. Smooth the scotch tape over the slide. Pinworm preparation slide must be submitted in a covered container. Pinworm eggs are very infectious. Specimen is best obtained a few hours after the patient has retired (2200 or 2300), or the first thing in the morning before a bowel movement or bath. This collection procedure is essential if valid results are to be obtained. Place pinworm preparation slide in a sterile container and send to Microbiology laboratory.	Weekdays Turnaround time 24-72 hrs	Microbiology
Parasite Exam (O & P), Stool	SAF transport media	Routine testing only includes EIA for Giardia/Cryptosporidium. Additional testing is available (direct wet mounts, concentration procedures, stained smears as appropriate). Only one sample will be routinely tested per patient. A representative sample, including gross blood and mucous in a stool specimen must be placed in a feces container with SAF fixative and emulsified. DO NOT FILL above the "Fill" mark. (If pinworm is suspected refer to PINWORM PREPARATION) Specimens obtained with mineral oil, bismuth, iron, or magnesium compounds are unsatisfactory. Wait one week or more after barium procedures or barium laxatives before collecting stools for examination. Causes for Rejection: Incomplete requisition. Inadequately labeled specimen. Improper container. Specimen sent on swab, diaper, or tissue paper. Insufficient specimen volume. Specimen contaminated with urine and/or water. Specimen contaminating outside of transport container. Specimen containing interfering substances, i.e. castor oil, bismuth, Metamucil, barium CONTRAINDICATIONS: Administration of antiamebic drugs within 1 week prior to test. NOTE: Include Patient/Travel history for additional testing.	Daily Turnaround time 7 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Parasite Serology (Schistosomiasis, Amoebiasis, Echinococcosis, Trichinosis, Strongyloidiasis, Cysticercosis, Toxocariasis)	Red top tube	Complete Public Health Laboratories' requisition. Parasite to be tested MUST be specified on requisition. Provide relevant patient history. Send to Microbiology laboratory without delay.	Daily (R) Turnaround time up to 6 weeks	Microbiology
Parathyroid Hormone (PTH)	Gold 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), Blood	See Specimen handling	By appointment only. Call Immunology Lab at 4602 – Test referred out – Specimen type is discussed during phone call – testing must be sent same day as blood is drawn. Special Note: Required Information – Transfusion History, Current CBC, One stained blood sample.	Referred out to University Health Network, Toronto, ON Flow Hematology Lab	Immunology
Parvovirus	Red top tube/sterile container/EDTA tube blood	See: Viral Serology See: Virus Detection PCR	Daily (R)	Microbiology
Pathology Report		Check CPR. If report not finalized contact Pathology secretaries (KGH ext. 4166 or 6035) on Douglas 2, Rm 8-216, KGH.	Weekdays 0630-1700. Turnaround time 3 days to 2 weeks depending on complexity	Histopathology
PCP DFA	Sterile container	See: Pneumocystis jiroveci (P. carinii) pneumonia	Daily or STAT	Microbiology
Pericardial Fluid, Culture	Sterile container/anaerobic transport media	See: Culture: Aerobic See: Culture: Anaerobic	Daily	Microbiology
Peritoneal Dialysis Fluid, Culture	Blood culture bottles and Sterile container	See: Culture, Peritoneal Dialysis Fluid	Daily	Microbiology
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, Plasma or Serum	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 serum or heparinized plasma. Store and send refrigerated.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Phosphate, Urine, 24h	24 hr urine collection container	24 hr urine collected without preservatives. Referrals: 2 mL urine aliquot from a 24 hr urine specimen collected without preservatives. Record total urine volume on the requisition. Store and ship refrigerated.	Weekdays	Chemistry
Phospholipid Antibodies	Gold or Red top tube	See: Cardiolipin Antibodies	Weekly Turnaround time 5 days	Immunology
Pinworm	Covered container	See: Parasite Exam - Pinworm	Weekdays	Microbiology
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.	Histopathology
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	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.	By prior arrangement only Turnaround time 1 day	Hemostasis
Platelet Function Studies		See: Platelet Aggregation Studies	By prior arrangement only	Hemostasis
Pleural Fluid, Culture	Sterile container/anaerobic transport media	See: Culture: Aerobic See: Culture: Anaerobic	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Pneumocystis jirovecii (P. carinii) Pneumonia, Direct Fluorescent Assay (PCP DFA)	Sterile container	Record information on patient's immunosuppression on microbiology requisition (MANDATORY). Submit bronchoalveolar lavage (BAL), bronchial washing, induced sputum, or sputum in a sterile container. Pneumocystis preparations applied to spontaneously expectorated sputum have an extremely low yield. Send to Microbiology laboratory without delay.	Daily or STAT Turnaround time 24-48 hrs	Microbiology
PNH		By appointment only Special Note: No transfusion in previous 3 months. Call Ottawa General Hospital to book testing.	Referred out to Ottawa General Hospital Flow Hematology Lab 613-737-8899 Ext 71756	Immunology
Porphobilinogen (PBG), 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 (R)	Chemistry
Porphyrin Precursors (ALA & PBG)	Random or 24 hr urine collected in dark bottle or wrap container with foil, 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 a brown plastic bottle containing 5g sodium carbonate and refrigerated during collection. (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. This collection is not suitable for Porphyrin analysis.	Specific Days Only (R)	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 (R)	Chemistry
Porphyrinogen, Urine	Random urine collected in dark bottle or wrap container with foil, protecting from light	See: Porphyrins, Urine	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Porphyrins, Quantitation	Random or 24 hr urine collected in dark bottle or wrap container with foil, protecting from light	See: Porphyrins, Screen	Specific Days Only (R)	Chemistry
Porphyrins, Screen	Random or 24 hr urine collected in dark bottle or wrap container with foil, 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 brown plastic bottle containing 5g sodium carbonate and refrigerated during collection. (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. Porphyrin quantitation is only performed when preliminary screen is positive. This collection is not suitable for ALA/PBG testing.	Specific Days Only (R)	Chemistry
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	2 mL fresh random urine or 24 hr urine collected. Referrals: 5 mL aliquot from a fresh random urine or from a 24 hr urine specimen collected without preservatives. Include collection times and total volume if 24 hr collection. Store and ship refrigerated.	Daily or STAT	Chemistry
Prealbumin, Plasma or Serum	Gold or Light Green top tube	1 mL of blood preferably taken after an overnight fast. Referrals: 0.5 mL of serum or heparinized plasma. Store and ship refrigerated.	Daily	Chemistry
Precipitins, Aspergillosis	Red top tube	See: Aspergillosis Precipitins	Specific Days Only (R)	Microbiology
Precipitins, Avian	Gold top tube	See: Avian Precipitins	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Prenatal Screen	Red top tube	Complete Public Health Laboratories' PRENATAL requisition. Tests available may include Rubella Antibody, Syphilis screen, HBsAG, HIV1/HIV2 serology. Each test required MUST be specified on the requisition. Collect blood in Red top vacutainer. Send to Microbiology laboratory without delay.	Daily (R) Turnaround time 5-7 days	Microbiology
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 (R)	Chemistry
Procainamide, Serum	Red top tube (no gel)	See: N-Acetylprocainamide	Specific Days Only (R)	Chemistry
Progesterone, Serum	Gold top tube	2 mL of blood. Referrals: 1 mL of serum. Store and send refrigerated.	Daily	Chemistry
Prolactin, Plasma or Serum	Gold or Light Green top tube	2 mL of blood. Referrals: 1 mL of serum or heparinized 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, total. 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. (Test will not be done if INR is greater than 1.2)	Weekdays	Hemostasis

