

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

SPECIMEN COLLECTION & HANDLING MANUAL

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Additional testing may be performed at the University of Washington, Laboratory 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
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 - BCR/ABL Quantitative, p210
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For more detailed information refer to UW Lab Medicine online [Lab User's Guide](#).

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Additional testing may be performed at the University of Washington, Laboratory 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 the QA Manager, Clinical Labs at 606-7360.

Brent L. Wood, MD, PhD
Director of Clinical Laboratories
Seattle Cancer Care Alliance

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LAB LOCATIONS AND HOURS OF SERVICE

Laboratory	Building	Room	Phone	Pager	Service Hours
Alliance Lab - Blood Draw	SCCA	1500	Blood Draw: 606-1214 Reception: 606- 6201		M-F 7am – 8pm <i>Weekends & Holidays</i> 8am – 5pm
Alliance Lab - Specimen Processing	SCCA	1500	606-1088		M-F 6:30am – 10pm <i>Weekends & Holidays</i> 7:30am – 5:30pm
Alliance Lab - Testing	SCCA	1500	Main: 606-1088 Chem: 606-1094 Coag: 606-1094 Heme: 606-1084		M-F 7am – 8pm <i>Weekends & Holidays</i> 7am – 5pm
Cellular Therapy Lab	1100 Eastlake	E1-419	606-1200	<i>Weekends & Holidays</i> 540-2851	M-F 7am – 8pm <i>Weekends & Holidays</i> 9am – 5pm; leave message on voicemail; on-call tech will respond
CIL	SCCA	7107	606-7700 CIL Lab Coordinator Office (LABCO)		M-F 8:30am – 5pm
Cytogenetics	SCCA	7503	606-1390 main line	340-7207	M-F 8am-5pm <i>Weekends & Holidays</i> on call 9am-5pm
Immunotherapy Lab	SCCA	6100	606-6049		6:30am – 5:00pm <i>After hours:</i> contact Alliance Lab
Immunotherapy Biomarker Lab	SCCA	6100	606-6053		
Pathology	SCCA	7910	606-1355 Pathologist 606-1343	Technologist 573-0892 Pathologist 498-7956	Monday 8am – 6:30pm Tues-Fri 4:30am - 6:30pm Sat 6:00am – 2:30pm <i>Sun and all other times</i> contact Path Technologist <i>Pathology is on call:</i> 24 hours 7 days a week, including Weekends & Holidays
Pharmacokinetics	SCCA	7405	606-7389	Pager 994-5942	Tues – Sat 8am – 5pm <i>Sundays, Mondays and</i> <i>Holidays: on call</i>
Transfusion Service Support	SCCA	1500	606-1095		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 606-1088

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: 606-1214 or 606-6201

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: 606-1088

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: 1100 Eastlake E, Room E1-419, Telephone: 606-1200

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

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

After hours: Pager 206-540-2851

After hours specimen handling: Redraw a fresh specimen in the morning.

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

Location: SCCA Room 7-107, Telephone (CIL Lab Coordinator Office): 606-7700

Routine hours: M – F 8:30am – 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, (FISH), and Genomic Array**

Location: SCCA Room 7-503, Telephone: 606-1390 main line

Routine hours: M – F 8am – 5pm

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

After hours specimen handling: Draw venous blood or marrow in tubes containing appropriate anticoagulant (sodium heparin for chromosome analysis and FISH; EDTA for Genomic Array). Store at room temperature until delivery to lab during day shift or on-call hours. **DO NOT HOLD SPECIMENS OVER THE WEEKEND - contact pager: 340-7207.**

Pathology: Histology and Morphology

Location: SCCA Room 7-910, Telephone: 606-1355

Routine hours: Monday 8am – 6:30pm; Tuesday – Friday 4:30am – 6:30pm

Saturday : 6am – 2:30pm

Sunday and all other times, contact the on call Pathology Technologist at 206 573-0892.

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 cell number 206-573-0892. When specimen is available, notify the on-call technologist at 206-573-0892

Pharmacokinetics: Performs Busulfan Testing

Location: SCCA Room 7-405, Telephone: 606-7389

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 UW Virology lab at 1616 Eastlake; 685-8037

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

Lab Name	Type of Lab	Lab Location	Phone Number	Primary Contact	Alternate Contact	Specific Protocol Link
Alliance Lab Specimen Collection	Specimen Collection	G1-500	606-1214 Reception 606-6201	Bonny Ogala	Susan Fitzer	
Alliance Lab – Specimen Processing (SCCA)	Specimen Processing	G1-500	606-1088	Leah Perkins	Dennis Cortez Elizabeth Means Ziemianski	
Alliance Lab - Testing (SCCA)	Testing	G1-500	606-7609	Elizabeth Means Ziemianski	Beth MacLeod Kirk Johnsen Lily Garcia Ly Tok Doug Howlett	
Alliance Lab-Transfusion Support Services	Transfusion Support	G1-500	606-1014	Emma Tiemeyer	Elizabeth Means Ziemianski Eden Keogh	
Bernstein Lab	Pediatric Oncology	D2-367	667-4886	Sommer Castro 667-2286	Barbara Killam 677-4757	
Bleakley Lab	Program in Immunology	D3-245	667-4751	Tanya Cunningham		2222, 956, 2660, 2684
Bloodworks Northwest	Tranfusion Medicine	921 Terry Seattle WA	292-6525			
Boeckh Lab	Infectious Disease	E4-340	667-4337	Terry Stevens- Ayers 667-4337		1587, 1660, 32.01, 1821
Cellular Therapy (SCCA)	Cell Processing/ Peripheral Blood CD34 Assay	E1-419	606-1200	Grace Randhawa	Andrew Mackie Melissa Dela Pena Aviva Ventura	
Clinical Immunogenetics Lab (SCCA)	Chimerism Testing/ HLA Typing	G7-107	606-7700 CIL Coord. Office	Lois Regen 606-1147	Nakita Shelton 606-6454	
Cytogenetics Lab (SCCA)	Chromosome Analysis or (FISH)	G7-503	606-1390	Kate Kroeger 606-1389	Stacie Thomas 606-1390	
Deeg Lab	Transplantation Biology	D1-287				
Frenkel Lab	Infectious Disease	Seattle Children's	884-3440	Ingrid Beck	Sheila Strychak 884-7201	List Study & Send Attention: Lisa Frenkel &

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LOCATIONS RESOURCE GUIDE

Lab Name	Type of Lab	Lab Location	Phone Number	Primary Contact	Alternate Contact	Specific Protocol Link
Hansen Lab / Research Cell Bank	Human Immunogenetics Program (HIP)	D2-345 or D2-346	667-3756 or 667-1450	Jenna Gravley 667-1450	Laura Tabellini 667-4449	Protocol 1606
Greenberg Lab	Immunology	D3-335				
Hans Ochs/Troy Torgerson Lab	Pediatric Immunology	Seattle Children's Research Institute C9S-7	987-7442	Mary Hackett	Dawn Marie Pares 884-7418	
Immunotherapy Lab	General Lab	6 th Floor IMTX	606-6049 or 606-6050	Nga Luong	Jeffrey Wells Nahid Hodjat Mary Rose Valencia Eileen Carter Loan Nguyen	
Kiem Lab	Transplantation Biology	D1-275	667-6981	Christina Ironside 667-2591		
Laboratory Medicine - HMC	General Lab	R&T Rms 725,726	897-5210	Robert Coombs, MD, PhD 897-5202	Geoffrey Baird, MD, PhD 744-9787	
Maloney Lab	Transplantation Biology	D1-331	667-4260	Barbara Pender 667-4260		
McElrath Lab	Infectious Disease HVTN	1100 Eastlake	667-2560	David Chambliss		1410 2210
McElrath Lab	Infectious Disease Standard Research	1100 Eastlake	667-6995	John McNevin 667-5706		
Molecular Oncology	Molecular Oncology	D2-281	667-2592	Jill Harrell 667-2592	Cathy Spurgeon 667-5067	
Virology Research	Molecular Virology	1616 Eastlake Suite 320	206-685-7720	Meei-Li Huang 685-7104	Jane Kuypers	
Nash Lab	Transplantation Biology	D1-295	667-5171			
Lee Nelson Lab	Immunogenetics	D2-313	667-6840		Hilary Gammill 667-4053	
Pharmacokinetics Lab (SCCA)	Busulfan	G7-405	606-7389	Louie Yu 606-7388	Hung Nguyen 606-7319	
Pathology (SCCA)	Pathology Lab	G7-910	Lab 606-1355	Amanda Moklebust		

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			Office 606-1343	606-1357		
Radich Lab	Molecular Genetics	D4-385	667-6630	Lan Beppu 667-6966	Jerry Radich 667-4118	
Riddell Lab	Immunology	D3-345	667-5892	Paula Kosasih		

LOCATIONS RESOURCE GUIDE

Lab Name	Type of Lab	Lab Location	Phone Number	Primary Contact	Alternate Contact	Specific Protocol Link
Sandmaier Lab		D1-365	667-6029	Erlinda Santos		
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	
Storb Lab	Transplantation Biology	D1-385	667-1509	Scott Graves 667-5267	Sue Carbonneau 667-6839	2173
Torok-Storb Lab	Transplantation Biology	D1-345	667-4545	Gretchen Johnson 667-4545		
Transfusion Support Office (SCCA)	Transfusion Support	K-231	606-1014	Bruce Ballard	Donia Black	
Transfusion Support Services (UWMC)	Transfusion Support	EA-210	598-6240	Marnie Thomas 598-6926		
Turtle Lab	Immunology	D3-313	667-7073			2639, 2494, 2517
UW Cyclosporin Bench	Therapeutic Drug	NW-225	598-6238	Elizabeth Madden		
UW Hematology	Hematology	NW-220	598-6234	Joanne Estergreen 598-6233	Gina Park 598-6234	
UW Hematopathology	Flow Cytometry & Molecular Studies	G7-800	606-7060	Brent Wood 606-7117	Julie Sako 606-7113	
UW Immunology Lab		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		Carol Maeso 616-6650	
UW Microbiology	Microbiology	NW-177	598-6147	Brett Norquist Sarah Jensen		
UW Special Chemistry	LCMSMS	NW-225C	598-4563	Lisa Lawrence		
Virology – UW Clinical	Molecular & Classic	1616 Eastlake, Suite 320	206-685-8037	Greg Pepper 987-2088	Anne Cent	

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 code (International Classification of Diseases—current 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 (Powerpath), the Alliance Lab LIS (SunQuest) or LabWare LIMS (Pharmacokinetics, Cytogenetics and Molecular Oncology) are available for viewing in ORCA and MINDscape. Labvision, used by the Clinical Immunogenetics Lab (CIL), is not interfaced to ORCA or MINDscape. CIL and 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 (CLIA).

