

## SCCA LABORATORIES

825 Eastlake Ave E  
PO Box 19023  
Seattle, WA 98109-1023

# SPECIMEN COLLECTION & HANDLING MANUAL

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Cerebral Spinal Fluid Protein

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Glucose

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## **Microbiology Specimens**

Additional testing may be performed at the University of Washington Laboratory of Medicine. Follow this link to search their online [Lab User's Guide](#).

## **Molecular (PCR) Studies**

Molecular studies to be performed by UW Molecular Hematopathology. Testing available:

### Lymphoma Associated Abnormalities

B-Cell clonality (IgH & IgKappa gene rearrangement)

T-Cell clonality

t(11;14) (Mantle Cell)

t(14;18) (Follicular / Large Cell)

### Leukemia/Myeloproliferative Disorder-Associated Abnormalities

BCR/ABL Qualitative, p210 & p190 (CML & Ph+ ALL)

BCR/ABL Quantitative, p210

BCR/ABL Quantitative, p190

FLT3 ITD Mutation, DNA Screen

NPM1 Insertion Mutation

CEBPA Mutation, DNA Screen

JAK2 V617F Mutation

For more detailed information refer to UW Lab Medicine online [Lab User's Guide](#).

## **Pathology**

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Additional testing may be performed at the University of Washington Laboratory of Medicine. Follow this link to search their online [Lab User's Guide](#).

## Introduction

This manual summarizes requirements for collecting and handling specimens for testing in the Clinical Laboratories of the Seattle Cancer Care Alliance. It has been prepared and revised as part of our ongoing efforts to provide the best possible patient care.

The directors, supervisors and technicians of the respective laboratories, and the QA/Integrity Manager, Clinical Labs have written these procedures. Revisions and supplements will be provided as needed.

We urge you to let us know of any errors, ambiguities or other deficiencies in this manual. Please contact the director or manager of the appropriate laboratory. You may also contact Beth-Ann Saul at 288-1038.

Daniel Sabath, MD, PhD      *Date* June 29, 2010

Daniel Sabath, MD, PhD  
Director of Clinical Laboratories  
Seattle Cancer Care Alliance

**\*\* This manual is reviewed and updated as needed.**

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## LAB LOCATIONS AND HOURS OF SERVICE

<b>Laboratory</b>	<b>Building</b>	<b>Room</b>	<b>Phone</b>	<b>Pager</b>	<b>Service Hours</b>
<b>Alliance Lab Testing</b>	SCCA	1500	Main: 288-1088 Chem: 288-1094 Coag: 288-1094 Heme: 288-1084		M-F 7am – 8pm <i>Weekends &amp; Holidays</i> 7am – 5pm
<b>Alliance Lab Specimen Processing</b>	SCCA	1500	288-1088		M-F 6:30am – 10pm <i>Weekends &amp; Holidays</i> 7:30am – 5:30pm
<b>Blood Draw</b>	SCCA	1500	Blood Draw: 288-1214  Reception: 288- 6201		M-F 7am – 8pm <i>Weekends &amp; Holidays</i> 8am – 5pm
<b>Cellular Therapy (Cryobiology)</b>	Thomas	DE-590	288-1200	<i>Weekends &amp; Holidays</i> 541-0291	M-F 7am – 8pm <i>Weekends &amp; Holidays</i> 9am – 5pm; leave message on voicemail; on-call tech will respond
<b>CIL</b>	SCCA	7107	288-7700 CIL Lab Coordinator Office (LABCO)		M-F 8:30am – 5pm
<b>Cytogenetics</b>	SCCA	7503	288-1395 specimen desk 288-1390 reception desk	340-7207	M-F 8am-5pm <i>Weekends &amp; Holidays</i> on call 9am-5pm
<b>Pathology</b>	SCCA	7910	288-1355   Pathologist: 288-1343	Technologist 559-6195  Pathologist 419-3994	Monday 8am – 7pm Tues-Fri 4:30am - 7pm Sat 7:30am - 6pm <i>Sun and all other times</i> page Path Technologist <i>Pathology is on call:</i> 24 hours 7 days a week, including Weekends & Holidays
<b>Pharmacokinetics</b>	SCCA	7405	288-7389	Pager 994-5942	Tues – Sat 8am – 5pm <i>Sundays, Mondays and Holidays: on call</i>
<b>Transfusion Service Support</b>	SCCA	1500	288-1095		M-F 7am – 10pm <i>Weekends and Holidays</i> 7:30am – 5:30pm

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## After Hours/Special Instructions

### **Alliance Lab**

#### **Testing: Hematology, limited chemistry, coagulation, blood gas analysis, and urinalysis.**

Routes tests not performed in the Alliance Laboratory to outside reference and research labs.

Provides transfusion service support.

Location: SCCA Room 1-500, Phone 288-1088

Routine hours: M – F, 7am – 8pm; 7am – 5pm, weekends and holidays

*After hours:* patients are seen at UWMC

#### **Blood Draw:** SCCA Room 1-500, Telephone: 288-1214 or 288-6201

Routine Hours: M – F 7am – 8pm; 8am – 5pm weekends and holidays

*After hours:* Infusion until 10pm. After 10pm patients are seen at UWMC.

#### **Alliance Lab Specimen Processing:** SCCA Room 1-500; Telephone: 288-1088

Routine hours: M – F, 6:30am – 10pm; 7:30am – 5:30pm, weekends and holidays

*After hours:* patients are seen at UWMC

### **Cellular Therapy: CD34 Assay**

Location: Thomas Building DE-590, Telephone: 288-1200

Routine hours: M – F 7am – 8pm, Processing 7am – 4pm

Weekends and holidays 9am – 5pm, Processing 9am – 3pm

*After hours:* Pager 206-540-2851

*After hour specimen handling:* Use 7 mL EDTA tube. Store at 4°C and transport to lab the next morning.

### **Clinical Immunogenetics Lab: HLA Typing and Chimerism Testing**

Location: SCCA Room 7-107, Telephone (CIL Lab Coordinator Office): 288-7700

Routine hours: M – F 8am – 5pm (see specific tests for cutoff times for specimen receipt)

*After hours specimen handling:* Draw sample and keep at room temperature. Deliver to lab at 8am the next working day.

### **Cytogenetics Lab: Chromosome analysis or (FISH)**

Location: SCCA Room 7-503, Telephone: 288-1395 (specimen desk); 288-1390 (reception)

Routine hours: M – F 8am – 5pm

*After hours:* on call 9am – 5pm weekend and holidays, Pager 206-340-7207

*After hour specimen handling:* Draw venous blood or marrow in tubes containing sodium heparin. Store at room temperature until delivery to lab during day shift or on-call hours. **DO NOT HOLD SPECIMENS OVER THE WEEKEND** - contact pager.

**Pathology: Accepts specimens directly at the Pathology Window**

Location: SCCA Room 7-910, Telephone: 288-1355

Routine hours: Monday 8am – 7pm; Tuesday – Friday 4:30am – 7pm

*Saturday 7:30am – 6pm and Sunday and all other times, page the on call Pathology Technologist.*

There is an on-call pathologist & Histology tech 24 hours/ 7 days a week including holidays and weekends.

*After hours:* In advance of procedure, notify the SCCA Pathology on-call technologist at pager number 206-559-6195. When specimen is available, notify the on-call technologist at pager 206-559-6195.

**Pharmacokinetics: Performs Busulfan Testing**

Location: SCCA Room 7-405, Telephone: 288-7389

Routine hours: Tuesday – Saturday 8am – 5pm. On call Sundays, Mondays and Holidays.

*After hours:* Contact pager 206-994-5942

**Microbiology Specimens:**

Sent by Specimen Processing to UWMC Microbiology; NW177; 598-6471

**Virology Specimens:**

Sent by Specimen Processing to Virology at Seattle Children's; Room W 8814; 987-2088

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**SCCA/RESEARCH/AFFILIATED LABORATORY  
LOCATIONS RESOURCE GUIDE**

<b>Lab Name</b>	<b>Type of Lab</b>	<b>Lab Location</b>	<b>Phone Number</b>	<b>Primary Contact</b>	<b>Alternate Contact</b>	<b>Specific Protocol Link</b>
Alliance Lab (SCCA)	General Labs	G1-500	288-1088	Doug Howlett	Gloria Calzado Crystal Lee Beth MacLeod Lily Garcia	
Alliance Lab (SCCA)	Blood Draw	G1-500	288-1214	Paul Helmuth	Doug Howlett	
Bernstein Lab	Pediatric Oncology	D2-367	667-4886	Sommer Castro 667-2286	Barbara Killam 677-4757	
Boeckh Lab	Infectious Disease	D3-263	667-4337	Terry Stevens-Ayers 667-4337	Cheryl Callais 667-6805	1587, 1660, 32.01, 1821
Cellular Therapy (SCCA)	Cell Processing/ CD34 Assay	DE-590	667-4989	Cindy Gist	Chris Thibault	
Clinical Immunogenetics Lab (SCCA)	Chimerism Testing/ HLA Typing	G7-107	288-7700 CIL Coord. Office	Lois Regen 288-1147	Linda Atkins 288-1151	
Cytogenetics Lab (SCCA)	Chromosome Analysis or (FISH)	G7-503	288-1390	Kate Kroeger 288-1389	Stacie Thomas 288-1390	
Deeg Lab	Transplantation Biology	D1-287		Mario Marcondes 667-6137	Xiang Li 667-4354	
Frenkel Lab	Infectious Disease	Seattle Children's	884-3440	Ingrid Beck	Sheila Strychak 884-7201	List Study & Send Attention: Lisa Frenkel & Greg Pepper
Greenberg Lab	Immunology	D3-335		<i>Page:</i> Gunnar Ragnarsson at 559-3215	667-5918	Protocol 1584
Hans Ochs/Troy Torgerson Lab	Pediatric Immunology	Seattle Children's Research Institute C9S-7	987-7442	Mary Hackett	Dawn Marie Pares 884-7418	
Hansen Lab / Research Cell Bank	Human Immunogenetics Program (HIP)	D2-345 or D2-346	667-3756 or 667-1450	Jenna Gravley 667-1450	Heather Risbeck 667-3756	Protocol 1606
Harborview Lab	General Lab	GWH-47	744-3451	Robert Coombs, MD, PhD 897-5202	Geoffrey Baird, MD, PhD 744-9787	

## LOCATIONS RESOURCE GUIDE

Lab Name	Type of Lab	Lab Location	Phone Number	Primary Contact	Alternate Contact	Specific Protocol Link
Kiem Lab	Transplantation Biology	D1-275	667-6981	Christina Ironside 667-2591	Brian Beard 667-5984	
Maloney Lab	Transplantation Biology	D1-331	667-4260	Barbara Pender 667-4260	Erlinda Santos 667-6029  Gretchen Johnson 667-4059	
McElrath Lab	Infectious Disease HVTN	1616 Eastlake Ave	667-2560	David Chambliss		
McElrath Lab	Infectious Disease Standard Research	D3-355	667-6995	John McNevin 667-5706	Lily Peterson 667-6995	1410 2210
Molecular Virology Clinical	Molecular Virology	1616 Eastlake Suite 320	685-6656	Linda Cook 685-7584	Pager 989-6561	
Molecular Diagnostic Research	Molecular Virology	1616 Eastlake Suite 320	685-7720	Meei-Li Huang 685-7104		
Molecular Oncology (FHCRC)	Molecular Oncology	D2-281	667-2592	Jill Harrell 667-6065	Cathy Spurgeon 667-5067	
Nash Lab	Transplantation Biology	D1-295	667-5171	Kraig Abrams 667-5931	Billie Hwang 667-1892	
Lee Nelson Lab	Immunogenetics	D2-313	667-7705	Tessa Aydelotte 667-3746	Hilary Gammill 667-4053	
Pharmacokinetics Lab (SCCA)	Busulfan	G7-405	288-7389	Louie Yu 288-7388	Matthew Pawlikowski 288-7386	
Pathology (SCCA)	Pathology Lab	G7-910	Lab 288-1355  Office 288-1343	Anita Ostrander 288-1347	Amanda Moglebust 288-1357	
Puget Sound Blood Center	Tranfusion Medicine	921 Terry Seattle WA	292-6525			
Radich Lab	Molecular Genetics	D4-385	667-6630	Lan Beppu 667-6966	Jerry Radich 667-4118	
Riddell Lab	Immunology	D3-275	667-1650	Tori Yamamoto 667-1650		Protocol 1410
Riddell Lab	Immunology	D3-313	667-4804	Julia Richardt	Marie Bleakley 667-6572	Protocols 2222,956
Sandmaier Lab		D1-365	667-6029	Erlinda Santos		

## LOCATIONS RESOURCE GUIDE

Lab Name	Type of Lab	Lab Location	Phone Number	Primary Contact	Alternate Contact	Specific Protocol Link
Seattle Children's Cell Marker Lab	Clinical	A8938	987-2560	Patsy McEnany		
Shared Resources	Research Specimen Processing	M5A-224	667-4645	Jon Digel 667-4434	Leonor Busuego Rick Sanders Angela Bryce Tom Bredlau	
Storb Lab	Transplantation Biology	D1-385	667-3490	Scott Graves 667-5267	Sue Carbonneau 667-4409	2173
Torok-Storb Lab	Transplantation Biology	D1-345	667-4545		Melissa Kreachbaum 667-4094	
Transfusion Support Services (SCCA)	Transfusion Support	G1-500	288-1095	Sanjin Lopatic	Doug Howlett	
Transfusion Support Services (UWMC)	Transfusion Support	EA-210	598-6240	Lauren Nutley	Marnie Thomas	
UW Cyclosporin Bench	Therapeutic Drug	NW-225	598-6238	Elizabeth Madden	Lisa Lawrence 598-4563	
UW Special Chemistry	LCMSMS	NW-225C	598-4563	Lisa Lawrence		
UW Hematology	Hematology	NW-220	598-6224	Judith Andrews 598-6233	Elizabeth Setram 598-8895	
UW Hematopathology	Flow Cytometry & Molecular Studies	G7-800	288-7060	Brent Wood 288-7117	Julie Sako 288-7113	
UW Immunology		NW-176	598-6149	Kathleen Hutchinson 598-6149	Jan Foley 598-6149	
UW Lab Medicine	General lab	NW-220	598-6224			
UW Lab Med Reference Lab Svc	Call Center		685-6066	Tucker Sparkman	Carol Maeso	
UW Microbiology	Microbiology	NW-177	543-3758	Greg Brazil		
UW Virology @ Seattle Children's	Virology	W 8814	987-2088	Anne Cent	Greg Pepper	

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## **SEATTLE CANCER CARE ALLIANCE**

### **Policies**

#### **Medical Necessity Information**

When ordering tests only those that are medically necessary for diagnosis and treatment of the patient should be ordered. The ordering physician or practitioner must provide an ICD-9-CM code (International Classification of Diseases 9th Revision) or narrative description for each test ordered. Medicare does not pay for screening tests, except for certain specifically approved tests.

While ordering custom panels or organ/disease related panels might be convenient, tests that are not medically necessary might be included. Lab requisitions include all tests included in each panel. Any test in a panel may be ordered as an individual test to avoid ordering tests that are not medically necessary.

#### **Reflexive Testing**

Some of our tests can be ordered as reflex tests or panels in which additional testing is done automatically in response to particular results from the initial testing. These tests or panels are included on the lab requisition and indicate when reflexive testing will be done.

#### **Repeat Testing**

Whenever there is a question about the validity of a test result, a repeat will be performed at no additional charges if there is specimen available.

#### **Reporting**

Results that have been entered into the Pathology LIS (IMPAC-Powerpath), the Alliance Lab LIS (SunQuest) or LabWare LIMS (Pharmacokinetics and Molecular Oncology) are available for viewing in ORCA and MINDscape. Labvision, used by the CIL, Cytogenetics, and Cellular Therapy labs, is not interfaced to ORCA or MINDscape. Cytogenetics, CIL and to a limited extent Cellular Therapy scan reports into MINDscape and ORCA. In addition, reports not available in ORCA or MINDscape are faxed or printed to Health Information Management (HIM) and the patient care areas.

#### **Referral to Another Lab**

Testing not provided by the Seattle Cancer Care Alliance Laboratories or Affiliate Laboratories will be referred to another qualified laboratory licensed to perform high complexity testing in the specialty/subspecialty as defined by the Clinical Laboratory Improvement Amendment.

SCCA has established a reference laboratory policy in cooperation with UW Laboratory Medicine to ensure appropriate and adequate organizational oversight, to safeguard the SCCA conflict of interest policies and to ensure standard processes for laboratory testing outside the SCCA and UW Medicine Organizations.

The Laboratory Director for the UW Medicine Department of Laboratory Medicine has designated the division directors, in consultation with laboratory medicine residents, institutional medical staff or physician clients (where appropriate), as primarily responsible for the selection of the reference laboratory locations and clinical oversight of the referral testing process.

UW Laboratory Medicine oversight is established by the assignment of specific division directors to each test referred to other laboratories. The appropriate division director assignment is based on clinical expertise and experience in the general classification of the assay. Assignments are adjusted as needed and are reviewed annually.

The UW Laboratory Medicine Resident (LMR) must approve requests for non-defined reference laboratory tests and select an appropriate reference lab.

The final reports will include the name of the laboratory performing the test.

### **Procedure for Requesting Reference Lab Testing**

1. Providers requesting reference lab tests must complete a physician's order to be filed in the patient's medical record.
2. Requests for reference lab testing should be submitted to the Alliance Laboratory which will coordinate the administrative functions necessary for UW LMR approval of the test(s) and specimen collection. In general, reference laboratory test requests should be submitted to the Alliance Lab in writing on a SCCA Clinical Laboratory test request form. The Alliance Lab may be phoned in advance if advance administrative coordination is necessary (see below).
3. In general a minimum of 24 hours advance notice is required by the Alliance Laboratory staff to allow administrative coordination, minimize patient waiting, and ensure appropriate specimen collection. Ordering providers or their staff should notify the Alliance Laboratory for reference laboratory testing need by submitting in advance a test request form or by calling 288-1088.
4. The UW LMR may need to speak directly with the ordering provider and require time to determine if clinical testing is available and to select an appropriate lab for testing. Alliance Lab staff will provide the ordering provider name and contact information upon LMR request.
5. Denial of testing: UW LMR denial of testing is most often the result of either clinical testing that is unavailable or the test is offered only on a research basis. The ordering provider will be notified of the denial by either the UW LMR or Alliance Laboratory staff.
6. Inquiries about establishing new laboratory testing opportunities at the SCCA or UW Laboratory Medicine or at other reference laboratories should be directed to the SCCA Clinical Laboratory Medical Director or the SCCA Associate Director of Clinical Laboratories.