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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)	Gold 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 (R)	Chemistry
Protein Electrophoresis, Urine	Random urine collection container	12 mL of first morning urine. Referrals: store and ship refrigerated or frozen.	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. (Test will not be done if INR is greater than 1.2)	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. (Test will not be done if INR is greater than 1.2)	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. (Test will not be done if INR is greater than 1.2)	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	AVAILABILITY (R) = Referred Out	LABORATORY
Protein, Total, Plasma or Serum	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	2 mL random urine or 24 hr urine. Referrals: 2 mL random urine or aliquot of 24 hr urine. Record total 24 hr urine volume on the requisition. Store and ship refrigerated.	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 (R)	Chemistry
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 (R)	Chemistry
PTH Related Peptide	Lavender 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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Pyruvate Kinase (Quantitative), RBC	Lavender top tube	5 mL of blood. Blood transfusions within the last 3 months invalidate test results.	Specific Days Only (R) Samples can only be accepted Monday - Thursday Turnaround time 1-2 weeks	Hematology
Q-Fever	Red top tube	See: Serology	Daily (R)	Microbiology
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.	Histopathology
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 (R)	Chemistry
Rabies	Red top tube	See: Viral Serology/Blood	Daily (R)	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Radioallergosorbent (RAST)		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.		
Reducing Substances, Urine	Random urine container	1 mL of fresh random urine. Referrals: Store and send refrigerated.	Daily	Chemistry
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.	Histopathology
Renin, Plasma	Lavender top tube	5 mL of blood. Referrals: 3 mL of EDTA plasma. Store and ship frozen.	Specific Days Only (R)	Chemistry
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 or STAT Turnaround time <24 hr	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.	Daily	Hematology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
Rickettsia	Red top tube	See: Serology	Daily (R)	Microbiology
Rotavirus, Stool (Immunochromatography)	Sterile container	1 mL of stool.	Daily Turnaround time 24 hr	Microbiology
RSV	Sterile container/viral transport media	See: Respiratory Syncytial Virus See: Virus Isolation	Daily	Microbiology
Rubella	Red top tube/viral transport media	See: Viral Serology See: Virus Isolation	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 (R)	Chemistry
Schillings Test		Direct inquiries to Nuclear Medicine (x4238, x4060)		Chemistry
Schistosomiasis	Red top tube	See: Parasite serology/Parasite Exam	Daily (R)	Microbiology
Sedimentation Rate (ESR) - Adults, Blood	Black top tube containing sodium citrate anticoagulant	1.8 mL of blood. Exact volume of blood is critical for this assay. Tube must be allowed to fill; reduced volumes severely affect the test due to dilution factors. Technique used is Standard Westergren. Analysis must be performed within 6 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
Seminal Fluid, Analysis Post vasectomy for the presence or absence of spermatozoa. Infertility testing for viable spermatozoa.	Specimen cup with tight fitting lid	1. Contact laboratory (local 4695) and ask cytology for appropriate containers, requisitions and instruction sheets for the patients. 2. Infertility and vasectomy specimens are only received Mon.-Thurs. between 0800-0900. Cytology Lab is closed on statutory holidays. Test applies to examination for spermatozoa in post vasectomy or vasectomy reversal patients and infertility sperm counts.	By Prior Arrangement Only	Cytology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Serology for Bartonella, Brucella, Chlamydia, Lyme Disease, Rickettsia, Q-Fever, Leptospirosis, Tularemia	Red top tube	Complete Public Health Laboratories' requisition. Test Must be specified. Send directly to Microbiology laboratory. NOTES: 1. Chlamydia pneumoniae serology testing is not available. See: Chlamydia Detection (NAT). 2. Chlamydia psittaci: submit blood for microimmunofluorescence, IgG, IgM, IgA (specify). 3. Lyme disease: submit detailed clinical history, including recent travel history. 4. Indicate if acute/convalescent, immunity/diagnosis.	Daily (R) Turnaround time 1-3 weeks	Microbiology
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 (R)	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	Daily	Chemistry
Sickle Cell Screen, Blood	Lavender top tube	See: Hemoglobin - Sickle cell screen	Daily Turnaround time STAT 2 hrs (R) 1 day	Hematology
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
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.	Histopathology
Sodium, Plasma	Light Green top tube	1 mL of blood in a Light Green top tube. Referrals: 0.5 mL of serum or 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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Somatomedin C aka: Insulin-like growth factor 1	Red top tube or Gold top tube	See: Insulin-like growth factor 0	Specific Days Only (R)	Chemistry
Specific Factor Inhibitor 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
