

North Bay Regional Health Centre  
Laboratory Services  
**Specimen Collection and Handling Guide**

Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
<b>Microbiology</b>				
Abscess/Aspirate Culture	Sterile universal (80 mL) container	Room Temperature	<b>Gram stain:</b> 24 hours <b>Final:</b> 5 days	<ul style="list-style-type: none"> <li>• Deliver to Laboratory <b>"STAT"</b></li> <li>• This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> </ul>
Anaerobic Culture	Anaerobic Transport System	Room Temperature	<b>Gram stain:</b> 24 hours <b>Final:</b> 5 days	<ul style="list-style-type: none"> <li>• Superficial swabs of doubtful value.</li> <li>• Remove surface exudates with 70% alcohol.</li> <li>• Processing is optimized when laboratory receives pertinent clinical information (i.e., wound site, history of animal bite).</li> <li>• Optimal isolation of anaerobic isolates requires submission of swab/specimen in anaerobic transportation media.</li> </ul>
Blood Culture, (single set) <ul style="list-style-type: none"> <li>• Use this for an add-on order or <b>for neonates and infants</b>.</li> </ul>	8-10 mL of blood in each Aerobic and Anaerobic blood culture bottles  1-3 mL of blood in a Pediatric blood culture bottle	Room Temperature	5 days	<ul style="list-style-type: none"> <li>• Positive results are phoned immediately.</li> <li>• A preliminary report will be issued.</li> <li>• Staff must forewarn laboratory if infections caused by hazardous organisms are suspected (e.g., brucellosis, anthrax, tularemia). If this is the case, incubation is extended to 21 days unless positive.</li> <li>• <b>Expected Time for Results:</b> 5 days unless positive.</li> <li>• <b>Note:</b> Each adult set of blood cultures should be inoculated into one aerobic and one anaerobic bottle. Each pediatric set is one pediatric blood culture bottle.</li> </ul>

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Blood Culture, (two sets) <b>Standard Order</b>	<p>8-10 mL of blood in each Aerobic and Anaerobic blood culture bottles for adults.</p> <p>1-3 mL of blood in a Pediatric blood culture bottle</p> <ul style="list-style-type: none"> <li>one set is often all that can be obtained safely from neonates and infants.</li> </ul>	Room Temperature	5 days	<ul style="list-style-type: none"> <li>Positive results are phoned immediately.</li> <li>A preliminary report will be issued.</li> <li>Only two sets of blood cultures will be processed in a 24 hour period.</li> <li>Staff must forewarn laboratory if infections caused by hazardous organisms are suspected (e.g., brucellosis, anthrax, tularemia). If this is the case, incubation is extended to 21 days unless positive.</li> <li><b>Expected Time for Results:</b> 5 days unless positive.</li> <li><b>Note:</b> Two sets of blood cultures are recommended for standard adult and pediatric culture but if endocarditis is suspected no more than three sets are generally required. Each adult set of blood cultures should be inoculated into one aerobic and one anaerobic bottle. Each pediatric set is one pediatric blood culture bottle.</li> </ul>
Blood Culture, (three sets) <b>Endocarditis</b>	<p>8-10 mL of blood in each Aerobic and Anaerobic blood culture bottles</p> <p>1-3 mL of blood in a Pediatric blood culture bottle</p>	Room Temperature	21 days for Subacute Bacterial Endocarditis (SBE)	<ul style="list-style-type: none"> <li>Positive results are phoned immediately.</li> <li>A preliminary report will be issued.</li> <li>Three sets of blood cultures at least thirty minutes apart will be processed in a 24 hour period.</li> <li>Staff must forewarn laboratory if infections caused by hazardous organisms are suspected (e.g., brucellosis, anthrax, tularemia).</li> <li><b>Expected Time for Results:</b> 21 days unless positive.</li> <li><b>Note:</b> Each adult set of blood cultures should be inoculated into one aerobic and one anaerobic bottle. Each pediatric set is one pediatric blood culture bottle.</li> </ul>
Bone Allograft Bone Flap Bone Marrow	Sterile universal (80 mL) container	Room Temperature	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Superficial swabs of doubtful value.</li> <li>Remove surface exudates with 70% alcohol.</li> <li>Processing is optimized when laboratory receives pertinent clinical information (i.e., wound site, history of animal bite).</li> <li>Optimal isolation of anaerobic isolates requires submission of swab/specimen in anaerobic transportation media.</li> </ul>

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Bronchial (brushing/lavage/washings) Bronchoscopy Aspirates Lung Needle Aspirates for Culture	Sterile universal (80 mL) container	Refrigerated	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Forward all specimens to Cytology/Microbiology Lab.</li> <li>It is preferable to obtain a separate specimen for cytology that is fixed in <b>toxic CytoRich</b> Red fixative. If this is impossible, the specimen can be divided between departments. The specimen should then be brought to the Cytology Laboratory ASAP for fixation.</li> </ul>
Bronchial (brushing/lavage/washings) Bronchoscopy Aspirates Lung Needle Aspirates for Cytology	Collect into universal (80mL) container containing <b>toxic CytoRich</b> Red fixative fluid Include equal parts of <b>CytoRich</b> Red fixative and specimen	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Sample may be stored at room temperature however if there is an expected delay of delivery, place the sample in a biohazard bag and refrigerate.</li> <li>Do <b>NOT</b> freeze.</li> <li>Cytology not available in Expanse OM, Complete Cytology Requisition Form RHC2425.</li> </ul>
Cerebrospinal Fluid (CSF) Culture  Includes: <ul style="list-style-type: none"> <li><i>Meningitis/Encephalitis</i> PCR Panel</li> <li>Cerebrospinal Fluid Cell Count</li> </ul>	CSF tubes from CSF collection tray (collected in order)	Room Temperature	<b>Gram stain:</b> 1 hour <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Collect sequentially in sterile tubes from lumbar tray, the first tube shall not be used for microbiological examination.</li> <li>Tube 1 – Chemistry (protein, glucose)</li> <li>Tube 2 – Culture</li> <li>Tube 3 – Cell count</li> <li>Tube 4 – Viral studies (or any other additional tests)</li> <li><b>Please notify Laboratory of intent to collect CSF.</b></li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> <li>Transport to the laboratory immediately by hand.</li> </ul>

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Cerebrospinal Fluid (CSF) for Cytology	Collect in a sterile CSF tube with equal parts <b>toxic CytoRich</b> Red fixative fluid and specimen.  Complete Cytology Requisition Form RHC2425.	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Collection containers with fixative obtained from the laboratory.</li> <li>Indicate source of specimen on requisition.</li> <li><b>NOT</b> treated as STAT unless confirmed by a pathologist.</li> <li>It is preferable to obtain a separate specimen for cytology that is fixed with equal parts <b>toxic CytoRich</b> Red fixative and sample. If this is impossible, the specimen can be divided between Cytology and Microbiology Labs. If this is the case, when the specimen is delivered to the lab, inform the technologist that the Cytology portion of the sample must be fixed with <b>CytoRich</b> Red fixative ASAP.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> </ul>
Neisseria gonorrhoeae Culture	Endocervical swab in Amies transport media  Vaginal swab only accepted from children (less than 12 years of age) or post-hysterectomy patients	Refrigerated	72 hours	<ul style="list-style-type: none"> <li>Specimens examined for <i>N. gonorrhoeae</i> only.</li> <li>Clearly indicate source on swab.</li> <li>If a pap test is required, it is recommended it be collected before the swab.</li> <li>In cases of sexual abuse in peripubertal and prepubertal children <b>both</b> culture and nucleic acid amplification testing (NAAT) should be performed. Although culture is the preferred method for medico-legal purposes NAAT is more sensitive than culture. Please see PHOL Specimen Collection Guide for full details.</li> </ul>
Eye Culture	Swab in Amies transport medium Swab swept over conjunctiva	Refrigerated	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Susceptibility testing not routinely performed as <i>in vitro</i> results may not accurately reflect <i>in vivo</i> activity to topical antimicrobial agents.</li> </ul>
Ear Culture	Swab in Amies transport medium Swab of external ear canal	Room Temperature	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Tympanocentesis specimens indicated for microbiological diagnosis of otitis media.</li> </ul>
Epiglottal Swab Culture	Swab in Amies transport medium	Refrigerated	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	