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 606-1088.
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

I. Labeling the Specimen

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

1. Patient name: last name, first name, middle initial or middle 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

*Bloodworks Northwest 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

For those lab tests requiring a requisition form, a CPOE requisition will be generated. The following information is included on the requisition:

1. Patient last name, first name, middle initial or middle 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 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

Orders defined in Sunquest or PowerPath will be interfaced to these lab systems from ORCA. Specialty labs will receive requisitions printed from ORCA and will continue to log in specimens in Labvision or LabWare.

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, SLU, 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 on the SCCA intranet at Departments & Clinics >Clinical Laboratories >Libraries Lab Admin Policies & Procedures.

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

Glass Red Top

*Blue Top or Black Top

Royal Blue Top *No Additive*

Gold or Red Gray Tiger Top or Orange Top

Plastic Red Top Tube

(Continued)

Lime Green Top
Green Top
Lavender (Purple) Top
Royal Blue Top with EDTA
Purple and Yellow Top (CellSave tube)
Gray Top
Yellow Top
QuantiFERON®-TB Gold kit– (1. Grey 2. Red 3. Lavender)
HLA Syringe
Specialty Tubes – Unless otherwise noted

Research is drawn with clinical samples following the correct order of draw.

* If blood cultures are not drawn and the 1st tube to be drawn is the Blue Top, a Discard Tube or a glass Red Top tube for testing 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.

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://menu.labmed.washington.edu/oltg>

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Seattle Cancer Care Alliance GUIDELINES FOR TIMED URINE AND STOOL COLLECTIONS

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, first name and middle initial
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, or the Stool Collection form (not timed).

[Patient Instructions for timed urine collection](#)

[Patient Instructions for timed stool collection](#)

[Patient Instructions for stool collection \(not timed\)](#)

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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 (1ST 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:

Bence Jones Quantitation	<ul style="list-style-type: none"> • No Restrictions. No additive required. REFRIGERATE DURING COLLECTION.
Catecholamines (Epinephrine, Norepinephrine, Dopamine, Metanephrine)	<ul style="list-style-type: none"> • 15 mL HCL must be added to container prior to collection. Please see Alliance Lab staff. REFRIGERATE DURING COLLECTION. (** Note: HCL can cause burns and irritations. Avoid contact with skin or eyes.) • Discontinue one week prior to and during collection: mythyldopa (Aldomet), & related antihypertensives, tetracyclines, quinidine, and quinine.
Creatinine Clearance	<ul style="list-style-type: none"> • A blood Creatinine level is required within 48 hours of the conclusion of the urine collection. Please check in with the lab to see if you need blood drawn for this test. • No Restrictions. No additive required. REFRIGERATE DURING COLLECTION.
Creatinine, Protein, Protein Electrophoresis	<ul style="list-style-type: none"> • No Restrictions. No additive required. REFRIGERATE DURING COLLECTION.
Cortisol	<ul style="list-style-type: none"> • 10 g of boric acid must be added to container at start of collection. . REFRIGERATE DURING COLLECTION.
Prophyrins Quantitation (includes porphobilinogen)	<ul style="list-style-type: none"> • 5g sodium carbonate (NOT sodium bicarbonate) must be added to container prior to collection. Please see Alliance Lab staff. REFRIGERATE DURING COLLECTION. • Protect from light. Keep collection container in brown paper bag. • 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.
VMA	<ul style="list-style-type: none"> • 15 mL HCL must be added to container prior to collection. Please see Alliance Lab staff. REFRIGERATE DURING COLLECTION. (** Note: HCL can cause burns and irritations. Avoid contact with skin or eyes.)
5HIAA (5-Hydroxyindolacetic Acid)	<ul style="list-style-type: none"> • 15 mL HCL must be added to container prior to collection. Please see Alliance Lab staff. REFRIGERATE DURING COLLECTION. (** Note: HCL can cause burns and irritations. Avoid contact with skin or eyes.) • Discontinue two days before and during collection: acetanilide, aspirin, avocados, bananas, chlorpromazine, cough medicines, eggplant, methamphetamines, nicotine, nortriptyline, nuts, phenothiazine, pineapple and plums.

Patient Name: _____

Start Date: ____/____/____

Start Time: _____

Stop Date: ____/____/____

Stop Time: _____

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 Laboratory

Stool Collection Instructions

You have been asked by the medical team to obtain a stool specimen. We ask that you collect the specimen according to the following instructions.

- ❖ NOTE: Antacids, barium bismuth, anti-diarrhea medication or oily laxatives should not be used prior to collection.
 - ❖ **Containers should be labeled prior to collection with the patient's name and either the date of birth or the MRN (the U number).**
1. Stool sample containers and a collection device (hat shaped white plastic) have been provided to you.
 2. The stool sample should not be contaminated with urine or toilet paper.
 3. Collect stool in the white plastic container (the hat) that is provided:
 - a. Lift the toilet seat.
 - b. Place the device over the toilet bowl.
 - c. Place the toilet seat down.
 - d. Pass the stool into the white plastic (hat) container without it being contaminated with urine.
 4. Once stool is in the hat, use a wooden stick (or pour) to remove portions of the stool and place it into the containers provided, collecting any mucus or blood with the specimen. ***Depending on the tests ordered by your provider, you may receive one or all of the containers below:***
 - a. For C. difficile and/or virology tests, place a portion of the stool sample into separate sterile clear containers without additive.
 - b. For bacterial culture, place stool into the Para-Pak C&S **Orange Cap** container to the fill line, tighten the cap, and shake firmly to insure that the specimen is adequately mixed.
 - c. For Ova and Parasite Exam, place stool into the Para-Pak EcoFix **Green Cap** container to the fill line, tighten the cap, and shake firmly to insure that the specimen is adequately mixed
 5. **Verify the containers are labeled correctly with your name and another identifier.**
 6. Place the containers into the biohazard bag and seal the bag.
 7. Remove gloves and wash hands

Note: The specimen should be delivered to the Alliance Laboratory drop-off window within 24 hours after collection. **Samples collected in preservative should be kept at room temperature. Samples collected without preservative should be refrigerated.**

Lab Hours: Monday – Friday: 7am – 8pm
 Saturday & Sunday: 8am – 4:30pm
 Holidays: 8am – 4:30pm

ALLIANCE LAB

This table provides additional information for tests performed in the SCCA Alliance Laboratory. *Note: several tests that were formerly listed in these tables have been removed from this list because they are performed elsewhere (UWMC, HMC). Additional information is available on the UWMC Online Test Guide: <http://menu.labmed.washington.edu/oltg>*

Turnaround times are 60 minutes except as noted under Comments. 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	COMMENTS
BMP	Basic Metabolic Panel	Na, K, Cl, CO ₂ , Glu, BUN, Creat, Ca, calculated glomerular filtration rate	
LYT	Electrolytes	Na, K, Cl, CO ₂	
LIPID	Lipid Panel	Chol, HDL, Trigs, LDL	
HFFA	Hepatic Function Panel	ALT, AST, ALK, Albumin, Bili T/D, Total protein	
SHFL	Hepatic Function Panel + LD	ALT, AST, ALK, Albumin, Bili T/D, Total protein, LD	
RENFP	Renal Function Panel	Albumin, Ca, CO ₂ , Cl, Creat, Glu, Phosphorus, Na, K, BUN, calculated glomerular filtration rate	
SRFM	Renal Function Panel + Mg	Albumin, Ca, CO ₂ , Cl, Creat, Glu, Phosphorus, Na, K, BUN, Mg, calculated glomerular filtration rate	
SCOMP	SCCA Comprehensive Metabolic Panel with calc. for globulin and A/G ratio	Na, K, Cl, CO ₂ , Glu, BUN, Creat, Ca, Total Protein, Albumin, ALT, AST, ALK, Albumin, T Bili, Globulin, A/G ratio, calculated glomerular filtration rate	
SCOMP with HSCT subgroup	SCOMP with D Bili, GGT, Mg, Phosphorus, Uric Acid, Cholesterol, Triglycerides	Na, K, Cl, CO ₂ , 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	

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CHEMISTRY INDIVIDUAL TESTS

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	COMMENTS
ALB	Albumin	Albumin	
ALK	Alkaline Phosphatase	Alkaline Phosphatase	
AST	AST	AST	
BIL	Bilirubin, Total	Bilirubin, Total	
BILT/D	Bilirubin, Total/Direct	Bilirubin, Total/Direct	
BUN	BUN	BUN	
CA	Calcium, Total	Calcium, Total	
SRIC	Calcium, Ionized, Serum	Calcium, Ionized, Serum	
CEA	Carcinoembryonic Antigen	Carcinoembryonic antigen	90 minutes TAT
CHOL	Cholesterol, Total	Cholesterol, Total	
CK	Creatine Kinase	Creatine Kinase	
CREG	Creatinine	Creatinine, calculated glomerular filtration rate	
GGT	GGT	GGT	
GLU	Glucose	Glucose	
GLUF	Glucose, Fasting	Glucose, Fasting	
HDL	HDL cholesterol	HDL cholesterol	
PGSTAT	Qualitative Serum Pregnancy		Positive or negative pregnancy test
LD	LD	LD	
LDL	LDL cholesterol	Calculation must be run with Lipid Panel	
MG	Magnesium	Magnesium	
P	Phosphorus	Phosphorus	
K	Potassium	Potassium	
PSA	Total	Total	90 minutes TAT

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ALLIANCE LAB - CHEMISTRY INDIVIDUAL TESTS (cont.)

