

Normal Values

Electrolytes

Potassium:	3.5 - 5.1 mEq/L
Sodium	135 - 145 mEq/L
Calcium:	4.5 - 5.2 mEq/L or 8.6 - 10 mg/dL
Magnesium	1.6 - 2.6 mEq/L
Chloride	98 - 107 mEq/L
Bicarbonate	22 - 29 mEq/L
Serum Osmolality	285-290 mOsm/kg H ₂ O
Phosphate	1.7-2.6 mEq/L
Phosphorus	2.5 - 4.5 mg/dL

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Gastro-Intestinal Serum Studies

Albumin	3.4 - 5 g/dL
Protein	6.0 - 8.0 g/dL
Alkaline Phosphatase	4.5 - 13 u/dL
ALT	
AST	
Ammonia	15 - 45 ug/dL
Amylase	25 - 151 IV/L
Lipase	10 - 140 U/L
BUA	M 4.5 to 8 mg/dL F 2.5 to 6.3 mg/dL
Total Bilirubin	< 1.5 mg/dL
Direct Bilirubin	0 - 0.3 mg/dL
Indirect Bilirubin	0.1 - 1 mg/dL

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Glucose

FBS	70 - 110 mg/dL
CBG (monitoring)	60 - 110 mg/dL
OGTT	
Baseline	70 - 110 mg/dL
30 mins	110 - 170 mg/dL
60 mins	120 - 170 mg/dL
90 mins	100 - 140 mg/dL
120 mins	70 - 120 mg/dL
Glucose 2 hr post-prandial	< 140mg/dL
HbA1c (Glycosylated)	
Good Control	≤ 7.5%
Fair	7.6 - 8.9%
Poor	9% and up

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Insulin

Type of Insulin	Onset	Peak	Duration
Regular (Humulin R)	½ - 1 hr	2-4 hr	6-8 hr
Intermediate Acting	2hr	6-12hr	18-26hr

(NPH, Humulin N)			
Long Acting Ultralente, Humulin U)	4hr	8-20hr	24-36hr
Combination Humulin 70/30	½ hr	2-12hr	24hr

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Lipids

Cholesterol	140 - 199 mg/dL
LDL	< 130 mg/dL
HDL	30 to 70 mg/dL
Triglycerides	< 200 mg/dL

Coagulation Studies

PT	M: 9.6-11.8 s F: 9.5 - 11.3 s PT - 10-13sec x 2	
INR	2 - 3	
Clotting Time	8 - 15 mins	
Bleeding Time	1-9 mins	
Platelet Count	150,000 - 400,00 u/L	
aPTT	APTT - 25-35sec x 3 1.5 - 2.5 x (therapeutic)	
Fibrinogen	M: 180 - 340 mg/dL F: 190 - 420 mg/dL	
ESR	30-40 mm/hr 40-70 mm/hr 70-150 mm/hr	Mild inflammation Moderate inflammation Severe inflammation
Hemoglobin		
Hematocrit	M- 42-52% F - 37-47%	

Blood Gases

pH	7.35 - 7.45
pCO ₂	35 - 45
pO ₂	80 - 100
HCO ₃	22-28
O ₂ Sat %	95-98%

Pressures

Tonometry (IOP)	8-21mm Hg
ICP	1-10mmHg
CVP	4-11cm H ₂ O or 3-7 mmHg

Stomach Capacity

Newborn	10 to 20 mL
1-week-old	30 to 60 mL
2-3-week-old	75 to 100 mL
1-month-old	90 to 150 mL

Obstructive VS Restrictive

	Obstructive	Restrictive
TLC	Inc	Dec
FRC	Inc	Dec
RV	Inc	Dec
VLC	Dec	Dec
PaCO2	Inc	Dec
FEV1	Dec	Normal

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Low Pressure Alarm	High Pressure Alarm
Patient disconnection, Circuit leaks, Airway leaks, Chest tube leaks	Patient coughing, Secretions or mucus in the airway, Patient biting tube, Airway problems, Reduced lung compliance, Increased airway resistance, Patient fighting the ventilator, Accumulation of water in the circuit, Kinking in the circuit, Problems with inspiratory or expiratory valves

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Diabetic, Arterial, Venous

	Diabetic	Arterial	Venous
Pain	None	Painful, Inc w/ Elevation	Dec w/ Elevation
Location	Plantar Aspect, Heel, Metatarsals	Distal Lateral Leg, Toes, Phalanges	Medial aspect of Lower Leg and Ankle, Malleolus area
Temp	Inc	Dec	Inc
Color	Red	Pale Base	Red/Purple

