



مدونة المناهج السعودية

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الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

## Normal Lab Values

\* Reference values only; normal ranges will vary between labs \*

<b>Hematology</b>	
Hgb	♂: 13.5-17.5 g/dl ♀: 12.0-16.0 g/dl
Hct	♂: 39-49% ♀: 35-45%
RBCs	♂: 4.3-5.7 (x10 <sup>8</sup> /μl) ♀: 3.8-5.1 (x10 <sup>8</sup> /μl)
Plt	150-450 x10 <sup>3</sup> /μl
WBCs (differential below)	4.5-11.0 x10 <sup>3</sup> /μl
Neutrophils	57-67%
Segs	54-62%
Bands	3-5%
Lymphocytes	23-33%
Monocytes	3-7%
Eosinophils	1-3%
Basophils	0-1%
ESR	♂: <15 mm/hr ♀: <20 mm/hr
Fe	♂: 65-175 μg/dl ♀: 50-170 μg/dl
Fe Sat	♂: 20-50% ♀: 15-50%
FDP	<10 μg/ml
Ferritin	♂: 20-250 ng/ml ♀: 10-120 ng/ml
Fibrinogen	150-350 mg/dl
Haptoglobin	26-185 mg/dl
Hgb A <sub>1C</sub>	5.0-7.5%
MCH	26-34 pg
MCHC	33-37%
MCV	80-100 fl
PT	10-14 sec
aPTT	20-40 sec
Reticulocytes	0.5-1.5%
TIBC	250-400 μg/dl
Transferrin	200-400 mg/dl
TT	13-20 sec
<b>Chemistries</b>	
Na <sup>+</sup>	135-145 mEq/l
K <sup>+</sup>	3.5-5.3 mEq/l
Cl <sup>-</sup>	95-105 mEq/l
HCO <sub>3</sub> <sup>-</sup>	22-29 mEq/l
BUN	10-26 mg/dl
Creatinine	0.6-1.3 mg/dl
Glucose	70-115 mg/dl

Anion Gap	7-16 mEq/l
Osmolality	275-300 mOsm/kg
Ca <sup>2+</sup> total	8.5-10.5 mg/dl
Ca <sup>2+</sup> ionized	4.65-5.28 mg/dl
Mg <sup>+</sup>	1.3-2.4 mEq/l
Phosphate	2.5-4.5 mg/dl
αFP	<10 ng/mol
Albumin	3.5-5.5 g/dl
IgA	70-312 mg/dl
IgG	640-1350 mg/dl
IgM	56-350 mg/dl
Lactate	0.5-1.3 mEq/l
Protein (total)	6.0-8.0 g/dl
Uric Acid	♂: 3.0-7.4 mg/dl ♀: 2.1-6.3 mg/dl
Zn	55-135 µg/dl
<b>Liver/Pancreas</b>	
ALT	0-40 IU/l
Alkaline Phosphatase	♂: 38-126 U/l ♀: 70-230 U/l
Ammonia	10-50 µmol/l
AST	7-40 IU/l
Bilirubin (total)	0.2-1.0 mg/dl
Bilirubin (conjugated)	0-0.2 mg/dl
GGT	0-50 U/l
LDH	90-190 U/l
Amylase	25-125 U/l
C peptide	0.7-1.89 ng/ml
Lipase	10-140 >60yo: 10-180
<b>Lipids</b>	
Total Cholesterol	<200 mg/dl
LDL	<130 mg/dl
HDL	♂: >29 mg/dl ♀: >35 mg/dl
Triglycerides	♂: 40-160 mg/dl ♀: 35-135 mg/dl
<b>Other</b>	
CPK	♂: 38-174 U/l ♀: 26-140 U/l
CPK MB	<5%
Acid Phosphatase	<0.8 IU/ml
B <sub>12</sub>	100-700 pg/ml
CA-125	<35 U/ml
Cu <sup>+</sup>	♂: 70-140 µg/dl ♀: 80-155 µg/dl
Folate	3-15 ng/ml
Pb	<10 µg/dl
PSA	<4.0 ng/ml

