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SCPMG Laboratory Systems
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October 2017

Hematology

Analyte	Age	Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
Hematocrit	0-30 days	%	< 30	> 71	12/5/2012	11/13/2013	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Family and Internal Medicine, Infectious Disease, Hospitalists, Hematology/Oncology and Pediatrics Approved by SCPMG Laboratory Operations Committee
	> 30 days		< 18	> 61	10/3/1997	10/3/1997		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Hemoglobin	0-30 days	g/dL	< 9.5	> 22.3	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
	> 30 days		< 6.6	> 19.9				
Absolute Neutrophils (Ascites)	All	Per cumm		> 250	6/9/2013	6/9/2013	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Quality Sub-Committee Approved by SCPMG Laboratory Operations Committee
Absolute Neutrophil	All	Per cumm	< 500		10/3/1997	12/10/2003 and 1/28/2004	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Quality sub-committee Approved by SCPMG Laboratory Operations Committee
Platelets	<18 yrs	Per cumm	< 30,000	> 999,000	10/3/1997	6/9/2013	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
	18 yrs and older		< 20,000					
WBC Total	All	Per cumm	< 2,000	> 30,000	10/3/1997	9/25/2013	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Peripheral Blood Smear	All	N/A	Blasts present	Blasts present	10/1/2007	10/1/2007		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee

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Coagulation

Analyte	Age	Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
Fibrinogen	All	mg/dL	< 100		11/12/2001	3/12/2009	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
PT - Prothrombin Time	All	INR		> 5.0	9/25/2003	9/25/2003	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Heparin Anti-Xa	All	IU/mL		Unfrac Heparin \geq 0.8	8/15/2005	10/28/2009		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Heparin (low molecular weight)	All	IU/mL		12 hour dosing: anti-Xa > 1.3 24 hour dosing: anti-Xa > 2.1	4/17/2007	4/17/2007		Approved by SCPMG Laboratory Operations
aPTT - Non Medicated	All	secs		> 68	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
aPTT on Heparin Therapy	All	secs		\geq 150	11/15/2017	10/25/2017		Approved by Pharmacy, Chief of Heme/Onc and Clinical Coag Experts Approved by SCPMG Laboratory Operations Committee

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Chemistry

Analyte	Age	Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
Bilirubin (Neonatal T Bili)	0 days	mg/dL		> 8	12/10/2002	4/13/2009	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee Approved by Regional Chiefs of Pediatric/ Dr. Wald 12/01
	1 day		> 11.4					
	2 days		> 13.6					
	3 days		> 14.5					
	4 days		> 15.0					
	> 4 days		> 18.0					
Calcium	All	mg/dL	< 6.6	> 12.9	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
CO2	All	mEq/L	< 11	> 40	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Gentamycin	All	mcg/mL		> 12	2/27/2002	2/27/2002	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Glucose	0-24 hours	mg/dL	< 35	> 200	10/3/1997	6/24/2015	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by SCPMG Laboratory Operations Committee
	> 24 hours - 30 days		< 50	> 200				
	> 30 days		< 50	> 484				
Lactic Acid (CSF)	All	mmol/L		None	1/9/1900	9/6/2011		Approved by SCPMG Laboratory Operations Committee
Lactic Acid (Blood)	All	mmol/L		> 1.9	1/9/1900	9/6/2011		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Magnesium	All	mg/dl	< 1.0	> 4.8	10/3/1997	8/22/2011	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Potassium	0-30 days	mEq/L	< 3.0	> 6.4	2/13/2003	10/7/2005	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
	> 30 days		< 2.8	> 6.2	10/3/1997	9/28/2005		
Sodium	0-30 days	mEq/L	≤ 124	≥ 156	9/28/2016	9/28/2016	The Harriet Lane Handbook: A Manual for Pediatric House Officers, Twentieth Editin (2015)	Approved by Neonatology Approved by SCPMG Laboratory Operations Committee
	> 30 days		< 120	> 158	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee