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Newborn Measurements

HC	30-35cm
CC	31-33cm
AC	50-55cm
	HC=CC - 2y/o
	AC=CC Barrel Chest

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Intelligence Quotient:

<70	Mild mental retardation
<50	Moderate mental retardation
<35	Severe mental retardation
<20	Imbecile/Idiot

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Immunizations

	2	4	6	12	15	4-6 y/o	10y
DTP	x	x	x		x		
OPV	x	x			x	x	
Hepa B	x	x	x				
HiB	x	x	x				
MMR				x or	x	x	
Varicella				x or	x		x
Td							x

Allergy Vaccine Contraindications

EGGS	INFLUENZA , MMR
NEOMYCIN	VARICELLA,IPV,MMR
YEAST	HEPA-B
GELATIN	VARICELLA

	RR	HR	BP
Newborn	30-60	120-160	60systolic or 80/40
1-4 y/o	20-40	80-140	90/60-99/65
5-12 y/o	15-25	70-115	100/56 - 110/60
Adult	12-20	60-100	90/60 - 140/90

Glasgow Coma Scale

I. EYE MOVEMENT (4)

4	Spontaneous
3	To speech
2	To pain
1	No response

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II. MOTOR RESPONSE (6)

6	Obeys Commands
5	Localizes pain
4	Withdraws to pain
3	Flexing (Decorticate)
2	Extension (Decerebrate)
1	No response

III. VERBAL RESPONSE (5)

5	Oriented
4	Confused
3	Inappropriate words
2	Incomprehensible sounds
1	No response

RULE OF NINES

Head	9
Arms	18
Torso	36
Legs & Thighs	36
Perineum	1

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Parkland-Baxter

= 4mL x kg x %TBSA

1/2 = given 1st 8 hrs

Renal Function

GFR	125mL/min
SG	1.010 - 1.030
Crea	0.6-1.3 mg/dL
BUN	8-25mg/dL
BUN:Crea Ratio	15 : 1
albumin	3.2 - 4.5 g/dL
Urine Culture	>= 100,000 (Positive Culture)
Urine Output	30-50mL/hr
Oliguria	< 400cc in 24 hr
Anuria	<100 in 24hr

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URINE

Clear	normal
cloudy	UTI
smokey	AGN
foamy	nephrotic syndrome

Pain Ladder (0-10)

1-3	Mild	Non-narcotic (Acetaminophen)-PNS
4-7	Moderate	Narcotic (Morphine)- CNS
8-10	Severe	Non-narcotic + Narcotic

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Therapeutic Levels

Medication	Levels
Acetaminophen (Tylenol)	5 to 20 ug/mL
Acetylcysteine	5 to 20 ug/mL
Carbamazepine (Tegretol)	3 to 14 ug/mL
Cycloserine	25 to 35g/mL
Digoxin (Lanoxin)	0.5 to 2 ng/mL
Digitoxin (Crystodigin)	15 to 25 ng/mL
Gentamycin (Garamycin)	5 to 10 ug/mL
Lidocaine (Xylocaine)	1.5 to 5 ug/mL
Lithium (Lithobid)	0.5 to 1.3 mEq/L
Magnesium So4	4 to 8 mg/dL
Phenytoin (Dilantin)	10 to 20 ug/mL
Phenobarbital (Luminal)	10 to 30 ug/mL
Procainamide (Pronestyl)	4 to 10 ug/mL
Propranolol (Inderal)	50 to 100 ng/mL
Salicylate (Aspirin)	100 to 250 ug/mL
Theophylline (Aminophylline)	10 to 20 ug/mL
Vancomycin	30 to 40 ug/mL

Things to prepare :

Hemodialysis	Bulldog clips
Sengstaken-Blakemore Tube	Scissors
CTT	Rubber-tipped hemostat
Acetylcysteine overdose	Suction Apparatus
Laryngospasm	Tracheotomy Set
Tracheostomy	Obturator
Skeletal pinning	Wire cutter
Sterile water /NSS bottle	if the chest tube bottle breaks
tongue depressor and flashlight	tonsillectomy

Bence Jones Protein	Multiple Myeloma
Auer Rods	AML
Reed Sternberg cells	Hodgkin's lymphoma
EBV	infectious mononucleosis

ANA test	SLE
Rheumatoid factor (RF)	Rheumatoid Arthritis
Bone Scan/Gallium Scan	Bone Cancer
Bone Densitometry	osteoporosis
Diskogram	HNP

