

MGH Laboratory Handbook

Online Lab Handbook:
<http://mghlabtest.partners.org>

Reference Intervals - MGH Clinical Laboratories

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For tests not included below or for further
information please contact laboratory

<i>Test name</i>	<i>Reference Interval</i>	<i>Laboratory</i>
25-OH Vitamin D	Desired: > 32 ng/mL	Core
Acetaminophen	Negative	Core
Acetone	Negative	Core
ACTH	6-76 pg/ml	Core
AFP (non-maternal specimens)	<6.1 ng/mL. Note: Reference interval does not apply to newborns where very high levels are expected. Range for newborns is not available.	Core
Albumin	3.3-5.0 g/dl	Core
Albumin (fluid--NOT CSF)		Core
Alcohols (ethanol, MeOH, isoprop)	Negative	Core
Alk Phos	Adults: male: 45-115 U/L; Female: 30-100 U/L; <20 yrs.: 15-350 U/L	Core
Alpha-1-antitrypsin 1	Adult normal range: 76-189 mg/dl	Immunology
Alpha-2-antiplasmin	80-130% activity	Special Coagulation
ALT (SGPT)	Male: 10-55 U/L; Female: 7-30 U/L	Core
Ammonia	12-48 umol/L	Core
Amylase (fluid--NOT CSF)		Core
Amylase (plasma)	3-100 U/L	Core
Amylase (urine)	3-460 U/L	Core
ANCA		Immunopathology
Anti-cardiolipin antibody	IgG: 0-15 GPL; IgM: 0-15 MPL	Special Coagulation
Anti-CCP	Negative <20 units (Normal); Weak Positive 20-39 units; Moderate Positive 40-59 units; Strong Positive >60 units;	Immunology

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Anti-double stranded DNA		Immunology
Anti-GBM antibody		Immunopathology
Anti-Jo-1 antibody		Immunology
Anti-mitochondrial antibody	Negative at 1:20	Immunology
Anti-nuclear antibody (ANA)	Negative at 1:40 and 1:160	Immunology
Anti-parietal cell antibody	Negative at 1:20	Immunology
Antiphospholipid antibody panel		Special Coagulation
Anti-Ro and Anti-La antibodies		Immunology
Anti-Scl-70 antibody		Immunology
Anti-smooth muscle antibody	Negative at 1:20	Immunology
Antithrombin III	> 6 months: 80-130%	Special Coagulation
Anti-thyroid antibodies (Anti-TPO)		Core
Anti-tissue transglutaminase IgA		Immunology
Anti-U1RNP and anti-Smith		Immunology
Anti-Xa (for Fondaparinux)		Special Coagulation
Anti-Xa (for Fragmin)		Special Coagulation
Anti-Xa (for Lovenox)		Special Coagulation
Anti-Xa (for UF Heparin)		Special Coagulation
APCR (Factor V Leiden)	Normal > 2.0	Special Coagulation
Arterial blood gas		Acute Care Lab
AST (SGOT)	Adults: Male: 10-40 U/L; Female: 9-32 U/L	Core
Basic metabolic panel		Core
Basic metabolic panel 7		Core
Basic serum tox panel		Core
Bence Jones protein (serum)	No Bence Jones protein detected in serum	Immunology
Bence Jones protein (urine)	No Bence Jones protein detected in 50x concentrated urine	Immunology
Benzodiazepines (serum)		Core
Bicarbonate (random urine)		Core
Bili direct	0-0.4 mg/dl	Core
Bili total	Total: 0-1.0 mg/dl	Core