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## Seattle Cancer Care Alliance

# SPECIMEN HANDLING GUIDELINES

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### I. Labeling the Specimen

Specimens may be labeled with a Sunquest-generated label, an addressograph label, or a hand-written label. The following information must appear on the specimen label:

1. Patient name: last name, middle initial and first name
2. Patient Medical Record Number (MRN)
3. Patient Date of Birth\*
4. Date and time the sample was collected
5. Specimen source when applicable, i.e. throat, urine
6. Initials of person drawing specimen

\*Puget Sound Blood Center does not accept the date of birth as a specimen identifier.

Note: Specimens collected for T&C and HLA Typing require two staff members to verbally verify the spelling of the patient name, the MRN, and date of birth. Both staff members will initial the specimen tube.

Note: Label to be attached in the presence of the patient.

### II. Requisition

Include the following information on the requisition:

1. Patient first name, middle initial and last name
2. Patient date of birth
3. Patient Medical Record Number (MRN)
4. Patient location
5. Specimen and site, if applicable
6. Date sample collected/to be collected
7. Time sample collected/to be collected
8. Location where specimen is to be collected (Alliance Lab, Apheresis or Infusion Room)
9. Test(s) required
10. Physician name and billing ID number (UPN)
11. ICD-9 code or descriptive diagnosis
12. Please provide any other pertinent clinical information/history that is available
13. Where applicable, a sample drawn from a donor or family member should include the patient name and the donor's relationship to the patient.

Verify that the information on the requisition matches the information on the specimen that it accompanies.

### III. Specimens Processed in the SCCA Labs

Specimens that are tested on site will be logged into Sunquest, PowerPath (IMPAC) or Labvision. This may be done either as a pre-log function (up to 72 hours in advance) or on the same day the specimen is to be drawn or received.

#### **IV. Packaging and Transport of Specimens Not Processed in the SCCA Labs**

Specimens sent to testing laboratories at FHCRC and the SCCA Clinic shall be packaged into sealed biohazard marked zip-lock bags. Test request forms accompanying these specimens should be placed in the pouch on the outside of the bag.

Specimens transported via the SCCA Clinic tube system will be double bagged in sealed zip-lock biohazard marked bags.

Specimens transported outside of the SCCA Clinic or FHCRC must be packaged into containers with hard sides (i.e. Styrofoam, plastic with screw top lid, cardboard box with appropriate Styrofoam specimen holder, etc.) and securely closed with packaging tape. Shipping containers will contain absorbent material. A biohazard sticker must be affixed to the outside of the shipping container. A sticker stating "diagnostic specimens" must be affixed to the outside of the shipping container. Complete a commodities tracking/routing slip appropriate for the destination of the specimen (UWMC, Seattle Children's, SELU, etc.)

#### **V. Criteria for Rejection of Specimens**

It is within the discretion of the receiving laboratory to determine if a specimen has been compromised, justifying rejection of the specimen. Below are specific reasons that may apply.

##### **A. Mislabeled specimens and requisitions**

Specimens submitted to the Alliance laboratories must adhere to all collecting, labeling, packaging, transporting and storing guidelines outlined in this manual. Misidentified or unlabeled specimens or requisitions will not be accepted. Mislabeled specimens are defined as:

- Specimens that are not labeled
- Specimens labeled on the container lid only
- Specimens labeled with a patient name and/or identification number different from that on the accompanying lab requisition form
- Specimens drawn from the correct patient but labeled with the wrong name and identification number or date of birth
- Specimens with matching specimen and requisition labels but drawn from the wrong patient
- Specimens not labeled with two patient identifiers

The laboratory receiving the specimen will immediately notify the ordering location of the error and request a new specimen.

If extenuating circumstances exist that prevent re-collection of the specimen and the patient care provider requests that the test be performed on a specimen meeting the definition of a mislabeled specimen, the lab will follow the Mislabeled Laboratory Specimens and Requisitions LAPP Gen.01. This LAPP can be found at the following SCCA Network address: J:\Clinical Lab Administration\Lab Admin Policies & Procedures\General LAPPs.

##### **B. Hemolysis of the blood sample**

Hemolysis results from the destruction of RBCs and the liberation of hemoglobin into the fluid portion of the specimen. This will not be known until the sample has been separated. Severe hemolysis will affect certain tests (such as Potassium and Lactate Dehydrogenase) and the sample will have to be redrawn.

*(Continued)*

Hemolysis can be caused by:

- mixing additive tubes too vigorously or using rough handling during transport
- drawing blood from a vein that has a hematoma
- pulling back the plunger on a syringe too quickly
- using a needle with too small of a bore for the venipuncture
- using too large a tube when using a small diameter butterfly needle
- frothing of the blood caused by improper fit of the needle on a syringe.
- forcing the blood from a syringe into an evacuated tube

**C. Specimen clotted**

Inadequate mixing of the Vacutainer™ tubes as soon as possible after the phlebotomy will result in the blood not mixing with the anti-coagulant. By gently inverting the Vacutainer™ tube 5-10 times, the blood will mix and clotting will not occur.

**D. Insufficient Specimen Quantity or Quantity Not Sufficient (QNS)**

Blood-testing volumes are reviewed annually for appropriateness and every effort is made to minimize these volumes. Please check the test to see what the minimum requirements are for that procedure. Specimens with insufficient volumes for testing will have to be redrawn.

**VI. Collection Guide**

**A. Contamination**

Non-additive tubes are drawn before additive tubes to avoid contamination with the additive.

**B. Additive-Containing Tubes**

Even for tubes with additives there is a recommended "order of draw" to avoid cross-contamination that can result in erroneous test values. Additive-Containing tubes should be drawn as follows:

- Blue top tubes (Na Citrate)
- Green top tubes (Heparin)
- Purple top tubes (EDTA)

Note: Gently invert tubes 5-10 times to mix the blood with the additive.

**C. Order of Draw**

The recommended "order of draw" when collecting several specimens from a single venipuncture and using an evacuated tube system is as follows:

- Syringe for blood cultures
- \*Blue Top
- Gold or Red Gray Tiger Top or Orange Top
- Red Top (plastic or glass)

*(Continued)*

Lime Green Top  
Green Top  
Lavender (Purple) Top  
Black Top  
Gray Top  
Yellow Top

\* If blood cultures are not drawn and the 1st tube to be drawn is the Blue Top, a Discard Tube **MUST** be drawn first to eliminate possible thromboplastin contamination from the site of the venipuncture. Note that plastic red top tubes contain a clot activator. You must use the translucent red top tube with no clot activator as a discard tube. Laboratory staff are able to assist with determining the correct tube for discard.

#### D. Minimizing unnecessarily large blood draw volumes

Blood losses from phlebotomy, particularly in pediatric patients and those with many venipunctures, may be a cause of iatrogenic anemia and increased transfusion needs. Adverse consequences of excess venipunctures include complications during collection for patients and health care workers, hazards from subsequent transfusions, contending with increased amounts of hazardous waste and greater cost. (College of American Pathologists, General Laboratory Check List GEN.40500, 06/17/2010).

Wherever possible, efforts should be made to reduce blood collection volumes in the following manner:

1. Combining tests with similar specimen tube type and processing and storage and transport requirements.
2. Reducing the number of blood collection tubes to produce the minimum volume needed for laboratory testing.

Minimal specimen requirements for tests performed at the SCCA Cellular Therapy, Clinical Immunogenetics, Cytogenetics, Pathology, Pharmacokinetics and Alliance Laboratories are specified in this manual: see entry for each test.

Minimal specimen collection requirements for tests performed at UW Laboratory Medicine labs can be located in the UW Laboratory Medicine online test guide  
<http://byblos.labmed.washington.edu/bcard/search.asp>

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## Seattle Cancer Care Alliance

### **GUIDELINES FOR TIMED URINE AND STOOL COLLECTIONS**

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The staff member providing the timed urine/stool container(s) is responsible for labeling the container(s) before giving them to the patient.

The following information must appear on the specimen label:

1. Patient name: Last name, middle initial and first name
2. Patient Medical Record Number (MRN)
3. Patient Date of Birth
4. Date and Time the specimen was collected

Provide the patient with the Timed Urine Collection or Timed Stool Collection instruction form.

[Patient Instructions for timed urine collection](#)

[Patient Instructions for timed stool collection](#)

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Seattle Cancer Care Alliance

## Timed Urine Collection

The best diagnostic results are based on a complete 24-hour urine collection, so it is important for you to follow this procedure carefully.

1. Start the collection at any time that is convenient for you.
2. To start, empty your bladder and discard the urine. Record the start time on this form.
3. Using the urine "hat" or urinal, save all urine from this point on in the container provided. If you need another container, the Alliance Lab staff, your team nurse, or nurse case manager will provide one for you.
4. At exactly 24 hours after your start time, empty your bladder and add this urine to the container. Record this time on this form. Do not put any additional urine into the container.
5. Store the container in the refrigerator during the collection period.
6. If any urine is spilled or discarded during the 24-hour period, stop the collection. Discard the urine, and discard the container in the trash. (**\*\*Note: If your container has HCL added, please bring the collection container to the Alliance Lab to discard.**) In order to begin collection again, request another collection container from the Alliance Lab or your team/clinical nurse.
7. Deliver the container along with this form to the Alliance Lab (1<sup>ST</sup> Floor – Specimen Window) as soon as possible (preferably the same day).

If you have been asked to collect urine for the following tests, please note the restrictions listed below:

<b>Bence Jones Quantitation</b>	<ul style="list-style-type: none"> <li>• <i>No Restrictions. No additive required. <b>REFRIGERATE DURING COLLECTION.</b></i></li> </ul>
<b>Catecholamines (Epinephrine, Norepinephrine, Dopamine Metanephrine)</b>	<ul style="list-style-type: none"> <li>• <i>15 mL HCL must be added to container prior to collection. Please see Alliance Lab staff. <b>REFRIGERATE DURING COLLECTION.</b></i></li> <li>(** Note: <b>HCL can cause burns and irritations. Avoid contact with skin or eyes.</b>)</li> <li>• <i>Discontinue one week prior to and during collection: mythyldopa (Aldomet), &amp; related antihypertensives, tetracyclines, quinidine, and quinine.</i></li> </ul>
<b>Creatinine, Creatinine Clearance, Protein, Protein Electrophoresis</b>	<ul style="list-style-type: none"> <li>• <i><b>A blood Creatinine level is required within 48 hours of the conclusion of the urine collection.</b> Please check with your Team Nurse or Nurse Case Manager to see if you need blood drawn for this test.</i></li> <li>• <i>No Restrictions. No additive required. <b>REFRIGERATE DURING COLLECTION.</b></i></li> </ul>
<b>Cortisol</b>	<ul style="list-style-type: none"> <li>• <i>No Restrictions. No additive required. <b>REFRIGERATE DURING COLLECTION.</b></i></li> </ul>
<b>Prophyrins Quantitation (includes porphobilinogen)</b>	<ul style="list-style-type: none"> <li>• <i>5g sodium carbonate (<b>NOT sodium bicarbonate</b>) must be added to container prior to collection. Please see Alliance Lab staff. <b>REFRIGERATE DURING COLLECTION.</b></i></li> <li>• <i>Protect from light. Keep collection container in brown paper bag.</i></li> <li>• <i>Blood specimen and stool collection may be required as well. Please check with your Team Nurse or Nurse Case Manager to determine if these are necessary.</i></li> </ul>
<b>VMA</b>	<ul style="list-style-type: none"> <li>• <i>15 mL HCL must be added to container prior to collection. Please see Alliance Lab staff. <b>REFRIGERATE DURING COLLECTION.</b></i></li> <li>(** Note: <b>HCL can cause burns and irritations. Avoid contact with skin or eyes.</b>)</li> </ul>
<b>5HIAA (5-Hydroxyindolacetic Acid)</b>	<ul style="list-style-type: none"> <li>• <i>15 mL HCL must be added to container prior to collection. Please see Alliance Lab staff. <b>REFRIGERATE DURING COLLECTION.</b></i></li> <li>(** Note: <b>HCL can cause burns and irritations. Avoid contact with skin or eyes.</b>)</li> <li>• <i>Discontinue two days before and during collection: acetanilide, aspirin, avocados, bananas, chlorpromazine, cough medicines, eggplant, methamphetamines, nicotine, nortriptyline, nuts, phenothiazine, pineapple and plums.</i></li> </ul>

Patient Name: \_\_\_\_\_

Start Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Start Time: \_\_\_\_\_

Stop Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Stop Time: \_\_\_\_\_

Seattle Cancer Care Alliance  
**Alliance Laboratory**  
**Specimen Collection & Processing**

### Timed Stool Collection for Fecal Fat

The best diagnostic results are based on a complete 36 to 72 hour collection. Therefore it is important for you to follow this procedure carefully.

1. You must be off any mineral oil compound for three days prior to start of your stool collection.
2. Start the collection at any time that is convenient for you.
3. Collect stool into collection "hat" and transfer to the specimen container provided.
4. Do not fill the container more than half full. You may request another collection container from the Alliance Lab staff.
5. Keep the specimen container refrigerated during the collection time period.
6. Seal the lid securely and deliver the container(s) along with this form to the Alliance Lab as soon as possible (preferably the same day).

**Note:**

- Store the container in the refrigerator during the collection period.
- DO NOT DISCARD ANY STOOL SPECIMEN DURING THE COLLECTION TIME FRAME.

**Patient Name:** \_\_\_\_\_

Patient Medical Record Number: \_\_\_\_\_

Patient Date of Birth: \_\_\_\_\_

Date Started: \_\_\_\_/\_\_\_\_/\_\_\_\_      Time Started: \_\_\_\_\_

Date Completed: \_\_\_\_/\_\_\_\_/\_\_\_\_      Time Completed: \_\_\_\_\_

## ALLIANCE LAB

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- > This table provides additional information for the tests listed on the SCCA Clinical Lab Request form.
- > Turnaround time is defined as the time from specimen draw to result reporting. Not included in the turnaround time are specimen transport time, blood draw waiting time, and blood draw time. These may also delay results.

### CHEMISTRY PANELS

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
BMP	Basic Metabolic Panel	Na, K, Cl, CO <sub>2</sub> , Glu, BUN, Creat, Ca, calculated glomerular filtration rate	60 minutes	2 hours	SCCA	
LYT	Electrolytes	Na, K, Cl, CO <sub>2</sub>	60 minutes	2 hours	SCCA	
LIPID	Lipid Panel	Chol, HDL, Trigs, LDL		Performed Daily	SCCA	
HFPA	Hepatic Function Panel	ALT, AST, ALK, Albumin, Bili T/D, Total protein	60 minutes	2 hours	SCCA	
SHFL	Hepatic Function Panel + LD	ALT, AST, ALK, Albumin, Bili T/D, Total protein, LD	60 minutes	2 hours	SCCA	
RENFP	Renal Function Panel	Albumin, Ca, CO <sub>2</sub> , Cl, Creat, Glu, Phosphorus, Na, K, BUN, calculated glomerular filtration rate	60 minutes	2 hours	SCCA	
SRFM	Renal Function Panel + Mg	Albumin, Ca, CO <sub>2</sub> , Cl, Creat, Glu, Phosphorus, Na, K, BUN, Mg, calculated glomerular filtration rate	60 minutes	2 hours	SCCA	
SCOMP	SCCA Comprehensive Metabolic Panel with calc. for globulin and A/G ratio	Na, K, Cl, CO <sub>2</sub> , Glu, BUN, Creat, Ca, Total Protein, Albumin, ALT, AST, ALK, Albumin, T Bili, Globulin, A/G ratio, calculated glomerular filtration rate	60 minutes	2 hours	SCCA	

**ALLIANCE LAB - CHEMISTRY PANELS (cont.)**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	Comments
SCOMP with HSCT subgroup	SCOMP with D Bili, GGT, Mg, Phosphorus, Uric Acid, Cholesterol, Triglycerides	Na, K, Cl, CO <sub>2</sub> , Glu, BUN, Creat, Ca, Total Protein, Albumin, ALT, AST, ALK, Albumin, T Bili, Globulin, A/G ratio, D Bili, GGT, Mg, Phosphorus, Uric Acid, Cholesterol, Trigs, calculated glomerular filtration rate		2 hours	SCCA	

**CHEMISTRY INDIVIDUAL TESTS**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
ACID	Acid Phosphatase	Acid Phosphatase		Results M,W,F by 1600	HMC	SCCA sample results the next day
ALB	Albumin	Albumin	60 minutes	2 hours	SCCA	
ALK	Alkaline Phosphatase	Alkaline Phosphatase	60 minutes	2 hours	SCCA	
AY	Amylase (with reflex fractionation)	Amylase (with reflex fractionation)		Performed daily	UWMC	Can be sent via cab as late as 2100.
AST	AST	AST	60 minutes	2 hours	SCCA	
BIL	Bilirubin, Total	Bilirubin, Total	60 minutes	2 hours	SCCA	
BILT/D	Bilirubin, Total/Direct	Bilirubin, Total/Direct	60 minutes	2 hours	SCCA	
BUN	BUN	BUN	60 minutes	2 hours	SCCA	
HSCR	C-reactive protein	C-reactive protein		Performed daily	UWMC	Can be sent via cab as late as 2100.
CA 125	Cancer antigen 125	Cancer antigen 125		Performed M-F	UWMC	
CA27	Cancer antigen 27.29	Cancer antigen 27.29		Performed M-F	UWMC	
CA	Calcium, Total	Calcium, Total	60 minutes	2 hours	SCCA	
CEA	Carcinoembryonic antigen	Carcinoembryonic antigen	90 minutes	2 hours	SCCA	
SRIC	Calcium, Ionized, Serum	Calcium, Ionized, Serum	60 minutes	60 minutes	SCCA	

**ALLIANCE LAB - CHEMISTRY INDIVIDUAL TESTS (cont.)**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
CHOL	Cholesterol, Total	Cholesterol, Total		Performed daily	SCCA	
CREG	Creatinine	Creatinine, calculated glomerular filtration rate	60 minutes	2 hours	SCCA	
CRYOG	Cryoglobulins	Cryoglobulins		Results in 10 days	UWMC	
EDOL	Estradiol	Estradiol		Specimen in UW lab by 1000, results by 1400	UWMC	
RESTRN	Estrone	Estrone				Specimen sent out to reference lab.
FER	Ferritin	Ferritin		Specimen in UW lab by 1000, results by 1400	UWMC	
FSH	FSH	FSH		Specimen in UW lab by 1000, results by 1400	UWMC	
G6PD	G6PD Screen	G6PD Screen		Set up MWF @ 0730	UWMC	
GGT	GGT	GGT	60 minutes	2 hours	SCCA	
GLU	Glucose	Glucose	60 minutes	2 hours	SCCA	
GLUF	Glucose, Fasting	Glucose, Fasting	60 minutes	2 hours	SCCA	
HDL	HDL cholesterol	HDL cholesterol		Performed Daily	SCCA	
HPT	Haptoglobin	Haptoglobin		Performed daily	UWMC	
PG	HCG (Quant, Pregnancy)	HCG (Quant, Pregnancy)	STAT available	Performed daily	UWMC	Provides quantitative HCG level
PGSTAT	Qualitative Serum Pregnancy		30 minutes	60 minutes	SCCA	Positive or negative pregnancy test

