

Summit Health Laboratory Tests

Test	Range	Guidelines	Preventive Measures
<p>1. 24 hour urine for cells, protein, calcium, and phosphate</p>	<ul style="list-style-type: none"> • Protein – Normal: <150mg/day (10mg/dl) • Calcium – Normal: 100 to 300 mg/day or 50 to 150 mg/day (if diet is low in calcium) • Phosphate – Normal: 0.9–1.3 g/ 24-hour urine sample or <1g/24-sample (if calcium and phosphate restricted diet) 		<p>When to get tested:</p> <ul style="list-style-type: none"> • If you have signs or symptoms of glomerular disease or another condition that affects kidney function • Evaluate kidney function <p>How test is conducted:</p> <ul style="list-style-type: none"> • Day 1, urinate into the toilet upon arising in the morning • Collect all subsequent urine (in a special container) for 24-hours • Day 2, urinate into the container in the morning upon arising. • Cap container. Keep in refrigerator or cool place during the collection period. Label container with name, date, time of completion, and return as instructed.
<p>2. 2D6, 2C9 &19 AmpliChip alt</p>	<p>Four types of metabolizers:</p> <ul style="list-style-type: none"> • Extensive metabolizers (normal): administered drugs following standard dosing practices • Poor metabolizers: deficiency in drug metabolism, may cause life-threatening drug accumulation and severe adverse reactions • Intermediate metabolizers: metabolize drugs at a slower-than-normal rate— • Ultra-rapid metabolizers: break down drugs at faster rates, experience no effect or less-than-expected effectiveness 	<ul style="list-style-type: none"> • Test predicts type of metabolizer – 4 types • These variations can help the physician identify how a patient's metabolism works. • If the test reveals that a patient metabolize drugs rapidly or slowly, the doctor may consider adjusting your drug dosages or switching to a non 2D6 or 2C19 metabolized drug 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Affect drug metabolism • If patient experiences toxic effects of overmedication while taking a standard dose • If patient does not respond to a standard dose of medication • If patient is considered able to properly metabolize certain drugs given within a standard dosing schedule. <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood sample needed to determine DNA • AmpliChip - Broad allelic coverage (27 alleles for CYP2D6 and 3 alleles for CYP2C19) makes the test applicable for the entire population
<p>3. A/G Ratio</p>	<ul style="list-style-type: none"> • Typically, there is a little more albumin than globulins • Normal A/G ratio slightly over 1 	<ul style="list-style-type: none"> • Proper albumin to globulin ratio is 2:1 • <1.7 low value • >3.5 high value 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Provide general information about nutritional status, such as a recent weight loss • Ordered along with several other tests to provide information if symptoms suggest liver or kidney disorder • Investigate the cause of abnormal pooling of fluid in tissue (edema) <p>How test is conducted:</p>