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Bilirubin (direct and total)	Adult: Direct: 0-0.4 mg/dl; Total: 0-1.0 mg/dl	Core
Bilirubin (fluid--NOT CSF)		Core
Bone marrow iron stain		Core
Bone marrow MPO stain		Core
Bone marrow NSE stain		Core
Bone marrow transplant stem cell monitoring	Reported with results	Flow Cytometry
Bone marrow Wright stain		Core
Buffy coat preparation		Core
Buffy coats (immunopathology)	Interpretation with results	Immunopathology
BUN	Adults: 8-25 mg/dl	Core
BUN/Creatinine		Core
C- reactive protein	For inflammation assessment reference range is < 8.0 mg/L. For cardiac risk assessment: Quintile 1, Lowest risk: <0.7 mg/L; Quintile 2, Low risk: 0.7-1.1 mg/L; Quintile 3, Moderate risk: 1.2-1.9 mg/L; Quintile 4, High risk: 2.0-3.8 mg/L; Quint	Core
C1 inhibitor (antigen)	12.4-24 mg/dl	Immunology
C3	Adult range: 86-184 mg/dl	Immunology
C4	Adult range: 16-38 mg/dl	Immunology
CA-125	<35 U/ml	Core
CA-15-3	<30 U/ml	Core
CA-19-9	<35 U/ml	Core
Calcium	8.5-10.5 mg/dl	Core
Calcium (24 hour urine)	Up to 300 mg/24 hours	Core
Calcium (random urine)		Core
Capillary blood gas		Acute Care Lab
Carbamazepine (Tegretol)	Adult: 4-12 mcg/ml; <18 yrs: 8-12 mcg/ml	Core
Carbon dioxide (bicarb)	Adult: 23-31.9 mmol/L; Newborn: (<2 weeks): 19-22 mmol/L; 2 weeks-1 year: 22-27 mmol/L	Core
CBC	Reported with results	Core
CBC with Diff	Reported with results	Core
CEA	< 3.4 ng/ml	Core
Celiac disease panel		Immunology

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Cell count (CSF)	Colorless, clear; RBC: None; WBC: 0-5/cumm	Core
Cell count (fluid--NOT CSF)		Core
Cell surface markers for hematologic malignancy	Interpretation included with results.	Flow Cytometry
Ceruloplasmin	27-50 mg/dl	Immunology
Chloride	Adult: 100-108 mmol/L; < 1 year: 98-106 mmol/L	Core
Chloride (random urine)		Core
Chloride (stool)		Core
Cholesterol (fluid--NOT CSF)		Core
Cholesterol (total)	Desirable: < 200 mg/dl; Borderline-high: 200-239 mg/dl; High: > or = 240 mg/dl	Core
Chromogenic factor X	60-140%	Special Coagulation
CK isoenzymes (CKMB+CPK)	CK-MB: <7.0 ng/ml; Relative index: < or = 3.5%	Core
Comprehensive metabolic panel		Core
Cortisol	5-25 ug/dl (8AM-12PM); <10 ug/dl (8PM-8AM); 5-15 ug/dl (12PM-8PM); <5.0 ug/dl (post dexamethasone)	Core
Cox panel		Core
CPK (creatine kinase)	Male: 60-400 U/L; Female: 40-150 U/L	Core
Creatinine	Adults: 0.6-1.5 mg/dl; < 10 yrs: 0.3-1.0 mg/dl	Core
Creatinine (24 hour urine)	15-25 mg/kg body weight/24 hours	Core
Creatinine (fluid--NOT CSF)		Core
Creatinine (random urine)		Core
Cryoprotein analysis		Immunology
CSF for oligoclonal bands		Immunology
Cyclosporin level		Core
D-dimer	< 350: Negative; 350-400: Borderline; >400: Positive.	Core
Digoxin level	0.9 - 2.0 ng/ml	Core
Dilantin level	5.0-20.0 mcg/ml	Core
DNA ploidy	Interpretation with results	Flow Cytometry
Doxepin	Reported with results.	Core
Drugs of abuse (urine)		Core
Drugs of abuse (urine)		Core