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Group B Streptococcus Screening in Pregnancy	Swab in Amies transport medium	Room Temperature	48-72 hours	<ul style="list-style-type: none"> <li>Since up to 15% of isolates may be resistant to clindamycin, specifically request susceptibility testing for patients with penicillin allergy.</li> <li>Individual vaginal or rectal swabs are sub-optimal. A combined vaginal-rectal swab is preferred.</li> <li>Vaginal-rectal swab collected at 35–37 weeks gestation.</li> </ul>
Intravascular Catheter Tip	Sterile universal (80 mL) container	Refrigerated	48-72 hours	
Intra-uterine Device (IUD)	Sterile universal (80 mL) container	Room Temperature	Same Day	<ul style="list-style-type: none"> <li>Send IUD not swab of IUD.</li> <li>IUD's are not cultured. A Gram smear only is performed for the detection of Actinomyces.</li> </ul>
Mouth Screen	Swab in Amies transport medium	Room Temperature	Same Day	<ul style="list-style-type: none"> <li>Culture is not performed.</li> <li>Direct examination for fungus only.</li> <li>Examination for Vincent's Angina will be performed on special request.</li> </ul>
Nasal Culture	Swab in Amies transport medium	Room Temperature	48 hours	<ul style="list-style-type: none"> <li>For the isolation of <i>Staphylococcus aureus</i> or MRSA only.</li> </ul>
Antibiotic-Resistant Organisms (ARO) <ul style="list-style-type: none"> <li>MRSA Screen</li> <li>VRE Screen</li> </ul>	Swab in Amies transport medium <ul style="list-style-type: none"> <li>Rectum or wounds or lesions</li> </ul>	Room Temperature	24-72 hours	<ul style="list-style-type: none"> <li>Susceptibility testing results not routinely provided for surveillance culture specimens.</li> </ul>
Antibiotic-Resistant Organisms (ARO) <ul style="list-style-type: none"> <li>MRSA Screen</li> </ul>	Swab in Amies transport medium <ul style="list-style-type: none"> <li>One swab for both nares</li> </ul>	Room Temperature	24-72 hours	<ul style="list-style-type: none"> <li>If rescreening for MRSA collect one swab for any source.</li> <li>Susceptibility testing results not routinely provided for surveillance culture specimens.</li> </ul>
Antibiotic-Resistant Organisms (ARO) <ul style="list-style-type: none"> <li>VRE Screen</li> </ul>	Swab in Amies transport medium <ul style="list-style-type: none"> <li>Rectum or wounds or lesions</li> </ul>	Room Temperature	24-72 hours	<ul style="list-style-type: none"> <li>If rescreening for VRE collect one swab for any source except the nares.</li> <li>Susceptibility testing results not routinely provided for surveillance culture specimens.</li> </ul>
Antibiotic-Resistant Organisms (ARO) <ul style="list-style-type: none"> <li>ESBL Screen</li> </ul>	Swab in Amies transport medium	Room Temperature	24-72 hours	<ul style="list-style-type: none"> <li>Susceptibility testing results not routinely provided for surveillance culture specimens.</li> </ul>
Antibiotic-Resistant Organisms (ARO) <ul style="list-style-type: none"> <li>CPE Screen</li> </ul>	Swab in Amies transport medium	Room Temperature	24-72 hours	<ul style="list-style-type: none"> <li>Susceptibility testing results not routinely provided for surveillance culture specimens.</li> </ul>
Coronavirus Disease 2019	Nasopharyngeal flocked swab placed into 1-2 mL of viral transport media.	18-24°C: up to 4 hours 2-8°C: up to 48 hours	24 hours	<ul style="list-style-type: none"> <li>Nasopharyngeal swabs are flexible flocked.</li> </ul>

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Seminal Fluid or Sperm for Culture	Sterile universal (80 mL) container	Body Temperature (37°C)	<b>Gram stain:</b> 24 hours <b>Final:</b> 5 days	<ul style="list-style-type: none"> <li>• <b>DO NOT</b> send sample through pneumatic tube system.</li> <li>• Patient collection instructions form RHC 270 (Semen Fluid Analysis).</li> </ul>
Semen analysis (fertility)	Sterile universal (80 mL) container	Body Temperature (37°C)	24 hours	<ul style="list-style-type: none"> <li>• Keep the specimen at body temperature.</li> <li>• There is a two hour time limit from time of collection to laboratory processing.</li> <li>• Specimens will not be accepted for analysis after 14:00 hours.</li> <li>• <b>DO NOT</b> send sample through pneumatic tube system.</li> <li>• Patient collection instructions form RHC 270 (Semen Fluid Analysis).</li> </ul>
Semen analysis (post vasectomy)	Sterile universal (80 mL) container	Body Temperature (37°C)	24 hours	<ul style="list-style-type: none"> <li>• <b>DO NOT</b> send sample through pneumatic tube system.</li> <li>• Patient collection instructions form RHC 270 (Semen Fluid Analysis).</li> </ul>
Post Vasovasostomy	Glass Slides	Room Temperature	STAT: 1 hour	<ul style="list-style-type: none"> <li>• The operating room should notify the Microbiology Lab (ext 2942) when specimens are being sent to ensure staff is available to process the slides immediately.</li> </ul>
Sinus Culture	Sterile universal (80 mL) container	Room Temperature	24 hours	
Tissue/Biopsy Culture	Insert swab deep into lesion Swab in Amies transport medium	Room Temperature	<b>Preliminary:</b> 48 hours <b>Final:</b> 5 days	<ul style="list-style-type: none"> <li>• Superficial swabs of doubtful value.</li> <li>• Remove surface exudates with 70% alcohol.</li> <li>• Processing is optimized when laboratory receives pertinent clinical information (i.e., wound site, history of animal bite).</li> <li>• Optimal isolation of anaerobic isolates requires submission of swab/specimen in anaerobic transportation media.</li> </ul>

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Respiratory Culture  Respiratory Culture for Cystic Fibrosis	Sterile universal (80 mL) container or sputum trap for endotracheal samples  Throat (cystic fibrosis only)	Refrigerated	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>• Mouth should be rinsed with water prior to specimen collection.</li> <li>• All specimens undergo microscopic evaluation to determine suitability for culture.</li> <li>• Sputum specimens must be received and processed within 24 hours of collection.</li> <li>• Only one specimen (deep cough) per patient per day will be cultured.</li> <li>• First/early morning sputum is preferred.</li> <li>• A series of 3 specimens is recommended.</li> <li>• Indicate if patient has Cystic Fibrosis.</li> <li>• If Cytology is also requested, it is preferable to obtain a separate specimen that is fixed in <b>toxic CytoRich</b> Red fixative. If this is impossible the specimen can be divided between both departments. Once this is done, the specimen should be brought to Cytology ASAP for fixation.</li> <li>• Patient collection instructions form RHC 2039 (Sputum for C&amp;S).</li> </ul>
Sputum for Cytology	Collect into universal (80 mL) container containing <b>toxic CytoRich</b> Red fixative fluid Include equal parts of <b>CytoRich</b> Red fixative and specimen	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>• Collection containers with fixative obtained from laboratory.</li> <li>• <b>DO NOT</b> send sample through pneumatic tube system.</li> <li>• Patient collection instructions form RHC971 (Sputum for Cytology).</li> <li>• Cytology not available in Expanse OM. Complete Cytology Requisition Form RHC2425.</li> </ul>

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Body Fluids (Sterile) for Microbiology <ul style="list-style-type: none"> <li>Peritoneal Fluid Culture and Cell Count</li> <li>Pleural Fluid Culture and Cell Count</li> <li>Synovial Fluid Culture and Cell Count</li> </ul>	Sterile universal (80 mL) container or 6 mL <b>red top</b> tube (Gram Stain and Culture) <b>and</b> 4 mL K <sub>2</sub> EDTA <b>lavender top</b> tube (cell count)	Room Temperature	<b>Gram stain:</b> 24 hours <b>Preliminary:</b> 48 hours <b>Final:</b> 5 days	<ul style="list-style-type: none"> <li>If there is a delay in transport, fluid may also be transferred to blood culture bottles using aseptic technique.</li> <li>These are <b>irretrievable samples</b>. <b>DO NOT</b> send through pneumatic tube system.</li> <li>Fill to appropriate volume for correct specimen to anticoagulant ratio.</li> <li>Mix well by inversion 10 times to avoid clots; clotted specimens cannot be processed.</li> <li>If Cytology is also requested, it is preferable to obtain a separate specimen that is fixed in <b>toxic CytoRich</b> Red fixative. If this is impossible the specimen can be aseptically aliquoted and brought to Cytology ASAP for fixation.</li> </ul>
Body Fluids (Sterile) for Cytology	Collect into universal (80 mL) container containing <b>toxic CytoRich</b> Red fixative fluid Include equal parts of <b>CytoRich</b> Red fixative and specimen	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Collection containers with fixative obtained from laboratory.</li> <li>Indicate source of specimen on requisition and container.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> <li>Cytology not available in Expanse OM. Complete Cytology Requisition Form RHC2425</li> </ul>
Peritoneal Effluent Culture and Dialysate Cell Count	Sterile universal (80 mL) container or 6 mL <b>red top</b> tube (Gram Stain and Culture) <b>and</b> 4 mL K <sub>2</sub> EDTA <b>lavender top</b> tube (cell count)  08:00h-16:00h the Kidney Clinic may send a PD pony bag ASAP to Microbiology Laboratory	Room Temperature	<b>Gram stain:</b> 24 hours <b>Preliminary:</b> 48 hours <b>Final:</b> 5 days	<ul style="list-style-type: none"> <li>If there is a delay in transport, fluid may also be transferred to blood culture bottles using aseptic technique.</li> <li>These are <b>irretrievable samples</b>. <b>DO NOT</b> send through pneumatic tube system.</li> <li>Fill to appropriate volume for correct specimen to anticoagulant ratio.</li> <li>Mix well by inversion 10 times to avoid clots; clotted specimens cannot be processed.</li> <li>If Cytology is also requested, it is preferable to obtain a separate specimen that is fixed in <b>toxic CytoRich</b> Red fixative. If this is impossible the specimen can be aseptically aliquoted and brought to Cytology ASAP for fixation.</li> <li>Cytology not available in Expanse OM. Complete Cytology Requisition Form RHC2425</li> </ul>