**ALLIANCE LAB - CHEMISTRY INDIVIDUAL TESTS (cont.)**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
A1C	Hemoglobin A1C	Hemoglobin A1C		3-5X/week, results in 2 working days	UWMC	
IGA	IGA	IGA		Performed M-F	UWMC	
IGG	IGG	IGG		Performed M-F	UWMC	
IGM	IGM	IGM		Performed M-F	UWMC	
LD	LD	LD	60 minutes	2 hours	SCCA	
LDL	LDL cholesterol	Calculation must be run with Lipid Panel		Performed Daily	SCCA	
LPASE	Lipase	Lipase		Performed daily	HMC	
MG	Magnesium	Magnesium	60 minutes	2 hours	SCCA	
P	Phosphorus	Phosphorus	60 minutes	2 hours	SCCA	
K	Potassium	Potassium	60 minutes	2 hours	SCCA	
PSA	Total	Total	90 minutes	2 hours	SCCA	
PSAFRP	Total and Free	Total and Free		Performed Daily	UWMC	
ELP	Protein Electrophoresis	Protein Electrophoresis		Performed M-F	UWMC	Must be into the UW lab on the day prior to run
IFIX	Immunofixation	Immunofixation		Performed M-F	UWMC	Must be into the UW lab on the day prior to run
TP	Total Protein	Total Protein	60 minutes	2 hours	SCCA	
NA	Sodium	Sodium	60 minutes	2 hours	SCCA	
SOCULT	Stool Occult Blood	Stool occult blood		Performed Daily	SCCA	
T3	T3	T3		Performed daily	UWMC	SCCA result the next day
T4FR	T4, Free	T4, Free		Performed M-F	UWMC	SCCA result the next day

**ALLIANCE LAB - CHEMISTRY INDIVIDUAL TESTS (cont.)**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
T4	T4	T4		Performed daily	UWMC	SCCA result the next day
TSH	TSH	TSH		Performed daily	UWMC	SCCA result the next day
TRIG	Triglycerides	Triglycerides		Performed daily	SCCA	
URIC	Uric Acid	Uric Acid	60 minutes	2 hours	SCCA	

**HEMATOLOGY**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:
CBC	Hemogram	HCT, HB, WBC, RBC, Platelet & RBC indices	60 minutes	2 hours	SCCA
CBANC	Hemogram and Abs Neutrophil Count	HCT, HB, WBC, RBC, Platelet, RBC indices & Abs Neutrophil count	30 minutes		SCCA
CBD	CBC w/ Diff/Smear Eval	HCT, HB, WBC, RBC, Platelets & RBC indices w/ Diff	60 minutes	2 hours	SCCA
HCT	Hematocrit	Hematocrit	60 minutes	2 hours	SCCA
PLT	Platelet	Platelet	60 minutes	2 hours	SCCA
RETIC	Reticulocyte	Reticulocyte		2 hours	SCCA
BMCNT	Bone marrow counts				SCCA
BMWRST	BM Wright's Stain	Bone Marrow Wright's Stain			SCCA
ESR	Erythrocyte Sedimentation Rate			2 hours	SCCA

**ALLIANCE LAB - COAGULATION**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
PRO	Prothrombin Time	Prothrombin Time	60 minutes	2 hours	SCCA	
TT	Thrombin time	Thrombin Time	60 minutes	2 hours	SCCA	
PTT	Activated Partial Thromboplastin Time	Activated Partial Thromboplastin Tme	60 minutes	2 hours	SCCA	
FIBCL	Fibrinogen	Fibrinogen	60 minutes	2 hours	SCCA	

**THERAPEUTIC DRUGS**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
CSA	Cyclosporin by HPLC (for solid tumor transplant)	Cyclosporin by HPLC (for solid tumor transplant)		Performed M-F, specimen in UW lab by 1100, results by 1630; Sat, Sun, Hol, in lab by 1000, results by 1630	UWMC	
FK506	Tacrolimus	Tacrolimus		Performed daily, specimen in lab by 1300, results by 1630	UWMC	Specimen must be in Alliance Lab before 1100
VANCO	Vancomycin	Vancomycin		Performed daily	UWMC	Can be sent via cab as late as 2100.

**URINES**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
UAWK	Urinalysis, workup	Urine dipstick tests, microscopic performed if macroscopic abnormal	30 minutes	2 hours	SCCA	
UAC	Urinalysis, complete	Urine dipstick tests, microscopic	60 minutes	2 hours	SCCA	

**ALLIANCE LAB - URINES (cont.)**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
UCLEAR	Creatinine clearance	Urine creatinine		2 hours	SCCA	Serum creatinine level required
UTP	Protein	Urine total protein		2 hours	SCCA	
UELPG	Protein electrophoresis			Performed M-F	UWMC	Must be into the UW lab on the day prior to run
UIFIXG	Immunofixation			Performed M-F	UWMC	
UPG	Urine Pregnancy		30 minutes	60 minutes	SCCA	Positive or negative pregnancy test
UPCRAT	Protein/Creatinine Ratio	Urine Protein, Urine Creatinine & Calculated Ratio	30 minutes	60 minutes	SCCA	

**CEREBRAL SPINAL FLUID**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
CCCNT	Cell Count	WBC, RBC	60 minutes	2 hours	SCCA	
CGLU	Glucose	Glucose	60 minutes	2 hours	SCCA	
CTP	Total Protein	Total Protein	60 minutes	2 hours	SCCA	
CCFUGE	CSF Cell evaluation by Hematopathologist		60 minutes	2 hours	SCCA	

**BLOOD GASES**

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TURN AROUND TIME	ROUTINE TURN AROUND TIME	TESTS PERFORMED AT:	COMMENTS
AG	Arterial blood gas	pH, pCO <sub>2</sub> , pO <sub>2</sub> , HCO <sub>3</sub>	30 minutes	30 minutes	SCCA	COOX performed at HMC
VG	Venous blood gas	pH, pCO <sub>2</sub> , pO <sub>2</sub> , HCO <sub>3</sub>	30 minutes	30 minutes	SCCA	COOX performed at HMC

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Seattle Cancer Care Alliance  
Laboratory Administrative Policies and Procedures  
**Laboratory Critical Results**  
Rev 08 Effective 9/20/2010

Serum or Plasma	Less than	Greater than	Units
Na	120	160	mEq/L
K	3.0	6.0	mEq/L
HCO <sub>3</sub> /CO <sub>2</sub>	10	40	mEq/L
Glucose	45	500	mg/dl
Ca	6.0	13.0	mg/dl
Phosphate	1.0	none	mg/dl
Mg	1.2	4.7	mg/dl
Ionized Calcium, Serum & Plasma	0.78	1.58	mmol/L
CSF glucose	20	N/A	mg/dl

Arterial Blood Gases	Less than	Greater than	Units
pH	7.20	7.58	
pCO <sub>2</sub>	9	65	mmHg
pO <sub>2</sub>	40	N/A	mmHg
HCO <sub>3</sub>	10	40	mEq/L

Hematology	Less than	Greater than	Units
*Absolute neutrophils	0.5	N/A	x 10 <sup>3</sup> /uL
Hematocrit	20	none	%
*Platelet	20	1000	x 10 <sup>3</sup> /uL

Coagulation	Less than	Greater than	Units
Prothrombin Time	N/A	5	INR
aPTT	N/A	120	Sec
Fibrinogen	100	N/A	mg/dL

Urinalysis	Less than	Greater than	Units
Glucose	N/A	1000 mg/dL (3+)	mg/dL

\*Critical ANC or PLT counts: The first time that a patient is seen, the critical value applies and this count must be called to the appropriate individual on the 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> floor or Apheresis.

- ❖ **Transplant Patients** with platelets <20 x 10<sup>3</sup>/ul and not included on the transplant OPD daily platelet sheet are added to the list and **faxed** to the charge nurse and Transfusion Service Office as soon as the result is reviewed and accepted.
- ❖ All patients are monitored and careful attention paid to previous counts. If there is a clinically significant fall in platelets, as determined by a Medical Technologist trained in Hematology, the appropriate nurse is called.
- ❖ If a patient's ANC has remained stable but is at or below the critical value (0.5 x10<sup>3</sup>/uL) the result does not need to be called.

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Updated February 12, 2010  
**ALLIANCE LAB REFERENCE RANGES**

**HEMATOLOGY**

TEST	SEX/AGE	Reference Range	ABSOLUTE VALUE
WBC		4.3-10.0 x 10 <sup>3</sup> /uL	
RBC	Male Female	4.4-5.6 x 10 <sup>6</sup> /uL 3.8-5.0 x 10 <sup>6</sup> /uL	
Hemoglobin	Male Female Children 6mo-12yr	13.0-18.0 g/dL 11.5-15.5 g/dL Varies with age	
Hematocrit	Male Female Children 6mo-12yr	38-50% 36-45% Varies with age	
MCV MCH MCHC		81-98 fl 27.3-33.6 pg 32.3-35.7%	
Platelet Count		150-400 x 10 <sup>3</sup> /uL	
Neutrophils (Polys)	Adults Children 6mo-12yr	1.8-7.0 x 10 <sup>3</sup> /uL 1.5-7.5 x 10 <sup>3</sup> /uL	
Lymphs	Adults Children 6mo-12yr	1.0-4.8 x 10 <sup>3</sup> /uL 1.0-7.5 x 10 <sup>3</sup> /uL	
Monos		0.0-0.80 x 10 <sup>3</sup> /uL	
Eosinophils Basophils		0.0-0.50 x 10 <sup>3</sup> /uL 0.0-0.20 x 10 <sup>3</sup> /uL	
Metamyelocytes Myelocytes Promyelocytes		0 x 10 <sup>3</sup> /uL 0 x 10 <sup>3</sup> /uL 0 x 10 <sup>3</sup> /uL	
Blasts		0 x 10 <sup>3</sup> /uL	
Reticulocytes	Male Female	0.5-1.5% 0.5-1.7%	20-65 x 10 <sup>3</sup> /uL 20-65 x 10 <sup>3</sup> /uL
Erythrocyte Sedimentation Rate	Male>12yrs Female>12yrs M/F 6 mo – 12yrs	0-15 mm/hour 0-20 mm/hour 0-10 mm/hour	
RDW-CV	Female ≥6m Male ≥6m	11.6 – 14.4% 11.6 – 14.4%	

**COAGULATION**

TEST	Reference Range	Units
Prothrombin time (PT)	10.7-15.6	Seconds
Thrombin Time	16 - 25	Seconds
Activated Partial Thromboplastin Time (aPTT)	22-35	Seconds
Fibrinogen	150-400	mg/dL
INR	0.8 - 1.3	

**ALLIANCE LAB REFERENCE RANGES**

**CHEMISTRY**

Analyte	Reference Range	Units
Na (Sodium)	136-145	mEq/L
K (Potassium)	3.7-5.2	mEq/L
Cl (Chloride)	98-108	mEq/L
CO <sub>2</sub> (Bicarbonate)	22-32	mEq/L
Ion Gap	3-11	
Creatinine	Female ≥18yrs 0.38-1.02 Male ≥18 yrs 0.51-1.18 Male or Female <18 yrs 0.20-1.10	mg/dL
BUN	8-21	mg/dL
Glucose	62-125	mg/dL
Ca (Calcium)	8.9-10.2	mg/dL
P (Phosphorus)	2.5-4.5 Child <12 years: 4.5-6.0	mg/dL
Albumin	3.5-5.2	g/dL
Mg (Magnesium)	1.8-2.4	mg/dL
Total Bilirubin	0.2-1.3	mg/dL
Direct Bilirubin	0.0-0.3	mg/dL
AST	15-40	U/L
ALT	Male Age 0-49 10-64 Age ≥ 50 10-48 Female 6-40	U/L
GGT	0-55	U/L
LD	80-190	U/L
Total Protein	6.0-8.2	g/dL
Uric Acid	Male 3.4-7.0 Female 2.9-6.3	mg/dL
Cholesterol	Desirable <200 Borderline 200-239 High >239	mg/dL
HDL-Cholesterol	Desirable >59 Acceptable 40-59 Low <40	mg/dL
Triglyceride	Desirable <150 Borderline 150-199 High 200-499 Very High >500	mg/dL
Amylase	27-144	U/L
Ionized Calcium, Serum & Plasma	≥ 1 year 1.18-1.38 < 1 year 1.16-1.45	mmol/L
Prostate Specific Antigen	Male: 0.00-4.00	ng/mL
CSF Glucose	40-80	mg/dL
CSF Protein	15-45	mg/dL
CEA	0.0-5.0	ng/mL

**ALLIANCE LAB REFERENCE RANGES**

**ALKALINE PHOSPHATASE**

AGE	MALE	FEMALE	UNITS
75	52-227	49-199	U/L
65	36-161	38-172	U/L
55	37-159	31-132	U/L
45	39-139	34-121	U/L
35	36-122	25-112	U/L
25	35-109	25-100	U/L
18	42-136	26-98	U/L
14	72-400	43-226	U/L
12	119-426	89-285	U/L
10	115-324	132-366	U/L
0	115-324	111-281	U/L

**URINE CHEMISTRIES**

Analyte	Reference Range	Units
Urine Total Protein	0-14 (random specimen) 0.050-0.080 (24 hour specimen)	mg/dL g/24hour
Urine Creatinine	Child 0-9 years 700 - 1800 Male > 9 years 1000 - 2000 Female > 9 Years 700 - 1800	mg/24 hours
Creatinine Clearance	Newborn 40-60 Male 75-120 Female 65-105	mL/min/m <sup>2</sup> mL/min mL/min

**BLOOD GASES**

Blood gas, Arterial (Adult)	Reference Range	Units
pH	7.35-7.45	
pCO <sub>2</sub>	33-48	mmHg
pO <sub>2</sub>	80-104	mmHg
Bicarbonate	24-31	mEq/L
O <sub>2</sub> Saturation	95-99	%

Blood gas, Venous (Adult)	Reference Range	Units
pH	7.32-7.40	
pCO <sub>2</sub>	42-50	mmHg
pO <sub>2</sub>	35-40	mmHg
Bicarbonate	23-27	mEq/L
O <sub>2</sub> Saturation	70-75	%

**ALLIANCE LAB REFERENCE RANGES**

**URINALYSIS**

<b>Test (Dipstick)</b>	<b>Reference Range</b>
pH	5.0-8.0
Specific Gravity	1.005-1.030
Protein	negative
Glucose	negative
Ketone	negative
Bilirubin	negative
Blood	negative
Nitrite	negative
Urobilinogen	0.1-1.0 Ehrlich units
Leucocyte esterase	negative

<b>Test (Microscopic)</b>	<b>Reference Range</b>
WBC/hpf	0-5
RBC/hpf	0-2
Casts/lpf	0
Crystals/lpf	0
Bacteria/hpf	0

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## CD34 ASSAY

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<b>Lab</b>	Cellular Therapy, Thomas Building Room DE-590
<b>Request Form</b>	Cellular Therapy (Cryobiology) Laboratory Requisition Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1200
<b>Availability</b>	M – F Lab Hours 7am – 8pm Processing Hours 7am – 4pm Weekends & Holidays Lab Hours 9am – 5pm Processing Hours 9am – 3pm
<b>Turnaround Time</b>	Same day if sample received by 3pm Results faxed/phoned to unit by 5pm
<b>Specimen</b>	Peripheral Blood
<b>Volume</b>	5 – 10 mL
<b>Pediatric Volume</b>	5 – 10 mL
<b>Container</b>	EDTA (7 ml purple top)
<b>Collection</b>	Routine venipuncture or line draw
<b>Special Handling</b>	Room temperature, label as STAT
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, WBC <500/ $\mu$ L, improperly stored specimen, specimen clotted
<b>Reference Ranges</b>	No normal values established for mobilized specimens
<b>After Hours</b>	Collect sample and store at 4° C. Transport to lab by courier when it opens the next morning.

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## RESEARCH SERUM SAMPLES

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<b>Related Terms</b>	Corporate Sponsored Protocols
<b>Lab</b>	Corporate Sponsored Laboratories
<b>Request Form</b>	Per Research Protocol
<b>Phone</b>	667-4989
<b>Availability</b>	Daily 9am – 5pm
<b>Turnaround Time</b>	Samples are batched and sent to corporate sponsored labs. No results are available through Cellular Therapy. Contact Protocol's Research Nurse. <i>See Research Labs Routing Reference</i>
<b>Specimen</b>	Peripheral Blood or serum
<b>Volume</b>	Per Research Protocol
<b>Pediatric volume</b>	Per Research Protocol
<b>Container</b>	Vacutainer™ tube with no anticoagulant (red top)
<b>Collection</b>	Routine venipuncture or line draw
<b>Special Handling</b>	Note the protocol # on the label and the timing/type of specimen (i.e., baseline, immediate after transplant, 60 days after transplant, etc.). Transport at ambient temperature.
<b>Causes for Rejection</b>	Mislabeled specimens and requisitions
<b>After Hours</b>	Collect as above. Store at 4°C. Deliver to Cellular Therapy the next morning.

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## BLOOD GAS, ARTERIAL

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<b>Related Terms</b>	Arterial blood gas, Blood gas, ABG, Gases
<b>Panel includes</b>	Measured parameters include pH, pCO <sub>2</sub> and pO <sub>2</sub> ; Calculated parameters include HCO <sub>3</sub> <sup>-</sup> , base excess, and oxygen saturation
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Arterial Blood
<b>Volume</b>	5mL; minimum volume is 300 µL (0.3mL) in a tuberculin syringe
<b>Pediatric Volume</b>	See Capillary Blood Gases
<b>Container</b>	Blood should be drawn into gas-tight plastic syringe using 1000-units sodium or lithium heparin. Other anticoagulants are not acceptable.
<b>Patient Preparation</b>	Acknowledging that patients requiring blood gas analysis may be unstable, the patient should be as physiologically stable as possible when the arterial blood specimen is collected. Ideally, a patient's ventilation should be stable during specimen collection. Therefore, a patient breathing spontaneously should be at rest at least 5 minutes or, if possible, for as long as it takes for the ventilation pattern to become stable.
<b>Collection</b>	Collect samples in airtight plastic syringe. Completely wet the inside of the barrel of the syringe. The sodium heparin acts as an anticoagulant. Place a needle on the syringe and expel the sodium heparin to fill the dead space of the syringe and needle. Draw samples anaerobically, without introducing air bubbles in the syringe, and cap the syringe. If bubbles develop during sample collection, remove them immediately.

(Continued)

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(Blood Gas, Arterial, continued)

### Special Instructions

Requisition must indicate time drawn, type of sample (arterial, venous, or capillary), FiO<sub>2</sub> and ventilatory support type, and patient temperature. Notifying the lab of a pending sample is helpful. Deliver to the lab immediately following collection.