<i>Test name</i>	<i>Reference Interval</i>	<i>Laboratory</i>
EBV DNA quantitation by PCR		Core
Electrolytes		Core
Estradiol	Males: < 50 pg/ml; Menstruating women: Follicular phase: < 20-145 pg/ml; Ovulatory peak: 112-443 pg/ml; Luteal phase: < 20-241 pg/ml; Postmenopausal: < 59 pg/ml	Core
Factor B	17-42 mg/dl	Immunology
Factor II	> 8 months: 60-140% Activity	Special Coagulation
Factor inhibitor assay	< 0.5 BU (Bethesda Units)	Special Coagulation
Factor IX	> 8 months: 60-140% Activity	Special Coagulation
Factor V	> 8 months: 60-140% Activity	Special Coagulation
Factor VII	> 8 months: 60-140% Activity	Special Coagulation
Factor VIII	> 8 months: 50-200% Activity	Special Coagulation
Factor X	> 8 months: 60-140% Activity	Special Coagulation
Factor XI	> 8 months: 60-140% Activity	Special Coagulation
Factor XII	> 8 months: 60-140% Activity	Special Coagulation
Factor XIII Screen	No deficiency detected	Special Coagulation
Ferritin	Male: 30-300 ng/ml; Female: 10-200 ng/ml	Core
Fetal fibronectin	Negative	Acute Care Lab
Fibrinogen	150-400 mg/dl	Core
Folate	Deficient:< 2.2 ng/ml; Borderline: 2.2-3.0 ng/ml; Normal: 3.1-17.4 ng/ml; Excess: > 17.4 ng/ml	Core
Free light chains (serum)	Free kappa: 3.3-19.4 mg/L; Free lambda: 5.7- 26.3 mg/L Normal K/L Ratio is 0.3-1.7.	Immunology
Free light chains (urine)	Urine free kappa: 0.4-15.1 mg/L; Urine free lambda: 0.8-10.1 mg/L. Reference interval for K/L ratio is 0.5-4.0.	Immunology
Free T4	0.9-1.8 ng/dL	Core
FSH	Reported with results	Core
Full serum toxicology		Core
Gastric occult blood with pH		Acute Care Lab
Gentamicin (peak)		Core
Gentamicin (random)		Core
Gentamicin (trough)		Core

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GGT (gamma glutamyl transferase)	Male: 8-61 U/L; Female: 5-36 U/L	Core
Glucose	70-110 mg/dl	Core
Glucose (blood gas)		Acute Care Lab
Glucose (CSF)		Core
Glucose (fluid--NOT CSF)		Core
Glucose (urine, random)	< 0.05 g%	Core
H pylori IgG antibody	H. pylori immune ratio: 0.0-0.9: Denotes a negative test for the presence of active H. pylori infection; H. pylori immune ratio: 0.91-1.09: Denotes a positive antibody response to H. pylori. This is clinically equivocal in that this may or may n	Immunology
Haptoglobin	16-199 mg/dl	Immunology
HBV core antibody (IgM only)		Core
HBV core antibody (total)		Core
HBV DNA (quantitative)	<29 HBV DNA IU/mL	Core
HBV surface antibody (qualitative)		Core
HBV surface antigen		Core
HCG (quantitative blood)	< 6 IU/L negative; 6-15 IU/L borderline; >15 IU/L positive	Core
HCV antibody (qualitative)		Core
HCV genotyping		Core
HCV viral RNA (quantitative)	<48 HCV IU/mL	Core
HDL	35 - 100 mg/dl; High > or = 60 mg/dl	Core
Hematocrit (manual)	Reported with results	Core
Hemochromatosis DNA testing		Core
Hemoglobin (blood gas)		Acute Care Lab
Hemoglobin A1c	3.8-6.4%	Core
Hep A virus antibody (IgM and total)		Core
Heparin PF4 antibody (HIT)		Special Coagulation
HIV-1/2 antibody		Core
HLA purity	Reported with results	Flow Cytometry
Homocysteine		Core
Human growth hormone	2-6 ng/ml (resting adult)	Core