Sputum, For Culture	Sterile sputum container or sputum trap	See: Culture, Sputum	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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
Staphylococcus aureus Culture	Swab in transport media	See: Culture: MRSA or Staphylococcus aureus	Daily	Microbiology
Stem Cells	Lavender top tube	See: CD34 Enumeration, Blood	Weekdays 0800-1600. Results available in 2-3 hrs Turnaround time 3 hrs	Immunology
Sterile Body Site/Fluid Culture	Sterile container/ anaerobic transport media	See: Culture: Aerobic See: Culture: Anaerobic	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Stool, For Culture	Sterile container/SAF transport media/enteric transport media	See: Culture: Stool See: Clostridium Difficile (CDIFF) Toxin See: Parasite Exam See: Rotavirus, Stool (Immunochromatography) See: Norovirus (Norwalk or Norwalk-like)	Daily	Microbiology
Streptococci Group B	Transport Media	See: Culture: Beta-Hemolytic Streptococci Group B (BHS Screen)	Daily	Microbiology
Strongyloidiasis	Red top tube	See: Parasite Serology/Parasite Exam	Daily (R)	Microbiology
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 (R)	Chemistry
Sulfatide, Urine	Urine collection container	50 mL urine from a first-morning collection. Referrals: Store and ship frozen	Specific Days Only (R)	Chemistry
Synovial Fluids for Identification of Crystals (Joint Fluid)	Red top tube (no gel) or Specimen Container	Applies to Joint Fluids. 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 on-call through KGH Switchboard	Cytology
Syphilis Serodiagnosis	Red top tube/SST CSF: Sterile tube	Tests available: Blood (Syphilis screen serology), CSF (VDRL, FTA ABS). Complete Public Health Laboratories' requisition. Tests MUST be specified on the requisition. BLOOD: Peripheral blood or cord blood in a RED top vacutainer or SST tube. SST is preferred for diagnostic tests. CSF: Submit in a sterile tube. Send to Microbiology Laboratory without delay.	Daily (R) Turnaround time 7 days	Microbiology
T3, Free (Free Tridothyronin)	Red top tube	3 mL blood. Referrals: 1 mL of serum or plasma. Store and send frozen.	Specific Days Only (R)	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	Gold top tube	See: Thyroxine Binding Globulin (TBG) Capacity, Serum	Specific Days Only (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
TBII	Gold top tube	See: Thyroxine Binding Globulin (TBG) Capacity, Serum	Specific Days Only (R)	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 (R)	Chemistry
Throat Swab	Swab in transport media	See: Culture: Throat	Daily	Microbiology
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	See: Candida/Vincents, Mouth Swab See: Culture: Yeast	Daily	Microbiology
Thyrocalcitonin	Red top tube	See: Thyroid Releasing Hormone Stimulation Test	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.	Specific Days Only (R)	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 (R). Contact Clinical Chemist if STAT analysis is required.	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Thyroid Stimulating Hormone, Serum or Plasma	Gold or Light Green top tube	1 mL of blood. Referrals: 1 mL of serum or plasma (heparinized or EDTA). 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.	Specific Days Only (R). (Twice a week)	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 (R)	Chemistry
Thyrotropin Receptor Antibody	Gold top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin, Serum	Specific Days Only (R)	Chemistry
Thyrotropin Releasing Hormone Stimulation Test		Arrangements to be made in consultation with Endocrinology		Chemistry
Thyroxine (T4), Free	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of serum. Store and ship refrigerated or frozen. Free T4 is ordered reflexively by the Laboratory when TSH is low. Free T4 is routinely available to Endocrinologists.	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 (R)	Chemistry
Tick Identification/Ectoparasite	Screw cap container	Submit tick for macroscopic and microscopic evaluation.	Weekdays Turnaround time: Specimen forwarded to Public Health Laboratories	Microbiology
Tissue Biopsy, For Microbiologic Culture	Sterile container without preservative/anaerobic transport media	See: Culture: Aerobic See: Culture: Anaerobic	Daily	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 (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.	Histopathology
Tissue Examination, Crystals	See Handling Procedure	Submit specimen in 70% alcohol which may be obtained from the Histology lab on Douglas 2, Rm 8-226, KGH. Contact lab for additional information (KGH ext. 4172).	Weekdays 0800-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 port 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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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.	Histopathology