Paget's dse	bowing of legs
Rheumatoid Arthritis	wrist drop or foot drop
Osteoarthritis	bouchard's & heberden's nodule

STANDARD	Universal Prec	Gloves, Goggles, Gown, Mask
AIRBORNE	PTB, Varicella Measles	HEPA filter mask, N-45 Negative pressure room 6-12 exchanges/ hr, Private Door Closed
CONTACT	MRSA (vancomycin), CDAD (vancomycin), RSV(Ribavirin)	GGG(gown, goggles, gloves) 3 feet away

	Herpes simplex Impetigo	
DROPLET	Respiratory infections, Meningitis, Pneumonia, Legionella, Scarlet Fever Pertussis Strep. Pharyngitis	3 feet away, Private room Mask
ENTERIC	GIT , Hepa A, Salmonella, Typhoid, Cholera	Oral-fecal route Gloves and gown
NEUTROPENIC		Leukemia, Organ transplant, Sickle cell dse, HIV, AIDS Immunocompromised, undergoing chemotherapy, Radiation therapy, Steroid therapy, Burns No fresh fruits, fish, meat, stagnant water, no yoghurt, buttermilk, Strict handwashing, private room, no dental boxes, no populated area No immunization with Attenuated vaccines

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Prioritization

AIRWAY	Bronchiolitis, Apnea, Burns, Chest Croup, Cystic fibrosis, DM, DKA Asthma, Seizure, Multiple sclerosis Myasthenia gravis
BREATHING	Flail chest
CIRCULATION	CHF, Edema, Thromboplebitis
OXYGEN	Angina, Shock
FLUIDS	Abortion, Addison's disease, Norwalk virus, Clostridium defficile Anemia, Sickle cell, DI, Giardiasis Hemorrhage, Renal colic Salmonellosis, SIADH
NUTRITION	Anorexia, Bulimia, Cancer, esophagus Cleft palate, Diverticulitis, TB
SAFETY	Agoraphobia, ADHD, Autism, Battered wife, Meniere's disease Cataract, Cerebral palsy, CVA, Depression, Seizure, Hemophilia, Hepatic coma, Fracture, Hypertension, Hypothyroidism, Hyperthyroidism, Increase ICP, Leukemia, Mania, Meningitis, Osteoporosis, Parkinson's disease, Poisoning, PIH, Suicide, Spinal cord injury, Wilm's tumor,

MOBILITY	(all musculoskeletal cases) Arthritis
ELIMINATION	Autonomic dysreflexia, BPH, UTI

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PHOTOSENSITIVITY DRUGS

Antipsychotic	PHENOTHIAZINE derivatives (Haldol, Thorazine, Stelazine, Risperdal)
Antihyperlipidemic agents/	Simvastatin/Atorvastatin
Sulfa Drugs	Trimethoprim-Bactrim, Sulfa
Quinolones	Levofloxacin, Ciprofloxacin
Tetracyclines	(Doxycycline)
Herbal	St. John's Wort

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RED-ORANGE URINE	Rifampicin, Azulfidine, Pyridium
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	Causes	S & Sx	ECG Findings
Hyper K	Cellular Shift, Trauma, Burns, Sepsis Metabolic Acidosis, Respiratory Acidosis, renal Insufficiency, Potassium sparers	Bradycardia Br adypnea; N & V; diarrhea; Intestinal Colic, Irritability; Muscle weakness, Numbness, Flaccid Paralysis	Tall Peaked T waves Flat P waves Widened QRS Prolonged PR Intervals
Hypo K	Cushing's Syndrome, Colitis, Laxative Abuse, Anorexia, Alcoholism, NGT, GI surgery, Vomiting, Diarrhea, Thiazide Diuretics, stress, Alkalotic states	Thready, rapid, weak pulse; faint heart sounds; Hypotension, skeletal muscle weakness; shallow respirations; malaise; apathy; lethargy; loss of orientation; dec reflexes anorexia, vomiting, weight loss, Ileus	Inverted T waves ST seg Depression U waves Heart block
Hyper Na	Steroid intake Renal failure	Dry, Flaky skin & mucous	