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Hypercoagulation panel		Special Coagulation
Hypersensitivity pneumonitis screen	Precipitating antibodies to hypersensitivity pneumonitis antigens: None detected.	Immunology
IgE (total)	0 - 100 IU/ml	Immunology
IGF-1		Core
Immunodeficiency lymphocyte subsets	Interpretation with results	Flow Cytometry
Immunofixation (serum)		Immunology
Immunoglobulin A	Adult normal range: 60-309 mg/dl	Immunology
Immunoglobulin G	Adult normal range: 614-1295 mg/dl	Immunology
Immunoglobulin M	Adult normal range: 53-334 mg/dl	Immunology
Indirect immunofluorescence for detection of Pemphigus or Pemphigoid antibodies	Negative	Immunopathology
Insulin		Core
Ionized calcium	1.14-1.30 mmol/L	Acute Care Lab
Iron/TIBC	Iron Male: 45-160 mcg/dl; Iron Female: 30-160 mcg/dl; TIBC: 230-404 mcg/dl	Core
JAK2 mutation analysis (V617F)		Diagnostic Molecular Path
Joint fluid crystals		Immunology
Lactic acid (lactate)	0.5-2.2 mmol/L	Core
Lamotrigine level		Core
LDH	110-210 U/L	Core
LDH (CSF)		Core
LDH (fluid--NOT CSF)		Core
LFTs (hepatic panel)		Core
LH	Reported with results	Core
Lipase	13-60 U/L	Core
Lipase (fluid--NOT CSF)		Core
Lipid panel		Core
Lithium level	0.5-1.5 mmol/L	Core
Low dose ristocetin platelet agg		Special Coagulation
Lupus anticoagulant		Special Coagulation
Magnesium	1.4-2.0 mEq/L	Core

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Magnesium (random urine)		Core
Methotrexate level		Core
Microalbumin (urine)		Core
NaCl split skin assay by Indirect immunofluorescence (detection of bullous pemphoid vs. epidermolysis bullosa acquisita antibodies)	Negative	Immunopathology
NT-proBNP	< 50 yrs: 0-450 pg/ml; 50-75 yrs: 0-900 pg/ml; > 75 yrs: 0-1800 pg/ml	Core
Organ transplant T cell monitoring (therapeutic antibody monitoring)	Interpretation with results	Flow Cytometry
Osmolality (serum)	Adult: 280-296 mOsm/kg; Pedi (<1yr): 275-295 mOsm/kg	Core
Osmolality (stool)		Core
Osmolality (urine, random)		Core
Pain management profile (VPAIN)		Core
pH (fluid--NOT CSF)		Core
Phenobarbital level	15-50 mcg/ml	Core
Phosphorus	Adults: 2.6-4.5 mg/dl 0-9.9 days: 4.5-9.0 mg/dl 10d-1.9yr: 4.5-6.7 mg/dl 2y-11.9yr: 4.5-5.5 mg/dl 12y-17.9yr: 3.0-4.5 mg/dl	Core
Phosphorus (random urine)		Core
Plasminogen (functional assay)	80-130% Activity	Special Coagulation
Platelet aggregation		Special Coagulation
Potassium	Adult: 3.4-4.8 mmol/L; <1 month: 4.0-5.6 mmol/L	Core
Potassium (blood gas)		Acute Care Lab
Potassium (random urine)		Core
Potassium (stool)		Core
Prealbumin		Core
Prekallikrein screen		Special Coagulation
Progesterone		Core
Prolactin		Core
Protein C	> 8 months: 70-140%	Special Coagulation
Protein S	> 8 months: 70-140%	Special Coagulation