			<ul style="list-style-type: none"> • Blood sample is taken with a needle from a vein in the arm
4. A1AT DNA test	<ul style="list-style-type: none"> • Phenotype determination to identify AAT protein variants if concentration is <100mg/dL 	<ul style="list-style-type: none"> • Serum AAT concentrations will be low in disease • Molecular DNA genotyping for common disease alleles • Alpha-1-antitrypsin serum protein concentration determination and A1A genotyping are performed on all specimens • If two deficiency alleles (ZZ, SZ, or SS) are detected, then testing is complete. • If protein concentration is less than 100 mg/dL and only one or no deficiency allele is detected by A1A genotyping, then phenotyping will be performed 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Adult with early onset COPD (<45 years of age) • Necrotizing panniculitis (unexplained) • Sibling or family member with known AAT deficiency • Bronchiectasis without known etiology • Unexplained liver disease • ANCA vasculitis (anti-PR3 type) • To identify the underlying genetic cause of Alpha-1 – or AAT • Detects the presence of S and Z deficiency alleles and AAT deficiency; includes reflex to phenotyping if AAT concentration is not consistent with genotype <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood sample is taken with a needle from a vein in the arm
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5. Albumin	Normal: 3.4 - 5.4 g/dL	<ul style="list-style-type: none"> • Albumin is made by the liver, so decreased serum albumin may result from liver disease • It can also result from kidney disease, which allows albumin to escape into the urine • Decreased albumin may also be explained by malnutrition or a low protein diet 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Provide general information about nutritional status, such as a recent weight loss • Ordered along with several other tests to provide information if symptoms suggest liver or kidney disorder • Investigate the cause of abnormal pooling of fluid in tissue (edema) <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood sample is taken with a needle from a vein in the arm • The blood sample is placed in a centrifuge to separate the cells from the serum
6. Albumin/Globulin Ratio (A/G ratio)	<ul style="list-style-type: none"> • Typically, there is a little more albumin than globulins • Normal A/G ratio slightly over 1 	<ul style="list-style-type: none"> • Proper albumin to globulin ratio is 2:1 • <1.7 may need to increase stomach acidity • >3.5 may need stomach acidity and pepsin 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Provide general information about nutritional status, such as a recent weight loss • Ordered along with several other tests to provide information if symptoms suggest liver or kidney disorder • Investigate the cause of abnormal pooling of fluid in tissue (edema) <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood sample is taken with a needle from a vein in the arm

<p>7. Alkaline Phosphatase</p>	<p>Adults:</p> <ul style="list-style-type: none"> • 30–126 units per liter (U/L) or 0.5–2.0 microkat/liter (mckat/L) <p>Children:</p> <ul style="list-style-type: none"> • 30–300 U/L or 0.5–5.0 mckat/L 	<p>High Values may indicate:</p> <ul style="list-style-type: none"> • Liver problems • Blockage of bile ducts • Gallstones • Cirrhosis • Liver cancer • Cancer that has spread to liver • Bone diseases/tumors • Normal healing of bone fracture • Heart failure, heart attack, mononucleosis, kidney cancer, or serious infection can raise ALP levels <p>Low values:</p> <ul style="list-style-type: none"> • Conditions that lead to malnutrition (i.e. celiac disease) • Lack of nutrients in the diet (i.e. scurvy) 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Check for liver disease or damage • Check bone problems • Often done at same time as routine blood test <p>How test is conducted:</p> <ul style="list-style-type: none"> • Needle inserted into vein of arm for blood sample
Test	Range	Guidelines	Preventive Measures
<p>8. Allergen Profile, Fall - Weed</p>	<p>Identifies IgE levels</p>	<p>Each type of IgE has specific “radar” for one type of allergen only</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine allergies to the following weeds: <ul style="list-style-type: none"> ○ Cocklebur ○ English plantain ○ goldenrod ○ kochia (firebush) ○ lamb's quarters ○ marsh elder ○ mugwort ○ pigweed, rough ○ ragweed, false ○ ragweed, short ○ wingscale ○ wormwood ○ yellow dock <p>How test is conducted:</p> <ul style="list-style-type: none"> • Needle inserted into vein of arm for blood sample • Test measures immunoglobulin E (IgE) specific to allergens tested

9. Allergen Profile, Spring - Tree	Identifies IgE levels	Each type of IgE has specific “radar” for one type of allergen only	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine allergies to the following trees: <ul style="list-style-type: none"> ○ Alder, smooth ○ beech ○ birch, white ○ cedar, mountain ○ elm, American ○ hickory, white ○ maple, box elder ○ oak, white ○ poplar, white; ○ sycamore, American ○ walnut ○ willow, black <p>How test is conducted:</p> <ul style="list-style-type: none"> • Needle inserted into vein of arm for blood sample • Test measures immunoglobulin E (IgE) specific to allergens tested
Test	Range	Guidelines	Preventive Measures
10. Allergen Profile, Summer - Grass	Identifies IgE levels	Each type of IgE has specific “radar” for one type of allergen only	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine allergies to the following grass: <ul style="list-style-type: none"> ○ <i>Alternaria tenuis</i> ○ Bahia grass ○ Bermuda grass ○ <i>Cladosporium herbarum</i> ○ fescue, meadow ○ Johnson grass ○ Kentucky bluegrass (June grass) ○ <i>Mucor racemosus</i> ○ rye grass, perennial ○ Timothy <p>How test is conducted:</p> <ul style="list-style-type: none"> • Needle inserted into vein of arm for blood sample • Test measures immunoglobulin E (IgE) that is specific to the allergens being tested
11. ALT or SGPT	Normal ALT (SGPT): 7 -	• The precise levels do not	When to get tested:

	56 units/liter of serum	<p>correlate with the extent of liver damage or the prognosis</p> <ul style="list-style-type: none"> Does not give an indication of the function of the liver 	<ul style="list-style-type: none"> To determine liver damage or injury from different types of disease <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood test to check for enzymes
12. ANA	<ul style="list-style-type: none"> If fluorescent cells are observed, ANA (antinuclear antibody) test is considered positive If fluorescent cells are not observed, ANA (antinuclear antibody) test is considered negative 	<ul style="list-style-type: none"> ANAs present different "patterns" depending on staining of cell nucleus in laboratory: <ul style="list-style-type: none"> Homogeneous or diffuse Speckled Nucleolar Peripheral or rim Patterns are not specific for any one illness, certain illnesses can more frequently be associated with one pattern or another Patterns can give doctor further clues to determine illnesses to look for 	<p>When to get tested:</p> <ul style="list-style-type: none"> Performed on blood sample to detect certain autoimmune diseases <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood sample is drawn Serum from blood specimen is added to microscope slides with commercially prepared cells on slide surface If serum contains antinuclear antibodies (ANA), they bind to the cells (specifically the nuclei of the cells) on slide A second antibody, commercially tagged with a fluorescent dye, is added to the mix of serum and commercially prepared cells on slide The second (fluorescent) antibody attaches to serum antibodies and cells which have bound together When viewed under an ultraviolet microscope, antinuclear antibodies appear as fluorescent cells
Test	Range	Guidelines	Preventive Measures
13. Anemia Screening Panel	<ul style="list-style-type: none"> Normal adult hematocrit values: 32 -43% Normal adult hemoglobin values: 11 - 15 g/deciliter range Ferritin: Men: 30 – 300 ng/mL Women: 15-200 ng/mL Folates: < 2 ng/mL Reticulocyte Count: depend on level of hemoglobin Vitamin B12: 200 - 900 pg/mL 	<p>Males:</p> <ul style="list-style-type: none"> Age 16-40: Every 10 years Age 40-50: Every 5 years Age 50+: Every 2 years <p>Females:</p> <ul style="list-style-type: none"> Age 16+: Every 2 years <ul style="list-style-type: none"> Anemia Panel includes: <ol style="list-style-type: none"> Complete Blood Count Ferritin Iron and Total Binding Capacity Reticulocyte Count Vitamin B12 and Folic Acid Tests 	<p>When to get tested:</p> <ul style="list-style-type: none"> Family History of Anemia Women who have experienced: <ul style="list-style-type: none"> Considerable blood loss due to menstruation Vitamin deficiency Diabetes Recent pregnancy Eating disorders Obesity Stomach surgery Gastrointestinal diseases Men/ women with the following symptoms: <ul style="list-style-type: none"> Fatigue/Weakness Pale skin Fainting spells Breathlessness Rapid heart beat Appetite loss Stomach pain