### Causes for Rejection

Large air bubbles will cause all values to be erroneous. The magnitude of error will be determined by the size of the air bubble, sample and sample air bubble interface, length of time bubble was in contact with sample before analysis and the gradient between sample gas tensions and room air gas tensions. Small bubbles, if immediately expelled, will generally not cause any significant error. Samples with large (more than 0.2 mL) bubbles should be discarded and a new, anaerobic sample obtained. Needle attached, sample clotted, specimen received more than 1 hour after collection.

### Reference Ranges/Critical Values

	Reference Range	Critical Values
pH	7.35 – 7.45	<7.20 or >7.58
pCO <sub>2</sub>	33 – 48 mm Hg	<9 or >65 mm Hg
pO <sub>2</sub>	80 – 104 mm Hg	<40 mm Hg (<20 mm Hg venous)
HCO <sub>3</sub>	24-31 mEq/L	<10 or >40mEq/L
O <sub>2</sub> Saturation	95-99%	

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## BASIC METABOLIC PANEL

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<b>Related Terms</b>	BMP
<b>Panel includes</b>	Sodium, potassium, chloride, carbon dioxide, glucose, urea nitrogen (BUN), creatinine, calcium, calculated glomerular filtration rate  Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or Plasma
<b>Volume</b>	2 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500 $\mu\text{L}$ (0.5 mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Range</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## COMPREHENSIVE METABOLIC PANEL WITH HSCT SUBGROUP

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<b>Panel includes</b>	Sodium, potassium, chloride, carbon dioxide, glucose, urea nitrogen (BUN), calcium, creatinine, alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin (total), total protein, albumin, calculation for globulin and albumin/globulin ratio, calculated glomerular filtration rate  Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
<b>HSCT subgroup</b>	<i>(Can be ordered individually or as group)</i> Magnesium, phosphorus, uric acid, bilirubin (direct), gamma glutamyl transferase (GGT), lactate dehydrogenase (LD), cholesterol, triglycerides
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	Routine
<b>Specimen</b>	Serum
<b>Volume</b>	2 mL
<b>Pediatric volume</b>	Pediatric capillary collection: 500 $\mu\text{L}$ serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## SCCA COMPREHENSIVE METABOLIC PANEL

### With Calculations for Globulin and Albumin/Globulin Ratio

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<b>Related Terms</b>	SCOMP
<b>Panel includes</b>	Sodium, potassium, chloride, carbon dioxide, glucose, urea nitrogen (BUN), calcium, creatinine, alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin (total), total protein, albumin, calculation for globulin and albumin/globulin ratio, calculated glomerular filtration rate  Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or Plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500 $\mu\text{L}$ serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## ELECTROLYTES

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<b>Related Terms</b>	Lytes
<b>Panel includes</b>	Sodium, potassium, chloride, CO <sub>2</sub> Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or Plasma
<b>Volume</b>	2 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500 µL (0.5 mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, red top tube or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## HEPATIC FUNCTION PANEL

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<b>Related Terms</b>	Liver Panel, Liver Studies, Hepatic Function, LFT, Liver Function Tests, Hepatic Profile
<b>Panel includes</b>	Alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin (total & direct), total protein, albumin
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or Plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500 µL (0.5 mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## HEPATIC FUNCTION PANEL WITH LACTATE DEHYDROGENASE

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<b>Related Terms</b>	Liver Panel, Liver Studies, Hepatic Function, LFT, Liver Function Tests, Hepatic Profile
<b>Panel includes</b>	Alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin (total & direct), total protein, albumin, lactate dehydrogenase (LD)
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or Plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500 µL(0.5 mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## LIPID PANEL

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<b>Related Terms</b>	Lipid Profile
<b>Panel includes</b>	Cholesterol, triglycerides, HDL cholesterol, calculated LDL cholesterol
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends & Holidays 8am – 5pm
<b>Availability</b>	Routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection; 500µL (0.5mL) serum collected in microtube or “bullet” tube
<b>Container</b>	5mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## RENAL FUNCTION PANEL

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<b>Panel includes</b>	Sodium, potassium, chloride, carbon dioxide, glucose, urea nitrogen (BUN), creatinine, calcium, phosphorus, albumin, calculated glomerular filtration rate  Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288 -1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends & Holidays 8am – 5pm
<b>Availability</b>	Stat or Routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection; 500 $\mu$ L (0.5 mL) serum collected in microtube or “bullet” tube
<b>Container</b>	5 mL green PST, green, SST™ red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## RENAL FUNCTION PANEL WITH MAGNESIUM

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<b>Panel includes</b>	Sodium, potassium, chloride, carbon dioxide, glucose, urea nitrogen (BUN), creatinine, calcium, phosphorus, albumin, magnesium, calculated glomerular filtration rate  Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends & Holidays 8am – 5pm
<b>Availability</b>	Stat or Routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection; 500 $\mu$ L (0.5 mL) serum collected in microtube or “bullet” tube
<b>Container</b>	5 mL green PST, green, SST™, red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	See individual tests
<b>Reference Ranges</b>	See individual tests
<b>Critical Values</b>	See individual tests

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## URINALYSIS

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<b>Related Terms</b>	UA
<b>Panel includes</b>	Color, appearance, bilirubin, leukocyte esterase, nitrite, specific gravity, pH, protein, glucose, ketones, blood and microscopic analysis if ordered or indicated by chemistries
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Random Urine
<b>Volume</b>	12 mL, can be done on <12 mL in extenuating instances such as infants
<b>Container</b>	Plastic urine container
<b>Collection</b>	Freshly voided clean-catch random urine or catheterized specimen
<b>Storage Instructions</b>	A fresh voiding should be examined within 1 hour, or it should be refrigerated (2-8°C).
<b>Causes for Rejection</b>	Specimens contaminated with feces, less than 1 mL of urine or specimens that are >1 hour old and have not been refrigerated.
<b>Reference Ranges</b>	Urinalysis macroscopic: color straw-dark yellow; appearance clear-hazy; pH 5-8; specific gravity 1.005-1.030; protein negative; glucose negative; ketones negative; bilirubin negative; blood negative: nitrite negative; urobilinogen 0.1-1 Ehrlich units; leucocyte esterase: negative. Urinalysis microscopic: RBC 0-2/hpf; WBC 0-5/hpf; casts negative.
<b>Critical Values</b>	Urine Glucose > 1000 mg/dL

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## ALANINE AMINOTRANSFERASE (ALT)

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**Related Terms** ALT, SGPT

**Test included in these panels**

- Hepatic Function Panel, Hepatic Function Panel with LD
- Comprehensive Metabolic Panel with HSCT subgroup
- Comprehensive Metabolic Panel with calc. for albumin and A/G ratio

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2 mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™, or red top tube; NO EDTA or oxalate

**Collection** Routine venipuncture or line draw

**Special Handling** Serum must be separated from red cells as soon as possible after  
collection. Erythrocytes contain 3x – 5x more ALT than does serum.

**Causes for Rejection** Hemolysis, lipemia, bilirubin, misidentified specimens  
and requisitions, specimen QNS

**Reference Ranges**

Age	Male	Female
0 - 50	10 - 64 U/L	6 - 40 U/L
> 50	10 - 48 U/L	6 - 40 U/L

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## ALBUMIN

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**Test is included in these panels:**

- Hepatic Function Panel, Hepatic Function Panel with LD
- Renal Function Panel
- Renal Function Panel with Mg
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup

<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or Plasma
<b>Volume</b>	0.5 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 200 µL (0.2 mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, or red top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Gross hemolysis, lipemia, or bilirubin, misidentified specimens and requisitions, specimen QNS
<b>Reference Ranges</b>	3.5 – 5.2 g/dL

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## ALKALINE PHOSPHATASE (ALK)

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**Related Terms** ALK, Alk Phos, ALP, Phosphatase, Alkaline

**Test included in these panels:**

- Hepatic Function Panel
- Hepatic Function Panel with LD
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200 µL (0.2mL) serum  
collected in microtube or “bullet” tube

**Container** 5 mL green PST, green, SST™, or red top tube; NO EDTA or oxalate

**Collection** Routine venipuncture or line draw

**Causes for Rejection** Hemolysis, misidentified specimens and requisitions, specimen QNS,  
serum not separated from cells within 2 hours after collection

*(Continued)*

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*Alkaline Phosphatase, continued***Reference Ranges**

<b>Age</b>	<b>Male</b>	<b>Female</b>
75 years	52-227 U/L	49-199 U/L
65 years	36-161 U/L	38-172 U/L
55 years	37-159 U/L	31-132 U/L
45 years	39-139 U/L	34-121 U/L
35 years	36-122 U/L	25-112 U/L
25 years	35-109 U/L	25-100 U/L
18 years	42-136 U/L	26-98 U/L
14 years	72-400 U/L	43-226 U/L
12 years	119-426 U/L	89-285 U/L
10 years	115-324 U/L	132-366 U/L
0 years	115-324 U/L	111-281 U/L

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## ASPARTATE AMINOTRANSFERASE (AST)

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**Related Terms** AST, GOT, Serum Glutamic Oxaloacetic Transaminase, SGOT

**Test included in these panels**

- Hepatic Function Panel
- Hepatic Function Panel with LD
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™, or red top tube; NO EDTA or oxalate

**Collection** Routine venipuncture or line draw

**Special Handling** The concentration of AST in red cells is roughly 15x that of  
normal serum, therefore, hemolysis should be avoided.

**Causes for Rejection** Hemolysis, misidentified specimens and requisitions, specimen QNS

**Reference Ranges** 15-40 U/L

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## UREA NITROGEN

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**Related Terms** Blood Urea Nitrogen, BUN

**Test included in these panels**

- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel
- Renal Function Panel with Mg

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™, or red top tube;  
NO EDTA, oxalate, or citrate

**Collection** Routine venipuncture or line draw

**Causes for rejection** Gross hemolysis, misidentified specimens and  
requisitions, specimen QNS

**Reference Ranges** 8 – 21 mg/dL

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# CALCIUM

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**Related Terms** Ca<sup>++</sup>

**Test included in these panels**

- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel
- Renal Function Panel with Mg

<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	0.5 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 200µL (0.2mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™ or red top tube; NO EDTA, oxalate, or citrate
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for rejection</b>	Gross hemolysis, specimen QNS, misidentified specimens and requisitions
<b>Reference Range</b>	8.9 – 10.2 mg/dL
<b>Critical Values</b>	<6.0 mg/dL or >13.0 mg/dL

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## CARCINOEMBRYONIC ANTIGEN

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<b>Related Terms</b>	CEA
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum
<b>Volume</b>	2.0 mL, minimum 0.8
<b>Container</b>	5 mL orange top tube preferred; or gold top or SST or red top tube SST
<b>Collection</b>	Routine venipuncture or line draw
<b>Interfering Substances</b>	Gross hemolysis, lipemia or bilirubin, misidentified specimens and requisitions, specimen QNS
<b>Reference Ranges</b>	0.0-5.0 ng/mL

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## CEREBRAL SPINAL FLUID GLUCOSE

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<b>Related Terms</b>	CSF glucose
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Cerebral spinal fluid
<b>Volume</b>	1 mL
<b>Minimum Volume</b>	0.4 mL
<b>Container</b>	Plastic tube with tight-fitting lid, orange top tube
<b>Collection</b>	Lumbar Puncture
<b>Causes for Rejection</b>	Insufficient quantity, misidentified specimens and requisitions
<b>Reference Ranges</b>	40-80 mg/dL
<b>Critical Values</b>	Less than 20 mg/dL

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## CEREBRAL SPINAL FLUID PROTEIN

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<b>Related Terms</b>	CSF protein
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Cerebral spinal fluid
<b>Volume</b>	1 mL
<b>Minimum Volume</b>	0.4 mL
<b>Container</b>	Plastic tube with tight-fitting lid
<b>Collection</b>	Lumbar Puncture
<b>Causes for Rejection</b>	Insufficient quantity, misidentified specimens and requisitions
<b>Reference Ranges</b>	15-45 mg/dL

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## CHLORIDE

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**Related Terms**            Cl-

**Test included in these panels**

- Electrolytes
- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel.
- Renal Function Panel with Mg

**Lab**                            Alliance Lab, Room G1-500

**Request Form**            SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone**                        288-1088

**Testing Frequency**    M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability**              STAT or routine

**Specimen**                  Serum or Plasma

**Volume**                     0.5 mL

**Pediatric Volume**      Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container**                 5 mL green PST, green, SST™, or red top tube;  
NO EDTA, oxalate, or citrate

**Collection**                Routine venipuncture or line draw

**Special Handling**        Centrifuge the specimen to separate serum from red cells  
within 2 hours of collection. Store refrigerated at 2–8°C.

*(Continued)*

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*Chloride, continued*

**Causes for Rejection**

Gross hemolysis, misidentified specimens and requisitions,  
specimen QNS

**Reference Ranges**

98 – 108 mEq/L

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## CHOLESTEROL

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<b>Test included in this panel</b>	Lipid panel
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	Routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500µL(0.5mL) serum collected in microtube or “bullet tube”
<b>Container</b>	5 mL green PST, green, SST™ or red top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen, gross hemolysis
<b>Reference Ranges</b>	Desirable <200 mg/dL Acceptable 200-239 mg/dL High >239 mg/dL

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## CO<sub>2</sub> (BICARBONATE)

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**Related Terms** TCO<sub>2</sub>, Total CO<sub>2</sub>, CO<sub>2</sub>, HCO<sub>3</sub><sup>-</sup>

**Test included in these panels**

- Electrolytes
- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup

<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	0.5 mL
<b>Pediatric volume</b>	Pediatric capillary collection: 200µL (0.2mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™, or red top tube; NO EDTA, oxalate, or citrate
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Gross hemolysis, misidentified specimens and requisitions, specimen QNS
<b>Reference Ranges</b>	22 – 32 mEq/L
<b>Critical Values</b>	<10 mEq/L or >40 mEq/L

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## CREATININE

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**Test included in these panels:**

- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel
- Renal Function Panel with Mg

<b>Test includes</b>	Creatinine, calculated glomerular filtration rate
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	0.5 mL
<b>Pediatric volume</b>	Pediatric capillary collection: 200µL (0.2mL) serum collected in microtube or "bullet" tube
<b>Container</b>	5 mL green PST, green, SST™ or red top tube; NO EDTA, oxalate, or citrate
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Hemolysis, misidentified specimens and requisitions, specimen QNS

<b>Reference Ranges</b>	Female		Male	
	Age	Range	Age	Range
	>=18 yrs	0.38-1.02	>=18 yrs	0.51-1.18
<18 yrs	0.20-1.10	<18 yrs	0.20-1.10	

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## DIRECT BILIRUBIN

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**Related Terms**            Conjugated Bilirubin

**Test included in these panels**

- Hepatic Function Panel
- Hepatic Function Panel with LD
- Comprehensive Metabolic Panel with HSCT subgroup

**Lab**                            Alliance Lab, Room G1-500

**Request Form**            SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone**                        288-1088

**Testing Frequency**    M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability**              STAT or routine

**Specimen**                  Serum or plasma

**Volume**                     0.5 mL

**Pediatric Volume**      Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container**                 5 mL green PST, green, SST™ or red top tube

**Collection**                Routine venipuncture or line draw

**Special Handling**      Protect specimen from light. Direct exposure can decrease direct  
bilirubin values in specimens by 50% in one hour.

**Causes for Rejection**    Hemolysis, misidentified specimens and requisitions, specimen QNS

**Reference Ranges**      0.0 – 0.3 mg/dL

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# GAMMA GLUTAMYL TRANSFERASE

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**Related Terms**            GGT

**Test included in this panel:**

- Comprehensive Metabolic Panel with HSCT subgroup

**Lab**                            Alliance Lab, Room G1-500

**Request Form**            SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone**                        288-1088

**Testing Frequency**      M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability**                Routine

**Specimen**                    Serum

**Volume**                      1 mL

**Pediatric Volume**        Pediatric capillary collection: 500µL (0.5mL) serum  
collected in microtube or “bullet tube”

**Container**                    Green top or gold top tube

**Collection**                    Routine venipuncture or line draw

**Interfering Substances**

Some anti-epileptic drugs (phenytoin, barbiturates), as well as heavy alcohol consumption before specimen collection may result in falsely elevated GGT values

**Causes for Rejection**

Misidentified specimens and requisitions, specimen QNS, improperly stored specimen, gross hemolysis

**Reference Ranges**        0 – 55 U/L

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# GLUCOSE

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**Related Terms**            Blood sugar, sugar

**Test included in these panels:**

- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel
- Renal Function Panel with Mg

**Lab**                            Alliance Lab, Room G1-500

**Request Form**            SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone**                        288-1088

**Testing Frequency**    M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability**                STAT or routine

**Specimen**                    Serum or plasma

**Volume**                      0.5 mL

**Pediatric Volume**        Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container**                    5 mL green PST, green, SST™, Lavender (EDTA),  
fluoride, or red top tube

**Collection**                    Routine venipuncture or line draw;  
do not draw specimen from an arm receiving intravenous transfusion

**Specimen Handling**        Separate plasma or serum from cells as soon as possible  
to minimize loss of glucose through glycolysis

*(Continued)*

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*Glucose, continued*

**Causes for Rejection**

Hemolysis, misidentified specimens and requisitions, specimen QNS

**Reference Ranges**

Glucose, fasting: 62–125 mg/dL

**Critical Values**

<45 mg/dL or >500 mg/dL

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## HDL CHOLESTEROL

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<b>Related Terms</b>	HDL
<b>Test included in this panel</b>	Lipid Panel
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am - 5pm
<b>Availability</b>	Routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500µL (0.5mL) serum collected in microtube or “bullet tube”
<b>Container</b>	5 mL green PST, green, SST™ or red top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen
<b>Reference Ranges</b>	Desirable >59 mg/dL Acceptable 40-59 mg/dL Low <40 mg/dL

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## IONIZED CALCIUM, SERUM & PLASMA

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<b>Test includes</b>	Ionized Calcium
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum & Plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	0.5 mL
<b>Container</b>	Gold top SST™ tube for serum Lime green top PST tube for plasma
<b>Collection</b>	Routine venipuncture or line draw
<b>Storage Instructions</b>	<b>DO NOT OPEN TUBE.</b> Use only PST/SST™ (gel barrier) tube if ordering additional tests and specimen cannot reach laboratory within 2 hours of collection. Spin PST/SST™ (gel barrier) tube to separate serum or plasma. Serum or plasma in stoppered and spun PST/SST™ tube is stable 24 hours at 4°C. If stored >24 hours, freeze serum in cryo tube at –20° or –70°C.
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, any tube that has been opened and exposed to air, gross hemolysis
<b>Reference Ranges</b>	≥ 1 year 1.18 mmol/L - 1.38 mmol/L < 1 year 1.16 mmol/L - 1.45 mmol/L
<b>Critical Values</b>	< 0.78 mmol/L or > 1.58 mmol/L