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Body Fluids (Sterile) for Chemistry <ul style="list-style-type: none"> <li>• Synovial Fluid</li> <li>• Peritoneal Fluid</li> <li>• Pleural Fluid</li> </ul>	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>• Fill to appropriate volume for correct specimen to anticoagulant ratio.</li> <li>• Mix well to avoid clots.</li> <li>• Tests ordered under <b>Synovial Fluid</b> include: Glucose, Total Protein, Uric Acid and Crystal microscopy.</li> <li>• Tests ordered under <b>Peritoneal Fluid</b> include: Total Protein and LDH.</li> <li>• Tests ordered under <b>Pleural Fluid</b> include: Total Protein and LDH.</li> </ul>
Stool Culture	Enteric Pathogen transport media	Refrigerated	48-72 hours	<ul style="list-style-type: none"> <li>• Patient collection instructions form RHC 860 (Stool for C&amp;S).</li> </ul> <p><b>Specimens cannot be accepted for processing for the following reasons:</b></p> <ul style="list-style-type: none"> <li>• Multiple specimens collected from the same in-patient the same day (only one specimen per patient per test per day is to be processed).</li> <li>• A maximum of two samples total per patient.</li> <li>• Stools from outpatients often arrive in batches and are usually a series taken from separate days. Accession and test the most recent specimen only.</li> <li>• Stool sample in Cary-Blair transport medium with yellow indicator showing failure of the buffering system to maintain a neutral pH.</li> <li>• Stool specimens not submitted in enteric transport medium, unless bowel washings from the OR which are set up immediately on day shift only.</li> </ul>

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Clostridium difficile	Sterile universal (80 mL) container	2-8°C: up to 5 days	24-48 hours	<ul style="list-style-type: none"> <li>• Patient collection instructions form RHC 975 (Stool for <i>Clostridium Difficile</i>).</li> <li>• A stool specimen is required for this test; rectal swabs cannot be processed.</li> <li>• Test will not be performed on formed stools.</li> <li>• Test will not be performed if a positive toxin result was detected within the last 7 days.</li> <li>• Test will not be performed on children less than 12 months of age.</li> <li>• Only a <i>C. difficile</i> assay will be performed; <i>C. difficile</i> culture is not preformed.</li> <li>• Testing is done at 13:00 daily. Any specimens delivered after 13:00 will be processed the following day.</li> <li>• Send specimen immediately to the lab.</li> </ul>
Throat Swab (Pharyngitis)	Swab in Amies transport medium collected from posterior pharynx and tonsillar area	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>• Since 14% of Group A <i>Streptococcus pharyngeal</i> isolates may be macrolide resistant, specifically request susceptibility testing for penicillin allergic patients.</li> <li>• Testing for <i>Neisseria gonorrhoeae</i> available upon request (<b>refrigerate</b> sample 4°C). Please indicate on requisition.</li> </ul>
Rapid Strep A Test	Double/twin swab in Amies transport medium collected from posterior pharynx and tonsillar area	Room Temperature	STAT: 15minutes <b>Culture:</b> 24-48 hours	<ul style="list-style-type: none"> <li>• A more sensitive culture is performed on all negative rapid tests for confirmation.</li> </ul>
Miscellaneous Culture	Sterile universal (80 mL) container	Room Temperature	<b>Gram stain:</b> 24 hours <b>Preliminary:</b> 48 hours <b>Final:</b> 5 days	
Respiratory PCR Panel	Nasopharyngeal flocked swab placed into 1-2 mL of viral transport media.	18-24°C: up to 4 hours 2-8°C: up to 48 hours	24 hours	<ul style="list-style-type: none"> <li>• Nasopharyngeal swabs are flexible flocked</li> <li>• Targets detected include; Adenovirus, Coronavirus, SARS-CoV2, Human Metapneumovirus, Human Rhinovirus/Enterovirus, Influenza A+B, Parainfluenza (1,2,3,4), RSV, <i>Bordetella parapertussis</i>, <i>Bordetella pertussis</i>, <i>Chlamydia pneumoniae</i>, <i>Mycoplasma pneumoniae</i></li> </ul>

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Vaginal Culture	Swab in Amies transport medium	Room Temperature	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Specimens should be obtained after appropriate debridement and cleansing of the wound, from the leading edge of the lesion, where pathogens should be present and colonizing organisms are less likely to occur.</li> </ul>
Urine Culture	Midstream Urine  Sterile universal (80 mL) container	Refrigerated	24-48 hours	<ul style="list-style-type: none"> <li>Immediate refrigeration after specimen collection is essential for accurate results.</li> <li>Specimens from indwelling catheters should be obtained aseptically from the urine port.</li> <li><b>Do not</b> collect urine specimens from a drainage bag.</li> <li>Only one sample per day will be processed.</li> <li>Urine specimens requesting C&amp;S will be examined for Candida. If other fungi are suspected, they must be specified.</li> <li>Patient collection instructions form RHC 271 (Midstream Urine).</li> </ul>
Vaginitis/Vaginosis Screen	Swab in Amies transport medium collected from posterior vaginal vault	Room Temperature	24 hours	<ul style="list-style-type: none"> <li>Laboratory diagnosis of bacterial vaginosis has been validated in <b>premenopausal women only</b>.</li> <li>Pyogenic bacteria, such as <i>Streptococcus pyogenes</i> may cause vulvitis/vaginitis in children; specimen will be processed accordingly.</li> <li>If toxic shock is suspected, specimens are examined for Group A strep and <i>S. aureus</i> (a comment noting toxic shock should be made on the requisition).</li> </ul>
Wound Culture	Swab in Amies transport medium	Room Temperature	<b>Gram stain:</b> 24 hours <b>Final:</b> 48-72 hours	<ul style="list-style-type: none"> <li>Specimens should be obtained after appropriate debridement and cleansing of the wound, from the leading edge of the lesion, where pathogens should be present and colonizing organisms are less likely to occur.</li> </ul>
Renal Dialysis Water Sterility (water samples)	Sterile universal (80 mL) container	Refrigerated	7 days	<ul style="list-style-type: none"> <li>Specimens to be obtained by BGIS or Clinical Engineering.</li> </ul>

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<b>Transfusion Medicine</b>				
Antibody Identification <ul style="list-style-type: none"> <li>Not available in OM, call Transfusion Medicine</li> </ul>	6 mL <b>pink top</b> K <sub>2</sub> EDTA tube	18-24°C: up to 8 hours 2-8°C: up to 7 days Less than -18°C: (plasma) up to 60 days for patients who have no history of transfusion	24 hours	<ul style="list-style-type: none"> <li>Performed to determine the specificity(ies) of the antibody(ies) when a patient has a positive antibody screening test. The order for this test will be initiated by the Transfusion Medicine Laboratory.</li> <li>Patient's transfusion/pregnancy history is required.</li> <li>Under filled containers are not acceptable.</li> <li>Multiple or complex antibody ID may take from 3 days to 3 weeks if sent to reference laboratory.</li> </ul>
Antibody Titre <ul style="list-style-type: none"> <li>Not available in OM, call Transfusion Medicine</li> </ul>	6 mL <b>pink top</b> K <sub>2</sub> EDTA tubes	18-24°C: up to 8 hours 2-8°C: up to 7 days Less than -18°C: (plasma) up to 1 year.	24 hours	<ul style="list-style-type: none"> <li>The antibody titre is a semiquantitative assay of the amount of antibody and is used primarily to monitor obstetrical patients who have produced bloodgroup antibodies that can cause hemolytic disease of the newborn.</li> <li>Titration of clinically significant alloantibody is a reflex order by the Transfusion Medicine Laboratory for pregnant women only.</li> <li>Patient's transfusion/pregnancy history is required.</li> <li>Under filled containers are not acceptable.</li> </ul>
Cold Agglutinin Screen	6 mL <b>pink top</b> K <sub>2</sub> EDTA tube	Must be kept at 37°C from time of sample collection. Place sample in a container with warm water (37°C) from time of collection until delivered to Transfusion Laboratory	24 hours	<ul style="list-style-type: none"> <li>If the cold agglutinin screen is positive, the physician may request the Cold Agglutinin Titre.</li> <li>Under filled containers are not acceptable.</li> <li>Separate plasma and red cells as soon as possible.</li> </ul>
Cold Agglutinin Titre <ul style="list-style-type: none"> <li>Not available in OM, enter in comments with cold agglutinin screen or call Transfusion Medicine</li> </ul>	2 x 6 mL <b>pink top</b> K <sub>2</sub> EDTA tubes	Must be kept at 37°C from time of sample collection. Place sample in a container with warm water (37°C) from time of collection until delivered to Transfusion Laboratory	24 hours	<ul style="list-style-type: none"> <li>Only done on request of physician if the cold agglutinin screen is positive.</li> <li>The titre of the cold autoantibody normally found in adult serum can increase following viral or bacterial infections or with cold autoimmune hemolytic anemia/cold hemagglutinin disease.</li> <li>Under filled containers are not acceptable.</li> <li>Separate plasma and red cells as soon as possible.</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
DAT (Direct Coombs Test)	<p><b>Infants less than 4 months:</b> 1 mL micro <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Pediatric greater than 4 months &amp; less than 3 years:</b> 2 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Children greater than 3 years &amp; less than 6 years:</b> 4 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Children greater than 6 years and Adults:</b> 6 mL <b>pink top</b> K<sub>2</sub>EDTA tube</p>	18-24°C: up to 8 hours 2-8°C: up to 7 days	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Usually ordered only when special hematological work-up is being done.</li> </ul>
Cord Blood Testing/Specimen	6 mL <b>pink top</b> K <sub>2</sub> EDTA tube	18-24°C: up to 8 hours 2-8°C: up to 7 days	24 hours	<ul style="list-style-type: none"> <li>Need a history on the maternal ABO/Rh/Antibody Screen.</li> <li>Collect the specimen using syringe or Vacutainer.</li> <li>Do not squeeze the cord.</li> <li>Specimen must be labeled with infant's identification, not mother's.</li> <li>Cord blood specimens are tested when the mother is Rh negative or O Rh positive, if mother has clinically significant antibodies, or on physician's request.</li> <li>Alternatively a 4 mL lavender top K<sub>2</sub>EDTA tube may be used.</li> </ul>