			<p>How test is conducted:</p> <ul style="list-style-type: none"> Blood panel to identify the presence, severity, and cause of anemia
14. ApoB Quant	<p>Males:</p> <ul style="list-style-type: none"> 63-152 mg/dL <p>Females:</p> <ul style="list-style-type: none"> 60-150 mg/dL 	<p>Increased levels:</p> <ul style="list-style-type: none"> Diabetes Drugs such as: androgens, beta blockers, diuretics, progestins (synthetic progesterones) Familial combined hyperlipidemia Hypothyroidism Nephrotic syndrome Pregnancy (levels increase temporarily and decrease again after delivery) <p>Lower levels are seen with:</p> <ul style="list-style-type: none"> Drugs such as: estrogen (in post-menopausal women), lovastatin, simvastatin, niacin, and thyroxine Hyperthyroidism Malnutrition Reye syndrome Weight reduction Severe illness Surgery Abetalipoproteinemia Cirrhosis 	<p>When to get tested:</p> <ul style="list-style-type: none"> Determine risk of developing atherosclerotic heart disease and coronary artery disease (CAD) Family history of heart disease and/or hyperlipidemia Diagnose cause of hyperlipidemia <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood sample drawn from vein in arm
15. AST or SGOT	Normal AST (SGOT): 5-40 units/liter of serum (the liquid part of the blood)	<ul style="list-style-type: none"> The precise levels do not correlate with the extent of liver damage or the prognosis Does not give an indication of the function of the liver 	<p>When to get tested:</p> <ul style="list-style-type: none"> To determine liver damage or injury from different types of disease <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood test to check for enzymes
Test	Range	Guidelines	Preventive Measures
16. B12	<ul style="list-style-type: none"> Vitamin B12 deficiency: < 200 pg/mL (picograms per milliliter) Normal: > 200-900 pg/mL Older adults may have symptoms: 200-500 pg/mL 	<p>High values</p> <ul style="list-style-type: none"> Occurs in liver disease and some types of leukemia In rare cases, may be found in people with diabetes or obese <p>Low values</p> <ul style="list-style-type: none"> Problems with absorption of the vitamin May occur following removal of part or all of the stomach, gastric bypass or gastric stapling surgery, or following surgery to remove part of the small intestine where vitamin is absorbed Infection with fish In rare cases, a person may not get enough vitamin B12 with food intake High levels of protein in the blood can falsely decrease blood levels 	<p>When to get tested:</p> <ul style="list-style-type: none"> Check for vitamin B12 deficiency anemia Diagnose cause of certain types of anemia Help find cause of dementia or other nervous system symptoms Determine presence of vitamin B12 deficiency anemia after diagnosis of atrophic gastritis <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood draw from a vein, usually from the inside of the elbow or the back of the hand

17. Bilirubin Direct	<p>Normal:</p> <ul style="list-style-type: none"> • Direct bilirubin: 0.1-0.3 mg/dL 	<p>Increased indirect or total bilirubin may indicate:</p> <ul style="list-style-type: none"> • Crigler-Najjar syndrome • Erythroblastosis fetalis • Gilbert's disease • Healing of a large hematoma (bleeding under the skin) • Hemolytic anemia • Hemolytic disease of the newborn • Physiological jaundice (normal in newborns) • Sickle cell anemia • Transfusion reaction • Pernicious anemia <p>Increased direct bilirubin may indicate:</p> <ul style="list-style-type: none"> • Bile duct obstruction • Cirrhosis • Dubin-Johnson syndrome (very rare) • Hepatitis • Intrahepatic cholestasis (buildup of bile in the liver) of many causes 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine presence of liver disease or a blocked bile duct <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein or capillary • The sample is spun in a centrifuge to separate serum from the cells • The bilirubin test is done on the serum
Test	Range	Guidelines	Preventive Measures
18. Bilirubin Total	<p>Normal:</p> <ul style="list-style-type: none"> • Total bilirubin: 0.3-1.9 mg/dL 	<p>Increased indirect or total bilirubin may indicate:</p> <ul style="list-style-type: none"> • Crigler-Najjar syndrome • Erythroblastosis fetalis • Gilbert's disease • Healing of a large hematoma (bleeding under the skin) • Hemolytic anemia • Hemolytic disease of the newborn • Physiological jaundice (normal in newborns) • Sickle cell anemia • Transfusion reaction • Pernicious anemia <p>Increased direct bilirubin may indicate:</p> <ul style="list-style-type: none"> • Bile duct obstruction • Cirrhosis • Dubin-Johnson syndrome (very rare) 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine presence of liver disease or a blocked bile duct <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein or capillary • The sample is spun in a centrifuge to separate serum from the cells • The bilirubin test is done on the serum

