

Micro and Macro Nutrients	
Carbohydrates	4 kcal/g
Fats	9 kcal /g
Proteins	4 kcal/g
Vitamins	
Minerals	<p>Iron: good source from meat, spinach, fortified cereal</p> <ul style="list-style-type: none"> - Recommendations: <ul style="list-style-type: none"> - Men: 8 mg - Women 18 mg/day - Pregnant women: 27 mg/day - Deficiency: <ul style="list-style-type: none"> - Iron-deficiency anemia <p>B12: Best source from animals</p> <ul style="list-style-type: none"> - Recommendations: B12 is only made by animals; not plants

Metabolic Diseases/Disorders MNT	
Diabetes	<p>Key: Insulin is Anabolic Hormone</p> <p>Type 1: immune system response; body develops antibodies to beta cells of the pancreas (which produces insulin)</p> <p>Type 2: a person develops insulin resistance/deficiency and excess glucose production.</p> <p>Gestational Diabetes: hormones produced by the placenta during pregnancy (insulin antagonists)</p> <ul style="list-style-type: none"> - Diagnostic Criteria: <ul style="list-style-type: none"> - Casual Plasma > or = 200 - Fasting Plasma Glucose > or = 126 - Hemoglobin A1C > or =6.5% - Prediabetes 5.7-6.4% - Covered by Medicare

	<ul style="list-style-type: none"> - Restrictions/Recommendations <ul style="list-style-type: none"> - Carbohydrates (amount) - Fiber (slows glucose absorption) - Lipids (DM is at risk for CVD) - Intervention: Weight Management, CHO counting, conventional insulin therapy, and physical activity - Monitor/Eval: Blood Glucose - Exchange lists: <ul style="list-style-type: none"> - Starch - Milk - Fruit - Vegetable (Starchy Vegetables) - Meat/Meat Substitute
Renal / Kidney Disease	<ul style="list-style-type: none"> - Diagnostic criteria: <ul style="list-style-type: none"> - Increased BUN - Increased Blood Creatinine - Low GFR - Increased K⁺ and Phosphorus (not being filtered out) - Albumin (low albumin due to low fl status HEMODILUTION, inflammation, urinary protein losses, etc.) - Also get labs on K⁺, Na, Ca, Phosphorus, PTH, BUN and Creatinine - Low Na = overhydration - The kidneys produce: <ul style="list-style-type: none"> - Erythropoietin (RBC) - Renin-angiotensin (BP) - - Covered by Medicare - Restrictions/Recommendation <ul style="list-style-type: none"> - ESRD <ul style="list-style-type: none"> - High protein of HBV (need it because it's lost in dialysis, metabolic acidosis, inflammation, infection, etc.) - Restrict K⁺, Pho, Na

	<p>and fluid</p> <ul style="list-style-type: none"> - Foods high in K+: fruits, veggies like bananas, OJ and oranges, tomato sauce, avocado, raisins/dry fruit - Foods high in Pho: cheese, dairy, organ meat, milks, soy milk, yogurt. Must limit dairy to 1 serving a day (½ cup) - Monitor and Evaluate: <ul style="list-style-type: none"> - Biochemical and Hematological data
<p>CVD</p>	<p>Key: DASH: Dietary Approaches to Stop Hypertension</p> <p>Coronary Heart Disease Peripheral Vascular Disease Stroke Hypertension Heart Failure</p> <p>High Density Lipoproteins: remove cholesterol from artery wall Low Density Lipoproteins: deposits chol in the artery wall</p> <p>Dislipidemia</p> <ul style="list-style-type: none"> - HDL: shouldn't be lower than 40 mg/dl - LDL: shouldn't be higher than 130 mg/dl, but for those with existing heart disease should be <70 mg/dl - Total Chol: <200 mg/dl - Triglycerides: <150 mg/dl <p>Recommendations/Restrictions:</p> <ul style="list-style-type: none"> - Keep trans fats to a minimum - Keep saturated fats less than 7% of total kcal - Monounsaturated fat: Up to 20% - Mediterranean diet