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## LACTATE DEHYDROGENASE

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**Related Terms** LD, LDH

**Test included in these panels:**

- Comprehensive Metabolic Panel with HSCT subgroup
- Hepatic Function Panel with LD

**Lab** Alliance Lab, Room G 1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™ or red top tube;  
NO EDTA, citrate, or oxalate

**Collection** Routine venipuncture or line draw

**Special Handling** Do not refrigerate specimens

**Causes for Rejection** Misidentified specimens and requisitions, specimen QNS

**Reference Ranges** 80 – 190 U/L

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## LDL CHOLESTEROL

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**Related Terms** LDL

**Test Included in this panel:** Lipid Panel

This test is a calculation and it cannot be ordered as an individual test.  
*Refer to Lipid Panel*

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** Routine

**Specimen** Serum or plasma

**Volume** 1 mL

**Pediatric Volume** Pediatric capillary collection: 500µL (0.5mL) serum  
collected in microtube or “bullet tube”

**Container** 5 mL green PST, green, SST™ or red top tube

**Collection** Routine venipuncture or line draw

**Special Handling** Serum or plasma must be separated from cells within 2 hours

**Causes for Rejection** Misidentified specimens and requisitions, specimen QNS,  
improperly stored specimen, gross hemolysis

**Reference Ranges** <130

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## MAGNESIUM

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**Related Terms** Mg<sup>++</sup>

**Test included in these panels:**

- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel with Mg

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™ or red top tube;  
NO EDTA, oxalate, or citrate

**Collection** Routine venipuncture or line draw

**Note** Erythrocytes contain 3x the magnesium concentration of serum

**Special Handling** Draw without venous stasis

**Causes for Rejection** Hemolysis, misidentified specimens and requisitions,  
specimen QNS

**Reference Ranges** 1.8 – 2.4 mg/dL

**Critical Values** <1.2 or >4.7 mg/dL

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# PHOSPHORUS

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**Related Terms** Phos, PO<sub>4</sub>, Inorganic phosphorus

**Test included in these panels:**

- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel
- Renal Function Panel with Mg

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™ or red top tube;  
NO EDTA, oxalate, fluoride, or citrate

**Collection** Routine venipuncture or line draw

**Special Handling** Hemolysis must be avoided, as phosphate may be split off  
from labile esters in the erythrocytes.

**Causes for Rejection** Hemolysis, misidentified specimens and requisitions,  
specimen QNS

**Reference Ranges** Adult 2.5 – 4.5 mg/dL  
Child <12 years 4.5 – 6.0 mg/dL

**Critical Values** < 1.0 mg/dL

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# POTASSIUM

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**Related Terms** K+, K, Serum Potassium

**Test included in these panels**

- Electrolytes
- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel; Renal Function Panel with Mg

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™ or red top tube

**Collection** Routine venipuncture or line draw, **do not** draw specimen from an arm receiving intravenous transfusion. Avoid hemolysis, as it can lead to falsely elevated K+ levels.

**Causes for Rejection** Hemolysis, misidentified specimens and requisitions, specimen QNS

**Reference Ranges** 3.7 – 5.2 mEq/L

**Critical Values** <3.0 mEq/L or >6.0 mEq/L

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## URINE PREGNANCY TEST

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<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Random Urine, first morning specimen preferred for best results
<b>Volume</b>	10 mL
<b>Container</b>	Plastic urine container
<b>Collection</b>	Freshly voided random urine
<b>Storage Instructions</b>	Specimen can be refrigerated (2-8°C).
<b>Causes for Rejection</b>	Specimens contaminated with feces or less than 1 mL of urine. Specimens that are >1 hour old and have not been refrigerated.
<b>Reporting</b>	Qualitative results, positive or negative
<b>Reference Ranges</b>	Negative

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## SERUM PREGNANCY TEST

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<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum
<b>Volume</b>	5 mL
<b>Container</b>	5 mL red top or gold top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Collected in tube with anticoagulant, QNS, misidentified specimens and requisitions
<b>Reporting</b>	Qualitative results, positive or negative
<b>Reference Ranges</b>	Negative

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## PROSTATE SPECIFIC ANTIGEN

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<b>Related Terms</b>	PSA, PSA monitor, PSA screen, ultrasensitive PSA
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Serum
<b>Volume</b>	2.0 mL, minimum 0.8
<b>Container</b>	5 mL orange top tube preferred; or gold top SST, red top tube, SST
<b>Collection</b>	Routine venipuncture or line draw
<b>Interfering Substances</b>	Gross hemolysis, lipemia, or bilirubin; misidentified specimens and requisitions; specimen QNS
<b>Reference Ranges</b>	0.00-4.00 ng/mL

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# SODIUM

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**Related Terms** Na+

**Test included in these panels:**

- Electrolytes
- Basic Metabolic Panel
- Comprehensive Metabolic Panel with calc. for globulin and A/G ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Renal Function Panel; Renal Function Panel with Mg

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™ or red top tube;  
NO EDTA, oxalate, or citrate

**Collection** Routine venipuncture or line draw; do not draw specimen from  
an arm receiving intravenous transfusion.

**Causes for Rejection** Gross hemolysis, misidentified specimens and requisitions,  
specimen QNS

**Reference Ranges** 136 – 145 mEq/L

**Critical Values** <120 mEq/L or >160 mEq/L

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## STOOL OCCULT BLOOD

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<b>Related Terms</b>	Fecal Occult Blood, Stool Guaiac, Occult Blood
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes; include date and time of specimen collection
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm, tests performed at approximately 11am and 4pm
<b>Specimen</b>	Send Hemoccult® card with stool specimen already applied, up to three cards can be sent at one time; three cards or a card with 3 samples are the same charge as one card
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, improperly prepared Hemoccult® card, refrigerated Hemoccult® cards
<b>Reference Range</b>	Negative

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## TOTAL BILIRUBIN

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**Related Terms**            Bilirubin

**Test included in these panels**

- Comprehensive Metabolic Panel with calc. for globulin and A/G Ratio
- Comprehensive Metabolic Panel with HSCT subgroup
- Hepatic Function Panel
- Hepatic Function Panel with LD

**Lab**                            Alliance Lab, Room G1-500

**Request Form**            SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone**                        288-1088

**Testing Frequency**    M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability**                STAT or routine

**Specimen**                    Serum or plasma

**Volume**                      0.5 mL

**Pediatric Volume**        Pediatric capillary collection: 200 µL serum  
collected in microtube or "bullet" tube

**Container**                    5 mL green PST, green, SST™ or red top tube

**Collection**                    Routine venipuncture or line draw

**Special Handling**        Protect specimen from light; direct exposure can decrease  
bilirubin values in specimens by 50% in 1 hour

**Causes for Rejection**    Hemolysis, misidentified specimens and requisitions,  
specimen QNS

**Reference Ranges**        0.2 – 1.3 mg/dL

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# TOTAL PROTEIN

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**Related Terms** Protein

**Test included in these panels:**

- Comprehensive Metabolic Screen with calc. for globulin and A/G ratio
- Comprehensive Metabolic Screen with HSCT subgroup
- Hepatic Function Panel
- Hepatic Function Panel with LD

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma; plasma is not recommended for this test as fibrinogen in the specimen will add to the protein measured. If plasma must be used, the recommended anticoagulant is heparin.

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200 µL (0.2mL) serum collected in microtube or "bullet" tube

**Container** SST™, red top or green top tube

**Collection** Routine venipuncture or line draw

**Interfering Substances**

Gross hemolysis, lipemia, or bilirubin

**Causes for Rejection**

Misidentified specimens and requisitions, specimen QNS

**Reference Ranges** 6.0 – 8.2 g/dL

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## URINE TOTAL PROTEIN

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<b>Related Terms</b>	Urine protein, Urine total protein
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request: write UPCRAT in the OTHER REQUEST section. Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	24 hour urine collection, random specimen also acceptable
<b>Volume</b>	1 mL
<b>Minimum Volume</b>	0.4 mL
<b>Container</b>	24 hour urine collection container, or plastic urine cup w/ tight-fitting lid
<b>Causes for Rejection</b>	Insufficient quantity, misidentified specimens and requisitions
<b>Reference Ranges</b>	0-14 mg/dL (random specimen) 0.05-0.08 g/24 hours (24 hour collection)

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## TRIGLYCERIDES

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<b>Related Terms</b>	Trigs
<b>Test included in this panel</b>	Lipid panel
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	Routine
<b>Specimen</b>	Serum or plasma
<b>Volume</b>	1 mL
<b>Pediatric Volume</b>	Pediatric capillary collection: 500µL (0.5mL) serum collected in microtube or “bullet tube”
<b>Container</b>	5 mL green PST, green, SST™ or red top tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen, hemolysis, not fasting for at least 12 hours
<b>Reference Ranges</b>	Desirable <150 mg/dL Borderline 150-199 mg/dL High 200-499 mg/dL Very High >500 mg/dL

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## URIC ACID

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**Test included in this panel** Comprehensive Metabolic Panel with HSCT subgroup

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Serum or plasma

**Volume** 0.5 mL

**Pediatric Volume** Pediatric capillary collection: 200µL (0.2mL) serum  
collected in microtube or "bullet" tube

**Container** 5 mL green PST, green, SST™ or red top tube;  
NO EDTA, oxalate, fluoride, or citrate

**Collection** Routine venipuncture or line draw

**Causes for Rejection** Misidentified specimens and requisitions, specimen QNS

**Reference Ranges**

Male	Female
3.4 – 7.0 mg/dL	2.9 – 6.3 mg/dL

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# URINE CREATININE CREATININE CLEARANCE

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**Test included in:**

- Urine Creatinine
- Creatinine clearance
- Urine Protein/Creatinine ratio

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Clinical Lab Request Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen: Urine for Urine Creatinine**

Aliquot of 4, 12 or 24-hour urine and a serum creatinine level within 48 hours of urine collection for a Creatinine Clearance

**Volume** 0.5 mL min.

**Container** Clean, leak proof container.

**Collection** No preservative needed, but if needed for other analytes, only Thymol or Toluene should be used.

**Creatinine Clearance Patient Preparation**

- Hydrate the patient by administering a minimum of 600 ml water. Withhold tea, coffee, and drugs on the day of collection.
- Have the patient void and discard that specimen. Note the time and begin the urine collection period.
- Save all urine from this time on.

*(Continued)*

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*Urine Creatinine, Creatinine Clearance, continued*

- Collect a 4, 12, or 24-hour specimen and record exact times of starting and completion of collection. A precisely timed specimen is required. At the end of the collection period, the patient is to empty their bladder and add the urine to the collection container. Do not add any additional urine to the container after the collection period.
- Refrigerate the sample during collection.

**Causes for Rejection**

Incomplete collections for timed periods

**Reference Ranges**

Urine Creatinine	Child 0-9 yrs	700-1800 mg/24 hrs
	Male > 9 yrs	1000-2000 mg/24 hrs
	Female > 9 yrs	700-1800 mg/24 hrs

Creatinine Clearance	Newborn	40 –60 mL/min/m <sup>2</sup>
	Male	75-120 mL/min
	Female	65-105 mL/min

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## URINE PROTEIN/URINE CREATININE RATIO

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<b>Related Terms</b>	Urine Total Protein, Urine Creatinine
<b>Test included</b>	Urine Total Protein, Urine Creatinine, calculated ratio
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request; write UPCRAT in the OTHER REQUEST section. Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Random urine sample
<b>Volume</b>	1.0 mL
<b>Container</b>	Urine specimen cup
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS
<b>Calculation</b>	$\frac{\text{Urine Protein value}}{\text{Urine Creatinine value}} = \text{Ratio}$

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## HLA TYPING

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<b>Related Terms</b>	Histocompatibility Testing, HLA DNA, Serology
<b>Lab</b>	Clinical Immunogenetics Lab, Room G7-107 Mail Stop G7-200
<b>Request Form</b>	HLA Typing Requisition and New Admit.doc. Fill out completely, including date, time and ICD-9 codes. Label and request must have two patient/donor identifiers.
<b>Phone</b>	288-7700 Lab Coordinator Office FAX 288-1169
<b>Availability</b>	M – F 8am – 5pm. After 2:30 please call 288-7700 to alert lab of blood draws or late specimens. Specimens must arrive in CIL before 4pm on Friday or the day before a holiday.
<b>Turnaround Time</b>	See ‘CIL Turn Around Time Chart’
<b>Specimen</b>	Peripheral Blood
<b>Volume/ Container</b>	5 mL blood in red top tube and 50 mL blood in green top tube (sodium heparin) <b>(lithium heparin unacceptable)</b>
<b>Collection</b>	Routine venipuncture or line draw
<b>Special Handling</b>	Room temperature, deliver to CIL immediately
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen or broken tubes.
<b>After hours</b>	Draw sample and keep specimen at room temperature. Deliver to lab the next working day.

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## CHIMERISM TESTING

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<b>Related Terms</b>	AMP-FLP (Amplified Fragment Length Polymorphism, Engraftment and Monitoring), STR (Short Tandem Repeat); VNTR (Variable Number Tandem Repeat).
<b>Lab</b>	Clinical Immunogenetics Lab, Room G7-107; Mail Stop G7-200
<b>Request Form</b>	Bone Marrow Procedure Order/Multiple Lab Requisition <u>or</u> Blood & Other Samples Physician's Order/Multiple Lab Requisition <u>or</u> Long Term Follow Up/Multiple Lab Request Form (for mail-in specimens)
	Fill out completely, including date, time and ICD-9 codes. Label and request must have two patient/donor identifiers.
<b>Phone</b>	288-1139 or 288-7700 FAX 288-1169
<b>Availability</b>	M – F 8am – 5pm. After 2:30 please call 288-7700 to alert lab of blood draws or late specimens. Specimens must arrive in CIL before 4pm on Friday or the day before a holiday.
<b>Turnaround Time</b>	See 'CIL Turn Around Time Chart'
<b>Specimen</b>	Peripheral Blood, Bone Marrow or Flow Cytometry Sorted White Cell subsets  <u>Cell Sorting</u> : Send specimens to the Hematopathology Laboratory, using the appropriate request form listed above, when testing of lineage specific white blood cell subsets (such as CD3+ and CD33+) is required. The Hematopathology Laboratory will isolate the requested cell fractions and forward them to the Clinical Immunogenetics Laboratory for chimerism testing.
<b>Volume</b>	For peripheral blood 10mL; for bone marrow 1-2mL
<b>Pediatric Volume</b>	Peripheral blood 5mL
<b>Container</b>	Heparin – 20 units/mL of blood or bone marrow
<b>Collection</b>	Routine venipuncture, line draw or bone marrow aspiration
<b>Special Handling</b>	Room temperature, deliver to CIL immediately
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen
<b>After Hours</b>	Draw sample and keep at room temperature. Deliver to lab the next working day.

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## CIL TURNAROUND TIMES FOR HLA ADMIT WORKUPS AND CHIMERISM TESTING

<b>HLA Typing</b>		
<b>Patient/Donor Status</b>	<b>Specimen Rec'd by 2pm on:</b>	<b>Results faxed to Ambulatory Clinics and/or Unit by:</b>
Matched family donor w/previous SCCA typing	Monday Tuesday Wednesday Thursday Friday	<b>5pm on:</b> Wednesday Thursday Friday Monday Tuesday
URD or Mismatched family donor w/previous SCCA typing	Monday Tuesday Wednesday Thursday Friday	<b>10am on:</b> Thursday Friday Monday Tuesday Wednesday
Matched/Mismatched No previous SCCA typing	Monday Tuesday Wednesday Thursday Friday	Within 6-10 working days
<b>Chimerism Testing</b>		
Results faxed to source of test request and current attending 1-3 days of sample receipt.		

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## FIBRINOGEN

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<b>Related Terms</b>	FIBCL
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	4.5 mL
<b>Pediatric volume</b>	2.7 mL
<b>Container</b>	Blue top 3.2 % (sodium citrate) tube
<b>Collection</b>	<p>If multiple tests are being drawn, draw coagulation studies second. If only a fibrinogen is being drawn, draw 1-2 mL into another Vacutainer®, discard, and then collect the fibrinogen tube. This procedure avoids contamination of the specimen with tissue thromboplastin. When it is necessary to obtain blood from indwelling arterial or venous catheters, the heparinized fluid infusion should be stopped and the first 15 mL blood obtained through the indwelling catheter should not be utilized for any coagulation studies. The appropriate volume of blood for the needed coagulation studies should be withdrawn from the catheter and the heparin infusion resumed after obtaining the sample. Samples obtained from a catheter should be so indicated. It should be understood that all coagulation specimens should be obtained without heparin contamination. All coagulation tests are, to some extent, sensitive to heparin contamination. Transport to the laboratory as soon as possible. Specimen <b>MUST</b> be processed by Lab within 24 hrs of blood collection.</p>

(Continued)

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*Fibrinogen, continued*

**Causes for Rejection** Specimen clotted, hemolyzed, contaminated with heparin, specimen received more than 2 hours after collection, tubes under-filled or overfilled, misidentified specimens and requisitions

**Reference Ranges** 150 – 400 mg/dL

**Critical Values** <100 mg/dL, possible effect, hemorrhage

**After Hours** Centrifuge for 10 minutes. Remove plasma and re-spin plasma for 10 minutes. Decant and freeze. Send frozen on dry ice.

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## PARTIAL THROMBOPLASTIN TIME

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<b>Related Terms</b>	Activated Partial Thromboplastin Time, aPTT, PTT
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	4.5 mL
<b>Pediatric Volume</b>	2.7 mL
<b>Container</b>	Blue top (3.2 % sodium citrate) tube
<b>Collection</b>	Routine venipuncture or line draw. If multiple tests are being drawn, draw coagulation studies second. If only a partial thromboplastin time (PTT) is being drawn, draw 1-2 mL into another Vacutainer®, discard, and then collect the PTT. This collection procedure avoids contamination of the specimen with tissue thromboplastins or heparin. Must be processed within 6 hrs.  <i>Note:</i> For Heparin monitoring, MUST DRAW 5 mL BLUE TOP and process in 1hr.
<b>Causes for Rejection</b>	Specimen clotted, gross hemolysis, received more than 2 hours after collection, tubes under-filled or overfilled, misidentified specimens and requisitions
<b>Reference Ranges</b>	22 – 35 seconds
<b>Therapeutic Range</b>	60 –100 seconds for patient on heparin therapy.

(Continued)

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*Partial Thromboplastin Time, continued*

**Critical Value** >120 seconds

**After Hours** Centrifuge for 10 minutes. Remove plasma and re-spin plasma for 10 minutes. Decant and freeze. Send frozen on dry ice.