## NBRHC Laboratory Specimen Collection and Handling Guide

Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Fetal Maternal Hemorrhage Screen	4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube	Room Temperature Collect 1 hour post delivery and within 24 hours. Samples must be processed within 4 hours of collection.	24 hours	<ul style="list-style-type: none"> <li>• Samples are routinely drawn on all Rh negative mothers post-delivery, however the test is only performed if the baby is Rh positive.</li> <li>• The test is used to screen for Rh positive RBC's in an Rh negative mother's circulation. If positive, a Kleihauer stain is subsequently performed to determine the volume of fetal-maternal hemorrhage during pregnancy or at the time of delivery and the Rhogam treatment dosage.</li> <li>• The test may also be done to detect fetal trauma antepartum.</li> <li>• Consult the Transfusion Medicine Laboratory for assistance with any Interpretation if clarification is necessary.</li> <li>• If there is a delay in testing specimens may be stored at 1-10°C for no longer than 48 hours.</li> <li>• Do not use hemolyzed specimens for this test.</li> </ul>
Crossmatch <ul style="list-style-type: none"> <li>• Order as Packed Red Cells</li> </ul>	<b>Infants less than 4 months:</b> 1 mL micro <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Pediatric greater than 4 months &amp; less than 3 years:</b> 2 mL <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Children greater than 3 years &amp; less than 6 years:</b> 4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Children greater than 6 years and Adults:</b> 6 mL <b>pink top</b> K <sub>2</sub> EDTA tube	18-24°C: up to 8 hours 2-8°C: up to 7 days	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>• Patient's transfusion/pregnancy history required.</li> <li>• Blood group and antibody screening test will be performed automatically.</li> <li>• If the antibody history and screening test is <i>negative</i>, blood can usually be made available in 45 minutes from the time the order is received.</li> <li>• If the antibody history or screening test is <i>positive</i>, the specificity of the antibody(ies) is routinely investigated before issue of blood products (see antibody investigation).</li> <li>• Each blood sample for compatibility testing shall be collected within 96 hours prior to the scheduled transfusion if the recipient: <ul style="list-style-type: none"> <li>a) has been transfused with a blood component containing red cells within the previous three months</li> <li>b) has been pregnant within the previous three months</li> <li>c) the transfusion history is questionable or unavailable</li> </ul> </li> </ul>

Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Type and Screen	<p><b>Infants less than 4 months:</b> 1 mL micro <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Pediatric greater than 4 months &amp; less than 3 years:</b> 2 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Children greater than 3 years &amp; less than 6 years:</b> 4 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Children greater than 6 years and Adults:</b> 6 mL <b>pink top</b> K<sub>2</sub>EDTA tube</p>	<p>18-24°C: up to 8 hours 2-8°C: up to 7 days</p>	<p>STAT: 1 hour Routine: 4 hours</p>	<ul style="list-style-type: none"> <li>• Patient's transfusion/pregnancy history required.</li> <li>• Each blood sample for compatibility testing shall be collected within 96 hours prior to the scheduled transfusion if the recipient:               <ol style="list-style-type: none"> <li>a) has been transfused with a blood component containing red cells within the previous three months</li> <li>b) has been pregnant within the previous three months</li> <li>c) the transfusion history is questionable or unavailable</li> </ol> </li> </ul>

Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Transfusion Reaction <ul style="list-style-type: none"> <li>order in TAR by placing unit on "hold" and click "Doc Reaction" then complete reaction signs and symptoms.</li> <li>Can be ordered by lab for TAR out-of-scope areas.</li> </ul>	<b>Infants less than 4 months:</b> 1 mL micro <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Pediatric greater than 4 months &amp; less than 3 years:</b> 2 mL <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Children greater than 3 years &amp; less than 6 years:</b> 4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Children greater than 6 years and Adults:</b> 6 mL <b>pink top</b> K <sub>2</sub> EDTA tube  Urine: universal (80mL) container	18-24°C: up to 8 hours 2-8°C: up to 7 days	24 hours	<ul style="list-style-type: none"> <li>Pre &amp; post transfusion- Temperature, Blood Pressure, Pulse and other symptoms of the patient are required.</li> <li>Signs and symptoms of the reaction should be recorded on the Notification of Transfusion Reaction Form RHC 556 for TAR out-of-scope areas.</li> <li>Further blood transfusion should not occur until investigation is complete.</li> <li>Post blood and urine specimens are required to complete investigation.</li> <li>Send completed RHC556 form (if used) to the Transfusion Laboratory along with the post reaction specimens.</li> </ul>
<b>Biochemistry</b>				
Acetaminophen	6 mL <b>red top</b> (Serum) tube	2-28°C: up to 2 weeks Less than -18°C: up to 45 days	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Acetaminophen specimens should not be drawn earlier than four hours after ingestion. If the time of ingestion is not known, two or more blood samples taken at two three-hour intervals may be used to estimate acetaminophen half-life and assess toxicity.</li> <li>Haemolysed samples are not acceptable. Icteric samples are known to cause a positive bias.</li> </ul>
Albumin	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 7 days 2-8°C: up to 4 weeks Less than -18°C: indefinitely	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed.</li> <li>Of all serum proteins, albumin is present in the highest concentration.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>



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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
ALT (Alanine Aminotransferase)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 18 hours 2-8°C: up to 1 week	Routine: 4 hours	<ul style="list-style-type: none"> <li>• Hemolyzed samples cannot be processed.</li> <li>• Alanine aminotransferase is present in high activity in liver, skeletal muscle, heart and kidney.</li> <li>• Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Alcohol	6 mL <b>red top</b> (Serum) tube	18-28° C: up to 2 days 2-8° C: up to 2 weeks Less than -18°C: up to 4 weeks	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>• This method may give positive results for ethanol in the absence of ethanol if other alcohols are present in the sample.</li> <li>• Do <b>not</b> cleanse the sample draw site with alcohol, chlorhexadine or other volatile disinfectants. Use only aqueous disinfectants such as iodine.</li> <li>• Alternately, a 4.5 mL mint green (PST) Gel and Lithium Heparin tube may be used.</li> <li>• Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
ALP (Alkaline Phosphatase)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	2-28°C: up to 4 days Less than -18°C: up to 4 days	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>• Hemolyzed specimens cannot be processed.</li> <li>• Alkaline phosphatase is present mainly in bone, liver, kidney, intestine, placenta and lung.</li> <li>• Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Ammonia	4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube	18-28°C: not recommended 2-8°C: up to 3 hours Less than -18°C: up to 24 hours	STAT: 1 hour	<ul style="list-style-type: none"> <li>• Keep on ice until analysis.</li> <li>• Centrifuge specimens and remove plasma from the cellular material with 15 minutes of collection.</li> <li>• Hemolyzed samples cannot be processed.</li> <li>• Glucose at concentrations of 33.3 mmol/L can cause a decrease of 8 to 40 µmol/L in ammonia concentration.</li> </ul>
AST (Aspartate Aminotransferase)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 3 days 2-8°C: up to 7 days Less than -18°C: up to 3 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>• Hemolyzed samples cannot be processed.</li> <li>• Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
β-HCG, <b>Quantitative</b>	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 5 days Less than -20°C: up to 4 weeks	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>• β-HCG levels less than 25 IU/L do not exclude pregnancy. A further sample should be tested after 48 hours if pregnancy is suspected.</li> <li>• β-HCG results greater than or equal to 25 IU/L are considered positive.</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
$\beta$ -HCG, <b>Qualitative</b> <ul style="list-style-type: none"> <li>Serum</li> </ul>	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 48 hours Less than -20°C: Thaw and centrifuge prior to testing	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed specimens should not be used.</li> <li>Reported as positive or negative.</li> </ul>
$\beta$ -HCG, <b>Qualitative</b> <ul style="list-style-type: none"> <li>Urine</li> </ul>	Sterile universal (80 mL) container	2-8°C: up to 48 hours Less than -20°C: Thaw and centrifuge prior to testing	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>A first morning urine specimen is preferred since it generally contains the highest concentration of <math>\beta</math>-HCG.</li> <li>Urine specimens collected at anytime of day may be used.</li> <li>Reported as positive or negative.</li> </ul>
Bicarbonate (CO <sub>2</sub> )	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	Tightly capped 18-28°C: up to 24 hours 2-8°C: up to 3 days Less than -18°C: up to 1 month	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Bilirubin Unconjugated and Conjugated	<b>Infants less than 4 months:</b> 1 mL <b>gold top</b> (SST) tube <b>Pediatric to Adult:</b> 4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 4 hours 2-8°C: up to 7 days Less than -18°C: up to 6 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed.</li> <li>Protect specimens from light by wrapping in foil if testing is delayed.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
CRP (C-Reactive Protein)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 4 hours 2-8°C: up to 3 days Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Please note this is regular CRP and not hsCRP.</li> </ul>
Calcium <ul style="list-style-type: none"> <li>Peripheral Blood</li> </ul>	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 4 hours 2-8°C: up to 22 days Less than -18°C: up to 1 year	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Blood from patients receiving Hypaque radiographic contrast agent cannot be used.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Calcium <ul style="list-style-type: none"> <li>Urine</li> </ul>	24 hour urine container or Random: universal (80mL) container	18-28°C: up to 5 days 2-8°C: up to 5 weeks Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Acidified urine specimens should have a pH range of 1.5 to 5.0. Samples with pH below 1.5 may result in a negative bias.</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Carbamazepine (Tegretol)	6 mL <b>red top</b> (Serum) tube	2-28°C: up to 5 days Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Sample is <b>not</b> to be collected using gold top (SST) tube or mint green (PST) tube.</li> <li>Sample should be drawn just before the next dose for trough values into a red top tube or a lithium heparin tube.</li> <li>Samples greater than 85 µmol/L must <b>NOT</b> be diluted and will be referred out for analysis by alternate method if requested by attending physician.</li> <li>Centrifuge specimens and remove the serum from the cellular material within 4 hours of collection.</li> <li>Alternately, a 6 mL dark green top Lithium Heparin tube may be used.</li> </ul>
Carboxyhemoglobin	Venous: 6 mL <b>dark green top</b> Lithium Heparin tube Arterial: <b>safePICO™</b> Self-fill Heparinized Syringe	Room Temperature: up to 24 hours	STAT: 30 minutes	<ul style="list-style-type: none"> <li>Do <b>not</b> open tube. Sample should be tested within 24 hours of collection.</li> <li>Sample <i>may</i> be transported by pneumatic tube as the pO2 is not reportable.</li> </ul>
Chloride	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 7 days 2-8°C: up to 4 weeks Less than -18°C: indefinitely	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Avoid drawing specimen from an arm receiving an intravenous infusion. If necessary stop IV for 2 minutes and collect a 6 mL red top discard tube prior to the sample.</li> <li>Chloride not available on urine samples.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Cholesterol	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: not recommended 2-8°C: up to 3 days Less than -18°C: up to 3 weeks	Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Cortisol • Peripheral Blood	5 mL <b>gold top</b> (SST) tube	15-30°C: for testing return to storage at 2-8°C: up to 5 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid or hemolyzed specimens, these conditions may affect test results.</li> </ul>