Zn <sup>2+</sup>	70-150 µg/dl	
<b>Blood Gases</b>		
	Arterial	Venous
pH	7.35-7.45	7.32-7.42
pCO <sub>2</sub>	35-45	41-51
pO <sub>2</sub>	80-100	25-40
HCO <sub>3</sub>	21-27	24-28
O <sub>2</sub> sat	95-99%	
<b>Urine</b>		
pH	5-9	
Minimal Volume	0.5-1.0 mg/kg/hr	
Specific Gravity	1.015-1.030	
Osmolality	600-1400 mOsm/kg	
Creatinine	♂: 14-26 mg/kg/day ♀: 11-20 mg/kg/day	
Creatinine Clearance	♂: 100-150 ml/min ♀: 90-140 ml/min *rough estimate only; varies with BMI	
Urea Nitrogen	12-20 g/day	
Ca <sup>2+</sup>	100-300 mg/day	
K <sup>+</sup>	25-125 mEq/day	
Na <sup>+</sup>	40-220 mEq/day	
Phosphate	0.4-1.3 g/day	
Uric Acid	250-750 mg/day	
Albumin	10-100 mg/day	
Amylase	1-17 U/hr	
Glucose	<0.5 g/day	
Protein	10-100 mg/day	
<b>CSF</b>		
Pressure	60-180 mmH <sub>2</sub> O	
WBC	0-5 /µl	
Protein	15-45 mg/dl	
Glucose	40-80 mg/dl	
<b>Synovial Fluid</b>		
WBC	<200 /µl	
	Trauma, OA, SLE	<3,000 /µl
	Gout, RA	>4,000 /µl
	Septic	>60,000 /µl
Protein	<3.0 g/dl	
Glucose	>50 mg/dl	
Uric Acid	<8.0 mg/dl	
LDH	< Serum LDH	
<b>Endocrine</b>		
Aldosterone	Supine: 3-10 ng/dl Upright: 5-30	
Cortisol	0800h: 6-23 µg/dl 1600h: 3-15 µg/dl 2200h: ≤50% of 0800h value	

Gastrin	<100 pg/ml	
GH (<60yo)	♂: <2 ng/ml ♀: <10 ng/ml	
GH (>60yo)	♂: <10 ng/ml ♀: <14 ng/ml	
Estrogen	Follicular: 60-200 pg/ml Luteal: 160-400 pg/ml Menopause: ≤130 pg/ml	
FSH	Follicular: 1-9 mU/ml Ovulation: 6-26 mU/ml Luteal: 1-9 mU/ml Menopause: 30-118 mU/ml	
LH	Follicular: 1-12 mU/ml Mid-cycle: 16-104 mU/ml Luteal: 1-12 mU/ml Menopause: 16-66 mU/ml	
Progesterone	Follicular: 0.15-0.7 ng/ml Luteal: 2.0-25 ng/ml	
Prolactin	<20 ng/ml	
PTH	10-65 pg/ml	
Sperm	20-200 million/ml	
Testosterone	Free	52-280 pg/ml
	Total	300-1000 ng/dl
T3	Uptake	0.82-1.18
	Total	100-200 ng/dl
T4	Total	5.0-12.0 µg/dl
	Free	0.3-2.3 ng/dl
TBG	16-34 µg/dl	
TSH	<10 µU/ml >60yo ♂: 2-7.3 µU/ml >60yo ♀: 2-16.8 µU/ml	
<b>Toxic Levels</b>		
Acetaminophen	>200 µg/ml	
CO Hgb	>20%	
EtOH (in a non-alcoholic patient)	Intoxicated	>100 mg/dl
	Lethargic	>200 mg/dl
	Coma	>300 mg/dl
	Resp. Distress, Death	>500 mg/dl
Ethylene Glycol	>20 mg/dl	
Lead	>100 µg/dl	
MeOH	>200 mg/l	
Salicylate	>300 µg/ml	

<b>Differential of Cerebral Spinal Fluid</b>					
	Color	Opening Pressure (mmH <sub>2</sub> O)	Glucose (mg/100ml)	Cells (#/mm <sup>3</sup> )	Protein (mg/100ml)
Adult (nl)	clear	70-180	45-80	0-5 lymphs	15-45
Newborn	clear	70-180	2/3 serum	40-60 lymphs	20-120

Viral Infection	clear/cloudy	normal or ↑	normal	10-500 lymphs	normal or ↑
Bacterial Infection	cloudy	↑	↓	25-10,000 PMNs	↑
TB/fungal	clear/cloudy	↑	↓	10-500 lymphs	↑
Subarachnoid Hemorrhage	bloody	↑	normal	WBC/RBC ratio same as serum	↑

<b>Differential of Ascitic or Pleural Fluid</b>		
	Transudate	Exudate
Specific Gravity	<1.016	>1.016
Protein (ratio of sample to serum)	<0.5	>0.5
LDH (ratio of sample to serum)	<0.6	>0.6

<b>Gram Stains and Organisms</b>		
Gram (+) Cocci	Clusters:	Chains:
	Coagulase+ → <i>Staph aureus</i>	Streptococcus
	Coagulase - → <i>S. epidermiditis</i>	
Gram (+) Rods	<i>Clostridium, Corynebacterium, Listeria, Bacillus sp.</i>	
Gram (-) Diplococci	<i>Neisseria sp.</i>	
Gram (-) Coccoid Rods	<i>Haemophilus sp.</i>	
Gram (-) Rods	<i>E. coli, Salmonella, Shigella, Proteus, Enterobacter, Klebsiella, Serratia, Pseudomonas, etc.</i>	

<b>Differential of Microcytic Anemia</b>				
Disease Process	Ferritin	Serum Fe	TIBC	RDW
Iron Deficiency	↓	↓	↑	↑
Chronic Disease	normal or ↑	↓	↓	normal
Sideroblastic Anemia	normal or ↑	normal	normal or ↓	normal
Thalassemia	normal or ↑	normal or ↑	normal or ↓	normal or ↑