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. 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 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 Hotel Dieu Hospital fresh tissue: contact Histology lab to arrange for transport (by STAT courier) to KGH Histology lab. Ensure container lid is properly secured and place in biohazard. 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 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)	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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. 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 Hotel Dieu Hospitals Frozen sections: contact histology lab to arrange for transport of fresh tissue (by STAT courier) to KGH Histology lab. Ensure container lid is properly secured and place in biohazard. 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 Hotel Dieu Hospital 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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 gauze slightly dampened (NOT SOAKED) with saline and taken IMMEDIATELY to the Histology Lab on Douglas 2, Rm. 8-226. 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 fresh tissue: contact Histology Lab to arrange for transport of fresh tissue (by STAT courier) to KGH Histology Lab. Ensure container lid is properly secured and place in biohazard. 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	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Tissue Examination, Muscle Biopsy (Skeletal)	Sterile container **(No Fixative or Saline)**	Call Histology Lab (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 OLA (Ontario Laboratory Accreditation) accredited KGH Histopathology Laboratory (there is no longer an OLA accredited Histopathology unit at Hotel Dieu Hospital). 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 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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Tissue Examination, Muscle Biopsy (Skeletal) for Mitochondrial Disorder	Sterile container **(No Fixative or Saline)**	Call Histology Lab (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.** 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 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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Tissue Examination, Peripheral Nerve Biopsy	Sterile container (no fixative)	Call Histology Lab (4172) 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 gauze 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 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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Tissue Examination, Renal Biopsies	Petri Dish with saline moistened Histo-wrap. REFERRALS: Vial of Michel Transport Medium and specimen container filled with 10% formalin.	Call Histology ext. 4037 prior to sending specimen. Transport specimen on saline moistened Histo-wrap 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. RERRALS" Call KGH 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 613-549-3333 ext. 4037 prior to sending specimen.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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. 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 Hotel Dieu Hospital Breast specimens: contact histology lab to arrange for transport (by STAT courier) to KGH histology lab. Ensure container lid is properly secured.	Weekdays 0630-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histopathology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 gauze and placed inside a sterile jar (no fixative) if transported IMMEDIATELY to the Histology lab 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 3-2 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 KGH Histology lab when biopsy was shipped and expected time of arrival.	Weekdays 0800-1700. Turnaround time 3 days to 2 weeks depending on complexity.	Histopathology
Tissue Transglutaminase Antibody-(IgA), TTG Serum	Red top vacutainer	1 mL serum. Store and ship frozen.	Specific Days Only (R)	Chemistry
Tissue Typing	Contact Laboratory at Ext 4602	Test includes organ transplant typing, typing for special blood products, typing for BM transplants. Clinical condition of the patient will dictate volume and specific requirements of sample collection. Please phone the Immunology Laboratory (x 4602) for assistance or information.	By Prior Arrangement Only Turnaround time 10 days	Immunology
Tissue Typing, Celiac Disease	EDTA .5 ml	Note: Sample will only be tested for DQ_2 and DQ_8.	Monday – Thursday 0800 – 1600 Turnaround Time-15 working days	Immunology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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 (R)	Chemistry
TORCH Screen (Toxoplasmosis, Rubella, Cytomegalovirus, Herpes Simplex)	Red top tube	Submit blood in a RED top vacutainer. Send to Microbiology Laboratory without delay. (Amniotic fluid TORCH screen testing at PHL is NOT available). Complete Public Health Laboratories' requisition. See: Virus Isolation/PCR for Parvovirus/CMV, HSV, Toxoplasmosis	Daily (R) Turnaround time up to 7 days	Microbiology
Total Protein	Light green top tube	See: Protein, Total	Daily	Chemistry
Toxocariasis	Red top tube	See: Parasite Serology/Parasite Exam	Daily (R)	Microbiology
Toxoplasmosis (Agglutination, EIA, IFA), Serum or CSF	Red top tube	Send to Microbiology Laboratory without delay. Complete Public Health Laboratories' requisition. Submit blood (CSF testing is no longer available at Public Health Laboratories).	Daily (R) Turnaround time 7 days	Microbiology
Toxoplasmosis (PCR): Blood, CSF or Amniotic Fluid, Eye Fluid	Blood: 2-Lavender top tube (6 mL tubes); CSF or fluid - Sterile container	Send to Microbiology Laboratory without delay.	Specific Days Only (R) Turnaround time up to 1 week	Microbiology
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 (R)	Chemistry
Transferrin, Serum	Light Green top tube	1 mL of blood. Store and ship refrigerated.	Daily	Chemistry
Transfusion Reaction Investigation	Pink top tubes	Two 7 mL tubes of blood. Label with BLOOD BANK COLLECTION LABELS. Test includes ABO; Rh; Antibody Screen; Direct Screen; Repeat Crossmatch; Urine Testing, C&S of blood giving set.	Daily Turnaround time is 4 hrs	Transfusion Medicine (Blood Bank)

