

BNP	↓	↑	DRUGS
Na+ 135-145	Addison's disease Renal diseases Cirrhosis Heart failure Ketonuria	Cushing syndrome Diabetes insipidus Excessive fluid loss Malnutrition Dehydration.	↑ : NSAIDs, laxatives, birth control pills, corticosteroids and lithium. ↓ : Diuretics, morphine, SSRIs
K+ 3.5-5.1	Anorexia nervosa, Malnutrition Diarrhea, Vomiting Poorly managed diabetes Hyperaldosteronism	Infection, Injury to tissue Dehydration Addison's disease Diabetes, Kidney failure Hypoaldosteronism	↑ : ACE ↓ , beta blockers, NSAIDs, K+ sparing diuretic ↓ :Amphotericin B, gentamicin, carbenicillin, corticosteroids, beta-adrenergic agonists, K+ wasting diuretics
Cl- 98-107	Vomiting, Sweating, Burns Dehydration, Gastric suction Chronic lung diseases Addison's disease, Bartter syndrome Congestive heart failure Metabolic alkalosis Compensated resp acidosis Hyperaldosteronism, SIADH	Diarrhea Metabolic acidosis Compensated respiratory alkalosis Kidney diseases, Renal tubular acidosis Bromide poisoning Cushing syndrome Hyperventilation	↑ : Carbonic anhydrase inhibitors. ↓ :Diuretics
CO2 22-29	Hyperventilation (Resp Alk) Cirrhosis (Resp Alk) Pneumonia (Resp Alk) Liver failure (Resp Alk) Diabetes (Met Alk) Diarrhea (Met Alk) Aspirin OD (Met Alk) Kidney failure (Met Alk) Heart Failure (Met Alk)	Pneumonia (Resp Acidosis) COPD (Resp Acidosis) Conn Syndrome(Met Acidosis) Cushing's (Met Acidosis) Alcoholism (Met Acidosis) Vomiting	
Glucose 70-99	<40 hypoglycemia, an insulinoma, hypothyroidism Addison disease malnutrition. anorexia cirrhosis kidney failure	Diabetes High carb intake Stress Inactivity	Smoking Birth control pills Prednisone Activity
BUN 6-20	Low protein diet Malnutrition Liver failure Fluid overload	Hypovolemia, Shock ↑ protein levels in GI tract Congestive heart failure, MI Gastrointestinal bleeding Urinary tract obstruction Glomerulonephritis Kidney failure, Pyelonephritis Acute tubular necrosis	↑ : Iloperinol, furosemide, indomethacin, cisplatin, methyldopa, propranolol, tetracyclines, rifampin, vancomycin, thiazide diuretics, gentamycin, carbamazepine, aminoglycosides, amphotericin B. ↓ : Streptomycin, chloramphenicol.
Creatinine 0.5-1	Spinal cord injuries Cachexia Sudden decrease in activity.	Preeclampsia Dehydration, Renal problems Rhabdomyolysis Blocked urinary tract Myasthenia graves, Hyperthyroidism Muscular dystrophy	↑ :minoglycosides, methicillin, lithium, amphotericin B, cistplatin, plicamycin, dextran,cyclosporine, gallium, streptozocin hydroxyurea, methoxyflurane, pentamidine, ↓ :Neuromuscular blocking agents.
Ca+ 8.4-10.5	Malnutrition, vitamin D deficiency Hypoparathyroidism Low blood level of albumin Kidney failure, Liver disease Magnesium deficiency Osteomalacia, Pancreatitis	Fungal & mycobacterial infections HIV/AIDS, Tuberculosis Hyperparathyroidism Metastatic bone tumor Paget's disease, Multiple myeloma Osteomalacia, Sarcoidosis Hyperthyroidism	↑ :Lithium, tamoxifen, thiazides, calcium supplements, vitamin D supplements