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19. Bone-Specific Alkaline Phosphatase	<p>Male:</p> <ul style="list-style-type: none"> • 7-9 yrs: 48.6-140.4 µg/L • 10-12 yrs: 48.8-155.5 µg/L • 13-15 yrs: 27.8-210.9 µg/L • 16-17 yrs: 15.3-126.8 µg/L • ≥ 25 yrs: 6.5-20.1µg/L <p>Female:</p> <ul style="list-style-type: none"> • 7-9 yrs: 36.3-159.4 µg/L • 10-12 yrs: 44.2-163.3 µg/L • 13-15 yrs: 14.8-136.2 µg/L • 16-17 yrs: 10.5-44.8 µg/L • Premenopausal: 4.5-16.9 µg/L • Postmenopausal: 7.0-22.4 µg/L 	<ul style="list-style-type: none"> • Hepatitis • Intrahepatic cholestasis (buildup of bile in the liver) of many causes <ul style="list-style-type: none"> • Each 100 U/L of liver alkaline phosphatase contributes an additional 2.5 to 5.8 µg/L to the bone specific alkaline phosphatase result • Reference intervals have not been established for children younger than 7 years of age or males 18-24 years 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Monitor disease activity and response to antiresorptive therapy in Paget's disease • Monitor antiresorptive therapy effectiveness in osteoporosis • Determine degree of bone turnover in patients with various forms of metabolic bone disease <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood draw from vein in arm
20. B-Type Natriuretic Peptide (BNP)	<ul style="list-style-type: none"> • Normal/no heart failure: < 100 pg/mL • Heart failure present: 100-300 pg/mL • Mild heart failure: > 300 pg/mL • Moderate heart failure: > 600 pg/mL • Severe heart failure: > 900 pg/mL 	<ul style="list-style-type: none"> • Aids in diagnosis/assessment of severity of congestive heart failure • Used for risk stratification of patients with acute coronary syndromes 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine if a patient has heart failure, rather than another condition with similar symptoms • Help physician make decisions about hospitalizations, aggressive treatments, and future prognosis <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood draw • Small amount of blood is placed in machine that detects level of BNP in blood • Test takes about 15 minutes
21. BUN - Urea Nitrogen	Normal: 10 - 20 mg/dl	<p>Higher levels may be due to:</p> <ul style="list-style-type: none"> • Congestive heart failure • Excessive protein levels • Gastrointestinal bleeding • Hypovolemia • Heart attack • Kidney disease • Kidney failure • Shock • Urinary tract obstruction <p>Lower levels may be due to:</p> <ul style="list-style-type: none"> • Liver failure • Low protein diet • Malnutrition • Over-hydration 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Urea nitrogen is what forms when protein breaks down • Measure the amount of urea nitrogen in the blood to check kidney function <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