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	COMMENTS
TP	Total Protein	Total Protein	
NA	Sodium	Sodium	
SOCULT	Stool Occult Blood	Stool occult blood	
TRIG	Triglycerides	Triglycerides	
URIC	Uric Acid	Uric Acid	

HEMATOLOGY

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	COMMENTS
CBC	Hemogram	HCT, HB, WBC, RBC, Platelet & RBC indices	
CBANC	Hemogram and Abs Neutrophil Count	HCT, HB, WBC, RBC, Platelet , RBC indices & Abs Neutrophil count	
CBD	CBC w/ Diff/Smear Eval	HCT, HB, WBC, RBC, Platelets & RBC indices w/ Diff	
HCT	Hematocrit	Hematocrit	
PLTG	Platelet	Platelet	
RETIC	Reticulocyte	Reticulocyte	
BMCNT	Bone marrow counts		
BMWRST	BM Wright's Stain	Bone Marrow Wright's Stain	
ESR	Erythrocyte Sedimentation Rate		90 minutes TAT

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ALLIANCE LAB - COAGULATION

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	COMMENTS
PRO	Prothrombin Time	Prothrombin Time	
TT	Thrombin time	Thrombin Time	
PTT	Activated Partial Thromboplastin Time	Activated Partial Thromboplastin Time	
FIBCL	Fibrinogen	Fibrinogen	

URINES

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	COMMENTS
UAWK	Urinalysis, workup	Urine dipstick tests, microscopic performed if macroscopic abnormal	
UAC	Urinalysis, complete	Urine dipstick tests, microscopic	
UCLEAR	Creatinine clearance	Urine creatinine	Serum creatinine level required
UTP	Protein	Urine total protein	
UPG	Urine Pregnancy		Positive or negative pregnancy test
UPCRAT	Protein/Creatinine Ratio	Urine Protein, Urine Creatinine & Calculated Ratio	

CEREBRAL SPINAL FLUID

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	COMMENTS
CCCNT	Cell Count	WBC, RBC	
CGLU	Glucose	Glucose	
CTP	Total Protein	Total Protein	
CCFUGE	CSF Cell evaluation by Hematopathologist		

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BLOOD GASES

TEST MNEMONIC	DESCRIPTION	TESTS INCLUDED	STAT TAT	COMMENTS
AG	Arterial blood gas	pH, pCO ₂ , pO ₂ , HCO ₃	30 minutes	COOX performed at HMC
VG	Venous blood gas	pH, pCO ₂ , pO ₂ , HCO ₃	30 minutes	COOX performed at HMC

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Seattle Cancer Care Alliance
Laboratory Administrative Policies and Procedures

Laboratory Critical Results

Rev Effective 09/16/2015

Serum or Plasma	Less than	Greater than	Units
Na	120	160	mEq/L
K	3.0	6.0	mEq/L
HCO ₃ /CO ₂	10	40	mEq/L
Glucose	50	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 ₂	9	65	mmHg
pO ₂	40	N/A	mmHg
HCO ₃	10	40	mEq/L

Hematology	Less than	Greater than	Units
*Absolute neutrophils	0.5	N/A	x 10 ³ /uL
Hematocrit	20	none	%
*Platelet	20	1000	x 10 ³ /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 3rd, 4th, 5th, 6th floor or Apheresis.

- ❖ **Transplant Patients** with platelets <20 x 10³/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 x10³/uL) the result does not need to be called.

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ALLIANCE LAB REFERENCE RANGES

HEMATOLOGY

updated January 23, 2014

WBC Units: THOU / uL

Female/Male	
Age	Range
6m – 1y	6.0 – 17.0
2y – 3y	6.0 – 15.5
4y – 5y	5.5 – 14.5
6y – 13y	4.5 – 13.5
14y –	4.3 – 10.0

RBC Units: mil / dL

Female		Male	
Age	Range	Age	Range
6m – 1y	3.70 – 5.30	6m – 1y	3.70 – 5.30
2y – 5y	3.90 – 5.30	2y – 5y	3.90 – 5.30
6y – 11y	4.00 – 5.20	6y – 11y	4.00 – 5.20
12y – 17y	4.10 – 5.10	12y – 17y	4.50 – 5.30
18y –	3.80 – 5.00	18y –	4.40 – 5.60

Hemoglobin Units: g / dL

Female		Male	
Age	Range	Age	Range
6m – 1y	10.5 – 13.5	6m – 1y	10.5 – 13.5
2y – 5y	11.5 – 13.5	2y – 5y	11.5 – 13.5
6y – 11y	11.5 – 15.5	6y – 11y	11.5 – 15.5
12y – 17y	12.0 – 15.5	12y – 17y	13.0 – 15.5
18y –	11.5 – 15.5	18y –	13.0 – 18.0

Hematocrit Units: %

Female		Male	
Age	Range	Age	Range
6m – 1y	33 – 39	6m – 1y	33 – 39
2y – 5y	34 – 40	2y – 5y	34 – 40
6y – 11y	35 – 45	6y – 11y	35 – 45
12y – 17y	36 – 45	12y – 17y	37 – 49
18y –	36 – 45	18y –	38 – 50

MCV Units: fL

Female/Male	
Age	Range
6m – 1y	70 – 86
2y – 5y	75 – 87
6y – 11y	77 – 95
12y –	81 – 98

MCH Units: pg

Female/Male	
Age	Range
6m – 1y	23.0 – 31.0
2y – 5y	24.0 – 30.0
6y – 11y	25.0 – 33.0
12y – 17y	25.0 – 35.0
18y –	27.3 – 33.6

MCHC Units: g / dL

Female/Male	
Age	Range
6m – 1y	30.0 – 36.0
2y –	32.2 – 36.5

Retic Units: %

Female		Male	
Age	Range	Age	Range
6 mos-	0.5 – 1.7	6 mos-	0.5 – 2.0

Retic Absolute Units: bil / L

Female		Male	
Age	Range	Age	Range
15y –	20 – 65	15y –	20 – 100

Platelet Count Units: THOU / uL

Female/Male	
Age	Range
0 – 1m	250 – 450
1m – 1y	300 – 750
1y – 2y	250 – 600
3y – 6y	250 – 550
7y – 11y	200 – 450
12y –	150 – 400

RDW-CV Units: %

Female		Male	
Age	Range	Age	Range
≥ 6m	11.6 – 14.4	≥ 6m	11.6 – 14.4

MPV Units: -fL

Female	Male
9.4 – 12.3	9.4 – 12.4

(Continued)

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ALLIANCE LAB REFERENCE RANGES

HEMATOLOGY (Continued)
updated January 23, 2014

Neutrophils Units: THOU / uL

Female/Male	
Age	Range
6m – 11m	1.50 – 5.00
1y – 3y	1.50 – 5.00
4y – 9y	1.50 – 7.50
10y – 11y	1.80 – 7.00
12y –	1.80 – 7.00

Lymphocytes Units: THOU / uL

Female/Male	
Age	Range
6m – 11m	3.00 – 7.00
1y – 3y	1.50 – 8.50
4y – 9y	1.50 – 5.00
10y – 11y	1.20 – 5.00
12y –	1.00 – 4.80

Monocytes Units: THOU / uL

Female/Male	
Age	Range
6m – 11m	0 – 0.60
1y – 3y	0 – 0.80
4y – 9y	0 – 0.80
10y – 11y	0 – 0.80
12y –	0 – 0.80

Differentials Units: %

Neutrophils	Adult	42 – 70
	Child (2y-9y)	35 – 75
Lymphocytes	Adult	23 – 48
	Child (2y-9y)	23 – 75
Monocytes		0 – 8
Eosinophils		0 – 5
Basophils		0 – 2
Immature Granulocytes		0 – 1
Blast		0

Eosinophils Units: THOU / uL

Female/Male	
Age	Range
6m – 11m	0 – 0.80
1y – 3y	0 – 0.50
4y – 9y	0 – 0.50
10y – 11y	0 – 0.50
12y –	0 – 0.50

Basophils Units: THOU / uL

Female/Male	
Age	Range
6m – 11m	0 – 0.20
1y – 3y	0 – 0.20
4y – 9y	0 – 0.20
10y – 11y	0 – 0.20
12y –	0 – 0.20

Erythrocyte Sedimentation Rate (ESR) Units: mm / hr

Female		Male	
Age	Range	Age	Range
6m – 11y	0 – 10	6m-11y	0 – 10
12y –	0 – 20	12y –	0 – 15

CSF Cell Count Units: /uL

Red Blood Cells	0
Mononuclear Cells	0 - 5

CSF Differential Units: %

Neutrophils	2 ± 4
Lymphocytes	60 ± 20
Monocytes	30 ± 15

COAGULATION

TEST	Reference Range	Units
Prothrombin time (PT)	10.7-15.6	Seconds
INR	0.8 - 1.3	
Activated Partial Thromboplastin Time (APTT)	22-35	Seconds
Fibrinogen	150-450	mg/dL
Thrombin Time	16-25	Seconds

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ALLIANCE LAB REFERENCE RANGES: CHEMISTRY

Analyte	Reference Range	Units
Na (Sodium)	135-145	mEq/L
K (Potassium)	3.6-5.2	mEq/L
Cl (Chloride)	98-108	mEq/L
CO ₂ (Bicarbonate)	22-32	mEq/L
Ion Gap	4-12	
Creatine Kinase	Male 30-285 Female 30-231	U/L
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	9-38	U/L
ALT	Male Age 0-49 10-64 Age ≥ 50 10-48 Female 7-33	U/L
CK (total)	Male: 62-325 Female: 43-274	U/L
GGT	0-55	U/L
LD	<210	U/L
Total Protein	6.0-8.2	g/dL
Uric Acid	Male 3.9-7.6 Female 2.6-6.8	mg/dL
Cholesterol	Desirable <200 Borderline 200-239 High >239	mg/dL
HDL-Cholesterol	>39 Desirable >59 Acceptable 40-59 Low <40	mg/dL
Triglyceride	Desirable <150 Borderline 150-199 High 200-499 Very High >500	mg/dL
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
CEA	0.0-5.0	ng/mL
CSF Glucose	40-80	mg/dL
CSF Protein	15-45	mg/dL

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

BLOOD GASES

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

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

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ALLIANCE LAB REFERENCE RANGES

URINALYSIS

Test (Dipstick)	Reference Range
pH	5.0-8.0
Specific Gravity	1.005-1.030
Protein	negative
Glucose	negative
Ketone	negative
Bilirubin	negative
Blood	negative
Nitrite	negative
Urobilinogen	0.1-1.9 Ehrlich units
Leucocyte esterase	negative

Test (Microscopic)	Reference Range
WBC/hpf	0-5
RBC/hpf	0-2
Casts/lpf	0
Crystals/lpf	0
Bacteria/hpf	0
Squamous epithelial cells/lpf	0-5 (neg)
Renal/transitional epithelial cells/hpf	<3 (neg)

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 ² mL/min mL/min

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CD34 ASSAY

Lab	Cellular Therapy, 1100 Eastlake Avenue E, E1-419
Request Form	SCCA CTL Test Requisition/Billing form – for Peripheral Blood Leucocytes (PBL) For SCCA Ambulatory Clinic, CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1200
Availability	M – F Lab Hours 7am – 8pm Processing Hours 7am – 5pm Weekends & Holidays Lab Hours 9am – 5pm Processing Hours 9am – 3pm
Turnaround Time	Three hours after sample received or lab start-up
Specimen	Peripheral Blood
Volume	2 - 4 mL
Pediatric Volume	2 - 4 mL
Container	EDTA (2.0 mL purple top)
Collection	Routine venipuncture or line draw
Special Handling	Room temperature, label as STAT
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen, specimen clotted
Reference Ranges	No normal values established for mobilized specimens
After Hours	Draw a fresh specimen in the morning (no after-hours specimen handling).