	<ul style="list-style-type: none"> - Omega-3 fatty acids and eicosanoids - Fiber <p>Atherosclerosis: Step #1: Injury to endothelium (caused from oxidized LDL, DM, high blood glucose, hypertension, smoking, etc. Step #2: Monocytes attracted to injury cite, then are converted to macrophages and become foam cells Step #3: Smooth muscle migrate up from lower layers of the vessel wall Step #4 Fatty streak forms, progress to fibrous mix of collagen, lipids, macrophages, smooth muscle, Ca Step #5 Inflammation and oxidative stress Leads to ischemia, transient occlusion, rupture, cerebral artery stroke and peripheral artery ischemia.</p> <p>Hypertension Diagnostic Criteria:</p> <p>Normal: Systolic <120 ; Diastolic < 80 Elevated: 120-129 ; <80 HT stage #1: 130-139 ; 80-89 Ht stage #2: > 140 ; > 90</p> <p>Recommendations/Restrictions:</p> <ul style="list-style-type: none"> - Low Na and Saturated Fat - Rich K+ foods, Mg, Ca and Fiber (fruits, veggies, little meat low in fat, fat free dairy, nuts) - Weight loss
Liver Disease/ Gallbladder	<p>Liver forms/stores glyocegn, glycogenolysis and gluconeogenesis</p> <p>Liver also is where the formation of lipoproteins take place, fatty acid oxidation, formation of chol, phospholipids, bile, lipogenesis, lipolysis.</p> <p>Fatty Liver → Hepatitis → Cirrhosis (irreversible)</p>

	<p>Gallbladder problems</p> <ul style="list-style-type: none"> - Recommendations: Low fat <30% fat, modest protein - Small frequent meals

Trauma/Sepsis	
Acid/Base Balance	<p>Respiratory Acidosis</p> <ul style="list-style-type: none"> - Respiratory Dysfunction <ul style="list-style-type: none"> - Renal compensatory mechanism used to fix - Excess acid in the blood secondary to CO₂ retention - Hypoventilation/severe pneumonia/chronic obstruction <p>Respiratory Alkalosis</p> <ul style="list-style-type: none"> - Excess amount of base (HCO₃) <ul style="list-style-type: none"> - kidneys/renal compensatory mechanism used to fix <p>Metabolic Acidosis (diarrhea)</p> <ul style="list-style-type: none"> - Not caused by excess Co₂; can be caused by either loss of base or addition of fixed acids/kidney loss of bicarb - Respiratory compensatory mechanism initiated (increase rate and depth of breathing) <p>Metabolic Alkalosis (vomiting)</p> <ul style="list-style-type: none"> - Excess base (HCO₃) - Respiratory compensatory mechanisms kick in and slow respiration to build up acid
Metabolic Stress	<p>Acute Phase Proteins: Marker of Stress</p> <ul style="list-style-type: none"> - C-reactive protein (standard to measure inflammation) - Fibronectin - Ceruloplasmin <p>Negative Acute Phase Proteins:</p> <ul style="list-style-type: none"> - Albumin - Transthyretin (prealbumin)

	<ul style="list-style-type: none"> - Transferrin - Retinol-binding protein <p>Summary of Metabolic Stress</p> <p>Increase in insulin antagonist levels</p> <p>Increase hyperglycemia and insulin resistance</p> <p>Increase BMR</p> <p>Increase gluconeogenesis</p> <p>Increase breakdown of skeletal muscle</p> <p>Increase Urinary N excretion (Negative N balance)</p> <p>Increase synthesis of acute phase proteins (CRP)</p> <p>Degrease synthesis of negative phase proteins</p>
Burns/Trauma	<p>Superficial 1st degree</p> <p>Superficial Partial-thickness/Deep Partial thickness = 2nd degree</p> <p>Full-thickness burn = 3rd degree</p> <ul style="list-style-type: none"> - Calculated using TBSA
Sepsis	<p>Multi Organ Distress Syndrome (MODS); Multisystem Organ Failure (MSOF)</p> <ul style="list-style-type: none"> - Sepsis: potentially life-threatening complication of an infection (immunosuppressive process) - SIRS: surgery trauma or heart attack increase risk (Sepsis without infection) - Increased WBC count, Increased heart rate, Increased respiration, elevated CRP, fibronogen <ul style="list-style-type: none"> - Nutrition Implication: <ul style="list-style-type: none"> - Patient enters surgery malnourished or overnourished
Cancer	<p>Nutritional Manifestations</p> <ul style="list-style-type: none"> - Cachexia: involuntary weight loss, tissue wasting, inability to perform daily activities - Decreased Food Intake <ul style="list-style-type: none"> - Anorexia of Malignance - Change in taste or smell - Malabsorption

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| | <ul style="list-style-type: none">- Abnormal Carbohydrate Metabolism<ul style="list-style-type: none">- Insulin resistance- Increased Glucose Synthesis- Increased Gluconeogenesis- Increased Cori Cycle activity- Decreased glucose tolerance- Others<ul style="list-style-type: none">- Dry mouth- Pain when you eat- Altered taste and smell- Decreased appetite- Nausea/vomiting- Painful swallowing- Skin problems- Fatigue- Chemo Brain- Recommendations:<ul style="list-style-type: none">- Increased protein needs- Increased Energy needs- Increased fluid needs- Timing of meals and avoid foods that trigger nausea and vomiting |
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