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Transglutaminase	Gold top tube	See: Tissue Transglutaminase Antibody - IgA, Serum	Specific Days Only (R)	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 (R)	Chemistry
TRH Stimulation Test See: Appendix V for test procedure	Red top tube	See: Thyroid Releasing Hormone Stimulation Test	Arrangements to be made in consultation with Endocrinology	Chemistry
Trichinosis	Red top tube	See: Parasite serology/Parasite Exam	Daily (R)	Microbiology
Tricyclic Antidepressant Screen, Serum	Gold or Light Green top tube	1 mL blood. Referrals: 0.5 mL serum or heparinized plasma. Store and ship refrigerated.	Daily or STAT	Chemistry
Tricyclics-Quantitation, Serum	Light green top tube or Gold top tube	See: Amitriptyline or Nortriptyline or Imipramine or Desipramine or Doxepin or Trimipramine	Specific Days Only (R)	Chemistry
Triglycerides, Plasma or Serum	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 serum or 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 (R)	Chemistry
Triiodothyronine (FT3), Free, Plasma	Light Green top tube	1 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Specific Days Only (R)	Chemistry
Triiodothyronine (T3) Total, Serum	Gold top tube	1 mL blood. Referrals: 0.5 mL serum. Store and ship refrigerated.	Specific Days Only (R)	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 (R)	Chemistry
Trimipramine, Serum	Red 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 (R)	Chemistry
Triple Bolus Test, See Appendix VI for procedure		See: HDH Nursing Practice Manual, Section 5, Brock 1 EPACU		Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Troponin I, Plasma (TnI). See Appendix VII for further information	Light Green top tube	1.0 mL of blood. Referrals: 0.5 mL of heparinized plasma. Store and ship refrigerated.	Daily or STAT	Chemistry
Tryptase	Red top tube	Full tube	Specific Days Only (R)	Chemistry
TSH	Gold or Light Green top tube	See: Thyroid Stimulating Hormone	Daily	Chemistry
TSI	Gold top tube	See: Thyrotropin Binding Inhibitory Immunoglobulin	Specific Days Only (R)	Chemistry
Tularemia	Red top tube	See: Serology	Daily	Microbiology
Type and Hold, Plasma	2-Pink top tubes (7 mL 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. If the presence of atypical antibodies is suspected upon testing, Blood Bank will: 1. Notify the ward 2. Ask for patient's transfusion history 3. Order additional specimen. Periods specimens acceptable for cross-matching: 1. Patients transfused or pregnant within past 3 months - 3 days. 2. 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 of the reasons for exceeding guidelines.	24 hr/7d STAT TAT = 45 minutes Urgent Turnaround time = 60-90 minutes Routine Turnaround time = 4 hrs	Transfusion Medicine (Blood Bank)
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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Urea, Plasma	Light Green	1 mL of blood. Referrals: 0.5 mL of serum or heparinized plasma. Store and ship refrigerated .	Daily or STAT	Chemistry
Urea, Urine	Without preservatives	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 collected without preservatives. Record total 24 hr urine volume on the requisition. Store and ship refrigerated.	Daily	Chemistry
Ureaplasma	Mycoplasma kit	See: Culture: Urogenital Mycoplasma Ureaplasma	Daily	Microbiology
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 serum or 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. To ensure accurate measurements, blood must be collected into pre-chilled tubes containing heparin anticoagulant and immediately immersed and maintained in an ice water bath; plasma samples must be assayed within 4 hrs of sample collection.	Daily	Chemistry
Uric Acid, Urine	Without preservatives	24 hr urine collected. Refrigerate during collection. Referrals: 2 mL aliquot from a 24 hr collected without preservatives. Record total 24 hr urine volume on the requisition. Store and ship refrigerated.	Weekdays	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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 or STAT	Chemistry
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	AVAILABILITY (R) = Referred Out	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	AVAILABILITY (R) = Referred Out	LABORATORY
Urine Culture	Sterile urine container	See: Culture, Urine	Daily	Microbiology
Uroporphyrin	Random urine collection container in dark bottle or wrap container with foil, to protect from light	See: Porphyrins	Specific days only (R)	Chemistry
Uroporphyrinogen-1-Synthase	Green top tube	See: Porphobilinogen Deaminase	By Prior arrangement Only	Chemistry
Vaginal Culture	Vaginal swab	See: Culture, Genital, Vaginal	Daily	Microbiology
Valproic Acid, Plasma or Serum	Gold or Light Green top tube	1 mL of blood. Collect specimen at trough level (predose). Referrals: 0.5 mL of serum or heparinized plasma. Store and send refrigerated.	Daily	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	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	AVAILABILITY (R) = Referred Out	LABORATORY
Vanillylmandelic Acid, Urine	Dark bottle containing 25 mL of 50% HCL (use 15 mL for a child)	24 hr urine collected in a dark bottle containing 25 mL of 50% HCL as a preservative (15 mL of acid for children). Container is available from Clinical Chemistry. Referrals: 10 mL of 24 hr urine collected as above. Record total 24 hr urine volume on the requisition. Store and ship refrigerated or frozen. 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 (R)	Chemistry
Varicella zoster	Red top tube/viral transport media/EDTA tube	See: Viral Serology See: Virus Isolation See: Virus Detection PCR	Daily (R)	Microbiology
Vasopressin	Pre-chilled Lavender tube for plasma ADH and Gold top tube for osmolality.	See: Antidiuretic Hormone	Specific Days Only (R). This test is available to Endocrinologists and Nephrologists. All other requests must be approved by a Clinical Chemist.	Chemistry
Very Long Chain Fatty Acids, Plasma	Lavender top tube	3 mL of blood. Sample MUST obtained fasting. Referrals: 2 mL EDTA plasma. Separate from cells and freeze as soon as possible. Store and ship frozen.	Specific Days Only (R)	Chemistry
Viral Culture	Sterile container/viral transport media Blood: Green top tube	See: Virus Isolation - Culture	Daily (R)	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Viral Serology/Blood, Serum Serology	Red top tube	Complete Public Health Laboratories' requisition. 6 mL blood. Send to Microbiology Lab. NOTES: 1. Serological tests MUST be specified on the requisition (Public Health Laboratories Lab req.). 2. Specific on requisition if acute or convalescent sample. 3. Provide case history is applicable. 4. If Arbovirus infection, submit full travel history and history of tick or mosquito bite 5. Refer to Hepatitis testing for Hepatitis A, B, C, D and E. 6. Adenovirus, Rhinovirus, Parainfluenza, and RSV serology testing are NOT available through Public Health Laboratories. 7. Serological testing for Polio, Coxsackie, Echovirus, and Enterovirus is not available. Submit throat swabs, stool specimens, and CSF for virus culture.	Daily (R) Serology testing is available for Influenza A & B, Mumps, Measles, Rubella, Varicella Zoster, Parvovirus, Hantavirus, Herpes Simplex Virus (HSV), Human Herpes Arboviruses, Lymphocytic choriomeningitis (LCM), Cytomegalovirus (CMV), Epstein-Barr and Rabies. Turnaround time up to 14 days	Microbiology
Virus Detection - PCR: Blood	2-Lavender top tube	PCR testing is constantly evolving, if uncertain as to availability of a specific PCR tests, consult laboratory to determine if PCR detection for a specific virus is available. Send to Microbiology Laboratory. Virus MUST be specified.	Daily (R) Turnaround time up to 1 week	Microbiology
Virus Detection PCR: CSF, Fluid, Lesion Scraping, Tissue	Sterile container	PCR testing is constantly evolving, if uncertain as to availability of a specific PCR tests, consult laboratory to determine if PCR detection for a specific virus is available. Send to Microbiology Lab. Virus MUST be specified.	Daily (R) Turnaround time up to 1 week	Microbiology
Virus Direct Detection - Influenza A/B	Aspirate in a sterile container. Swab in viral transport media	Direct detection of influenza A/B virus from nasopharyngeal specimens. 2-3 mL nasopharyngeal/pharyngeal aspirate or washes. Transport to lab immediately.	Daily or STAT Turnaround <24 hr	Microbiology
Virus Isolation - Detection, Swabs or Vesicular Fluids	Viral transport media	Complete Public Health Laboratories' requisition. Place sample swabs, or vesicular fluid material in viral transport media (available from Microbiology Laboratory). SPECIFY virus. Specimen should be collected during the acute phase of the disease.	Daily (R) Turnaround time 3-21 days	Microbiology