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BLOOD GAS, ARTERIAL

Related Terms	Arterial blood gas, Blood gas, ABG, Gases
Panel includes	Measured parameters include pH, pCO ₂ and pO ₂ ; Calculated parameters include HCO ₃ , base excess, and oxygen saturation
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes Pulmonary Function Testing (PFT) staff will print a CPOE requisition to accompany the specimen.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Arterial Blood
Volume	3mL; minimum volume is 300 µL (0.3mL) in a tuberculin syringe
Pediatric Volume	See Capillary Blood Gases
Container	Blood should be drawn into gas-tight plastic syringe using 1000-units sodium or lithium heparin. Other anticoagulants are not acceptable.
Patient Preparation	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.
Collection	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)

(Blood Gas, Arterial, continued)

Special Instructions

Requisition must indicate time drawn, type of sample (arterial, venous, or capillary), FiO₂ 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 ₂	33 – 48 mm Hg	<9 or >65 mm Hg
pO ₂	80 – 104 mm Hg	<40 mm Hg (<20 mm Hg venous)
HCO ₃	24-31 mEq/L	<10 or >40mEq/L
O ₂ Saturation	95-99%	

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BASIC METABOLIC PANEL

Related Terms	BMP
Panel includes	Sodium, potassium, chloride, carbon dioxide, glucose, urea nitrogen (BUN), creatinine, calcium, calculated glomerular filtration rate Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$ Glomerular filtration rate (GFR) is calculated by the Modification of Diet in Renal Disease (MDRD) Study equation, which is reasonably accurate in non-hospitalized patients with chronic kidney disease, but tends to underestimate GFR in other populations. It is inaccurate in patients with rapidly changing renal function. <i>See NEJM 2006;354:2473.</i>
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	2 mL
Pediatric Volume	Pediatric capillary collection: 500 μL (0.5 mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Range	See individual tests
Critical Values	See individual tests

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COMPREHENSIVE METABOLIC PANEL WITH HSCT SUBGROUP

Panel includes Sodium, potassium, chloride, carbon dioxide, calculation for Ion Gap, 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

$$\text{Ion Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$$

$$\text{Globulin} = \text{TP} - \text{Alb}$$

$$\text{Albumin/Globulin Ratio} = \text{Alb/Globulin}$$

Glomerular filtration rate (GFR) is calculated by the Modification of Diet in Renal Disease (MDRD) Study equation, which is reasonably accurate in non-hospitalized patients with chronic kidney disease, but tends to underestimate GFR in other populations. It is inaccurate in patients with rapidly changing renal function. See *NEJM 2006;354:2473*.

HSCT subgroup *(Can be ordered individually or as group)*

Magnesium, phosphorus, uric acid, bilirubin (direct), gamma glutamyl transferase (GGT), lactate dehydrogenase (LD), cholesterol, triglycerides

Lab Alliance Lab, Room G1-500

Request Form SCCA Clinical Lab Request: fill out completely, including ICD codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability Routine

Specimen Plasma or Serum

Volume 2 mL

Pediatric volume Pediatric capillary collection: 500 µL serum
collected in microtube or "bullet" tube

(Continued)

Comprehensive Metabolic Panel with HSCT Subgroup, continued

Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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SCCA COMPREHENSIVE METABOLIC PANEL

With Calculations for Globulin and Albumin/Globulin Ratio

Related Terms	SCOMP
Panel includes	Sodium, potassium, chloride, carbon dioxide, calculation for Ion Gap, 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 $\text{Ion Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$ $\text{Globulin} = \text{TP} - \text{Alb}$ $\text{Albumin/Globulin Ratio} = \text{Alb}/\text{Globulin}$ Glomerular filtration rate (GFR) is calculated by the Modification of Diet in Renal Disease (MDRD) Study equation, which is reasonably accurate in non-hospitalized patients with chronic kidney disease, but tends to underestimate GFR in other populations. It is inaccurate in patients with rapidly changing renal function. <i>See NEJM 2006;354:2473</i>
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection: 500 µL serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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ELECTROLYTES

Related Terms	Lytes
Panel includes	Sodium, potassium, chloride, CO ₂ Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	2 mL
Pediatric Volume	Pediatric capillary collection: 500 µL (0.5 mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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HEPATIC FUNCTION PANEL

Related Terms	Liver Panel, Liver Studies, Hepatic Function, LFT, Liver Function Tests, Hepatic Profile
Panel includes	Alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin (total & direct), total protein, albumin
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection: 500 µL (0.5 mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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HEPATIC FUNCTION PANEL

WITH LACTATE DEHYDROGENASE

Related Terms	Liver Panel, Liver Studies, Hepatic Function, LFT, Liver Function Tests, Hepatic Profile
Panel includes	Alanine aminotransferase (ALT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), bilirubin (total & direct), total protein, albumin, lactate dehydrogenase (LD)
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection: 500 µL(0.5 mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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LIPID PANEL

Related Terms	Lipid Profile
Panel includes	Cholesterol, triglycerides, HDL cholesterol, calculated LDL cholesterol, non-HDL Cholesterol, Cholesterol/HLC Ratio LDL = Chol – (Trig/5) – HDL Non-HDL Cholesterol = Cholesterol – HDL Cholesterol/HDL Ratio = Cholesterol/HDL
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends & Holidays 8am – 5pm
Availability	Routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection; 500µL (0.5mL) serum collected in microtube or “bullet” tube
Container	5mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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RENAL FUNCTION PANEL

Panel includes	Sodium, potassium, chloride, carbon dioxide, calculation for Ion Gap, glucose, urea nitrogen (BUN), creatinine, calcium, phosphorus, albumin, calculated glomerular filtration rate Ion Gap is calculated: $\text{Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$ Glomerular filtration rate (GFR) is calculated by the Modification of Diet in Renal Disease (MDRD) Study equation, which is reasonably accurate in non-hospitalized patients with chronic kidney disease, but tends to underestimate GFR in other populations. It is inaccurate in patients with rapidly changing renal function. See <i>NEJM 2006;354:2473</i> .
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606 -1088
Testing Frequency	M – F 8am – 8pm Weekends & Holidays 8am – 5pm
Availability	Stat or Routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection; 500 μ L (0.5 mL) serum collected in microtube or “bullet” tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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RENAL FUNCTION PANEL WITH MAGNESIUM

Panel includes	Sodium, potassium, chloride, carbon dioxide, calculation for Ion Gap, glucose, urea nitrogen (BUN), creatinine, calcium, phosphorus, albumin, magnesium, calculated glomerular filtration rate $\text{Ion Gap} = \text{Na} - (\text{Cl} + \text{CO}_2)$ Glomerular filtration rate (GFR) is calculated by the Modification of Diet in Renal Disease (MDRD) Study equation, which is reasonably accurate in non-hospitalized patients with chronic kidney disease, but tends to underestimate GFR in other populations. It is inaccurate in patients with rapidly changing renal function. <i>See NEJM 2006;354:2437</i>
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends & Holidays 8am – 5pm
Availability	Stat or Routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection; 500µL (0.5 mL) serum collected in microtube or “bullet” tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST tube
Collection	Routine venipuncture or line draw
Causes for Rejection	See individual tests
Reference Ranges	See individual tests
Critical Values	See individual tests

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URINALYSIS

Related Terms	UA
Panel includes	Color, appearance, bilirubin, leukocyte esterase, nitrite, specific gravity, pH, protein, glucose, ketones, blood and microscopic analysis if ordered or indicated by chemistries
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Random Urine
Volume	12 mL, can be done on <12 mL in extenuating instances such as infants
Container	Plastic urine container
Collection	Freshly voided clean-catch random urine or catheterized specimen
Storage Instructions	A fresh voiding should be examined within 1 hour, or it should be refrigerated (2-8°C).
Causes for Rejection	Specimens contaminated with feces, less than 1 mL of urine or specimens that are >1 hour old and have not been refrigerated.
Reference Ranges	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.
Critical Values	Urine Glucose > 1000 mg/dL

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ALANINE AMINOTRANSFERASE (ALT)

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST;
NO EDTA samples

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 - 49	10 - 64 U/L	7-33U/L
≥ 50	10 - 48 U/L	7-33U/L

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ALBUMIN

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

Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	0.5 mL
Pediatric Volume	Pediatric capillary collection: 200 µL (0.2 mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST
Collection	Routine venipuncture or line draw
Causes for Rejection	Gross hemolysis, lipemia or bilirubin, misidentified specimens and requisitions, specimen QNS
Reference Ranges	3.5 – 5.2 g/dL

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ALKALINE PHOSPHATASE (ALK)

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST;
NO EDTA or oxalate samples

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)

Alkaline Phosphatase, continued

Reference Ranges

Age	Male	Female
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)

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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

Related Terms Ca⁺⁺

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 codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	0.5 mL
Pediatric Volume	Pediatric capillary collection: 200µL (0.2mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST
Collection	Routine venipuncture or line draw
Causes for rejection	Gross hemolysis, specimen QNS, misidentified specimens and requisitions
Reference Range	8.9 – 10.2 mg/dL
Critical Values	<6.0 mg/dL or >13.0 mg/dL

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CARCINOEMBRYONIC ANTIGEN

Related Terms	CEA
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm
Availability	STAT or routine
Specimen	Serum
Volume	2.0 mL, minimum 0.8
Container	5 mL orange top tube preferred; or gold top or SST or red top tube SST
Collection	Routine venipuncture or line draw
Interfering Substances	Gross hemolysis, lipemia or bilirubin, misidentified specimens and requisitions, specimen QNS
Reference Ranges	0.0-5.0 ng/mL

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CEREBRAL SPINAL FLUID GLUCOSE

Related Terms	CSF glucose
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Cerebral spinal fluid
Volume	1 mL
Minimum Volume	0.4 mL
Container	Plastic tube with tight-fitting lid, orange top tube
Collection	Lumbar Puncture
Causes for Rejection	Insufficient quantity, misidentified specimens and requisitions
Reference Ranges	40-80 mg/dL
Critical Values	Less than 20 mg/dL

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CEREBRAL SPINAL FLUID PROTEIN

Related Terms	CSF protein
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Cerebral spinal fluid
Volume	1 mL
Minimum Volume	0.4 mL
Container	Plastic tube with tight-fitting lid
Collection	Lumbar Puncture
Causes for Rejection	Insufficient quantity, misidentified specimens and requisitions
Reference Ranges	15-45 mg/dL

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CHLORIDE

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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.