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Cortisol • Urine	24 hour urine container or Random: universal (80mL) container	15-30°C: for testing return to storage at 2-8°C: up to 5 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do <b>NOT</b> add preservative to urine specimen.</li> <li>Urine specimens must be pretreated, refer to manufacturer extraction instructions.</li> </ul>
CK (Creatine Kinase)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28 °C: up to 4 hours 2-8°C: up to 5 days Less than -18°C: up to 4 weeks.	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Creatinine (eGFR)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 5 days 2-8°C: up to 30 days Less than -18°C: indefinitely	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>eGFR calculation reported for all creatinine results.</li> <li>This calculation is valid only in patients with stable renal function.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Digoxin	6 mL <b>red top</b> (Serum) tube only	18-28°C: up to 8 hours 2-8°C: up to 1 week Less than -18°C: up to 4 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Samples should be drawn at least six to eight hours after the last dose.</li> <li>Centrifuge specimens and remove the serum or plasma from the cellular material within 4 hours of collection.</li> </ul>
Ferritin	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 5 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>
Folate	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 7 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid or hemolyzed specimens, these conditions may affect test results.</li> <li>Samples to be tested for folate should be protected from light. Light accelerates the degradation of folate.</li> </ul>
Free T3	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 7 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>
Free T4	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 7 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>
FSH	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 6 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>
GGT (Gamma Glutamyltransferase)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	2-28°C: up to 7 days Less than -18°C: up to 2 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>

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Gentamicin	6 mL <b>red top</b> (Serum) tube	18-28°C: up to 2 hours 2-8°C: up to 7 days Less than -18°C: up to 14 days	Routine: 4 hours	<ul style="list-style-type: none"> <li>For patients receiving gentamicin via conventional dosing methods peak and trough drug monitoring should begin after a steady state is achieved (usually after 3-4 doses). Samples for peak concentrations should be collected 60- 90 minutes after intravenous infusion. Samples for trough concentrations should be collected within 30 minutes of the next dose.</li> <li>Centrifuge specimens and remove the serum from the cellular material within one hour of collection. Store refrigerated or frozen until assayed.</li> <li>Alternatively, a 4.5 mL mint green top (PST) Gel and Lithium Heparin tube may be used.</li> </ul>
Glucose <ul style="list-style-type: none"> <li>Random</li> </ul>	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 24 hours 2-8°C: up to 7 days Less than -18°C: up to 1 year	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Glucose <ul style="list-style-type: none"> <li>Fasting</li> </ul>	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 24 hours 2-8°C: up to 7 days Less than -18°C: up to 1 year	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Patient should have nothing to eat or drink for 8 hours prior to collection of specimen for fasting glucose.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Glucose <ul style="list-style-type: none"> <li>Synovial Fluid</li> </ul>	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Fill to appropriate volume for correct specimen to anticoagulant ratio.</li> <li>Mix well to avoid clots.</li> <li>Tests ordered under Synovial Fluid Profile: Glucose, Total Protein, Uric Acid and Crystal microscopy.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send sample through pneumatic tube system.</li> </ul>
HBsAg	5 mL <b>gold top</b> (SST) tube	15-30°C: for testing return to storage at 2-8°C: up to 5 days Less than -20°C: up to 4 weeks	STAT: 2 hours Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, this condition may affect test results.</li> <li>All samples testing as reactive or positive for HBsAg will be sent to PHOL for confirmatory testing.</li> </ul>
HDL Cholesterol	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	2-8°C: up to 3 days Less than -20°C: up to 3 weeks	Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> <li>Lipid Profile Includes: Cholesterol, HDL Cholesterol, LDL Cholesterol, Triglycerides and Cholesterol/HDL ratio.</li> </ul>

Note: Unless otherwise indicated specimens are peripheral blood and urine ONLY, intraosseous blood samples are not acceptable for laboratory examination. Page 21 of 37

## NBRHC Laboratory Specimen Collection and Handling Guide

Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Hemoglobin A1c	4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube	2-28°C: up to 3 days	Routine: 4 hours	<ul style="list-style-type: none"> <li>Any cause of shortened red cell survival (hemolytic anemia or other hemolytic diseases, pregnancy, recent significant blood loss) will reduce exposure of red cells to glucose with a consequent decrease in %A1c values.</li> <li>Caution should be used when interpreting the %A1c results from patients with chronic blood loss and consequent variable erythrocyte lifespan.</li> <li>Iron deficiency anemia can lead to an increased erythrocyte mass, thus altering the average age of erythrocytes.</li> </ul>
Immunofixation (IFE)	5 mL <b>gold top</b> (SST) tube	2-8°C: up to one week Less than -18°C: up to 4 weeks	Up to 14 Days	<ul style="list-style-type: none"> <li>Protein Electrophoresis is always performed first.</li> <li>IFE is performed when an abnormal globulin band is initially detected on protein electrophoresis.</li> <li>Subsequently IFE is performed at the discretion of the pathologist.</li> <li>Alternatively, a 6 mL red top (serum) tube may be used.</li> </ul>
Iron	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 4 days 2-8°C: up to 7 days Less than -18°C: up to 3 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed specimens will not be processed because of the high concentration of iron in hemoglobin.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
β-Hydroxybutyrate (Ketones) • Peripheral Blood	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	2 to 8°: up to 7 days	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>For urine ketones order a urinalysis.</li> </ul>
Lactate (Lactic Acid)	6 mL <b>grey top</b> Sodium Fluoride Potassium Oxalate tube	18-28°C: up to 8 hours 2-8°C: up to 14 days Less than -18°C: up to 1 month	STAT: 1 hour	<ul style="list-style-type: none"> <li>Venous specimens should be obtained <b>without</b> the use of a tourniquet. The patient should avoid any exercise of the arm or hand before or during collection of the specimen.</li> <li>Fluoride oxalate specimens must be collected in tubes that are at least half-full. Smaller volumes can result in a negative bias.</li> <li>Centrifuge specimens and remove the plasma from the cellular material <b>within</b> 15 minutes of collection.</li> </ul>

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LDH (Lactate Dehydrogenase) • Peripheral Blood	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 2 days 2-8°C: not recommended Less than -18°C: not recommended	Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
LDH • Peritoneal Fluid • Pleural Fluid	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Fill to appropriate volume for correct specimen to anticoagulant ratio</li> <li>Mix well to avoid clots.</li> <li>Do <b>NOT</b> send sample through pneumatic tube system.</li> </ul>
LH (Leutinizing Hormone)	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 5 days Less than -20°C: up to 4 weeks	Routine: 4 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens. Turbidity may affect test results.</li> </ul>
Lipase	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 7 days 2-8°C : up to 3 weeks Less than -18°C: up to 5 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> <li>Do not use grossly lipemic samples they may show a large negative bias.</li> </ul>
Lithium	6 mL <b>red top</b> (Serum) tube	18-28°C: up to 8 hours 2-8°C: up to 24 hours Less than -18°C: up to 6 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Samples are commonly drawn approximately 12 hours after the last dose of lithium has been taken.</li> </ul>
Magnesium • Peripheral Blood	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	2-28°C: up to 1 week Less than -18°C: up to 1 month	Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed specimens can cause falsely elevated results due to intracellular magnesium levels.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Magnesium • Urine	24 hour urine container or Random: universal (80mL) container	2-28°C: up to 1 week Less than -18°C: up to 1 month	Routine: 4 hours	<ul style="list-style-type: none"> <li>Do <b>NOT</b> add preservative to urine specimen.</li> </ul>
Methemoglobin (MetHb)	Venous: 6 mL <b>dark green top</b> Lithium Heparin tube Arterial: <b>safePICO™</b> Self-fill Heparinized Syringe	Room Temperature: up to 24 hours	STAT: 30 minutes	<ul style="list-style-type: none"> <li>Do <b>not</b> open tube. Sample should be tested within 24 hours of collection.</li> <li>Sample <i>may</i> be transported by pneumatic tube as the pO2 is not reportable.</li> </ul>
PTH (Parathyroid Hormone)	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 2 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens. Turbidity may affect test results.</li> </ul>