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22. BUN/ Creatinine Ratio	Normal: <ul style="list-style-type: none"> • < 12 months of age: up to 30:1 	High values occur with: <ul style="list-style-type: none"> • Acute kidney failure • Blockage in urinary tract • Bleeding in digestive or respiratory tract Low values may be caused by: <ul style="list-style-type: none"> • Diet low in protein, • Severe muscle injury • rhabdomyolysis • Pregnancy • Cirrhosis • Syndrome of inappropriate antidiuretic hormone secretion (SIADH) 	When to get tested: <ul style="list-style-type: none"> • Measure the amount of urea nitrogen in the blood to check kidney function How test is conducted: <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
23. CA 125	<ul style="list-style-type: none"> • Elevated: > 35 U/ml • Elevated CA-125 levels can be: <ul style="list-style-type: none"> ○ False positive ○ Benign tumor ○ Ovarian cancer ○ Another type of cancer 	<ul style="list-style-type: none"> • Lower specificity in premenopausal women • Not recommended for use alone as early detection method, rate of false positives is very high • CA-125 test should be used with transvaginal sonography and rectovaginal pelvic examination for greater accuracy • Normal CA-125 levels can be a true negative, or a false negative result: <ul style="list-style-type: none"> ○ True positive result: identifies patient as having ovarian cancer and they do ○ False positive result: identifies patient as having ovarian cancer and they do not – cancer free ○ True negative result: identifies patient as not having ovarian cancer, and they do not it ○ False negative result: identifies patient as not having ovarian cancer and they do 	When to get tested: <ul style="list-style-type: none"> • CA-125, is a protein found at levels in most ovarian cancer cells that are elevated compared to normal cells • Assess concentration of CA-125 in blood How test is conducted: <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

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24. Calcium	Normal: <ul style="list-style-type: none"> • Adults: 9.0–10.5 mg/dL or 2.25–2.75 mmol/L • Children: 7.6–10.8 mg/dL or 1.9–2.7 mmol/L 	High Total Calcium - Hypercalcemia <ul style="list-style-type: none"> • Hyperparathyroidism • Cancer • Hyperthyroidism • Sarcoidosis • Tuberculosis • Prolonged immobilization • Excess Vitamin D intake • Kidney transplant Low Total Calcium – Hypocalcemia <ul style="list-style-type: none"> • Low blood protein levels • Underactive parathyroid gland • Inherited resistance to parathyroid hormone effects • Extreme dietary calcium deficiency • Decreased vitamin D levels • Magnesium deficiency • Increased phosphorus levels • Pancreatitis • Renal failure • Malnutrition • Alcoholism 	When to get tested: <ul style="list-style-type: none"> • Diagnostic test if symptoms suggest: <ul style="list-style-type: none"> ○ Kidney stones ○ Bone disease ○ Neurologic disorders • Evaluate calcium status to screen, diagnose, and conditions related to the bones, heart, nerves, kidneys, and teeth • Ordered as a screening test during regular medical exam How test is conducted: <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand • Urine test
25. Carbon Dioxide	Normal: <ul style="list-style-type: none"> • Adults: 23–29 mmol/L • Children: 20–28 mmol/L • Babies: 13–22 mmol/L 	High values may be caused by: <ul style="list-style-type: none"> • Diseases that decrease blood pH (COPD, emphysema, and pneumonia) • Diseases that increase blood pH (Cushing's syndrome, Conn's syndrome, and alcoholism) • Vomiting Low values may be caused by: <ul style="list-style-type: none"> • Problems that increase blood pH (pneumonia, cirrhosis, liver failure, or hyperventilation) • Problems that decrease blood pH (uncontrolled diabetes, kidney or heart failure, aspirin overdose, shock, frequent diarrhea, dehydration, long-term starvation, and swallowing antifreeze or wood alcohol) 	When to get tested: <ul style="list-style-type: none"> • At the same time as arterial blood gas test • Part of a group of laboratory blood tests (chemistry screen) to help find the cause of many kinds of symptoms. • If breathing problems occur How test is conducted: <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