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

Reference Ranges 98 – 108 mEq/L

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CHOLESTEROL

Test included in this panel	Lipid panel
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	Routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection: 500µL(0.5mL) serum collected in microtube or “bullet tube”
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST
Collection	Routine venipuncture or line draw
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen, gross hemolysis
Reference Ranges	Desirable <200 mg/dL Acceptable 200-239 mg/dL High >239 mg/dL

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CO₂ (BICARBONATE)

Related Terms TCO₂, Total CO₂, CO₂, HCO₃⁻

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

Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	0.5 mL
Pediatric volume	Pediatric capillary collection: 200µL (0.2mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST; NO EDTA, oxalate, or citrate
Collection	Routine venipuncture or line draw
Causes for Rejection	Gross hemolysis, misidentified specimens and requisitions, specimen QNS
Reference Ranges	22 – 32 mEq/L
Critical Values	<10 mEq/L or >40 mEq/L

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CREATINE KINASE

Related terms	CK, CK-Total, CPK
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Plasma or Serum
Volume	0.5 mL
Pediatric volume	Pediatric capillary collection: 200µL (0.2mL) serum collected in microtube or "bullet" tube
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST; NO EDTA, citrate, or oxalate.
Collection	Routine venipuncture or line draw
Special handling	Separated serum or plasma should not remain at room temp longer than 4 hours. If assays are not completed within 4 hours, serum or plasma should be stored at 2°C to 8°C for up to one week.
Cause for rejection	Misidentified specimens and requisitions, specimen QNS

Reference Ranges

Male	Female
62-325 U/L	43-274 U/L

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CREATININE

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

Test includes

Creatinine, calculated glomerular filtration rate

Glomerular filtration rate (GFR) is calculated by the Modification of Diet in Renal Disease (MDRD) Study equation, which is reasonably accurate in non-hospitalized patients with chronic kidney disease, but tends to underestimate GFR in other populations. It is inaccurate in patients with rapidly changing renal function. *See NEJM 2006;354:2473*

Lab

Alliance Lab, Room G1-500

Request Form

SCCA Clinical Lab Request: fill out completely, including ICD codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone

606-1088

Testing Frequency

M – F 8am – 8pm
Weekends and Holidays 8am – 5pm

Availability

STAT or routine

Specimen

Plasma or Serum

Volume

0.5 mL

Pediatric volume

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

Container

5 mL lime top PST, green top, red top, gold top SST or orange top RST

Collection

Routine venipuncture or line draw

Causes for Rejection

Hemolysis, misidentified specimens and requisitions, specimen QNS

Reference Ranges

Female		Male	
Age	Range	Age	Range
>=18 yrs	0.38-1.02	>=18 yrs	0.51-1.18

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DIRECT BILIRUBIN

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability Routine

Specimen Plasma or Serum

Volume 1 mL

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

Container 5 ml lime top PST, green top, red top, gold top SST or orange top RST.
No EDTA, citrate, oxalate, or fluoride.

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

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST.
EDTA or fluoride acceptable.

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

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

Related Terms	HDL
Test included in this panel	Lipid Panel
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am - 5pm
Availability	Routine
Specimen	Plasma or Serum
Volume	1 mL
Pediatric Volume	Pediatric capillary collection: 500µL (0.5mL) serum collected in microtube or “bullet tube”
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST. No citrate or oxalate.
Collection	Routine venipuncture or line draw
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen
Reference Ranges	>39 Desirable >59 mg/dL Acceptable 40-59 mg/dL Low <40 mg/dL

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IONIZED CALCIUM, SERUM & PLASMA

Test includes	Ionized Calcium
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Serum & Plasma
Volume	1 mL
Pediatric Volume	0.5 mL
Container	Gold top SST™ tube for serum Lime green top PST tube for plasma
Collection	Routine venipuncture or line draw
Storage Instructions	DO NOT OPEN TUBE. 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.
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, any tube that has been opened and exposed to air, gross hemolysis
Reference Ranges	≥ 1 year 1.18 mmol/L - 1.38 mmol/L < 1 year 1.16 mmol/L - 1.45 mmol/L
Critical Values	< 0.78 mmol/L or > 1.58 mmol/L

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LACTATE DEHYDROGENASE

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST.
No 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 Range <210 U/L

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LDL CHOLESTEROL

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

$$\text{LDL} = \text{Chol} - (\text{Trig}/5) - \text{HDL}$$

Lab Alliance Lab, Room G1-500

Request Form SCCA Clinical Lab Request: fill out completely, including ICD codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability Routine

Specimen Plasma or Serum

Volume 1 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST.

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

Related Terms Mg⁺⁺

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST.
No EDTA, citrate or oxalate.

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

Related Terms Phos, PO₄, 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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST.
No EDTA, citrate or oxalate.

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

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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 3.6 – 5.2 mEq/L

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

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URINE PREGNANCY TEST

Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Random Urine, first morning specimen preferred for best results
Volume	10 mL
Container	Plastic urine container
Collection	Freshly voided random urine
Storage Instructions	Specimen can be refrigerated (2-8°C).
Causes for Rejection	Specimens contaminated with feces or less than 1 mL of urine. Specimens that are >1 hour old and have not been refrigerated.
Reporting	Qualitative results, positive or negative
Reference Ranges	Negative

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SERUM PREGNANCY TEST (QUALITATIVE)

Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Serum
Volume	5 mL
Container	4ml orange top RST, gold top SST, red top tube <i>Not acceptable:</i> lime or green top tube
Collection	Routine venipuncture or line draw
Causes for Rejection	Collected in tube with anticoagulant, QNS, misidentified specimens and requisitions
Reporting	Qualitative results, positive or negative
Reference Ranges	Negative

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PROSTATE SPECIFIC ANTIGEN

Related Terms	PSA, PSA monitor, PSA screen, ultrasensitive PSA
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm
Availability	STAT or routine
Specimen	Serum
Volume	2.0 mL, minimum 0.8
Container	5 mL orange top tube preferred; or gold top SST, red top tube, SST
Collection	Routine venipuncture or line draw
Interfering Substances	Gross hemolysis, lipemia, or bilirubin; misidentified specimens and requisitions; specimen QNS
Reference Ranges	0.00-4.00 ng/mL

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SODIUM

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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 135 – 145 mEq/L

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

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STOOL OCCULT BLOOD

Related Terms	Fecal Occult Blood, Stool Guiac, Occult Blood
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes; include date and time of specimen collection CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm, tests performed at approximately 11am and 4pm
Specimen	Send Hemocult® 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
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly prepared Hemocult® card, refrigerated Hemocult® cards
Reference Range	Negative

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TOTAL BILIRUBIN

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or serum. Plasma samples will exhibit slightly higher total protein levels due to the presence of fibrinogen. Heparin is the recommended anticoagulant for plasma samples.

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RST

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

Related Terms	Urine protein, Urine total protein
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: write UPCRAT in the OTHER REQUEST section. Fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	24 hour urine collection, random specimen also acceptable
Volume	1 mL
Minimum Volume	0.4 mL
Container	24 hour urine collection container, or plastic urine cup w/ tight-fitting lid
Causes for Rejection	Insufficient quantity, misidentified specimens and requisitions
Reference Ranges	0-14 mg/dL (random specimen) 0.05-0.08 g/24 hours (24 hour collection)

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TRIGLYCERIDES

Related Terms	Trigs
Test included in this panel	Lipid panel
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	Routine
Specimen	Plasma or Serum Volume 1 mL
Pediatric Volume	Pediatric capillary collection: 500µL (0.5mL) serum collected in microtube or “bullet tube”
Container	5 mL lime top PST, green top, red top, gold top SST or orange top RST
Collection	Routine venipuncture or line draw
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen, hemolysis, not fasting for at least 12 hours
Reference Ranges	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

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 codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Availability STAT or routine

Specimen Plasma or Serum

Volume 0.5 mL

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

Container 5 mL lime top PST, green top, red top, gold top SST or orange top RSTNO EDTA

Collection Routine venipuncture or line draw

Causes for Rejection Misidentified specimens and requisitions, specimen QNS

Reference Ranges

Male	Female
3.9 – 7.6 mg/dL	2.6-6.8 mg/dL

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URINE CREATININE CREATININE CLEARANCE

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 codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
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, leakproof 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)

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/m²
 Male 75-120 mL/min
 Female 65-105 mL/min

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URINE PROTEIN/URINE CREATININE RATIO

Related Terms	Urine Total Protein, Urine Creatinine
Test included	Urine Total Protein, Urine Creatinine, calculated ratio
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request; write UPCRAT in the OTHER REQUEST section. Fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Random urine sample
Volume	1.0 mL
Container	Urine specimen cup
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS
Calculation	$\frac{\text{Urine Protein value}}{\text{Urine Creatinine value}} = \text{Ratio}$

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HLA TYPING

Related Terms	Histocompatibility Testing, HLA DNA, Serology
Lab	Clinical Immunogenetics Lab, Room G7-107 Mail Stop G7-200
Request Form	HLA Typing Requisition and New Admit.doc. Fill out completely, including date, time and ICD codes. Label and request must have two patient/donor identifiers. For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-7700 Lab Coordinator Office FAX 606-1169
Availability	M – F 8:30am – 5pm. After 2:30 please call 606-7700 to alert lab of blood draws or late specimens. Specimens must arrive in CIL before 4pm on Friday or the day before a holiday.
Turnaround Time	See ‘CIL Turn Around Time Chart’
Specimen	Peripheral Blood
Volume/ Container	5 mL blood in red top tube and 30 mL blood in green top tubes (sodium heparin) (lithium heparin unacceptable)
Collection	Routine venipuncture or line draw
Special Handling	Room temperature, deliver to CIL immediately
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen or broken tubes.
After hours	Draw sample and keep specimen at room temperature. Deliver to lab the next working day.

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CHIMERISM TESTING

Related Terms	AMP-FLP (Amplified Fragment Length Polymorphism, Engraftment and Monitoring), STR (Short Tandem Repeat); VNTR (Variable Number Tandem Repeat).
Lab	Clinical Immunogenetics Lab, Room G7-107; Mail Stop G7-200
Request Form	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 codes. Label and request must have two patient/donor identifiers. For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1139 or 606-7700, FAX 606-1169
Availability	M – F 8:30am – 5pm. After 2:30 please call 606-7700 to alert lab of blood draws or late specimens. Specimens must arrive in CIL before 4pm on Friday or the day before a holiday.
Turnaround Time	See 'CIL Turnaround Time Chart'
Specimen	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.
Volume	For peripheral blood 10mL; for bone marrow 1-2mL
Pediatric Volume	Peripheral blood 5mL
Container	Heparin – 20 units/mL of blood or bone marrow
Collection	Routine venipuncture, line draw or bone marrow aspiration
Special Handling	Room temperature, deliver to CIL immediately
Causes for Rejection	Misidentified specimens and requisitions, specimen QNS, improperly stored specimen
After Hours	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**

HLA Typing		
Patient/Donor Status	Specimen Rec'd by 2pm on:	Results faxed to Ambulatory Clinics and/or Unit by:
Matched family donor w/previous SCCA typing	Monday Tuesday Wednesday Thursday Friday	5pm on: Within 4-10 working days
URD or Mismatched family donor w/previous SCCA typing	Monday Tuesday Wednesday Thursday Friday	10am on: Within 4-10 working days
Matched/Mismatched No previous SCCA typing	Monday Tuesday Wednesday Thursday Friday	Within 6-10 working days

Chimerism Testing
Results faxed to source of test request and current attending 1-3 days of sample receipt.