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
Virus Isolation – Detection, Urine, Fluids, Nasal/Throat Washings, Biopsy, Tissue, Bronchoscopy Samples, Stool, Blood	Sterile container Blood: green top tube	Complete Public Health Laboratories' requisition. Place sample (no preservative) in a sterile screw cap tube or container. Blood for virus culture: Submit blood in Green top (heparinized) tube. Virus MUST be specified. Specimen should be collected during the acute phase of the disease.	Daily Turnaround time 3-21 days	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
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 (R)	Chemistry
Vitamin B1	Lavender top tube	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 (R)	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 (R)	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 (R)	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 (R)	Chemistry

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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 (R)	Chemistry
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 (R)	Chemistry
Vitreous Fluid, For Culture	Sterile container/anaerobic transport media	See: Culture: Aerobic See: Culture: Anaerobic	Daily	Microbiology
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	AVAILABILITY (R) = Referred Out	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 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
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

TEST:	Specimen Container	SPECIMEN/HANDLING	AVAILABILITY (R) = Referred Out	LABORATORY
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
VRE Screen	Sterile container swab in transport media	See: Culture: Vancomycin-Resistant Enterococci (VRE)	Daily	Microbiology
West Nile Virus	Sterile Container Red top tube	Complete Public Health Laboratories requisition	Daily (R) Turnaround time 1 week	Microbiology
Worm Detection	Saline or 70% alcohol in screw cap container	See: Helminth Identification	Daily	Microbiology
Yeast Detection	Sterile container/anaerobic transport media	See: Culture: Yeast	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 (R)	Chemistry
Zinc Protoporphyrin (ZPP)	Royal Blue top tube with EDTA (Whole blood)	1 Full Royal Blue EDTA tube	Specific Days Only (R)	Chemistry
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 (R)	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 2nd 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 2nd 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 2nd 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.