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Phenytoin (Dilantin)	6 mL <b>red top</b> (Serum) tube	18-28°C: up to 8 hours 2-8°C: up to 1 week Less than -18°C: up to 12 weeks	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Specimens should be drawn just before the next dose for trough values.</li> <li>If toxicity is suspected, specimens may be drawn at any time.</li> <li>Hemolyzed samples cannot be processed.</li> <li>Do <b>NOT</b> collect using a gold top (SST) Vacutainer tube.</li> </ul>
Phosphorus <ul style="list-style-type: none"> <li>Peripheral Blood</li> </ul>	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 3 days 2-8°C: up to 7 days Less than -18°C: up to 2 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed. Hemolysis produces elevated phosphorus values due to inorganic phosphates and phosphatases present in red blood cells.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Phosphorus <ul style="list-style-type: none"> <li>Urine</li> </ul>	24 hour urine container or Random: universal (80mL) container	18-28°C: up to 6 hours 2-8°C: up to 2 days Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Add 20 mL of 6 N HCl to the container prior to collection of the urine (use 1 mL of 6 N HCl for a random specimen). Final pH must be between 1.5 to 5.0</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>
Potassium	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	2-28°C: up to 6 weeks Less than -18°C: up to 1 year	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Patient should avoid any exercise of the arm or hand before or during collection because opening and closing the fist increases potassium concentrations by 10% to 20%.</li> <li>Avoid drawing specimen from an arm receiving an intravenous infusion. If necessary stop IV for 2 minutes and collect a 6 mL red top discard tube prior to the sample.</li> <li>Hemolyzed samples cannot be processed.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Potassium <ul style="list-style-type: none"> <li>Urine</li> </ul>	24 hour urine container or Random: universal (80mL) container	18-28°C: up to 4 days 2-8°C: up to 7 days Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Do <b>NOT</b> add preservative to urine specimens.</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>
Prolactin	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 5 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Macroprolactin has been known to interfere with this assay, causing elevated prolactin results. Therefore, elevated prolactin results will be investigated for macroprolactin.</li> </ul>



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Protein <ul style="list-style-type: none"> <li>CSF</li> </ul>	CSF tubes from CSF collection tray (collected in order)	18-28°C: up to 4 hour 2-8°C: up to 3 days Less than -18°C: up to 6 months Less than -70°C: indefinitely	STAT: 1 hour	<ul style="list-style-type: none"> <li>Hemolysed specimens should not be used. Hemoglobin is a protein and its presence in cerebrospinal fluid will result in an increase in measured protein.</li> <li>Samples greater than 1 mL should be centrifuged prior to testing.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> </ul>
Protein, Total <ul style="list-style-type: none"> <li>Peripheral Blood</li> </ul>	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 4 hours 2-8°C: up to 3 days Less than -18°C: up to 6 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Protein, Total <ul style="list-style-type: none"> <li>Peritoneal Fluid</li> <li>Pleural Fluid</li> <li>Synovial Fluid</li> </ul>	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Fill to appropriate volume for correct specimen to anticoagulant ratio.</li> <li>Mix well to avoid clots.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send sample through pneumatic tube system.</li> </ul>
Protein, Total <ul style="list-style-type: none"> <li>Urine</li> </ul>	24 hour urine container or Random: universal (80mL) container	18-28°C: up to 4 hours 2-8°C: up to 3 days	Routine: 4 hours	<ul style="list-style-type: none"> <li>Do <b>NOT</b> add preservative to urine specimens.</li> <li>Do not use hemolyzed specimens. Hemoglobin is a protein and its presence in urine results in an increase in measured protein. Red-coloured urine may indicate the presence of intact red blood cells, which can be removed by centrifugation.</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>
PSA, Total	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 4 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>
Salicylate	6 mL <b>red top</b> (Serum) tube	2-28°C: up to 7 days Less than -18°C: up to 6 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Centrifuge specimens and remove the serum from the cellular material within 4 hours of collection.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Sodium <ul style="list-style-type: none"> <li>Peripheral Blood</li> </ul>	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 4 days 2-8°C: up to 1 week Less than -18°C: up to 6 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Avoid drawing specimen from an arm receiving an intravenous infusion. If necessary stop IV for 2 minutes and collect a 6 mL red top discard tube prior to the sample.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>

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Sodium • Urine	24 hour urine container or Random: universal (80mL) container	18-28°C: up to 24 hours 2-8°C: up to 7 days Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Do <b>NOT</b> add preservative to urine specimens.</li> <li>Keep specimen refrigerated until analysis.</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>
Transferrin	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C : up to 1 day 2-8°C: up to 3 days Less than -20°C: indefinitely	Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> <li>An iron is automatically provided with this test.</li> </ul>
Triglycerides	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 3 days 2-8°C: up to 7 days Less than -18°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
HS Troponin I	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	15-30°C: for testing up to 8 hours. 2-8°C: up to 2 days Less than -20°C: up to 13 weeks	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Avoid using hemolyzed samples as results can be affected.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> <li>Serum and lithium heparin samples should not be used interchangeably when collecting serial samples from the same patient.</li> <li>Acutely, serial specimens should be drawn at onset of symptoms, 2 and 4 hours.</li> <li>When requested, subsequent serial collections will occur at 8 hour intervals (07:00, 15:00, 23:00).</li> </ul>
TSH	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 7 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Results falling below or above the reference range will be tested for FT4.</li> <li>Do not use turbid specimens. Turbidity in specimens may affect test results.</li> </ul>
Urea • Peripheral Blood	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 1 day 2-8°C: up to 5 days Less than -18°C: up to 6 months	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples cannot be processed.</li> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>
Urea • Urine	24 hour urine container or Random: universal (80mL) container	Refrigerated	Routine: 4 hours	<ul style="list-style-type: none"> <li>Do <b>NOT</b> add preservative to urine specimen.</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>
Uric Acid • Peripheral Blood	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 3 days 2-8°C: up to 5 days Less than -20°C: up to 6 months	Routine: 4 hours	<ul style="list-style-type: none"> <li>Alternately, a 5 mL gold top (SST) tube may be used.</li> </ul>

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Uric Acid <ul style="list-style-type: none"> <li>Synovial Fluid</li> </ul>	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Fill to appropriate volume for correct specimen to anticoagulant ratio.</li> <li>Mix well to avoid clots.</li> </ul>
Uric Acid <ul style="list-style-type: none"> <li>Urine</li> </ul>	24 hour urine container or Random: universal (80mL) container	18-28°C: up to 3 days 2-8°C: not recommended Less than -18°C: not recommended	Routine: 4 hours	<ul style="list-style-type: none"> <li>Pipette a 5 mL aliquot of urine into a separate test tube. Adjust pH between 8.5 to 10.0 dropwise using 1 N NaOH.</li> <li>Patient collection instructions form RHC954 (24 Hour Urine).</li> </ul>
Urinalysis	Sterile universal (80 mL) container	Room Temperature: up to 2 hours 2-8°C: up to 24 hours	STAT: 1 hour Routine: 2 hours	<ul style="list-style-type: none"> <li>Microscopic analysis will be reflexed by Meditech based on parameters of the results of the chemical analysis.</li> <li>On occasion, a physician may request microscopic investigation for casts or crystals even if a microscopic analysis is not reflexed.</li> <li>Samples will not be processed if greater than 24 hours since time of collection.</li> <li>Patient collection instructions form RHC 271 (Midstream Urine).</li> </ul>
Valproic Acid	6 mL <b>red top</b> (Serum) tube	18-28°C: up to 1 day 2-8°C: up to 14 days Less than -20°C: up to 14 days	Routine: 4 hours	<ul style="list-style-type: none"> <li>Valproic acid monitoring is most appropriate when the blood sample is drawn after steady-state conditions have been reached (after 4-5 half-lives on an unchanged dose regimen).</li> <li>Blood samples should be drawn immediately before the next dose.</li> </ul>
Vancomycin	6 mL <b>red top</b> (Serum) tube	18-28°C: up to 2 hours 2-8°C: up to 3 days Less than -20°C: up to 14 days	Routine: 4 hours	<ul style="list-style-type: none"> <li>Hemolyzed samples can cause results to be falsely decreased.</li> <li>Only trough samples are reported. Peak values are not clinically indicated for Vancomycin.</li> <li>Trough concentrations should be monitored after steady state is achieved and within 30 minutes of the next dose.</li> </ul>
Vitamin B12	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 7 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>
Vitamin D, 25-Hydroxy	5 mL <b>gold top</b> (SST) tube	2-8°C: up to 7 days Less than -20°C: up to 4 weeks	Routine: 24 hours	<ul style="list-style-type: none"> <li>Do not use turbid specimens, turbidity in specimens may affect test results.</li> </ul>