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## PROTHROMBIN TIME

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<b>Related Terms</b>	Protime, PT, PRO, ACCINR*
<b>Test includes</b>	Prothrombin Time and International Normalization Ratio (INR) (*ACCINR includes INR result, only)
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	4.5 mL
<b>Pediatric Volume</b>	2.7 mL
<b>Container</b>	Blue top (3.2% sodium citrate) tube
<b>Collection</b>	Routine venipuncture or line draw. If multiple tests are being drawn, draw coagulation studies second. If only a Prothrombin Time is being drawn, draw 1-2 mL into another Vacutainer®, discard, and then collect the Prothrombin Time. This collection procedure avoids contamination of the specimen with tissue thromboplastins or heparin. Specimen MUST be processed by Lab within 24 hrs of blood collection.
<b>Causes for Rejection</b>	Specimen clotted, gross hemolysis, tubes under-filled or overfilled, misidentified specimens and requisitions.
<b>Reference Range</b>	INR 0.8 – 1.3 PRO 10.7 – 15.6 secs
<b>Therapeutic Range</b>	INR 2.0 – 3.5; INR is applicable only to patients on stable coumadin therapy.

(Continued)

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*Prothrombin Time, continued*

<b>Critical Values</b>	Non-anticoagulated patient, more than 44 seconds, possible effect is hemorrhage.  Anticoagulated patient, more than three times normal mean, possible effect is hemorrhage.  Critical Prothrombin Time is the PT that generates >5.0 INR.
<b>After Hours</b>	Centrifuge for 10 minutes. Remove plasma and re-spin plasma for 10 minutes. Decant and freeze. Send frozen on dry ice.

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## THROMBIN TIME

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<b>Test includes</b>	Thrombin time
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Clinical Lab Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	4.5 mL
<b>Pediatric Volume</b>	2.7 mL
<b>Container</b>	Blue top (3.2% sodium citrate) tube
<b>Collection</b>	Routine venipuncture or line draw. If multiple tests are being drawn, draw coagulation studies second. If only a Thrombin Time is being drawn, draw 1-2 mL into another Vacutainer®, discard, and then collect the Thrombin Time. This collection procedure avoids contamination of the specimen with tissue thromboplastins or heparin. Specimen <b>MUST</b> be processed by Lab within 6 hrs of blood collection.
<b>Causes for Rejection</b>	Specimen clotted, severely hemolyzed specimens, tubes under-filled or overfilled, misidentified specimens and requisitions.
<b>Reference Range</b>	16-25

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## CYTOGENETICS STUDIES – BLOOD

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<b>Related Terms</b>	Molecular Cytogenetics, Chromosome analysis, FISH (fluorescence in situ hybridization)
<b>Test includes</b>	Chromosome analysis or fluorescence in situ hybridization (FISH)
<b>Lab</b>	Cytogenetics Lab, Room G7-503
<b>Request Form</b>	Blood and Other Samples Physician's Order/Multiple Lab Requisition. Fill out completely, including ICD-9 codes. Multiple tests may be requested on one form; however a separate form is required for each specimen type.
<b>Phone</b>	288-1390
<b>Availability</b>	M – F 8am – 5pm
<b>Turnaround Time</b>	See 'Cytogenetics Turnaround Time Table'
<b>Specimen</b>	Peripheral Blood
<b>Volume</b>	Adults 20mL; Donors 3mL; LTFU 7mL. <i>Note:</i> 20 mL of peripheral blood is requested due to the variability of white blood cell counts in patients with hematological disorders. Amounts requested have been minimized for children and for individuals expected to have a white blood count within the normal range. For chromosome fragility tests to rule out Fanconi Anemia, higher volumes may be required - contact the laboratory for instructions.
<b>Pediatric volume</b>	Children 10mL; infants 1-2mL. For chromosome fragility tests to rule out Fanconi Anemia, higher volumes may be required - contact the laboratory for instructions.
<b>Container</b>	Sodium heparin (green top tube)
<b>Collection</b>	Routine venipuncture or line draw

(Continued)

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*Cytogenetics Studies - Blood, continued*

**Special Handling** Room temperature; deliver immediately to Cytogenetics Lab. For cell sorting, then FISH testing, send to Alliance Lab for delivery to University of Washington Hematopathology Lab.

**Causes for Rejection** Misidentified specimens and requisitions, improperly stored specimens, leaking specimens that pose a risk to technologist, specimens of questionable integrity.

**After Hours** Store specimens at room temperature until delivery to lab during day shift or on-call hours.

(On call weekends and holidays 9am – 5pm: Pager# 340-7207)

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## CYTOGENETICS STUDIES – BONE MARROW

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<b>Related Terms</b>	Molecular Cytogenetics, Chromosome analysis, FISH (fluorescence in situ hybridization)
<b>Test includes</b>	Chromosome analysis or fluorescence in situ hybridization (FISH).
<b>Lab</b>	Cytogenetics Lab, Room G7-503
<b>Request Form</b>	Bone Marrow Procedure Order/Multiple Lab Requisition Fill out completely, including ICD-9 codes. Multiple tests may be requested on one form; however, a separate form is required for each specimen type.
<b>Phone</b>	288-1390
<b>Availability</b>	M – F 8am – 5pm
<b>Turnaround Time</b>	See 'Cytogenetics Turnaround Time Table'
<b>Specimen</b>	Bone Marrow
<b>Volume</b>	1-2 mL
<b>Container</b>	Put 1 – 2 mL in a green top (sodium heparin) tube. After marrow is put into tubes, the tubes must be mixed well to prevent clotting.
<b>Collection</b>	Bone Marrow Aspirate
<b>Special Handling</b>	Room temperature; deliver immediately to Cytogenetics Lab. For cell sorting, then FISH testing, send to Alliance Lab for delivery to University of Washington Hematopathology Lab.
<b>Causes for Rejection</b>	Misidentified specimens and requisitions, improperly stored specimens, clotted specimens, leaking specimens that pose a risk to technologist, specimens of questionable integrity.

*(Continued)*

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*Cytogenetics Studies-Bone Marrow, continued*

**After Hours**

Store specimens at room temperature until delivery to lab during day shift or on-call hours.

**DO NOT HOLD SPECIMENS OVER THE WEEKEND, CONTACT PAGER.**

(On call weekends and holidays 9am – 5pm, Pager# 340-7207.)

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## TURNAROUND TIMES CYTOGENETICS/MOLECULAR CYTOGENETICS

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<b>TURN AROUND TIMES Peripheral Blood</b>	
<b>Test Type</b>	<b>Results by:***</b>
Cytogenetics	Conventional chromosome analysis and tumor marker FISH
Unstimulated	5–10 working days with day 1 as day of receipt.
Mitogen stimulated	8–10 working days with day 1 as day of receipt.
<b>Please indicate special circumstances on requisition form and/or call 288-1390.</b>	
Unusual circumstances may cause a delay in availability of results. During times of heavy workload, samples will be prioritized according to known clinical urgency. If results are needed sooner than the above stated time frame, please indicate this on requisition form and/or call 288-1390.	

<b>TURN AROUND TIMES Bone Marrow</b>	
<b>Test Type</b>	<b>Results by:***</b>
Cytogenetics	Conventional chromosome analysis and tumor marker FISH
Unstimulated Bone Marrow or Bone Marrow Biopsy	5–10 working days with day 1 as day of receipt.
<b>Please indicate special circumstances on requisition form and/or call 288-1390.</b>	
Unusual circumstances may cause a delay in availability of results. During times of heavy workload, samples will be prioritized according to known clinical urgency. If results are needed sooner than the above stated time frame, please indicate this on requisition form and/or call 288-1390.	

\*\*\* Unexpected abnormal results are reported to the attending physician or primary provider. All reports are uploaded to Mindscape/ORCA. Reports are also faxed to patient locations without Mindscape/ORCA access.

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## CEREBRAL SPINAL FLUID CELL COUNT

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<b>Related Terms</b>	CSF cell count
<b>Test Includes</b>	White blood cell count, red blood cell count, white blood cell differential (includes all nucleated cells observed on concentrated smear). Smears also sent to UWMC Hematopathologist for microscopic examination.
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Laboratory Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Cerebral spinal fluid
<b>Volume</b>	1 mL
<b>Minimum Volume</b>	0.5 mL
<b>Container</b>	Sterile Tube; EDTA (lavender-top tube) if bloody
<b>Collection</b>	Lumbar puncture
<b>Causes for Rejection</b>	Insufficient quantity, misidentified specimens and requisitions
<b>Reference Ranges</b>	0 rbc/uL 0-5 mononuclear (lymphocytes and/or monocytes) cells/uL  Differential    Neutrophils        2% + 4% Lymphocytes            60% + 20% Monocytes                30% + 15%

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## COMPLETE BLOOD COUNT AND DIFFERENTIAL

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<b>Related Terms</b>	CBC, Complete CBC
<b>Panels Available</b>	CBC (Hemogram) = WBC, RBC, Hgb, HCT, MCV, MCH, MCHC & platelets  CBANC = CBC & Absolute Neutrophil Count  CBD = CBC & differential
<b>Panels Include</b>	
Measured Parameters	Hemoglobin (Hgb), platelets (PLT), red blood cells (RBC), white blood cells (WBC), and hematocrit (HCT).
Calculated Parameters	Mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), red blood cell distribution width (RDW), and mean platelet volume (MPV).
Auto Differential	Lymphocytes, Neutrophils, Monocytes, Eosinophils, and Basophils expressed as Absolute Number and % of total WBC.
Manual Differential	Cells in auto diff plus metamyelocytes, myelocytes, promyelocytes, blasts, plasma cells, hairy cells, unclassified cells (description provided) and nRBCs.
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Laboratory Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	2 – 3 mL
<b>Pediatric Volume</b>	One properly filled Microtainer™ (EDTA) tube for pediatric capillary collection.

(Continued)

*Complete Blood Count and Differential, continued*

**Storage Instructions** For best results, deliver to lab within 1 hour. Accepted if <24 hours from time of draw and sample was refrigerated or if less than 8 hours from the time of draw and sample not refrigerated.

**Container** EDTA Vacutainer® tube

**Collection** Routine venipuncture or line draw

**Causes for Rejection** Clotted specimen, insufficient quantity, old specimen, hemolysis, and misidentified specimens and requisitions

**Reference Ranges/Critical Values** See tables below

	Age	Male	Female
WBC (x10 <sup>3</sup> /uL)	14	4.3-10.0	4.3-10.0
	6	4.5-13.5	4.5-13.5
	4	5.5-14.5	5.5-14.5
	2	6.0-15.5	6.0-15.5
	6m	6.0-17.0	6.0-17.0
RBC (x10 <sup>6</sup> /uL)	18	4.40-5.60	3.80-5.00
	6	4.50-5.30	4.10-5.10
	4	4.00-5.20	4.00-5.20
	2	3.90-5.30	3.90-5.30
	6m	3.70-5.30	3.70-5.30
Hgb (g/dl)	18	13.0-18.0	11.5-15.5
	6	13.0-15.5	12.0-15.5
	4	11.5-15.5	11.5-15.5
	2	11.5-13.5	11.5-13.5
	6m	10.5-13.5	10.5-13.5
HCT (%)	18	38-50	36-45
	6	37-49	36-45
	4	35-45	35-45
	2	34-40	34-40
	6m	33-39	33-39
MCV (fl)	12	81-98	81-98
	6	77-95	77-95
	2	75-87	75-87
	6m	70-86	70-86
MCH (pg)	18	27.3-33.6	27.3-33.6
	6	25.0-35.0	25.0-35.0
	4	25.0-33.0	25.0-33.0
	2	24.0-30.0	24.0-30.0
	6m	23.0-31.0	23.0-31.0

	Age	Male	Female
MCHC (g/dL)	2	32.3-35.7	32.3-35.7
	6m	30.0-36.0	30.0-36.0
Plt (x10 <sup>3</sup> /uL)	12	150-400	150-400
	7	200-450	200-450
	3	250-550	250-550
	1	250-600	250-600
	1m	300-750	300-750
Basophils (x10 <sup>3</sup> /uL)	0	250-450	250-450
	6m	0-0.20	0-0.20
Eosinophils (x10 <sup>3</sup> /uL)	1	0.0-0.50	0-0.50
	6m	0-0.80	0-0.80
Lymphocytes (x10 <sup>3</sup> /uL)	12	1.00-4.80	1.00-4.80
	10	1.20-5.00	1.20-5.00
	1	1.50-5.00	1.50-5.00
	4	1.50-8.50	1.50-8.50
	6m	3.00-7.00	3.00-7.00
Monocytes (x10 <sup>3</sup> /uL)	1	0-0.80	0-0.80
	6m	0-0.60	0-0.60
Neutrophils (x10 <sup>3</sup> /uL)	10	1.80-7.00	1.80-7.00
	4	1.50-7.50	1.50-7.50
	6m	1.50-5.00	1.50-5.00

Critical Values	Less Than	Greater than	Units
Absolute neutrophils	0.5	N/A	(x10 <sup>3</sup> /uL)
Hematocrit	20	60	%
Platelet	40	1000	(x10 <sup>3</sup> /uL)
WBC	1	100	(x10 <sup>3</sup> /uL)

**Interfering Substances** High WBC counts, sickle cells, RBC fragments, cold agglutinins, elevated lipids, elevated chylomicrons, elevated bilirubin, nucleated red blood cells, circulating micro-megakaryocytes, elevated serum urea nitrogen, clumped platelets, and inappropriate anticoagulant.

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## ERYTHROCYTE SEDIMENTATION RATE

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<b>Related Terms</b>	ESR, Sed Rate
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Laboratory Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	2mL
<b>Container</b>	2.4 mL black top Vacutainer® tube 2.4 mL lavender top Vacutainer® tube <i>Unacceptable:</i> any Microtainer tube
<b>Storage Instructions</b>	Black top (citrate) top within 2 hours Lavender top (EDTA) at room temperature within 4 hours Lavender top (EDTA) refrigerated within 12 hours
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Clotted specimen, insufficient quantity, misidentified specimens and requisitions

### Reference Ranges

Female		Male	
Age	Range	Age	Range
6m - 12y	0-10 mm/hr	6m - 12y	0-10 mm/hr
Over 12y	0-20 mm/hr	Over 12y	0-15 mm/hr

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## HEMATOCRIT

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**Related Terms** Hct, Crit

**Test included in these panels**

- CBC
- CBANC
- CBD

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Laboratory Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Blood

**Volume** 2 mL

**Pediatric Volume** One properly filled Microtainer™ (EDTA) tube for pediatric capillary collection.

**Container** Lavender top (EDTA) tube

**Collection** Routine venipuncture or line draw

**Causes for Rejection** Clotted specimen, insufficient quantity, old specimen, hemolysis, misidentified specimens and requisitions

**Reference Ranges** see Complete Blood Count

**Critical Values** see Complete Blood Count

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## PLATELET COUNT

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**Related Terms** Platelets, Thrombocyte Count

**Test included in these panels**

- CBC
- CBANC
- CBD

**Lab** Alliance Lab, Room G1-500

**Request Form** SCCA Laboratory Request  
Fill out completely, including ICD-9 codes

**Phone** 288-1088

**Testing Frequency** M – F 8am – 8pm  
Weekends and Holidays 8am – 5pm

**Availability** STAT or routine

**Specimen** Blood

**Volume** 2 mL

**Pediatric Volume** One properly filled Microtainer™ (EDTA) tube for pediatric capillary collection.

**Container** Lavender top (EDTA) tube.  
May also be drawn in blue top (citrate) if platelet clumps are present (Platelet values will be corrected for the dilution factor).

**Collection** Routine venipuncture or line draw

**Causes for Rejection** Clotted specimen, insufficient quantity, old specimen, hemolysis, misidentified specimens and requisitions

**Reference Ranges** see Complete Blood Count

**Critical Values** see Complete Blood Count

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## RETICULOCYTE COUNT

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<b>Related Terms</b>	Retic Count
<b>Test Includes</b>	An Absolute Reticulocyte count and Reticulocytes expressed as a percentage in a total of 1000 RBCs
<b>Lab</b>	Alliance Lab, Room G1-500
<b>Request Form</b>	SCCA Laboratory Request Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Testing Frequency</b>	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
<b>Availability</b>	STAT or routine
<b>Specimen</b>	Blood
<b>Volume</b>	2mL
<b>Pediatric Volume</b>	One properly filled Microtainer™ (EDTA) tube for pediatric capillary collection
<b>Container</b>	Lavender top (EDTA) tube
<b>Collection</b>	Routine venipuncture or line draw
<b>Causes for Rejection</b>	Clotted specimen, insufficient quantity, old specimen, hemolysis, misidentified specimens and requisitions
<b>Reference Ranges</b>	

	<b>Male</b>	<b>Female</b>
Reticulocyte count	0.5-1.5 %	0.5-1.7%
Reticulocyte absolute	20-65 x 10 <sup>3</sup> /uL	20-65 x 10 <sup>3</sup> /uL

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## BONE MARROW ASPIRATE (HSCT)

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<b>Related Terms</b>	Bone marrow, marrow aspirate
<b>Test includes</b>	Gross and microscopic examination with diagnosis
<b>Lab</b>	Alliance Lab staff assists with Bone Marrow procedures and distributes specimens to SCCA Hematology, Pathology, Cytogenetics, UW Hematopathology, Microbiology, Virology, Molecular Virology, and various research labs.
<b>Request Form</b>	SCCA Requisition(s) specific for above laboratories Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Availability</b>	M – F 7am – 5:30pm. For special requests, special handling or to make arrangements for a Marrow Technician's assistance after 5:30pm or weekends and holidays, call Paul Helmuth at 288-1088 or pager 998-2937.
<b>Turnaround Time</b>	If the specimen is placed in fixative by 1pm and delivered to Pathology by 3pm the same day, results are provided the next business day. If time frames are not met, results are provided the second business day. Holidays may extend result times.  Pathology hours are Monday 8am – 7pm, Tuesday-Friday 4:30am – 7pm, Saturday 7:30am – 6pm, and Sundays and after hours if STAT processing is required, page the on-call SCCA Pathology Technologist at 559-6195.
<b>Specimen</b>	Bone marrow aspirate removed for diagnostic interpretation
<b>Container</b>	Pathology requires a well-constructed container with 10% Buffered Formalin with secure lid and a sealed plastic bag.
<b>Collection</b>	Bone marrow aspirate
<b>Special Handling</b>	Place the bone marrow aspirate in fixative, noting on the container the site, date and time of placement in fixative. Deliver the specimen, at ambient temperature, to SCCA Pathology by 3pm.

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*Bone Marrow Aspirate, continued*

**Causes for Rejection** Improper handling, misidentified specimens and requisitions. Failure to note time specimen was placed in fixative will delay specimen processing.

**After Hours** In advance, notify the SCCA Pathology on-call Technologist at pager number 559-6195. When specimen is available, notify the on-call Technologist at pager 559-6195.