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FIBRINOGEN

Related Terms	FIBCL
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	4.5 mL
Pediatric volume	2.7 mL
Container	Blue top 3.2 % (sodium citrate) tube
Collection	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 MUST be processed by Lab within 24 hrs of blood collection.

(Continued)

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

Related Terms	Activated Partial Thromboplastin Time, aPTT, PTT
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	4.5 mL
Pediatric Volume	2.7 mL
Container	Blue top (3.2 % sodium citrate) tube
Collection	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.
Causes for Rejection	Specimen clotted, gross hemolysis, received more than 2 hours after collection, tubes under-filled or overfilled, misidentified specimens and requisitions
Reference Ranges	22 – 35 seconds
Therapeutic Range	60 –100 seconds for patient on heparin therapy.
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

Related Terms	Protime, PT, PRO, ACCINR*
Test includes	Prothrombin Time and International Normalization Ratio (INR) (*ACCINR includes INR result, only)
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	4.5 mL
Pediatric Volume	2.7 mL
Container	Blue top (3.2% sodium citrate) tube
Collection	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.
Causes for Rejection	Specimen clotted, gross hemolysis, tubes under-filled or overfilled, misidentified specimens and requisitions.
Reference Range	INR 0.8 – 1.3 PRO 10.7 – 15.6 secs
Therapeutic Range	INR 2.0 – 3.5; INR is applicable only to patients on stable coumadin therapy.

(Continued)

Prothrombin Time, continued

Critical Values

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.

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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THROMBIN TIME

Test includes	Thrombin time
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	4.5 mL
Pediatric Volume	2.7 mL
Container	Blue top (3.2% sodium citrate) tube
Collection	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 MUST be processed by Lab within 6 hrs of blood collection.
Causes for Rejection	Specimen clotted, severely hemolyzed specimens, tubes under-filled or overfilled, misidentified specimens and requisitions.
Reference Range	16-25 seconds

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**CYTOGENETICS STUDIES –
CHROMOSOME ANALYSIS AND FISH**

Related Terms Molecular Cytogenetics, Chromosome Analysis, FISH (fluorescence in situ hybridization)

Test includes Chromosome analysis or fluorescence in situ hybridization (FISH)

Lab Cytogenetics Lab, Room G7-503

Request Form Bone Marrow Procedure Order/Multiple Lab Requisition (for Northwest Hospital)

or

Long Term Follow Up/Multiple Lab Request Form (for mail-in specimens)

Fill out completely, including date, time and ICD codes. Label and request must have two patient/donor identifiers.

For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.

See http://menu.labmed.washington.edu/oltg?action=search&search_type=text&search_text=evaluate&search_as_component=yes&search_cross_reference=yes&search_include_non_orderables for additional information on ordering EVALHD testing.

Phone 606-1390 main line

Availability M – F 8am – 5pm
After hours: on call 9am – 5pm weekends and holidays,
Pager 206-340-7207

Turnaround Time See 'Cytogenetics Turnaround Time Table'

Specimen Bone Marrow, Peripheral Blood, or Flow Cytometry Sorted White Cell subsets

Cell Sorting: Send specimens to the UW 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 Cytogenetics Laboratory for FISH testing.

Volume For bone marrow 1-2mL; peripheral blood 5mL

Pediatric volume For blood, infants 1-2mL.

Container Sodium heparin (green top tube)

(Continued)

Cytogenetics Studies – Chromosome Analysis and FISH, continued

Collection	Routine venipuncture or line draw
Special Handling	Room temperature; deliver promptly 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, severely clotted 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. DO NOT HOLD SPECIMENS OVER THE WEEKEND - CONTACT PAGER. (On call weekends and holidays 9am – 5pm: Pager# 340-7207)

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CYTOGENETICS STUDIES – GENOMIC ARRAY

Related Terms	CGAT, Array CGH, SNP array, DNA Microarray
Test includes	Genomic Array (CGAT)
Lab	Cytogenetics Lab, Room G7-503
Request Form	ORCA generated order <u>or</u> Bone Marrow Procedure Order/Multiple Lab Requisition (for Northwest Hospital) <u>or</u> Long Term Follow Up/Multiple Lab Request Form (for mail-in specimens). Fill out completely, including date, time and ICD codes. Label and request must have two patient/donor identifiers For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form. See http://menu.labmed.washington.edu/oltg?action=search&search_type=text&search_text=evaluate&search_as_component=yes&search_cross_reference=yes&search_include_non_orderables for additional information on ordering EVALHD testing.
Phone	606-1390 main line
Availability	M – F 8am – 5pm <i>After hours:</i> on call 9am – 5pm weekends and holidays, Pager 206-340-7207
Turnaround Time	See 'Cytogenetics Turnaround Time Table'
Specimen	Bone Marrow, Peripheral Blood, Tissue (fresh, frozen, or FFPE)
Volume	For bone marrow 1-2mL; peripheral blood 3-5mL, tissue (contact lab)
Container	Marrow and Blood: Put in an EDTA (purple top) tube. Sodium heparin (green top), Sodium citrate (blue top) and Acid citrate dextrose (yellow top) are also acceptable. After marrow is put into tubes, the tubes must be mixed well to prevent clotting. Tissue: contact lab
Collection	Routine venipuncture, line draw or bone marrow aspiration; surgical excision for tissue
Special Handling	On ice (2-8°C) in an insulated container; deliver immediately to Cytogenetics Lab. Keep refrigerated if delivery delayed. Room temperature OK if delivered within a few hours of draw.
Causes for Rejection	Misidentified specimens and requisitions, frozen or heated marrow or blood, severely clotted specimens, any specimen possibly exposed to contaminating DNA or RNA, leaking specimens that pose a risk to technologist, and specimens of questionable integrity.

(Continued)

Cytogenetics Studies-Genomic Array, continued

After Hours

Store specimens refrigerated or at 2-8°C 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

TURNAROUND TIMES Chromosome Analysis and FISH

Test Type	Results by:***
Chromosome Analysis and FISH	5–10 working days with day 1 as day of receipt. Pretransplant samples are prioritized for day 5 completion. Samples requiring mitogen stimulation and or cultures longer than 24 hours may not be completed by day 5.
Please indicate special circumstances on requisition form and/or call 606-1390.	
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 606-1390.	

TURNAROUND TIMES Genomic Array

Test Type	Results by:***
Genomic Array	5–10 working days with day 1 as day of receipt; up to 15 days for FFPE samples.
Please indicate special circumstances on requisition form and/or call 606-1390.	
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 606-1390.	

*** 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

Related Terms	CSF cell count
Test Includes	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.
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Cerebral spinal fluid
Volume	1 mL
Minimum Volume	0.5 mL
Container	Sterile Tube; EDTA (lavender-top tube) if bloody
Collection	Lumbar puncture
Causes for Rejection	Insufficient quantity, misidentified specimens and requisitions
Reference Ranges	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

Related Terms	CBC, Complete CBC
Panels Available	CBC (Hemogram) = WBC, RBC, Hgb, HCT, MCV, MCH, MCHC & platelets CBANC = CBC & Absolute Neutrophil Count CBD = CBC & differential
Panels Include	
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.
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	2 – 3 mL
Pediatric Volume	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 [Click here](#)

Critical Values See table below

<u>Critical Values</u>	Less than	Greater than	Units
Absolute neutrophils	0.5	N/A	x 10 ³ /uL
Hematocrit	20	None	%
Platelet	20	1000	x 10 ³ /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

Related Terms	ESR, Sed Rate
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	2mL
Container	2.4 mL black top Vacutainer® tube 2.4 mL lavender top Vacutainer® tube <i>Unacceptable:</i> any Microtainer tube
Storage Instructions	Black top (citrate) within 2 hours Lavender top (EDTA) at room temperature within 4 hours Lavender top (EDTA) refrigerated within 12 hours
Collection	Routine venipuncture or line draw
Causes for Rejection	Clotted specimen, insufficient quantity, misidentified specimens and requisitions

Reference Ranges

Female		Male	
Age	Range	Age	Range
6m - 11y	0-10 mm/hr	6m - 11y	0-10 mm/hr
12y-	0-20 mm/hr	12y-	0-15 mm/hr

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HEMATOCRIT

Related Terms Hct, Crit

Test included in these panels

- CBC
- CBANC
- CBD

Lab Alliance Lab, Room G1-500

Request Form SCCA Clinical Lab Request: fill out completely, including ICD codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Related Terms Platelets, Thrombocyte Count

Test included in these panels

- CBC
- CBANC
- CBD

Lab Alliance Lab, Room G1-500

Request Form SCCA Clinical Lab Request: fill out completely, including ICD codes
CPOE orders will be interfaced to Sunquest upon order activation in ORCA.

Phone 606-1088

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

Related Terms	Retic Count
Test Includes	An Absolute Reticulocyte count and Reticulocytes expressed as a percentage in a total of 1000 RBCs
Lab	Alliance Lab, Room G1-500
Request Form	SCCA Clinical Lab Request: fill out completely, including ICD codes CPOE orders will be interfaced to Sunquest upon order activation in ORCA.
Phone	606-1088
Testing Frequency	M – F 8am – 8pm Weekends and Holidays 8am – 5pm
Availability	STAT or routine
Specimen	Blood
Volume	2mL
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

<u>Retic</u>		Units: %	
Female		Male	
Age	Range	Age	Range
6 mos-	0.5 – 1.7	6 mos-	0.5 – 2.0

<u>Retic Absolute</u>		Units: bil / L	
Female		Male	
Age	Range	Age	Range
15y –	20 – 65	15y –	20 – 100

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BONE MARROW ASPIRATE / BIOPSY

Related Terms	Bone marrow, iliac crest, bone marrow core
Test Includes	Gross and microscopic examination with diagnosis, other laboratory tests as ordered
Lab	Alliance Lab staff assists with Bone Marrow procedures and distributes specimens to other laboratories including Hematology, Pathology, UW Hematopathology, Microbiology and Virology.
Request Form	SCCA Requisition(s) specific for above laboratories Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1088
Availability	M – F 8am – 4:30pm
Turnaround Time	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. Refer to other entries, for turnaround times of other testing. Pathology hours are: Monday 8am – 6:30pm, Tuesday-Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and after hours if STAT processing is required, contact the on-call SCCA Pathology Technologist at 573-0892.
Specimen	Approximately 2 cc of bone marrow aspirate collected in syringe with no additive to be placed in a 6mL lavender EDTA tube. Invert tube 8-10 times to coat the walls of the tube to ensure adequate mixing of additive with aspirate. Pour the aspirate into a petri dish or watch glass to make 12 aspirate coverslips. After cover slips are made, place 1cc of aspirate back into the 6mL lavender top tube for Flow Cytometry, the rest of the sample to be sent to Pathology as requested. Place 3cc bone marrow aspirate collected in syringe with no additive into a 4mL lavender top tube for Molecular. Place 3cc bone marrow aspirate collected in Preservative-free Heparin syringe for Cytogenetics in a 4 mL green top tube.