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<b>Biochemistry – Blood Gases and Serology</b>				
Arterial Blood Gases	<b>safePICO™</b> Self-fill Heparinized Syringe	Room Temperature: up to 30 minutes	30 minutes	<ul style="list-style-type: none"> <li>• Send to the laboratory immediately after collection, sample must be tested within 30 minutes.</li> <li>• Do <b>NOT</b> place sample on ice.</li> <li>• Do <b>NOT</b> send sample through pneumatic tube system.</li> </ul>
Venous Blood Gases	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature: up to 30 minutes	30 minutes	<ul style="list-style-type: none"> <li>• Send to the laboratory immediately after collection, sample must be tested within 30 minutes.</li> <li>• Do <b>NOT</b> place sample on ice.</li> <li>• Samples <i>may</i> be transported by pneumatic tube as the pO<sub>2</sub> is not reportable.</li> </ul>
Central Mixed Venous Blood Gas	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature: up to 30 minutes	30 minutes	<ul style="list-style-type: none"> <li>• Send to the laboratory immediately after collection, sample must be tested within 30 minutes.</li> <li>• Do <b>NOT</b> place sample on ice.</li> <li>• Do <b>NOT</b> send sample through pneumatic tube system.</li> </ul>
Cord Blood Gases	<b>safePICO™</b> Self-fill Heparinized Syringe	Room Temperature: up to 30 minutes	30 minutes	<ul style="list-style-type: none"> <li>• Send to the laboratory immediately after collection, sample must be tested within 30 minutes.</li> <li>• Do <b>NOT</b> place sample on ice.</li> <li>• Do <b>NOT</b> send sample through pneumatic tube system.</li> </ul>
Capillary Gases	Capillary Gas Collection tube	Room Temperature: up to 30 minutes	30 minutes	<ul style="list-style-type: none"> <li>• Send to the laboratory immediately after collection, sample must be tested within 30 minutes.</li> <li>• Do <b>NOT</b> place sample on ice.</li> <li>• Do <b>NOT</b> send sample through pneumatic tube system.</li> </ul>
Osmolality <ul style="list-style-type: none"> <li>• Serum</li> </ul>	5 mL <b>gold top</b> (SST) tube	Refrigerate if testing delayed.	STAT: 1 hour Routine: 4 hours	
Osmolarity <ul style="list-style-type: none"> <li>• Urine</li> </ul>	Sterile universal (80 mL) container	Refrigerate if testing delayed.	Routine: 4 hours	

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Osmolarity • Pleural Fluid	6 mL Lithium Heparin <b>dark green top</b> tube	Refrigerate if testing delayed.	Routine: 4 hours	
Mono Test	5 mL <b>gold top</b> (SST) tube	2 8°C: up to 8 days	Routine: 24 hours	• Hemolyzed specimens should not be used.
Fetal Fibronectin	<b>Cytec™</b> Specimen Collection Kit.	15-30°C: up to 8 hours 2 8°C : up to 3 days Less than -20 °C: up to 3 months	1 hour	• <b>Cytec™</b> Specimen Collection Kit must be used.
Drugs of Abuse • Urine	Sterile universal (80 mL) container	2 to 8°C: up to 2 days Less than -20°C: up to 6 months	STAT: 1 hour Routine: 4 hours	• Do not use preservatives, use fresh urine specimen. • Analytes detected include; Amphetamine, Barbiturates, Benzodiazepines, Buprenorphine, Cocaine, Fentanyl, Methamphetamine, Methadone, Opiates (Morphine), Oxycodone, Phencyclidine, Propoxyphene, Cannabinoids (THC), Tricyclic Antidepressants (TCA).
Occult Blood • Stool	Sterile universal (80 mL) container	Room Temperature	STAT: 15 minutes Routine: 4 hours	• Fecal specimens from bowel movements on three different days should be submitted for testing. • Patient collection instructions form RHC 2040 (Occult Blood).
Occult Blood • Gastric	Sterile universal (80 mL) container	Room Temperature	STAT: 15 minutes Routine: 4 hours	• A gastric aspirate obtained by nasogastric intubation or vomitus are appropriate samples for use. • This qualitative test also includes a pH.
Crystals • Synovial Fluid	6 mL Lithium Heparin <b>dark green top</b> tube	Room Temperature 2 to 8°C: up to 24 hours	24 hours	• Slides for crystals will be read by a Pathologist.
Protein Electrophoresis	5 mL <b>gold top</b> (SST) tube	2 to 8°C: up to 7 days Less than -20°C: up to 30 days	7 days	• Abnormal protein electrophoresis will reflex an immuno fixation (IFE).
Microalbumin (Random Quantitative) • Urine	Sterile universal (80 mL) container	18-28°C: up to 24 hours 2-8°C: up to 7 days	24 hours	• A microalbumin/creatinine ratio is provided. • Results above the upper limit will reflex a urine total protein
Glucose Tolerance Test (GTT) in pregnancy (50g) Screen	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 24 hours 2-8°C: up to 7 days Less than -18°C: up to 1 year	Routine: 4 hours	• No fasting required. • 50g glucose drink. • Gestational GTT screen glucose is drawn 1 hour post glucose load.

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Glucose Tolerance Test (GTT) (75g)	4.5 mL <b>mint green</b> (PST) Gel and Lithium Heparin tube	18-28°C: up to 24 hours 2-8°C: up to 7 days Less than -18°C: up to 1 year	Routine: 4 hours	<ul style="list-style-type: none"> <li>Fasting glucose needs to be drawn.</li> <li>75g glucose drink.</li> <li>If fasting glucose is greater than 7.8 mmol/L the test will be cancelled.</li> <li>Pregnant women with abnormal 50g GTT screen completes 75g gestational GTT on subsequent visit.</li> <li>Gestational 75g GTT glucose will be drawn at 1 and 2 hours post glucose load.</li> <li>Non-gestational 75g GTT glucose only drawn 2 hours post glucose load.</li> </ul>
Newborn Screening Test	Newborn Screening Cards	Room Temperature	10-14 days	<ul style="list-style-type: none"> <li>Capillary sample from the newborn's heel is required for testing.</li> <li>Newborn must be greater than 24 hours old prior to collection.</li> </ul>
<b>Hematology and Coagulation</b>				
CBC	<p><b>Infants less than 4 months:</b> 1 mL micro <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Pediatric greater than 4 months &amp; less than 3 years:</b> 2 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p> <p><b>Children greater than 3 years &amp; Adults:</b> 4 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p>	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>All three must be gently inverted a minimum of eight times to ensure proper mixing and allowed to stabilize for ten minutes prior to analysis.</li> <li>Alternately 2 mL lavender top tube for CCU arterial line and renal dialysis draws.</li> </ul>

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Prothrombin Time (INR)	<p><b>Infants less than 4 months:</b> 1.8 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p> <p><b>Pediatric greater than 4 months &amp; Adults:</b> 2.7 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p>	<p>Samples should be tested within 24 hours provided tubes are unopened and samples are stored at 18- 24°C.</p> <p>Refrigerated samples are unacceptable.</p>	<p>STAT: 1 hour Routine: 4 hours</p>	<ul style="list-style-type: none"> <li>Refrigerated samples are unacceptable.</li> <li>Platelet poor plasma may be stored at -20°C for up to two weeks or -70°C for up to six months. Samples that have been frozen should not stand at 37°C for more than five minutes after being thawed.</li> <li>9:1 (sample to anticoagulant) ratio <b>MUST</b> be met.</li> <li>Fill tube until vacuum is depleted.</li> </ul>
Thrombin Time	<p><b>Infants less than 4 months:</b> 1.8 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p> <p><b>Pediatric greater than 4 months &amp; Adults:</b> 2.7 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p>	<p>15-25°C: up to 4 hours</p>	<p>STAT: 1 hour Routine: 4 hours</p>	<ul style="list-style-type: none"> <li>Centrifuge as soon as possible after collection.</li> <li>Samples containing heparin should be run within two hours.</li> <li>9:1 (sample to anticoagulant) ratio <b>MUST</b> be met.</li> <li>Fill tube until vacuum is depleted.</li> </ul>
Activated Partial Thromboplastin Time (aPTT)	<p><b>Infants less than 4 months:</b> 1.8 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p> <p><b>Pediatric greater than 4 months &amp; Adults:</b> 2.7 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p>	<p>Samples should be tested within 4 hours provided tubes are unopened and samples are stored at 18- 24°C.</p>	<p>STAT: 1 hour Routine: 4 hours</p>	<ul style="list-style-type: none"> <li>Samples should be tested within four hours provided tubes are unopened and samples are stored at 18-24°C.</li> <li>aPTT for Unfractionated Heparin (UFH): Samples should be centrifuged within one hour of collection and tested within four hours provided tubes are unopened and samples are stored at 18-24 °C.</li> <li>Platelet poor plasma may be stored at -20°C for up to two weeks or -70°C for up to six months. Samples that have been frozen should not stand at 37°C for more than five minutes after being thawed.</li> <li>9:1 (sample to anticoagulant) ratio <b>MUST</b> be met.</li> <li>Fill tube until vacuum is depleted.</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
D-Dimer	<p><b>Infants less than 4 months:</b> 1.8 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p> <p><b>Pediatric greater than 4 months &amp; Adults:</b> 2.7 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p>	Room Temperature	STAT: 1 hour	<ul style="list-style-type: none"> <li>Centrifuge specimen for a minimum of eight minutes at 3400 rpm as soon as possible after collection. Testing should be completed within two hours of collection. Referred in frozen plasma specimens should be thawed at 37°C for no longer than five minutes and centrifuge plasma before testing. After thawing the assay must be performed within two hours.</li> <li>9:1 (sample to anticoagulant) ratio <b>MUST</b> be met.</li> <li>Fill tube until vacuum is depleted.</li> <li>Sample <b>MUST</b> be tested within 2 hours of collection.</li> </ul>
Fibrinogen (Clauss)	<p><b>Infants less than 4 months:</b> 1.8 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p> <p><b>Pediatric greater than 4 months &amp; Adults:</b> 2.7 mL <b>light blue top</b> Na. Citrate tube (3.2% only)</p>	Room Temperature	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li>Centrifuge as soon as possible after collection for a minimum of eight minutes at 3400 rpm. Although studies have demonstrated no significant change in fibrinogen values on plasma samples stored up to 72 hours at 4°C, it is good laboratory practice to test samples as soon as possible.</li> <li>9:1 (sample to anticoagulant) ratio <b>MUST</b> be met.</li> <li>Fill tube until vacuum is depleted.</li> </ul>
Platelet Function and Adhesion (PFA)	<p>2 X 2.7 mL <b>light blue top</b> Na. Citrate tube (3.2% only) <b>AND</b> 1-4 mL <b>lavender top</b> K<sub>2</sub>EDTA tube</p>	Sample stable stored at room temperature undisturbed for up to 4 hours	STAT: 1 hour Routine: 4 hours	<ul style="list-style-type: none"> <li><b>DO NOT CENTRIFUGE THE SAMPLE.</b></li> <li>Patient preparation: If possible, medications containing ASA, ibuprofen or any drug known to act as a platelet antagonist should be stopped seven to ten days prior to testing but must be discontinued a minimum of 48 hours.</li> <li>Venipuncture should be performed using a 21 gauge or larger needle. Discard sample if there is venous collapse or stoppage of blood flow during collection. Do not use hemolyzed samples.</li> <li><b>DO NOT</b> send sample through pneumatic tube system.</li> <li>9:1 (sample to anticoagulant) ratio <b>MUST</b> be met.</li> <li>Fill tube until vacuum is depleted.</li> </ul>