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Troponin	All	ng/ml		> 0.5	11/17/2009	11/17/2009		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
TSH	0-50 days	mcg/dL		> 10.0	10/28/2015	10/28/2015		Approved by Regional Perinatal Services and Pediatric Endocrinology Approved by SCPMG Laboratory Operations Committee
Urinalysis, Automated W/O Micro - Glucose	< 18 years	mg/dL		≥ 500	7/31/2013	9/5/2014		Approved by Regional Chiefs for Family Medicine, Pediatrics, Pediatric Endocrinology, and Endocrinology Approved by SCPMG Laboratory Operations Committee

Microbiology

Analyte	Age	Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
Positive Blood Cultures	All			If Present	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Positive Gram Stain from CSF and other sterile body fluids	All			If Present	10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Positive Blood Parasites	All			If Present	7/31/2006	7/31/2006	CAP Accreditation Requirements, Microbiology Checklist, April 2005, MIC 52280	Approved by SCPMG Laboratory Operations Committee
Cryptococcus - India Ink Prep	All			If Present	7/1/2013	6/9/2013		Approved by SCPMG Laboratory Operations Committee

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Therapeutic Drugs

Analyte		Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
5 - Flucytosine (5FC)	All	mcg/mL		> 100	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Acetaminophen	All	mcg/mL		> 150	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Amikacin (Peak)	All	mcg/mL		> 33	6/15/2011	6/15/2011		Approved by SCPMG Laboratory Operations
Amikacin (Trough)	All	mcg/mL		> 11	6/15/2011	6/15/2011		Approved by SCPMG Laboratory Operations
Amikacin (Random)	All	mcg/mL		> 33	10/3/1997	6/15/2011		Approved by SCPMG Laboratory Operations
Amitriptyline	All	ng/mL		≥ 500	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Chlordiazepoxide (Librium)	All	ng/mL		Chlordiazepoxide: > 4000; Norchlordiazepox: > 1000	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Clorazepate (Tranxene)	All	ng/mL		> 3000	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Desipramine	All	ng/mL		≥ 500	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Diazepam (Valium)	All	ng/mL		Diazepam + Desmethyldiazepam > 3000	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Digoxin (CHF)	All	ng/mL		> 2.0	11/17/2010	11/17/2010		Approved by SCPMG Laboratory Operations
Digoxin (Atrial Arrhythmia)	All	ng/mL		> 2.0	11/17/2010	11/17/2010		Approved by SCPMG Laboratory Operations
Digoxin (No Indication SpecF)	All	ng/mL		> 2.0	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Doxepine	All	ng/mL		≥ 500	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations

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Ethosuximide (Zarontin)	All	mcg/mL		> 100	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Gentamicin (Peak)	All	mcg/mL		0-14 yrs: >12 Adults: > 11	6/15/2011	6/15/2011		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Gentamicin (Synergy Peak)	All	mcg/mL		> 6	6/15/2011	6/15/2011		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Gentamicin (Trough)	All	mcg/mL		> 2	6/15/2011	6/15/2011		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Gentamicin (SDDA)	All	mcg/mL		0-14 yrs: > 12 Adults: > 11	2/27/2002	2/27/2002		Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Gentamicin (Random)	All	mcg/mL		0-14 yrs: > 12 Adults: > 11	10/3/1997	6/15/2011	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee 3/02
Heparin (low molecular weight)	All	IU/mL		(12 hour dosing): anti-Xa > 1.3 (24 hour dosing) anti-Xa > 2.1	4/17/2007	4/17/2007		Approved by SCPMG Laboratory Operations
Heparin (unfractionated)	All	IU/mL		anti-Xa ≥ 0.8	8/15/2005	8/15/2005		Approved by SCPMG Laboratory Operations
Imipramine	All	ng/mL		≥ 500	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Lead	All	mcg/dL		≥ 45	4/9/2007	4/9/2007		Approved by SCPMG Laboratory Operations
Lithium	All	meq/L		> 1.5	10/3/2007	10/3/2007		Approved by SCPMG Laboratory Operations
Nortriptyline	All	ng/mL		≥ 500	10/3/2007	10/3/2007		Approved by SCPMG Laboratory Operations
Phenobarbital	All	mcg/mL		> 50	6/10/2002	3/27/2002	Regional Chiefs of Neurology	Approved by SCPMG Laboratory Operations Committee 3/02, Approved by Regional Chiefs of Neurology, Approved by Chiefs of Primary Care
Phenytoin (Dilantin)	All	mcg/mL		> 25	6/10/2002	3/27/2002	Regional Chiefs of Neurology	Approved by SCPMG Laboratory Operations Committee 3/02, Approved by Regional Chiefs of Neurology, Approved by Chiefs of Primary Care
Phenytoin, Free	All	mcg/mL		> 3.0	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations

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Primidone (Mysoline)	All	mcg/mL		> 12.0	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Salicylate	All	mg/dL		0-14yrs: > 15.0 Adults: > 35.0	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Tegretol (carbamazepine)	All	mcg/mL		> 15	6/10/2002	3/27/2002	Regional Chiefs of Neurology	Approved by SCPMG Laboratory Operations Committee 3/02, Approved by Regional Chiefs of Neurology, Approved by Chiefs of Primary Care
Theophylline	All	mcg/mL		> 20	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Therapeutic Drugs	All	1 unit above therapeutic range, unless otherwise defined.			10/3/1997	10/3/1997	Kost, G. J., 1990. Critical Limits for Urgent Clinician Notification at US Medical Centers. JAMA 263(5): 704 -	Approved by Chiefs of Primary Care Approved by SCPMG Laboratory Operations Committee
Thiocyanate	All	mg/dL		> 2.5	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Tobramycin (Peak)	All	mcg/mL		> 11	6/15/2011	6/15/2011		Approved by SCPMG Laboratory Operations
Tobramycin (Trough)	All	mcg/mL		> 2	6/15/2011	6/15/2011		Approved by SCPMG Laboratory Operations
Tobramycin (SDDA)	All	mcg/mL		≥ 0.5	6/15/2011	6/15/2011		Approved by SCPMG Laboratory Operations
Tobramycin (Random)	All	mcg/mL		> 11	10/3/1997	6/15/2011		Approved by SCPMG Laboratory Operations
Trazodone	All	ng/mL		> 5000	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Trimethoprim (Bactrim) & Sulfamethoxazole	All	mcg/mL		TMP: > 10.0; SMOX: > 200	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Valproic Acid (Depakene)	All	mcg/mL		> 170	6/10/2002	6/10/2002	Regional Chiefs of Neurology	Approved by SCPMG Laboratory Operations Committee 3/02, Approved by Regional Chiefs of Neurology, Approved by Chiefs of Primary Care

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Vancomycin (Trough)	All	mcg/mL		> 50	6/15/2011	6/15/2011	Regional Reference Laboratories and Infectious Disease Committee (RLID)	Approved by SCPMG Laboratory Operations
Vancomycin (Random)	All	mcg/mL		> 50	9/25/2006	6/15/2011		Approved by SCPMG Laboratory Operations
Volatiles, Blood Alcohol	All	mg/dL		Ethanol: > 200 Methanol: > 20 Acetone: > 50 Isopropanol: > 50	10/3/1997	10/3/1997		Approved by SCPMG Laboratory Operations
Warfarin (Coumadin)	All			INR > 5	9/23/2003	9/23/2003		Approved by SCPMG Laboratory Operations

Genetics

Analyte		Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
Prenatal cytogenetic studies	All	N/A	abnormal	abnormal	11/1/2008	10/22/2008		Approved by SCPMG Laboratory Operations Committee
Newborn cytogenetic studies	All	N/A	abnormal	abnormal	11/1/2008	10/22/2008		Approved by SCPMG Laboratory Operations Committee
STAT cytogenetic & sex determination studies	All	N/A	abnormal	abnormal	11/1/2008	10/22/2008		Approved by SCPMG Laboratory Operations Committee

Genetic Critical Value Notification by phone, fax, e-mail or hardcopy is at the discretion of the Laboratory Director