	Hyperaldosteronism	mem, thirst edema Low UO High SG	
Hypo Na	Diaphoresis or GI suctioning, Adrenal insufficiency	N & V, abdominal cramps; weight loss; cold, clammy skin; decreased skin turgor; fingerprinting over the sternum; shrunken tongue; apprehension; headache; convulsions; confusion; weakness; fatigue; Postural hypotension; rapid, thready pulse	
Hyper Ca	Hyperparathyroidism, Excess Vit. D osteoporosis and osteomalacia	Hypoactive Bowel sounds N & V, anorexia, constipation, headache, confusion, lethargy, stupor, decreased muscle tone, deep bone and/or flank pain	Shortened ST segment Widened T wave
Hypo Ca	Prolonged Bed Rest, Vit D Deficiency Hypoparathyroidism Acute Pancreatitis, Diarrhea, steroid therapy	Painful tonic muscle spasms, fatigue, laryngospasm, Trousseau's signs, Chvostek's signs, convulsions, dyspnea	Prolonged QT interval Prolonged ST interval
Hyper Mg	Renal insufficiency, dehydration,	Drowsiness, Sedation, Lethargy, Somnolence Muscle Weakness N & V paresthesias Dec RR, DTRS	
Hypo Mg	Low intake of magnesium in diet, prolonged diarrhea, massive diuresis,	Paresthesias, confusion, hallucinations, convulsions, ataxia, tremors,	

Hyper PO4	Renal insufficiency Tumor Lysis Syndrome Hypoparathyroidism		
Hypo PO4	Malnutrition, Starvation Alcoholism, Al-Mg (antacids)		

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	Cause	S & Sx
Fluid Volume Deficit	Vomiting, Diarrhea, Hemorrhage, Tachypnea Inc UO, Kidney dse. Insufficient IVF replacement Diuretics Draining Fistulas, Peritonitis, Edema Ileostomy, Colostomy NGT	Increased = RR, HR, Hct, SG Decreased = CVP, Wt., UO, BP Anorexia, Wt. loss
Fluid Volume Overload	CHF Dec Kidney Fxn. Liver Dse.	Altered LOC Vein Distention Cough, Dyspnea, Rales Inc RR, HR, CVP

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Isotonic	Hypotonic	Hypertonic
LR D5W NS D5 0.5 NaCl D5 1/4 NS	0.45 NS 1/2 NS	D10W D5 NS D5 1/2 NS

	Cause	S & Sx
Respiratory Acidosis	COPD, Barbiturate or Sedative Overdose, Acute Airway Obstruction, Weakness of Respiratory muscles	Headache, weakness, visual disturbances, , confusion, drowsiness, coma Inc. RR & HR

Respiratory Alkalosis	Hyperventilation, mechanical overventilation, encephalitis	Inc RR & Depth Headache, Lightheadedness, Vertigo Mental Status Changes Paresthesias Dry Mouth Low K, Low Ca Tetany, Convulsions
Metabolic Acidosis	Ileostomy, Hyperpnea w/ Kussmaul's DKA, Uremia, starvation, Diarrhea, Severe infections, Renal Tubular Acidosis	Headache, N&V Fruity Breath CNS depression Drowsiness, Convulsions, Tremors ↑ K, Ca
Metabolic Alkalosis	Severe Vomiting, NGT suctioning Excessive Antacids, NaHCO ₃ , Diuretics, Biliary Drainage	N &V, diarrhea, Paresthesia, Tetany, ↓ RR & HR

	transfusion
LPN	Technical Doer, Stable, medications, wound dressing
CAN/UAP	Routine Care, Urine Dip Stix, Reporting to RN, Routine VS turning q2H, conducting group activities, ambulation

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Dietary Restrictions

KOSHER	Jewish, no mixture of meat and dairy
HALAL	Islam, No pork
VEGAN	vegetable diet - Buddhism
R. CATHOLIC	No Meat on Good Fri & Ash Wed
JEHOVAH'S WITNESS	No Blood or Blood Products

Herbal Medications

St. John's Wort	Antidepressant, photosensitive (C/I in SULFA drugs)
Garlic	Antihypertensive, (avoid Aspirin)
Ginseng	Anti stress, (C/I in Coumadin)
Green tea	Antioxidant, (C/I risk for calculi-oxalates)
Echinacea	immune stimulant (6-8 weeks only) (C/I in SANDIMMUNE)
Licorice	cough and cold
Ginger root	antinausea, (C/I in Coumadin)
Ginkgo	Improves Circulation; (C/I in anticoagulant, headache side effect - check PT)
Ma Huang	Bronchodilator, Stimulant (Ephedra)
Valerian	For Insomnia
Black Cohosh	For Menopause
Kava kava	For stress and anxiety relief

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RN	Least stable, unstable, central catheters (hickman, broviac), admission, discharge, health teachings, patient for transfer, blood
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