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Erythrocyte Sedimentation Rate (ESR)	<b>Infants and Pediatric less than 3 years:</b> 2 mL <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Children greater than 3 years &amp; Adults:</b> 4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube	Room Temperature: less than 6 hours 2-8°C: up to 24 hours	24 hours	<ul style="list-style-type: none"> <li>All tubes for ESR must have a minimum of 2 mL</li> <li>Alternately, 2 mL (full) lavender top tube for CCU arterial line and renal dialysis draws.</li> </ul>
Solubility Test of Hemoglobin S (Sickle Test)	<b>Pediatric greater than 6 months &amp; less than 3 years:</b> 2 mL <b>lavender top</b> K <sub>2</sub> EDTA tube  <b>Children greater than 3 years &amp; Adults:</b> 4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube	1-10°C: up to 45 days	24 hours	<ul style="list-style-type: none"> <li>Testing will not be done on patients less than 6 months of age. These patients should be investigated by hemoglobin electrophoresis</li> </ul>
Malaria Smear	4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube is acceptable if received in lab within 1 hour of collection.	Room Temperature: up to 1 hour	STAT: 1 hour	<ul style="list-style-type: none"> <li>A malaria request consists of three orders for malaria in a twenty four hour period. ie: 0 hours 12 hours and 24 hours unless specified by a pathologist.</li> <li>Specimen is considered stat and should be received in the lab within one hour of collection.</li> </ul>
Kleihauer	4 mL <b>lavender top</b> K <sub>2</sub> EDTA tube less than 6 hours old.	Room Temperature: up to 6 hours	24 hours	<ul style="list-style-type: none"> <li>The Kleihauer stain determines the amount fetal hemoglobin in blood smears.</li> </ul>
<b>Anatomical Pathology - Histology/Cytology</b>				
Tissue for Pathology (routine order)	Suitable sized container containing 10% buffered Formalin. (must be minimum 1:20 ratio, tissue to formalin)	Room Temperature	3-5 days	<ul style="list-style-type: none"> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> <li>Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> <li>Anatomical pathology specimens shall be in a large enough container to accommodate the specimen and fixative (recommended volume 10-20X specimen size).</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Breast Tissue	Suitable sized container containing 10% buffered Formalin. (must be minimum 1:20 ratio, tissue to formalin)	Room Temperature	3-6 days	<ul style="list-style-type: none"> <li>• Cold ischemic time for fresh breast tissue specimens for prognostic and predictive markers shall be documented and limited to one hour. <i>Once a specimen is removed from the patient, the ischemic time begins. Within an hour, the specimen must be inspected grossly, have margins designated, be sliced at 5-10 mm intervals (bread-loafing) and be placed in sufficient volume of neutral buffered formalin. This ensures complete fixation of the proteins on which prognostic markers will be tested.</i></li> <li>• This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>• Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> <li>• Phone Pathology Assistant (ext 2958) when sending breast tissue. If no answer call the Histology Lab (ext 2950).</li> <li>• Specimen <b>MUST</b> be handed off directly to Pathology/ Histology personnel.</li> </ul>
Sentinal Lymph Nodes	Suitable sized container containing 10% buffered Formalin. (must be minimum 1:20 ratio, tissue to formalin)	Room Temperature	3-5 days	<ul style="list-style-type: none"> <li>• All radioactive dye injected tissue should be labeled as such.</li> <li>• Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>
Tissue for Pathology-Quick Section	Dry specimen container accompanied by a completed requisition	Room Temperature	20 minutes from time of receipt	<ul style="list-style-type: none"> <li>• Frozen Section must be prescheduled in Expanse and specimen <b>MUST</b> be handed off directly to Pathology/ Histology personnel.</li> <li>• Phone Pathology Assistant (ext 2958) when sending the section. If no answer call the Histology Lab (ext 2950).</li> <li>• This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>• Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Lymphoma Protocol	Send specimen in saline soaked gauze accompanied by a completed requisition (include patient history).	Room Temperature	3-5 days	<ul style="list-style-type: none"> <li>Lymph Node Protocols must be prescheduled <b>Before 12:00</b> Monday to Thursdays in Expanse under Frozen Sections.</li> <li>This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>
Testicular Biopsy	Specimen to be placed in Bouin's Fixative.	Room Temperature	3-5 days	<ul style="list-style-type: none"> <li>Lab must be notified at least ONE WEEK prior to procedure in order to have fixative available.</li> <li>This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>
Kidney Biopsy	Technologist will bring appropriate fixatives for kidney biopsy testing.	Room Temperature	4-6 weeks	<ul style="list-style-type: none"> <li>Kidney biopsies must be prescheduled with Histology Lab (ext 2950) <b>Before 12:00</b> Monday to Thursdays. Technologist will go to Ultrasound for collection of specimens.</li> <li><b>Patient history must be available.</b></li> <li>This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>
Muscle Biopsy	Dry container with dry specimen.	Room Temperature	2-4 weeks	<ul style="list-style-type: none"> <li>Muscle biopsies must be prescheduled with Histology (ext 2950) <b>Before 12:00</b> Monday to Thursdays.</li> <li><b>Patient history must be available.</b></li> <li>This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>
Bone Marrow	Technologist will bring appropriate fixatives for bone marrow testing.	Room Temperature	3-5 days	<ul style="list-style-type: none"> <li>Must be prescheduled with Pathologist.</li> <li>Technologist accompanies Pathologist for Specimen collection.</li> <li>This is an <b>irretrievable sample. DO NOT</b> send through pneumatic tube system.</li> <li>Histology not available in Expanse OM, complete Tissue Requisition Form RHC691</li> </ul>
Stool (WBC, eosinophils and qualitative fat)	Sterile (universal) container	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Collect samples in dry containers and complete General Laboratory Requisition form RHC1168.</li> <li>Samples processed Monday to Friday in Histology.</li> </ul>

Note: Unless otherwise indicated specimens are peripheral blood and urine ONLY, intraosseous blood samples are not acceptable for laboratory examination. Page 35 of 37

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Gynaecology (Pap Smears – Liquid Based & Conventional)	Sample collected into Surepath Liquid- based Collection System routinely. Pregnant women or Post- Hysterectomy patients collected with Ayre scraper onto 1 slide and immediately fixed with Cytospray fixative.	Room Temperature	7 days	<ul style="list-style-type: none"> <li>Pregnant women over 10 weeks and post-hysterectomy use conventional method with Ayre scraper on 1 slide which is immediately fixed with Cytospray fixative; make sure the patient's full name is written on the frosted end of the glass slide with lead pencil or permanent marker.</li> <li>Gyne kits (both conventional and liquid based) are available from the Cytology Lab.</li> <li>Cytology not available in Expanse OM, complete Cytology Requisition Form RHC2425.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> </ul>
Urinary Tract for Cytology	Collect into Universal container containing <b>toxic CytoRich</b> Red Collection fluid Include equal parts of <b>CytoRich</b> Red fixative and specimen	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Indicate source of specimen on requisition and container.</li> <li><b>DO NOT</b> send through pneumatic tube system.</li> <li>Patient collection instructions form RHC 952 (Midstream Urine for Cytology).</li> <li>Cytology not available in Expanse OM, complete Cytology requisition Form RHC2425.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> </ul>
Fine Needle Aspirates for Cytology	Collect into Universal container containing <b>toxic CytoRich</b> Red Collection fluid Include equal parts of <b>CytoRich</b> Red fixative and specimen	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Indicate source of specimen on requisition and specimen container along with any pertinent clinical data.</li> <li>Cytology not available in Expanse OM, complete Cytology requisition Form RHC2425.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> </ul>
Contact/ Touch Smears/ Tzank	2 touch smears that are immediately fixed with Cytospray fixative, deliver to Laboratory immediately	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>Indicate source of specimen on requisition and container.</li> <li>Collect one or two touch preparations that are fixed with Cytospray fixative.</li> <li>Cytology not available in Expanse OM, complete Cytology requisition Form RHC2425.</li> <li>This is an <b>irretrievable sample</b>. <b>DO NOT</b> send through pneumatic tube system.</li> <li>Touch prep kits and Cytospray fixative are available from the Cytology Lab (ext 2943).</li> </ul>

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Test / Specimen Type	Container	Optimum Specimen Holding Temperature	Turn Around Time	Notes / Specimens Stability Criteria
Direct Smear/Nipple Discharge	The discharge should be smeared directly from the nipple onto a glass slide and immediately fixed with Cytospray fixative.	Room Temperature	24-48 hours	<ul style="list-style-type: none"> <li>• Make sure the patient's full name is written on the frosted end of the glass slide with lead pencil or permanent marker.</li> <li>• Submit slide(s) to Cytology Lab in a cardboard mailing folder along with the Cytology Requisition form RHC2425.</li> <li>• Collection kits and Cytospray fixative are available from the Cytology Lab (ext 2943).</li> </ul>