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Prothrombin gene mutation (G20210A)		Special Coagulation
PSA (total)	Males: <0.1 to 4.0 ng/ml	Core
PT mixing study		Special Coagulation
PTH	10-60 pg/ml	Core
PT-INR	PT 11.0-13.7 sec (age 6 months to adult); PT-INR values for Warfarin Anti-Coag Therapy: Standard Intensity 2.0-3.0; High Intensity 2.5-3.5	Core
PTT	7 months-adult: 21.0-33.0 seconds.	Core
PTT mixing study		Special Coagulation
Reptilase time	13-24 sec	Special Coagulation
Reticulocyte count	0.5-2.5%	Core
Rheumatoid factor	< 30 IU/ml	Immunology
Rituximab monitoring (therapeutic antibody monitoring)	Reported with results	Flow Cytometry
Salicylates		Core
Sed rate (ESR)	Male: 0-11 mm/hr; Female: 0-17 mm/hr	Core
Sex hormone binding globulin	Adult Male: 11-71 nmol/L; Adult Female (non pregnant): 12-139 nmol/L	Core
Sirolimus level		Core
Sodium	135-145 mmol/L	Core
Sodium (blood gas)		Acute Care Lab
Sodium (random urine)		Core
Sodium (stool)		Core
Special slide box		Core
SPEP with immunoglobulins	IgG, IgA, IgM, see individual normal ranges; SPEP: normal pattern	Immunology
Sputum for eosinophils		Core
State metabolic screen		Core
T3 (total)	60-181 ng/dl	Core
T4 (total)	4.5-10.9 ug/dl	Core
Tacrolimus level		Core
Tau protein		Immunology
Testosterone	Males: 270-1070 ng/dl; Females: < 86 ng/dl	Core

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Thrombin time	13.5-21.5 sec	Special Coagulation
Thyroglobulin (with antibody screen)	Thyroglobulin: 4-40 ng/ml; Thyroglobulin antibody < 40 IU/ml;	Core
Thyroid screening panel		Core
Tobramycin (peak)		Core
Tobramycin (random)		Core
Tobramycin (trough)		Core
Total complement	63-145 U/ml (reference range for serum only)	Immunology
Total protein	Adults: 6.0-8.3 g/dl	Core
Total protein (24 hour urine)	< 165 mg/24 hr	Core
Total protein (CSF)		Core
Total protein (fluid--NOT CSF)		Core
Total protein (random urine)	< 135 mg/L	Core
Total protein with Cr ratio (random urine)		Core
Triglycerides	< 150 mg/dl normal; 150-199 mg/dl borderline high; 200-499 mg/dl high; > or = 500 mg/dl very high	Core
Triglycerides (fluid--NOT CSF)		Core
Troponin T	<0.03 ng/mL: Negative; 0.03-0.09 ng/mL: Suggestive of myocardial necrosis; >.09 ng/mL: Indicative of myocardial necrosis.	Core
TSH	TSH: 0.4-5.0 uU/ml	Core
U/A (urinalysis)	pH: 5.0-9.0; SPECIFIC GRAVITY: 1.001-1.035; CHEMICAL SCREENS: negative	Core
Urea nitrogen (24 hour urine)	6-17 g/24 hours	Core
Urea nitrogen (fluid--NOT CSF)		Core
Urea nitrogen (random urine)		Core
Uric acid	Males: 3.6-8.5 mg/dl; Females: 2.3-6.6 mg/dl	Core
Urine eosinophils		Core
Urine free cortisol	17-47 mcg//24 hours	Core
Urine hemosiderin		Core
Valproic acid level	50-100 mcg/ml	Core
Vancomycin (peak)		Core
Vancomycin (random)		Core

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Vancomycin (trough)		Core
Venous blood gas		Acute Care Lab
Viscosity (serum)	1.4-1.8 relative viscosity units	Immunology
Vitamin B12	Deficient: < 175 pg/ml; Borderline:175-250 pg/ml; Normal: > 250 pg/ml	Core
von Willebrand panel	Reported with results. Varies by blood type.	Special Coagulation