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## BONE MARROW BIOPSY (HSCT)

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<b>Related Terms</b>	Bone marrow core, iliac core
<b>Test Includes</b>	Gross and microscopic examination with diagnosis, other test results as ordered
<b>Lab</b>	Alliance Lab staff assists the clinic with Bone Marrow procedures and distributes specimens to other laboratories including Hematology, Pathology, Cytogenetics, UW Hematopathology, Microbiology, Virology, and Molecular Virology.
<b>Request Form</b>	SCCA Requisition(s) specific for above laboratories. Fill out completely, including ICD-9 codes.
<b>Phone</b>	288-1088
<b>Availability</b>	M – F 7am – 5:30pm For special requests, special handling or to make arrangements for a Marrow Technician's assistance after 5:30pm or weekends and holidays, call Paul Helmuth at 288-1088 or by pager at 998-2937.
<b>Turnaround Time</b>	If the specimen is placed in fixative by 1pm and delivered to Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times. Refer to specific laboratories for other turnaround time information.
<b>Specimen</b>	Bone marrow core removed for biopsy diagnostic interpretation.
<b>Container</b>	Pathology requires a well-constructed container with 10% Buffered Formalin with a secure lid and a sealed plastic bag.
<b>Special Handling</b>	Place the biopsy in the fixative, noting on the bottle the site, date and time of placement in the fixative. Deliver to SCCA Pathology by 3pm.

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*Bone Marrow Biopsy, continued*

**Causes for Rejection**

Improper handling, misidentified specimens and requisitions. Failure to note time specimen was placed in fixative will delay specimen processing.

**After Hours**

In advance, notify the SCCA Pathology on-call Technologist at pager number 559-6195. When specimen is available, notify the on-call Technologist at pager 559-6195

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## **BONE MARROW ASPIRATE / BIOPSY**

### **GENERAL ONCOLOGY/HEMATOLOGY/ UW TRANSPLANT PROTOCOLS**

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<b>Related Terms</b>	Bone marrow, iliac crest, bone marrow core
<b>Test Includes</b>	Gross and microscopic examination with diagnosis, other laboratory tests as ordered
<b>Lab</b>	Alliance Lab staff assists with Bone Marrow procedures and sends specimens to UWMC Hematology for distribution as indicated by the physician's order to UW Hematopathology, Cytogenetics, PCR, Flow Cytometry, Microbiology, Virology. UWMC Hematology requests all specimens and slides be sent as one package after processing at the Alliance Lab is complete.
<b>Request Form</b>	UWMC Requisition(s) specific for above laboratories Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1088
<b>Availability</b>	M – F 7am – 5pm
<b>Specimen</b>	<p>Approximately 3 cc of bone marrow aspirate in syringe with sterile EDTA. Make 12 aspirate coverslips. Place 3cc bone marrow aspirate collected in sterile EDTA into a red top tube for flow. Place 3cc bone marrow aspirate in Preservative-free Heparin red top tube for Cytogenetics.</p> <p>If cultures for bacteria, fungus and/or AFB are requested, 1-3cc of bone marrow aspirate is placed into a SPS or AFB tube.</p> <p>For viral cultures, 1-3cc of bone marrow aspirate is placed into an EDTA tube. Bone Marrow aspirate (1-2cc) for CMV PCR is placed into an EDTA tube.</p> <p>If a bone marrow biopsy is obtained, make 2-3 touch preps and then place the bone marrow core removed for biopsy diagnostic interpretation into 10% buffered formalin.</p> <p>If there is a special request or special handling is needed, contact Paul Helmuth at 288-1088 or pager 998-2937.</p>

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*Bone Marrow Aspirate/Biopsy - General Oncology/Hematology/UW Transplant Protocols, continued*

<b>Container</b>	Well-constructed container with 10% buffered formalin with secure lid and sealed plastic bag for the bone biopsy.
<b>Collection</b>	Bone marrow aspirate and bone marrow core biopsy
<b>Causes for Rejection</b>	Improper handling, misidentified specimens and requisitions
<b>After Hours</b>	To arrange for a bone marrow tech to assist after available hours M – F (7am – 5:30pm) call the Hematology Tech staff at 288-1088. Contact UW Hematopathology Lab at 598-6231 to arrange specimen processing for all testing done at UW.

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## BRONCHOALVEOLAR LAVAGE

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<b>Related Terms</b>	BAL, Bronchial Aspirate, Bronchial Wash
<b>Test Includes</b>	Detection of abnormal cells, malignant cells, infectious agents
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form. Complete a Lab Medicine Microbiology and/or Virology Request if ordered. Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday – Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times; if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	Preliminary results are provided within 3.5 hours of specimen receipt at SCCA Pathology; final report is provided the next business day.
<b>Specimen</b>	Bronchial wash fluid or bronchoalveolar lavage fluid
<b>Specimen Collection:</b>	
Bronchial Washings	Pass the bronchoscope transnasally or transorally in nonintubated patients or via the endotracheal tube in intubated patients. Wedge the tip of the bronchoscope in a segmental bronchus. Inject sterile nonbacteriostatic saline (generally 5- to 20-ml aliquots) from a syringe through a biopsy channel of the bronchoscope. Gently suction the saline into a sterile container before administering the next aliquot. Keep aliquots separate during collection. Send to laboratory immediately. Refrigerate if delay is unavoidable.

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*Bronchoalveolar Lavage, continued*

**Bronchial Brushing** Pass the bronchoscope transnasally or transorally in nonintubated patients or via the endotracheal tube in intubated patients. Insert a telescoping double catheter plugged with polyethylene glycol at the distal end (to prevent contamination of the bronchial brush) through the biopsy channel of the bronchoscope. Once the brushing is obtained, cut off the brush end and send it to the laboratory in physiological saline. Send to laboratory immediately. Refrigerate if delay is unavoidable.

**Volume** Minimum volume is 2 mL

**Container** Well-constructed, sterile container with secure lid and sealed plastic bag

**Specimen Handling**

<b>Collection on a HSCT Patient at SCCA Ambulatory Clinic</b>
<ul style="list-style-type: none"> <li>▶ Notify SCCA Pathology in advance of procedure by calling 288-1355. Outside normal business hours page the on call Pathology Technologist at 559-6195.</li> <li>▶ Pathology specimens should be sent immediately, unfixed, and at ambient temperature to the SCCA Pathology Laboratory.</li> <li>▶ Pulmonary physicians will divide the specimen for Microbiology and Virology culture.</li> <li>▶ Specimens for culture should be delivered to the Alliance Laboratory for transport to the Microbiology and Virology Labs.</li> </ul>

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<ul style="list-style-type: none"> <li>▶ Call the SCCA Pathology Department In <b>ADVANCE</b> at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150). Call the in house courier at 598-8603 for a STAT pick-up.</li> </ul>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b> - during these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355.</p>

(Continued)

*Bronchoalveolar Lavage, continued*

<ul style="list-style-type: none"> <li>▶ BAL specimens are divided by the pulmonary physicians and distributed to Pathology, Microbiology and Virology Labs.</li> <li>▶ Deliver Pathology specimens to UWMC Pathology (NW 211) for routing of specimens to SCCA Pathology Lab.</li> <li>▶ Accession specimen.</li> <li>▶ Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Use a courier to transport the package to the commodities box.</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>In ADVANCE page the SCCA Pathology Tech at 559-6195</b></li> <li>▶ BAL specimens are divided by the pulmonary physicians and distributed to Pathology, Microbiology and Virology labs.</li> <li>▶ Specimens are sent by the floor via cab to the Pathology Department at the SCCA, Room G7-910.</li> </ul> <p style="text-align: center;"><b>After hours do not send the specimen to UWMC Pathology Department.</b></p>
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<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Specimen delivered by UWMC courier or Pulmonary staff to UWMC Pathology (NW 211)</li> <li>▶ UWMC Histology Tech accessions the specimen in the computer and sends the specimen to Harborview Medical Center for processing.</li> </ul>

<b>Collection of SCCA GenOnc/Heme or UWMC Patients at SCCA</b>
<ul style="list-style-type: none"> <li>▶ Specimen delivered by courier to SCCA Pathology (G7-910)</li> <li>▶ SCCA Histology Tech accessions the specimen in the computer immediately and cabs the specimen to Harborview Medical Center Cytology.</li> </ul>

**Causes for Rejection** Delayed delivery of fresh specimens, misidentified specimens and requisitions, insufficient pertinent clinical history.

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## ENDOSCOPY

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<b>Test includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology and/or Virology Request if ordered. Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday-Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	If specimen is placed in fixative by 1pm and delivered to SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times.
<b>Container</b>	Well-constructed container with 10% buffered formalin fixative with secure lid and sealed plastic bag. NOTE: If SCCA General Oncology/Hematology or UWMC patient, tissue is placed in Hollande's fixative (obtained from UW GI Lab).

### Specimen Handling

<b>Collection on a HSCT Patient at SCCA Ambulatory Clinic</b>
<ul style="list-style-type: none"> <li>▶ Notify SCCA Pathology in advance of procedure by calling 288-1355.</li> <li>▶ Place the specimen in 10% Buffered formalin, noting on the bottle the date and time of placement in the fixative.</li> <li>▶ Deliver to SCCA Pathology by 3pm.</li> <li>▶ Biopsies for culture should be placed in transport media and taken to the Alliance Laboratory for transport to the Microbiology and Virology Labs.</li> </ul>

(Continued)

*Endoscopy, continued*

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<ul style="list-style-type: none"> <li>▶ IN ADVANCE call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150).</li> <li>▶ Tissue for culture should be sent directly from the procedure room to UWMC Microbiology and/or Virology.</li> <li>▶ Place Pathology specimens in 10% buffered formalin fixative and deliver to UWMC Pathology (NW 211) immediately for routing to SCCA Pathology Lab</li> <li>▶ Accession specimen</li> <li>▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Use a courier to transport the package to the commodities box.</li> </ul>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b> During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355</p> <ul style="list-style-type: none"> <li>▶ In ADVANCE page the SCCA Pathology Tech at 559-6195</li> <li>▶ Tissue for culture should be sent directly from the procedure room to UWMC Microbiology and/or Virology.</li> <li>▶ Specimens are sent by the floor via cab to the Pathology Department at the SCCA, Room G7-910</li> </ul> <p><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>

<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Specimen in Hollande's fixative delivered directly to Rubin's GI Lab (RR-106, Phone numbers 543-4402 or 543-4403).</li> </ul>

**Causes for Rejection**

Improper handling, misidentified specimens and requisitions

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## FINE NEEDLE ASPIRATIONS

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<b>Related Terms</b>	FNAs
<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	FNAs are processed by Harborview Cytology
<b>Request Form</b>	University of Washington Medical Centers/Harborview Medical Center Cytology Request. Fill out completely, including ICD-9 codes.
<b>Phone</b>	Harborview Cytology 744-2166
<b>Availability</b>	Monday – Friday 8am – 5pm
<b>Specimen Collection</b>	<p>Fine Needle Aspirate (FNA)</p> <p>For deep aspirates, sterile technique is required for cleansing of the skin and local anesthetic is usually required. A quick motion should be used in passing the needle through the skin. The needle is then advanced through the subcutaneous tissue into the mass. With the needle in the mass, the needle tip should be moved in short motions initially to loosen cells within the mass. Negative pressure is then applied by pulling back on the plunger of the syringe. If blood or material appears in the hub of the needle, the aspiration should be stopped. Prior to withdrawing the needle, negative pressure must be released to prevent suction of the material into the barrel of the syringe when the needle exits the skin. The fluid may be used to prepare smears. These slides should be immediately fixed in 95% ethanol. The fluid may also be deposited into the vial of CytoLyt solution.</p>

(Continued)

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*Fine Needle Aspirations, continued*

**Specimen Handling**

<b>Collection on a HSCT Patient at SCCA Ambulatory Clinic</b>
<ul style="list-style-type: none"> <li>▶ Deliver the specimen to SCCA Pathology by 3pm.</li> <li>▶ SCCA Pathology Tech will accession the specimen. It will be sent via cab to Harborview Cytology.</li> </ul>

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri. Weekends &amp; Holidays</b>
<ul style="list-style-type: none"> <li>▶ In ADVANCE fax physician order to UWMC Pathology (fax 598-9150)</li> <li>▶ Immediately deliver Pathology specimens to UWMC Pathology</li> <li>▶ All FNAs will be sent to Harborview Cytology for processing.</li> </ul>	<ul style="list-style-type: none"> <li>▶ In ADVANCE page UWMC on-call Histology Tech (663-8098) and fax Physician order to UWMC Pathology (fax 598-9150)</li> <li>▶ Immediately deliver Pathology specimens to UWMC Pathology</li> <li>▶ All FNAs will be sent by UWMC Pathology to Harborview Cytology</li> </ul>

<b>UWMC PATHOLOGY STAFF</b>
<ul style="list-style-type: none"> <li>▶ Package and send specimen to Harborview Cytology for processing</li> </ul>

**Causes for Rejection** Improper handling, misidentified specimens, and requisitions

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## LIP OR SKIN BIOPSY

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<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology and/or Virology Request if ordered Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday - Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	If specimen is placed in fixative by 1pm and delivered to SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times.
<b>Container</b>	Container with 10% buffered formalin

**Specimen Handling**

<b>Collection on a HSCT Patient at SCCA Ambulatory Clinic</b>
<ul style="list-style-type: none"> <li>▶ Notify SCCA Pathology in advance of procedure by calling 288-1355.</li> <li>▶ Pathology specimens should be placed immediately in 10% buffered formalin at ambient temperature and sent to the SCCA Pathology laboratory.</li> <li>▶ If Microbiology and/or Virology culture is requested, place fresh specimen in appropriate transport media.</li> <li>▶ Specimens for culture should be delivered to the Alliance Laboratory for transport to the Microbiology and/or Virology Labs.</li> </ul>

*(Continued)*

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*Lip or Skin Biopsy, continued*

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<ul style="list-style-type: none"> <li>▶ IN ADVANCE call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150).</li> <li>▶ If fungal or bacterial infection is suspected, fresh tissue for culture should be sent directly from the procedure room to UWMC Microbiology and/or Virology.</li> <li>▶ Place specimens in 10% buffered formalin and deliver to UWMC Pathology (NW 211) for routing to SCCA Pathology Lab</li> <li>▶ Accession specimen</li>   <li>▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Business hours: Use a courier to transport the package to the commodities box.</li> </ul>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355</p> <ul style="list-style-type: none"> <li>▶ In ADVANCE page the SCCA Pathology Tech at 559-6195</li> <li>▶ Place tissue in 10% buffered formalin and deliver from the floor via cab to the Pathology Department at the SCCA, Room G7-910.</li> </ul> <p><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>

<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Specimen in 10% formalin delivered to UWMC Pathology (NW 211)</li> <li>▶ UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.</li> </ul>

**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## LIVER BIOPSY (PERCUTANEOUS AND TRANSVENOUS)

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<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology Request and/or Virology Request if ordered  Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday- Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	For specimens received in SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times.
<b>Container</b>	Submit specimens for culture in a sterile container with secure lid.
<b>Note</b>	SCCA General Oncology/Hematology and UW patients, standard number of biopsies are placed in 10% buffered formalin.

*(Continued)*

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*Liver Biopsy, continued*

**Specimen Handling**

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<ul style="list-style-type: none"> <li>▶ IN ADVANCE call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150). Call the in-house courier at 598-8603 for a STAT pick-up.</li> <li>▶ Place specimens in 10% buffered formalin fixative and deliver to UWMC Pathology (NW 211) immediately for routing to SCCA Pathology Lab.</li> <li>▶ If fulminant viral hepatitis or an infectious abscess is suspected, tissue for culture should be sent directly from the procedure room to UWMC Microbiology and/or Virology.</li> <li>▶ Accession specimen</li> <li>▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Have a courier transport the package to the commodities box.</li> </ul>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355</p> <ul style="list-style-type: none"> <li>▶ <b>In ADVANCE page the SCCA Pathology Tech at 559-6195</b></li> <li>▶ Place pathology specimens in 10% buffered formalin fixative.</li> <li>▶ Specimens are sent from the floor via cab to the Pathology Department at the SCCA, Room G7-910.</li> </ul> <p><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>

*(Continued)*

*Liver Biopsy, continued*

<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"><li>• Specimen prepared as requested by surgeon.</li><li>• If the procedure is done in the Operating Room, place the specimen in the Operating Room Pathology refrigerator. It will be picked up by UWMC Pathology Tech.</li><li>• If done in Interventional Radiology, specimen delivered by Intervention Radiology staff to UWMC Pathology (NW-211)</li><li>• UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.</li></ul>



**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## LIVER BIOPSY (WEDGE BIOPSY ONLY)

<b>Related Terms</b>	Liver biopsy, liver wedge biopsy
<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology and/or Virology if ordered Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday-Friday 4:30am – 7pm Saturday 7:30am – 6pm Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	For specimens received in SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times.
<b>Container</b>	Well-constructed container suitable for the type of specimen contained, with secure lid and sealed plastic bag

**Specimen Handling**

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon – Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<p><b>NOTE:</b> The type of container, the temperature, appropriate transport media, or other handling details should be determined <b>prior to shipment</b> by consulting the SCCA Pathology Technologist and the attending Pathologist.</p>	<p style="text-align: center;"><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355</p>

*(Continued)*



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## LUNG BIOPSY

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<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday – Friday 4:30am – 7pm Saturday 7:30am – 6pm Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	If specimen is delivered to SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided the next business day. Holidays may extend result times. Final results are provided the following business day. Routine and special stains for malignancies and microorganisms will be performed on frozen sections and touch preps. <b>If intra-operative frozen sections are required for any reason, the entire specimen will be retained by the institution of origin for culture and diagnosis.</b>
<b>Container</b>	Well-constructed sterile container with secure lid and sealed plastic bag

**Specimen Handling**

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<p>► <b>IN ADVANCE</b> call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150). Call the in-house courier at 598-8603 for a STAT pick-up.</p>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355.</p>

(Continued)

*Lung Biopsy, continued*

<ul style="list-style-type: none"> <li>▶ The entire unfixed and undissected biopsy is placed in a sterile container and brought immediately to the UWMC Pathology lab (NW-211) for routing to SCCA Pathology Lab.</li> <li>▶ Appropriate instructions for specimens to be submitted for culture must accompany the specimen.</li> <li>▶ Accession specimen</li> <li>▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Have a courier transport the package to the commodities box.</li> <li>▶ Specimens for culture will be divided and distributed by the SCCA Pathology Lab. The SCCA Tech will be responsible for completing the correct Lab Requisitions to be sent with the specimens to be submitted for culture.</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>In ADVANCE page the SCCA Pathology Tech at 559-6195</b></li> <li>▶ The entire unfixed and undissected biopsy is placed in a sterile container and sent by the floor via cab to the Pathology Department at the SCCA, Room G7-910.</li> <li>▶ Appropriate instructions for specimens to be submitted for culture must accompany the specimen.</li> <li>▶ Specimens for culture will be divided and distributed by the SCCA Pathology Lab. The SCCA Tech will be responsible for filling out the correct Lab Requisitions to be sent with the specimens to be submitted for culture.</li> </ul> <p><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>
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<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Place the specimen in the Operating Room Pathology refrigerator. It will be picked up by UWMC Pathology Tech.</li> <li>▶ UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.</li> </ul>