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Point of Care

Analyte	Age	Unit	Low Value	High Value	Effective Date	Date Revised and Approved	Literature Reference	Approvals
Glucose	< 24 hrs	mg/dL	≤ 35	> 200	12/26/2012	9/23/2015	Regional Perinatal Services, Polocy on Identification and Management of Neonate with Hypoglycemia	Approved by SCPMG Laboratory Operations
	> 24 hrs - 1 month		< 50	> 200				
	> 1 month		< 55	> 400				



Date	Whom	comments
3/27/2008	fu	Reformat into excel from word
4/11/2008	fu	corrected Adult potassium from 6.4 to 6.2
4/11/2008	fu	corrected format for column D
1152008	fu	add genetic values, update dates for Lab Net Publication
11/11/2008	fu	corrected type for theophylline reference range to 10 - 20
11/11/2008	fu	spell correction anti, coag
11/14/2008	fu	coag heparin added > = to value
4/1/2009	fu	Add POCT glucose and urine dipstick critical values and reference ranges
4/15/2009	fu	correct Norpace and Valproic spelling and units
4/15/2009	fu	ketonuria threshold correction
4/15/2009	fu	remove the following from critical value list, no longer performed at RRL
4/15/2009	fu	up date bilirubin neonatal critical/reference ranges.
4/16/2009	fu	moved anti-Xa and Fondaparinux to Coag table, micro cv under high, if present, removed ketones from POCT
4/17/2009	fu	removed urinalysis ranges as they were the reference ranges and not critical values
4/22/2009	fu	as requested by QSC, reference range column is to be hidden on spreadsheet
426/2010	fu	corrected units for desiprimide
9/8/2010	lf	added definition of critical values in Pathology
9/8/2010	lf	added lactic acid
9/8/2011	fu	update amikacin peak, trough, random, vancomycin trough, random, Gentamicin peak, synergy peak, gentamicin trough, SDDA, Random, Tobramycin peak, trough, SDDA, random
9/8/2011	fu	Magnesium new reporting units mEq/L to mg/dL
9/8/2011	fu	remove Fondaparinux (Arixtra) testing discontinued at Kaiser, sent out
9/8/2011	fu	Lactic Acid blood and csf unit change from mg/dL to mmol/L
9/8/2011	fu	Digoxin, add "no indication specf, atrial arrhythmia, CHF)
9/14/2011	fu	correct typo for Gentamicin adult > 11, missing > sign
12/5/2012	fu	neonatal hematocrit critical value upper limit changed to 65% due to current limit of instrument analytical measurement range
8/1/2014	fu	added clarifying language to Pediatric chemistry table, definitions of neonate, pediatrics
8/1/2014	fu	clarifying unit of measure mcg/mL on page 1 pediatric gentamicin
8/1/2014	fu	Neonate Hematocrit page 2 changed value to match Cerner GenLab to >65 from >71
8/1/2014	fu	clarify Anti-Xa, page 4 and page 9 to >= 0.8
8/1/2014	fu	Platelets low value page 5 to < 20 from no value, match Cerner GenLab.
8/1/2014	fu	WBC Total to current Cerner GenLab value of > 37,000, >30K was not approved by Laboratory Operations.
8/1/2014	fu	Cryptococcus - India Ink Prep language change from Indian Ink prep.
3/21/2016	fu	updated list based on OSC decisions list 8/2014 - 3/2017

Signature Manifest

Document Number: SCPMG QMS - 0077

Revision: 3

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All dates and times are in Pacific Standard Time.

Regional Critical Values Attachment

Initial Approval

Name/Signature	Title	Date	Meaning/Reason
Maureen Ahler (K083442)	Quality Systems Leader	26 Oct 2017, 02:12:09 PM	Approved
Fred Ung (K057175)	SCPMG LABORATORY QCD	10 Nov 2017, 10:29:40 AM	Approved

Final Approval

Name/Signature	Title	Date	Meaning/Reason
David Quam (P092597)	Rgnl Mg Admn-Pmg Executive	15 Nov 2017, 09:35:47 AM	Approved

Set Effective Date

Name/Signature	Title	Date	Meaning/Reason
Maureen Ahler (K083442)	Quality Systems Leader	16 Nov 2017, 03:22:39 PM	Approved