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 OR INCUBATE blood culture specimens.
4. Transport to Microbiology Lab immediately (or to Core lab between 2300 and 0800 hrs).

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)
Blood culture adapter (see table below)

Blood Culture Adapter	Specimen Collection Method					
	Venipuncture using Butterfly Set		Venipuncture with IV Cannula		Central Venous Catheter	
	No Syringe	Syringe	No Syringe	Syringe	No Syringe	Syringe
Adapter Cap* ('Adapter insert" packaged separately)	√		√		√	
Tube Holder with Female Adapter* (packaged with "adapter cap' and 'adapter insert")		√		√		√

* "Adapter insert" only needed for other bloodwork.

Procedure:
1. Remove caps from blood culture bottles and wipe rubber bottle tops with 70% isopropyl alcohol before filling.
2. For specimens obtained by venipuncture (including IV cannula insertion): (NOTE: Blood cultures are never drawn from an established IV lock device)
    a. Wash venipuncture site with soap and water if site is visibly soiled.
    b. Moving from vein outwards, disinfect venipuncture site using a 2% chlorhexidine with 70% alcohol swab.

EXCEPTION: For NICU patients, disinfect using a 2% chlorhexidine without alcohol swab.

c. If palpation of venipuncture site is required after disinfection, use a sterile glove.
d. 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 (see equipment list).

3. For specimens obtained from a central venous catheter:
   a. Carefully cleanse port with 70% isopropyl alcohol (due to the greater risk of contamination of blood cultures taken from central line ports).
   b. There is no need for a discard.
   c. Collect blood specimen(s) according to pediatric and adult tables below using the appropriate blood culture adapter (see equipment list).
4. 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.

Pediatric Blood Culture Specimens

1. The following table applies to pediatric patients with or without a central venous catheter.
2. 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. Only one lumen of the central venous catheter needs to be sampled.

EXCEPTION: In neonates, blood collection from a PICC line is contraindicated.

Patient's Weight (kg)	**Bottle Type**	**Simultaneously (within 5 minutes)**			
		Site #1		**Site #2**	
		Specimen Volume in Bottle #1* (mL)	**Specimen Volume in Bottle #2* (mL)**	**Specimen Volume in Bottle #1* (mL)**	**Specimen Volume in Bottle #2* (mL)**
1.0 or less	Pediatric	0.5 to 1 (yellow top, aerobic)	–	–	–
1.1 or less	Pediatric	1 to 2 (yellow top, aerobic)	–	–	–
2.1 to 5.0	Pediatric	2 to 3 (yellow top, aerobic)	–	–	–
5.1 to 8.0	Pediatric	3 to 4 (yellow top, aerobic)	2 (yellow top, aerobic)	–	–
8.1 to 13.0	Pediatric	4 (yellow top, aerobic)	3 to 4 (yellow top, aerobic)	–	–

Patient's Weight (kg)	Bottle Type	Simultaneously (within 5 minutes)			
		Site #1		Site #2	
		Specimen Volume in Bottle #1* (mL)	Specimen Volume in Bottle #2* (mL)	Specimen Volume in Bottle #1* (mL)	Specimen Volume in Bottle #2* (mL)
13.1 to 23.0	Adult	8 to 10 (green top, aerobic)	8 to 10 (orange top, anaerobic)	–	–
23.1 to 36.0	Adult	8 to 10 (green top, aerobic)	8 to 10 (orange top, anaerobic)	–	–
36.1 to 45.0	Adult	10 (green top, aerobic)	10 (orange top, anaerobic)	–	–
More than 45.0	Adult	10 (green top, aerobic)	10 (orange top, anaerobic)	10 (green top, aerobic)	10 (orange top, anaerobic)

NOTE: There are no pediatric anaerobic bottles.