(Continued)

Bone Marrow Aspirate/Biopsy, continued

If cultures for bacteria, fungus and/or AFB are requested, 1-3cc of bone marrow aspirate is placed into a SPS or AFB tube.

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.

If a bone marrow biopsy is obtained, make 3-4 touch preps and then place the bone marrow core removed for biopsy diagnostic interpretation into 10% buffered formalin.

If there is a special request or special handling is needed, contact the Bone Marrow Lead at 606-1088 or page 206-540-3431.

Container

Well-constructed container with 10% buffered formalin with secure lid and sealed plastic bag for the bone biopsy.

Collection

Bone marrow aspirate and bone marrow core biopsy

Causes for Rejection

Improper handling, misidentified specimens and requisitions

After Hours

To arrange for a bone marrow tech to assist after available hours M – F (8am – 4:30pm) call the Specimen Processing staff at 606-1088.

For all testing done at UW, contact UW Hematopathology Lab at 598-6231 to arrange specimen processing.

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BRONCHOALVEOLAR LAVAGE

Related Terms	BAL, Bronchial Aspirate, Bronchial Wash
Test Includes	Detection of abnormal cells, malignant cells, infectious agents
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form. Complete a Lab Medicine Microbiology and/or Virology Request if ordered. Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6:00am – 2:30pm Sundays and all other times; if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	Preliminary results are available within 3.5 hours of specimen receipt at SCCA Pathology; final report is provided the next business day.
Specimen	Bronchial wash fluid or bronchoalveolar lavage fluid
Specimen Collection:	
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.

(Continued)

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 5 mL

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

Specimen Handling

Collection from a Patient at SCCA Ambulatory Clinic	
<ul style="list-style-type: none"> ▶ Notify SCCA Pathology in advance of procedure by calling 606-1355. Outside normal business hours contact the on call Pathology Technologist at 573-0892. ▶ Pathology specimens should be sent immediately, unfixed, and at ambient temperature to the SCCA Pathology Laboratory. ▶ Pulmonary physicians will divide the specimen for Microbiology and Virology culture. ▶ Specimens for culture should be delivered to the Alliance Laboratory for transport to the Microbiology and Virology Labs. ▶ Specimen delivered by courier to SCCA Pathology (G7-910) ▶ SCCA Histology Tech accessions the specimen in the computer immediately. If there is a need to evaluate the specimen for malignancy it will be sent to Harborview Medical Center Cytology. 	

Collection from a Patient at UWMC for infection	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<ul style="list-style-type: none"> ▶ Call the SCCA Pathology Department IN ADVANCE at 606-1355. Call the in house courier at 598-8603 for a STAT pick-up. 	<p>Saturdays follow the procedure below except between 6:00am to 2pm - during these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355.</p>

(Continued)

Bronchoalveolar Lavage, continued

<ul style="list-style-type: none">▶ BAL specimens are routed to Microbiology for dividing and distributed to Pathology and Virology Labs. ▶ Transport all Pathology specimens in shipping containers at ambient temperature.▶ Send to SCCA Pathology Lab, Room G7-910.▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.	<ul style="list-style-type: none">▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892▶ BAL specimens are routed to Microbiology for dividing and distributed to Pathology and Virology Labs. ▶ Specimen delivered by courier to SCCA Pathology (G7-910)
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Collection on a Patient at UWMC for malignancy
<ul style="list-style-type: none">▶ Specimen delivered by UWMC courier or Pulmonary staff to UWMC Pathology (EC 239)▶ UWMC Histology Tech accessions the specimen in the computer and sends the specimen to Harborview Medical Center for processing.

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

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ENDOSCOPY

Test includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology and/or Virology Request if ordered. Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday-Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0982.
Turnaround Time	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.
Container	Well-constructed container with 10% buffered formalin fixative with secure lid and sealed plastic bag.
Specimen Handling	

Collection on a Patient at SCCA Ambulatory Clinic

- | |
|--|
| <ul style="list-style-type: none">▶ Place biopsies <u>for morphology</u> in 10% Buffered formalin, noting on the bottle the date and time of placement in the fixative.▶ Deliver to SCCA Pathology.▶ Biopsies <u>for culture</u> should be placed in transport media and taken to the Alliance Laboratory for transport to the Microbiology and Virology Labs. |
|--|

(Continued)

Endoscopy, continued

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<ul style="list-style-type: none"> ▶ Tissue for culture should be sent directly from the procedure room to UWMC Microbiology and/or Virology. ▶ Place Pathology specimens in 10% buffered formalin fixative and deliver to UWMC Pathology (EC 239) immediately for routing to SCCA Pathology Lab ▶ Accession specimen ▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature. ▶ Send to SCCA Pathology Lab, Room G7-910. ▶ Call SCCA Pathology Tech and tell them the specimen is being shipped. ▶ Use a courier to transport the package to the commodities box. 	<p>Saturdays follow the procedure below except between 6am to 2pm During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355</p> <ul style="list-style-type: none"> ▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892 ▶ Tissue for culture should be sent directly from the procedure room to UWMC Microbiology and/or Virology. ▶ Specimens are sent by the floor via cab to the Pathology Department at the SCCA, Room G7-910 <p style="text-align: center;">After hours: do not send the specimen to UWMC Pathology Department.</p>

Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC
<ul style="list-style-type: none"> ▶ Specimen in 10% buffered formalin fixative delivered directly to Rubin's GI Lab (RR-106, phone numbers 543-4402 or 543-4403).

Causes for Rejection

Improper handling, misidentified specimens and requisitions

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FINE NEEDLE ASPIRATIONS

Related Terms	FNAs
Test Includes	Gross and microscopic exam with diagnosis
Lab	Harborview Cytology
Request Form	University of Washington Medical Centers/Harborview Medical Center Cytology Request. Fill out completely, including ICD codes. For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	Harborview Cytology 744-4279
Availability	Monday – Friday 8am – 5pm
Specimen Collection	Fine Needle Aspirate (FNA) 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.

(Continued)

Fine Needle Aspirations, continued

Specimen Handling

Collection at SCCA Ambulatory Clinic
<ul style="list-style-type: none">▶ Deliver the specimen to SCCA Pathology.▶ SCCA Pathology Tech will accession the specimen. It will be sent via cab to Harborview Cytology.

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

Causes for Rejection Improper handling, misidentified specimens, and requisitions

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LIP OR SKIN BIOPSY

Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology and/or Virology Request if ordered Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0892
Turnaround Time	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.
Container	Container with 10% buffered formalin
Specimen Handling	

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

(Continued)

Lip or Skin Biopsy, continued

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<ul style="list-style-type: none"> ▶ 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. ▶ Place specimens in 10% buffered formalin and deliver to UWMC Pathology (EC 239) for routing to SCCA Pathology Lab ▶ Accession specimen ▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature. ▶ Send to SCCA Pathology Lab, Room G7-910. ▶ Call SCCA Pathology Tech and tell them the specimen is being shipped. ▶ Business hours: Use a courier to transport the package to the commodities box. 	<p>Saturdays follow the procedure below except between 6am to 2pm</p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355</p> <ul style="list-style-type: none"> ▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892 ▶ Place tissue in 10% buffered formalin and deliver from the floor via cab to the Pathology Department at the SCCA, Room G7-910. <p>After hours: do not send the specimen to UWMC Pathology Department.</p>

Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC
<ul style="list-style-type: none"> ▶ Specimen in 10% formalin delivered to UWMC Pathology (EC 239) ▶ UWMC Histology Tech accessions the specimen in the computer for processing at UWMC Anatomical Pathology.

Causes for Rejection Improper handling, misidentified specimens and requisitions

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LIVER BIOPSY

(Percutaneous and Transvenous)

Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology Request and/or Virology Request if ordered Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday- Friday 4:30am – 6:30pm Saturday 6am to 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	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.
Container	Submit specimens for culture in a sterile container with secure lid. Biopsies for morphology are placed in 10% buffered formalin.

(Continued)

Liver Biopsy, continued

Specimen Handling

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<ul style="list-style-type: none"> ▶ IN ADVANCE call the SCCA Pathology Department at 606-1355. Call the in-house courier at 598-8603 for a STAT pick-up. ▶ Place specimens in 10% buffered formalin fixative and deliver to UWMC Pathology (EC 239) immediately for routing to SCCA Pathology Lab. ▶ 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. ▶ Accession specimen ▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature. ▶ Send to SCCA Pathology Lab, Room G7-910. ▶ Call SCCA Pathology Tech and tell them the specimen is being shipped. ▶ Have a courier transport the package to the commodities box. 	<p>Saturdays follow the procedure below except between 7:30am to 6pm</p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355</p> <ul style="list-style-type: none"> ▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892 ▶ Place pathology specimens in 10% buffered formalin fixative. ▶ Specimens are sent from the floor via cab to the Pathology Department at the SCCA, Room G7-910. <p style="text-align: center;">After hours: do not send the specimen to UWMC Pathology Department.</p>

(Continued)

Liver Biopsy, continued

Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC
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| <ul style="list-style-type: none">• Specimen prepared as requested by surgeon.• 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.• If done in Interventional Radiology, specimen delivered by Intervention Radiology staff to UWMC Pathology (NW-211)• UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology. |
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Causes for Rejection Improper handling, misidentified specimens and requisitions

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LIVER BIOPSY

(Wedge Biopsy Only)

Related Terms	Liver biopsy, liver wedge biopsy
Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Complete a Lab Medicine Microbiology and/or Virology if ordered Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday-Friday 4:30am – 6:30pm Saturday 6am to 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	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.
Container	Well-constructed container suitable for the type of specimen contained, with secure lid and sealed plastic bag
Specimen Handling	

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<p>NOTE: The type of container, the temperature, appropriate transport media, or other handling details should be determined prior to shipment by consulting the SCCA Pathology Technologist and the attending Pathologist.</p>	<p>Saturdays follow the procedure below except between 6am to 2pm</p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355</p>

(Continued)

LUNG BIOPSY

Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6am to 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0982.
Turnaround Time	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. 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.
Container	Well-constructed sterile container with secure lid and sealed plastic bag
Specimen Handling	

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<p>▶ IN ADVANCE call the SCCA Pathology Department at 606-1355. Call the in-house courier at 598-8603 for a STAT pick-up.</p>	<p style="text-align: center;">Saturdays follow the procedure below except between 6 am to 2pm</p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355.</p>

(Continued)

Lung Biopsy, continued

<ul style="list-style-type: none">▶ 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.▶ Appropriate instructions for specimens to be submitted for culture must accompany the specimen.▶ Accession specimen▶ Package specimen for transport. Transport all Pathology specimens in shipping containers at ambient temperature.▶ Send to SCCA Pathology Lab, Room G7-910.▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.▶ Have a courier transport the package to the commodities box.▶ 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.	<ul style="list-style-type: none">▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892▶ 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.▶ Appropriate instructions for specimens to be submitted for culture must accompany the specimen.▶ 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. <p>After hours: do not send the specimen to UWMC Pathology Department.</p>
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Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC

- ▶ Place the specimen in the Operating Room Pathology refrigerator. It will be picked up by UWMC Pathology Tech.
- ▶ UWMC Histology Tech accessions the specimen in the computer for processing at UWMC Anatomical Pathology.