**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## LYMPH NODE BIOPSY

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<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday – Friday 4:30am– 7pm Saturday 7:30am – 6pm  Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195.
<b>Turnaround Time</b>	Specimens received in SCCA Pathology by 3pm will have results provided the following business day. If time frame is not met results are provided on the second business day. Holidays may extend result times.
<b>Container</b>	Well-constructed, sterile container with secure lid and sealed plastic bag
<b>Specimen Handling</b>	In advance of procedure, notify SCCA Pathology

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri. Weekends &amp; Holidays</b>
<p>▶ <b>IN ADVANCE</b> call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150). Call the in-house courier at 598-8603 for a STAT pick-up.</p>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355.</p>

*(Continued)*

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*Lymph Node Biopsy, continued*

<ul style="list-style-type: none"> <li>▶ Place <b>entire biopsy</b> in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline. Transport specimen container <b>immediately</b> to UWMC Pathology (NW-211) for routing to SCCA Pathology.</li> <li>▶ Appropriate instructions for specimens to be submitted for culture must accompany the specimen. The SCCA tech will be responsible for completing the correct Lab Requisitions to be sent with specimens submitted for culture.</li> <li>▶ Accession specimen</li> <li>▶ Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Have a courier transport the package to the commodities box.</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>In ADVANCE page the SCCA Pathology Tech at 559-6195</b></li> <li>▶ Place <b>entire biopsy</b> in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline. Transport specimen container <b>immediately</b> to UWMC Pathology (NW-211) for routing to SCCA Pathology.</li> <li>▶ Appropriate instructions for specimens to be submitted for culture must accompany the specimen. The SCCA tech will be responsible for completing the correct Lab Requisitions to be sent with specimens submitted for culture.</li> </ul> <p><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>
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<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Place the specimen in the Operating Room Pathology refrigerator. It will be picked up by UWMC Pathology Tech.</li> <li>▶ UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.</li> </ul>

**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## THINPREP<sup>®</sup> PAP TEST COLLECTION

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<b>Test includes</b>	Microscopic exam with diagnosis
<b>Lab</b>	HMC Cytology, Room 2EC22
<b>Request Form</b>	Cytology Request Form Fill out completely, including ICD-9 codes
<b>Phone</b>	744-2166
<b>Availability</b>	Monday – Friday 8am – 5pm
<b>Turnaround Time</b>	If specimen is delivered to SCCA Pathology by 10am, it is sent to HMC Cytology the same day. If it is not received by 10am, it is sent to HMC Cytology the next business day. Samples are screened the next business day after receipt.
<b>Container</b>	Vial containing PreservCyt <sup>®</sup> Solution.
<b>Specimen Collection</b>	<p>Label a PreservCyt<sup>®</sup> vial with patient's name and medical record number.</p> <p>With patient in lithotomy position, expose cervix using a vaginal speculum moistened with warm water. Visually examine vaginal mucosa and cervix for lesions, ulceration or discharge. Document findings of the examination on patient's record, and note the relevant clinical findings on the requisition for optimum cytological interpretation.</p> <p>To collect a specimen from the ectocervix, select contoured end of plastic spatula and rotate it 360° around the entire ectocervical surface. Remove spatula.</p> <p>Rinse the contoured end of plastic spatula in a vial of PreservCyt<sup>®</sup> Solution by swirling vigorously ten (10) times. Discard plastic spatula. Place cap on vial.</p>

(Continued)

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*Thinprep PAP Test, continued*

Insert Cytobrush® Plus GT device into the endocervix until only the bottom-most bristles are exposed. Slowly rotate  $\frac{1}{4}$  to  $\frac{1}{2}$  turn in one direction. Remove device. Do not over-rotate. Additional rotating may cause bleeding and contaminate the specimen.

Rinse the Cytobrush® Plus GT device in the vial of PreservCyt® Solution by rotating the device in the solution ten (10) times while pushing it against the wall of the vial. Swirl the device vigorously to further release the material. Discard device.

Tighten the PreservCyt® vial cap so that the torque line on the cap passes the torque line on the vial.

## Specimen Handling

<b>Collection at SCCA Ambulatory Clinic</b>
<ul style="list-style-type: none"><li>▶ Deliver the specimen to SCCA Pathology by 10am for delivery to HMC Cytology the same day</li><li>▶ SCCA pathology Laboratory will accession and transport to HMC Cytology department.</li></ul>



<b>Collection at UWMC</b>
<ul style="list-style-type: none"><li>▶ Deliver the specimen to UWMC Anatomic Pathology</li><li>▶ UWMC Anatomic Pathology will accession and transport to HMC Cytology department.</li></ul>



**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## SINUS BIOPSY OR ASPIRATE

<b>Test Includes</b>	Gross and microscopic exam with diagnosis.
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday – Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at -559-6195
<b>Turnaround Time</b>	If specimen is delivered to SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided the next business day. Holidays may extend result times.
<b>Specimen</b>	Sinus biopsy or sinus aspirate removed for diagnostic interpretation
<b>Container</b>	Well-constructed sterile container with secure lid and sealed plastic bag

**Specimen Handling**

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<p>▶ <b>IN ADVANCE</b> call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150). Call the in-house courier at 598-8603 for a STAT pick-up.</p>	<p><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6 pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355.</p>

*(Continued)*

*Sinus Biopsy, continued*

<ul style="list-style-type: none"> <li>▶ Place <b>entire biopsy</b> in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline.</li> <li>▶ Place entire <b>aspirate</b> in a sterile container.</li> <li>▶ Specimen will be divided in SCCA Pathology and distributed to appropriate labs. The SCCA Tech will be responsible for completing the correct Lab Requisitions sent with the specimens to be submitted for culture.</li> <li>▶ Deliver Pathology specimens to UWMC Pathology (NW 211) for routing of specimens to SCCA Pathology Lab.</li> <li>▶ Accession specimen.</li> <li>▶ Package specimen for transport.</li> <li>▶ Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being sent.</li> <li>▶ Use a courier to transport the package to the commodities box.</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>In ADVANCE page the SCCA Pathology Tech at 559-6195</b></li> <li>▶▶ Place entire <b>biopsy</b> in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline.</li> <li>▶ Place entire <b>aspirate</b> in a sterile container.</li> </ul> <p><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>
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<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Operating Room delivers specimen to Operating Room Pathology refrigerator.</li> <li>▶ UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.</li> </ul>

**Causes for Rejection** Delayed delivery of fresh specimens, misidentified specimens and requisitions, insufficient pertinent clinical history

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## SURGICAL SPECIMENS

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<b>Surgical Specimens</b>	Specimens not specifically described in the Specimen Handling Procedure Manual; e.g., spleen, kidney, thoracentesis, laparoscopy.
<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday – Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times if STAT processing is required, page the on call Pathology Technologist at 559-6195
<b>Turnaround Time</b>	For specimens received in SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times. <b>If intra-operative frozen sections are required for any reason, the entire specimen will be retained by the institution of origin for culture and diagnosis.</b>
<b>Container</b>	See below.
<b>Specimen Handling</b>	The type of container, transport temperature, appropriate transport media, fixative, or other handling details should be determined prior to specimen collection by consulting the appropriate Pathology Laboratory, the on-call Path Tech, or Pathologist.

*(Continued)*

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*Surgical Specimens, continued*

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon - Fri Business Hours</b>	<b>4:30pm to 7am Mon – Fri Weekends &amp; Holidays</b>
<ul style="list-style-type: none"> <li>▶ IN ADVANCE call the SCCA Pathology Department at 288-1355 and fax the physician order to UWMC Pathology (fax 598-9150). Call the in-house courier at 598-8603 for a STAT pick-up.</li> <li>▶ Deliver Specimens to UWMC Pathology (NW-211) for routing of specimens to SCCA Pathology.</li> <li>▶ SCCA Pathology will divide and route specimens to appropriate labs per protocol.</li> <li>▶ The SCCA Tech will be responsible for completing the appropriate Lab Requisitions sent with the specimens to be submitted for culture.</li> <li>▶ Accession specimen</li> <li>▶ Transport all Pathology specimens in shipping containers at ambient temperature.</li> <li>▶ Send to SCCA Pathology Lab, Room G7-910.</li> <li>▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.</li> <li>▶ Have a courier transport the package to the commodities box.</li> </ul>	<p style="text-align: center;"><b>Saturdays</b> follow the procedure below <b>except between 7:30am to 6pm</b></p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 288-1355</p> <ul style="list-style-type: none"> <li>▶ <b>In ADVANCE page the SCCA Pathology Tech at 559-6195</b></li> <li>▶ SCCA Pathology will divide and route specimens to appropriate labs per protocol.</li> <li>▶ The SCCA Tech will be responsible for completing the appropriate Lab Requisitions sent with the specimens to be submitted for culture.</li> <li>▶ Specimens are sent by the floor via cab to the Pathology Department at the SCCA, Room G7-910.</li> </ul> <p style="text-align: center;"><b>After hours: do not send the specimen to UWMC Pathology Department.</b></p>

<b>Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC</b>
<ul style="list-style-type: none"> <li>▶ Place the specimen in the Operating Room Pathology refrigerator. It will be picked up by UWMC Pathology Tech.</li> <li>▶ UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.</li> </ul>

**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## OTHER FLUID SPECIMENS

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<b>Other Fluids</b>	Specimens not specifically described in the Specimen Handling Procedure Manual; e.g., CSF, Urine.
<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	Specimens processed by Harborview Cytology
<b>Request Form</b>	University of Washington Medical Centers/Harborview Medical Center Cytology Request. Fill out completely, including ICD-9 codes.
<b>Phone</b>	Harborview Cytology 744-2166
<b>Availability</b>	Monday – Friday 8am – 5pm
<b>Specimen Collection</b>	<p>All specimen containers must be labeled with patient name and medical record number or birthdate. They must be accompanied by a completed requisition.</p> <p>Please note that the following collection procedures are a suggested guideline. Techniques vary based on personal preference, and specific clinical circumstances must be taken into account when deciding on the collection method utilized.</p>
Cerebrospinal Fluid (CSF)	<p>A lumbar puncture is performed with the patient either lying down with knees bent or sitting. After the back is cleaned, an anesthetic is injected into the lower spine. Once the spinal needle is inserted, spinal fluid pressure is measured and fluid collected. The fresh fluid is highly perishable. Minimum volume needed is 1 ml. Send to laboratory immediately. Refrigerate if delay is unavoidable.</p>
Sputum	<p>Have the patient cough deeply to expectorate sputum directly into the sterile container. Do not contaminate the rim of the container with sputum. Do NOT include any saliva or postnasal discharge. Three consecutive early morning specimens increase the yield of cells. Send to laboratory immediately. Refrigerate if delay is unavoidable.</p>

*(Continued)*

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*Other Fluid Specimens, continued*

Body Cavity Fluids	Clean and disinfect the needle puncture site to prevent introduction of infection. The physician will aseptically perform percutaneous aspiration to obtain pleural, pericardial, peritoneal, or synovial fluids. Expel any air bubbles from the syringe, and immediately inject the specimen into sterile container. Add 0.5 ml EDTA to the container for each 100 ml collected.
Urine (voided)	First morning urine specimen should not be sent for cytological studies (since the first morning urine is usually made up of degenerative exfoliated cell materials and concentrated urine waste products, which obscure the cellular detail). At least 100 ml of "clean catch" urine is required for cytology. In cases with residual urine problems or with severe urethritis or vaginitis, the urine should be obtained by catheterization. Send to laboratory immediately. Refrigerate if delay is unavoidable.
Urine (catheterized)	This specimen is collected under sterile conditions by passing a hollow tube through the urethra into the bladder. Send to laboratory immediately. Refrigerate if delay is unavoidable.
Bladder Washing	Bladder washing samples are taken by placing a balanced salt solution into the bladder through a catheter (tube) and then removing the solution for microscopic testing. Collect into a sterile container. Send to laboratory immediately. Refrigerate if delay is unavoidable. If delay is more than 24 hours, add an equal volume of 50% ethanol.

**Specimen Handling**

<b>Collection on a HSCT Patient at SCCA Ambulatory Clinic</b>
<ul style="list-style-type: none"> <li>▶ Notify SCCA Pathology Department in advance of the procedure by calling 288-1355.</li> <li>▶ Deliver the specimen to SCCA Pathology by 3pm.</li> <li>▶ A SCCA Pathology Technician will accession all of these specimens. They will be sent via cab to Harborview Cytology</li> </ul>

*(Continued)*

*Other Fluid Specimens, continued*

<b>Collection on a HSCT Patient at UWMC</b>	
<b>7am to 4:30pm Mon–Fri Business Hours</b>	<b>4:30pm to 7am Mon-Fri Saturdays, Sundays and Holidays</b>
<ul style="list-style-type: none"> <li>▶ In ADVANCE fax physician order to UWMC Pathology (fax 598-9150)</li> <li>▶ Follow collection guidelines above.</li> <li>▶ Immediately deliver Pathology specimens to UWMC Pathology.</li> <li>▶ Fluid specimens will be sent to Harborview Cytology for processing.</li> </ul>	<ul style="list-style-type: none"> <li>▶ In ADVANCE page UWMC on-call Histology Tech (663-8098).</li> <li>▶ Follow collection guidelines above.</li> <li>▶ In ADVANCE fax physician order to UWMC Pathology (fax 598-9150)</li> <li>▶ Immediately deliver Pathology specimens to UWMC Pathology.</li> <li>▶ Fluid specimens will be sent by UWMC Pathology to Harborview Cytology</li> </ul>

**Causes for Rejection** Improper handling, misidentified specimens and requisitions.

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## **SURGICAL SPECIMENS COLLECTED AT SCCA AMBULATORY CLINIC**

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<b>Surgical Specimens</b>	Specimens collected at SCCA Ambulatory Clinic not specifically described in the Specimen Collection and Handling Manual
<b>Test Includes</b>	Gross and microscopic exam with diagnosis
<b>Lab</b>	SCCA Pathology, Room G7-910
<b>Request Form</b>	Anatomic Pathology Specimen Request Form Fill out completely, including ICD-9 codes
<b>Phone</b>	288-1355
<b>Availability</b>	Monday 8am – 7pm Tuesday – Friday 4:30am – 7pm Saturday 7:30am – 6pm  Sundays and all other times, if STAT processing is required, page the on call Pathology Technologist at 559-6195
<b>Turnaround Time</b>	For specimens received in SCCA Pathology by 3pm, results will be provided the next business day. If the time frame is not met, results are provided on the second business day. Holidays may extend result times.
<b>Container</b>	See below
<b>Specimen Handling</b>	The type of container, transport temperature, appropriate transport media, fixative, or other handling details should be determined prior to specimen collection by consulting the appropriate Pathology Laboratory, the on-call Path Tech, or Pathologist.

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*Surgical Specimens Collected at SCCA, continued*

<b>Collection on a Gen/Onc Patient at SCCA Ambulatory Clinic</b>
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<b>7am to 4:30pm Mon –Fri</b> Business Hours
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| ▶ Deliver specimen to SCCA Pathology, Room G7-910 for routing of specimens to UWMC Pathology |
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<b>SCCA PATHOLOGY STAFF</b>
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|--|
| ▶ Accession specimen   |
| ▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature. |
| ▶ Send to UWMC Pathology Lab, Room NW-211.   |
| ▶ Call UWMC Histology Tech and tell them the specimen is being sent.   |
| ▶ Business Hours- Use courier to transport package to the commodities box.   |

<b>Collection on an HSCT Patient at SCCA Ambulatory Clinic</b>
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- |   |
|---|
| ▶ Internal courier delivers the specimen to SCCA Pathology  |
| ▶ SCCA Path Tech accessions the specimen in the computer immediately and sets up for processing at SCCA Pathology |

**Causes for Rejection** Improper handling, misidentified specimens and requisitions

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## THERAPEUTIC DRUG MONITORING OF BUSULFAN

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<b>Test includes</b>	Css (ng/mL) result and dose recommendations (mg every 6 or every 24 hours)
<b>Lab</b>	Pharmacokinetics, Room G7-405
<b>Request Form</b>	Busulfan Requisition Form Fill out completely, including ICD-9 codes, time of draw, dose amount, and time given
<b>Phone</b>	288-7389
<b>Availability</b>	Tuesday – Saturday, 8am – 5pm Sundays, Mondays and Holidays: on call
<b>Turnaround Time</b>	If dose is given at the standard time of 8am, results available between 4pm and 5pm the same day
<b>Specimen</b>	Blood (only plasma is analyzed)
<b>Volume</b>	1-3 mL oral, 1-4 mL IV formulation
<b>Container</b>	Green Top 4 mL sodium heparin Vacutainer® tube
<b>Collection</b>	<p>The following patient information must be recorded on the requisition form: busulfan dose given (mg), and the date and time it was given. <b>Label tubes with patient name, U#, date, actual time of blood draw, initials of person drawing the blood, and record this information on the requisition form.</b> Place samples on wet ice within 10 minutes and deliver immediately to Alliance Laboratory (G1-500) for pick-up.</p> <p>Note: The staff from the Busulfan Lab will pick up samples on 7 or 8 NE if the patient is an inpatient at the UW Medical Center.</p>

(Continued)

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*Therapeutic Drug Monitoring of Busulfan, continued*

Oral Busulfan every 6 hours

Collect 1-3 mL of whole blood at the following post dose times in minutes for **dose 1**: 15 (suspension only), 30, 60, 90, 120, 180, 240, 300, 360.

Collect 1-3 mL of whole blood at the following times for **doses 5 and 9**: 0 (immediately prior to dose), 30 (suspension only), 60, 120, 240, 360.

Note: If there was emesis during the dose or previous doses have the amount of busulfan given as a redose.

IV Busulfan every 6 hours

Collect 1-4 mL of whole blood at the following post dose times in minutes for **dose 1**: End of infusion (120), 135, 150, 180, 240, 300, 360.

Collect 1-4 mL of whole blood at the following times for **doses 5 and 9**: 0 (immediately prior to dose), end of infusion (120), 135, 150, 240, 360.

Be sure the entire drug has been delivered and the lines have been flushed thoroughly of busulfan before drawing post-infusion sample.

IV Busulfan every 24 hours

Collect 1-4 mL of whole blood at the following post dose times in minutes for **dose 1**: End of infusion (180), 195, 270, 360, 480, 660.

Collect 1-4 mL of whole blood at the following times for **doses 2 and 3**: 0 (immediately prior to dose), end of infusion (180), 195, 270, 360, 480, 660.

Be sure the entire drug has been delivered and the lines have been flushed thoroughly of busulfan before drawing post-infusion sample.

**Causes for Rejection** Misidentified specimens and requisitions, improper storage, gross hemolysis or clotting, and/or insufficient sample volume will be rejected and the appropriate personnel at the patient care facility will be notified.

Additional requirement for specimens delivered to us by post courier: specimen must arrive frozen.

**After Hours**

Call Pharmacokinetics Laboratory to schedule.

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