*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. If you are unable to obtain the required amount of blood, split the specimen equally between the identified bottles. **EXCEPTION:** Aerobic-only specimens that are 4 mL or less may be sent in one bottle.

Adult Blood Culture Specimens:

1. 1 set = 1 aerobic and 1 anaerobic bottle from 1 site.
2. 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.
3. It is essential to use the markings on the adult bottle to ensure a draw of 10 mL because under filling may fail to detect a bacteremia, and overfilling may affect the results. If you are unable to obtain the required amount of blood, split the specimen equally between the bottles.

Adult Patients Who Do Not Have a Central Venous Catheter:

1. Draw first 2 sets of blood cultures from the 2 different peripheral venipuncture sites simultaneously (i.e. within 5 minutes of each other) as indicated in the table below.
2. If the physician orders blood cultures for possible endovascular infection or endocarditis, draw a 3rd set 30 to 60 minutes later as indicated in the table below.

	Timing of Blood Culture Collection					
	Simultaneously (within 5 minutes)				30 to 60 minutes later (if endovascular infection/endocarditis blood culture protocol ordered	
	Set #1 (from peripheral venipuncture site #1)		Set #2 (from peripheral venipuncture site #2)		Set #3 (from peripheral venipuncture site #1 or #2, or a new venipuncture	
Bottle Type	Blood Volume in Bottle #1 (mL)	Blood Volume in Bottle #2 (mL)	Blood Volume in Bottle #1 (mL)	Blood Volume in Bottle #2 (mL)	Blood Volume in Bottle #1 (mL)	Blood Volume in Bottle #2 (mL)
Adult	10 mL (green top, aerobic)	10 mL (orange top, anaerobic)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic

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).

	Timing of Blood Culture Collection					
	Simultaneously (within 5 minutes)				30 to 60 Minutes Later	
	Set #1 (from peripheral venipuncture site #1)		Set #2 (from the central venous catheter)*		Set #3 (from a different peripheral venipuncture site #2)	
Type of Catheter						
Central venous catheter (from one lumen only)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic
Hemodialysis catheter (from arterial lumen)**	10 mL (green top, aerobic)	10 mL (orange top, anaerobic)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic)	10 mL (green top, aerobic)	10 mL (orange top, anaerobic
Arterial line	Arterial lines should not be used for blood culture collection					

**Only nurses authorized for hemodialysis and continuous renal replacement therapy (CRRT) may access hemodialysis catheters.

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

Labels and Requisitions:

1. Carefully label and complete one requisition for each bottle per KGH Administrative Policy 20-045 Lab Requisitions and Specimen Labels or HDH Administrative Policy 1260 Lab Requisitions and Specimen Labels.
2. Check labels on the bottles and requisition to ensure they match and are from the correct patient.
3. Clearly indicate the date and time the culture was taken as well as the location (i.e. left antecubital vein, PICC port, etc).
4. Do not cover the bar code or sensor located on the bottom of the bottle with the label.

Related Policies and Procedures:

1. KGH Administrative Policy 20-045 Lab Requisitions and Specimen Labels
2. KGH Nursing Policy C-4000 Cleansing Agents
3. HDH Nursing policy #3-6-1 - Cleansing Agents for Skin, Invasive Lines, and Wounds
4. HDH Administrative policy #10100 - Lab Specimens Requisitions and Labels

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.

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

MSS	Maternal Serum Screen
Na	Sodium
O&P	Ova and Parasites
Pb	Lead
PBG	Porphobilinogen
PC	Protein C
PAP	Papanicolaou test
PCR	Polymerase Chain Reaction
PE	Protein Electrophoresis
PHNO	Phenobarbital
PK	Pyruvate Kinase
PNP	Platelet Neutralization Procedure
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
T3	Triiodothyronine
T4	Thyroxine
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 Antigen
VWF:Ag	Von Willebrand Antigen
VWRCOF	Von Willebrand Ristocetin Cofactor
VWF:RCo	Von Willebrand Ristocetin Cofactor
VWFM	Von Willebrand Multimers
VWS	Von Willebrand Studies
VMA	Vanillylmandelic Acid, Urine
VRE	Vancomycin-Resistant Enterococci
Zn	Zinc
ZPP	Zinc Protoporphyrin