Causes for Rejection Improper handling, misidentified specimens and requisitions

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LYMPH NODE BIOPSY

Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	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.
Container	Well-constructed, sterile container with secure lid and sealed plastic bag
Specimen Handling	In advance of procedure, notify SCCA Pathology

<p style="text-align: center;">7am to 4:30pm Mon – Fri Business Hours</p>

<p>► IN ADVANCE call the SCCA Pathology Department at 606-1355. Call the in-house courier at 598-8603 for a STAT pick-up.</p>

(Continued)

Lymph Node Biopsy, continued

- ▶ Place **entire biopsy** in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline. Transport specimen container **immediately** to UWMC Pathology (NW-211) for routing to SCCA Pathology.
- ▶ Specimens for lymphoma or LN Adenopathy will have touch preps made and portions of the tissue placed in RPMI for flow cytometry by UWMC Pathology.
- ▶ Accession specimen
- ▶ Transport all Pathology specimens in shipping containers at ambient temperature.
- ▶ Send to SCCA Pathology Lab, Room G7-910.
- ▶ Call SCCA Pathology Tech and tell them the specimen is being shipped.
- ▶ Have a courier transport the package to the commodities box.

Collection at SCCA Ambulatory Clinic

- ▶ If Microbiology and/or Virology culture is requested, place fresh specimen in appropriate transport media and deliver to the Alliance Laboratory.
- ▶ Specimens for flow cytometry should be placed in RPMI and sent to UWMC Hematopathology.
- ▶ Pathology specimens should be placed immediately in 10% buffered formalin at ambient temperature and sent to the SCCA Pathology Laboratory.

Causes for Rejection Improper handling, misidentified specimens and requisitions

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THINPREP[®] PAP TEST COLLECTION

Test includes	Microscopic exam with diagnosis
Lab	HMC Cytology
Request Form	Cytology Request Form Fill out completely, including ICD codes Post CPOE go-live for SCCA Ambulatory Clinic, for those lab tests requiring a requisition form, a CPOE requisition will be generated.
Phone	744-2166
Availability	Monday – Friday 8am – 5pm
Turnaround Time	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.
Container	Vial containing PreservCyt [®] Solution.
Specimen Collection	Label a PreservCyt [®] vial with patient's name and medical record number. 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. To collect a specimen from the ectocervix, select contoured end of plastic spatula and rotate it 360 ^o around the entire ectocervical surface. Remove spatula. Rinse the contoured end of plastic spatula in a vial of PreservCyt [®] Solution by swirling vigorously ten (10) times. Discard plastic spatula. Place cap on vial.

(Continued)

Thinprep PAP Test, continued

Insert Cytobrush® Plus GT device into the endocervix until only the bottom-most bristles are exposed. Slowly rotate ¼ to ½ 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

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

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

Causes for Rejection Improper handling, misidentified specimens and requisitions

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SINUS BIOPSY OR ASPIRATE

Test Includes	Gross and microscopic exam with diagnosis.
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	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.
Specimen	Sinus biopsy or sinus aspirate removed for diagnostic interpretation
Container	Well-constructed sterile container with secure lid and sealed plastic bag
Specimen Handling	

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
▶ IN ADVANCE call the SCCA Pathology Department at 606-1355. Call the in-house courier at 598-8603 for a STAT pick-up.	Saturdays follow the procedure below except between 6am to 2 pm During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355.

(Continued)

Sinus Biopsy, continued

<ul style="list-style-type: none">▶ Place entire biopsy in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline.▶ Place entire aspirate in a sterile container.▶ 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.▶ Deliver Pathology specimens to UWMC Pathology (EC 239) for routing of specimens to SCCA Pathology Lab.▶ Accession specimen.▶ Package specimen for transport.▶ Transport all Pathology specimens in shipping containers at ambient temperature.▶ Send to SCCA Pathology Lab, Room G7-910.▶ Call SCCA Pathology Tech and tell them the specimen is being sent.▶ Use a courier to transport the package to the commodities box.	<ul style="list-style-type: none">▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892▶ Place entire biopsy in a sterile container and keep moist with a sterile gauze pad soaked with sterile, non-bacteriostatic saline.▶ Place entire aspirate in a sterile container. <p>After hours: do not send the specimen to UWMC Pathology Department.</p>
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Collection of SCCA GenOnc/Heme or UWMC Patients at UWMC

- ▶ Operating Room delivers specimen to Operating Room Pathology refrigerator.
- ▶ UWMC Histology Tech accessions the specimen in the computer immediately and sets up for processing at UWMC Anatomical Pathology.

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

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SURGICAL SPECIMENS

Surgical Specimens	Specimens not specifically described in the Specimen Handling Procedure Manual; e.g., spleen, kidney, thoracentesis, laparoscopy.
Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and all other times if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	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. 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.
Container	See below.
Specimen Handling	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)

Surgical Specimens, continued

Collection on a HSCT Patient at UWMC	
7am to 4:30pm Mon – Fri Business Hours	4:30pm to 7am Mon – Fri Weekends & Holidays
<ul style="list-style-type: none"> ▶ IN ADVANCE call the SCCA Pathology Department at 606-1355 Call the in-house courier at 598-8603 for a STAT pick-up. ▶ Deliver Specimens to UWMC Pathology (NW-211) for routing of specimens to SCCA Pathology. ▶ SCCA Pathology will divide and route specimens to appropriate labs per protocol. ▶ The SCCA Tech will be responsible for completing the appropriate Lab Requisitions sent with the specimens to be submitted for culture. ▶ Accession specimen ▶ Transport all Pathology specimens in shipping containers at ambient temperature. ▶ Send to SCCA Pathology Lab, Room G7-910. ▶ Call SCCA Pathology Tech and tell them the specimen is being shipped. ▶ Have a courier transport the package to the commodities box. 	<p style="text-align: center;">Saturdays follow the procedure below except between 6am to 2pm</p> <p>During these hours notify the Saturday Tech in the SCCA Pathology Department at 606-1355</p> <ul style="list-style-type: none"> ▶ In ADVANCE contact the SCCA Pathology Tech at 573-0892 ▶ SCCA Pathology will divide and route specimens to appropriate labs per protocol. ▶ The SCCA Tech will be responsible for completing the appropriate Lab Requisitions sent with the specimens to be submitted for culture. ▶ Specimens are sent by the floor via cab to the Pathology Department at the SCCA, Room G7-910. <p>After hours: do not send the specimen to UWMC Pathology Department.</p>

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

Causes for Rejection Improper handling, misidentified specimens and requisitions

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OTHER FLUID SPECIMENS

Other Fluids	Specimens not specifically described in the Specimen Handling Procedure Manual; e.g., CSF, Urine.
Test Includes	Gross and microscopic exam with diagnosis
Lab	Specimens processed by Harborview Cytology
Request Form	University of Washington Medical Centers/Harborview Medical Center Cytology Request. Fill out completely, including ICD codes. For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	Harborview Cytology 744-2166
Availability	Monday – Friday 8am – 5pm
Specimen Collection	<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)

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.

Sputum

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.

(Continued)

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

Collection on a HSCT Patient at SCCA Ambulatory Clinic
<ul style="list-style-type: none">▶ Deliver the specimen to SCCA Pathology.▶ A SCCA Pathology Technician will accession all of these specimens. They will be sent via cab to Harborview Cytology

(Continued)

Other Fluid Specimens, continued

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

Causes for Rejection Improper handling, misidentified specimens and requisitions.

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SURGICAL SPECIMENS

Collected at SCCA Ambulatory Clinic

Surgical Specimens	Specimens collected at SCCA Ambulatory Clinic not specifically described in the Specimen Collection and Handling Manual
Test Includes	Gross and microscopic exam with diagnosis
Lab	SCCA Pathology, Room G7-910
Request Form	Anatomic Pathology Specimen Request Form Fill out completely, including ICD codes For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-1355
Availability	Monday 8am – 6:30pm Tuesday – Friday 4:30am – 6:30pm Saturday 6am – 2:30pm Sundays and all other times, if STAT processing is required, contact the on call Pathology Technologist at 573-0892.
Turnaround Time	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.
Container	See below
Specimen Handling	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)

Surgical Specimens Collected at SCCA, continued

Collection at SCCA Ambulatory Clinic
7am to 4:30pm Mon – Fri Business Hours
<ul style="list-style-type: none">▶ Internal courier delivers the specimen to SCCA Pathology▶ If the specimen is from a HSCT or Heme-Onc patient, SCCA Path Tech accessions the specimen in the computer for processing at SCCA Pathology▶ If the specimen is from a solid tumor patient, the SCCA Path Tech accessions the specimen in the computer for transport to UWMC Pathology Lab, Room NW-211.▶ Business hours – Use courier to transport package to commodities box.

Causes for Rejection Improper handling, misidentified specimens and requisitions

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THERAPEUTIC DRUG MONITORING OF BUSULFAN

Test includes	Css (ng/mL) result and dose recommendations (mg every 6 or every 24 hours)
Lab	Pharmacokinetics, Room G7-405
Request Form	Busulfan Requisition Form (<i>available on UWMC-7NE, 8NE, and SCCA outpatient blood draw area</i>) Fill out completely, including ICD codes, time of draw, dose amount, and time given For SCCA Ambulatory Clinic, a CPOE requisition will be generated for those lab tests requiring a requisition form.
Phone	606-7389
Availability	Tuesday – Saturday, 8am – 5pm Sundays, Mondays and Holidays: on call
Turnaround Time	If dose is given before or at the standard time of 8am, results available between 4pm and 5pm the same day
Specimen	Blood (only plasma is analyzed)
Volume	1-3 mL oral, 1-4 mL IV formulation
Container	Green Top 4 mL sodium heparin Vacutainer® tube
Collection	The following patient information must be recorded on the requisition form: busulfan dose given (mg), and the date and time it was given. 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. Place samples on wet ice within 10 minutes and deliver immediately to Alliance Laboratory (G1-500) for pick-up. Note: Special contracted courier service will pick up samples on 7 or 8 NE if the patient is an inpatient at the UW Medical Center.

(Continued)

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.

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.

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 Page Pharmacokinetics Laboratory staff at (206) 994-5942 to schedule

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