Test	Range	Guidelines	Preventive Measures
26. CBC with diff	<p>White blood cell (WBC, leukocyte) count</p> <ul style="list-style-type: none"> Men and nonpregnant women: 4,500–11,000/mcL³ Pregnant women: <ul style="list-style-type: none"> 1st trimester: 6,600–14,100/mcL 2nd trimester: 6,900–17,100/mcL 3rd trimester: 5,900–14,700/mcL Postpartum: 9,700–25,700/mcL <p>White blood cell types (WBC differential)</p> <ul style="list-style-type: none"> Neutrophils: 50%–62% Band neutrophils: 3%–6% Lymphocytes: 25%–40% Monocytes: 3%–7% Eosinophils: 0%–3% Basophils: 0%–1% <p>Red blood cell (RBC) count</p> <ul style="list-style-type: none"> Men: 4.7–6.1 million RBCs/mcL Women: 4.2–5.4 million RBCs/mcL Children: 4.0–5.5 million RBCs/mcL Newborn: 4.8–7.1 million RBCs/mcL <p>Hematocrit (HCT)</p> <ul style="list-style-type: none"> Men: 42%–52% Women: 37%–47% Pregnant women: <ul style="list-style-type: none"> 1st trimester: 35%–46% 2nd trimester: 30%–42% 3rd trimester: 34%–44% Postpartum: 30%–44% Children: 32%–44% Newborns: 44%–64% <p>Hemoglobin (Hgb)</p> <ul style="list-style-type: none"> Men: 14–18g/dL Women: 12–16 g/dL Pregnant women: <ul style="list-style-type: none"> 1st trimester: 11.4–15.0 g/dL 	<p>A standard CBC includes:</p> <ul style="list-style-type: none"> number of white blood cells (WBC) number of red blood cells (RBC) hemoglobin content (Hgb) hematocrit (Hct) mean corpuscular volume (MCV) mean corpuscular hemoglobin (MCH) mean corpuscular hemoglobin concentration (MCHC) platelet count and volume <p>High Results Indicate:</p> <ul style="list-style-type: none"> Red Blood Cells: blood's thickness is increased causing reduced blood flow and possible blood clots White Blood Cells: indication of infection Platelets: does not always indicate a medical problem, can be elevated due to secondary disease Hematocrit: seen in people living in high altitudes, chronic smokers, and dehydration Hemoglobin: seen with several conditions, most common is dehydration <p>Low Results Indicate:</p> <ul style="list-style-type: none"> Red blood cells: blood loss, chronic or acute White blood cells: result from chemotherapy, radiation or immune system diseases Platelets: can cause abnormal and excessive bleeding Hematocrit: indicate anemia Hemoglobin: can indicate anemia, excessive bleeding, cancers affecting the bone marrow, and kidney disease 	<p>When to get tested:</p> <ul style="list-style-type: none"> Acquire information about the kinds and numbers of cells in the blood Assist health professionals check any symptoms, such as weakness, fatigue, or bruising and diagnose conditions, such as anemia and infection Part of regular physical exam <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

	<p>2nd trimester: 10.0–14.3 g/dL 3rd trimester: 10.2–14.4 g/dL Postpartum: 10.4–18.0 g/dL</p> <ul style="list-style-type: none"> • Children: 9.5–15.5 g/dL • Newborn: 14–24 g/dL <p>Red cell distribution width (RDW)</p> <ul style="list-style-type: none"> • Normal: 11.5%–14.6% <p>Platelet (thrombocyte) count</p> <p>Normal:</p> <ul style="list-style-type: none"> • Children: 150,000–450,000 platelets per mm³ • Adults: 150,000–400,000 platelets per mm³ <p>Mean platelet volume (MPV)</p> <p>Normal:</p> <ul style="list-style-type: none"> • Children: 7.4–10.4 mcm³ or 7.4–10.4 fL • Adults: 7.4–10.4 mcm³ or 7.4–10.4 fL <p>Blood smear</p> <p>Normal:</p> <ul style="list-style-type: none"> • Blood cells are normal in shape, size, color, and number 		
27. CEA	<p>Normal:</p> <ul style="list-style-type: none"> • Nonsmokers: 3 mcg/L • Smokers: 5 mcg/L 	<ul style="list-style-type: none"> • CEA levels higher in smokers <p>High values</p> <ul style="list-style-type: none"> • Cancer of colon, lung, pancreas, breast, or ovary may be present • Cancer may not be responding to treatment • Cancer may have returned after treatment • Another condition or disease is present <p>Low values</p> <ul style="list-style-type: none"> • People with small cancers or early-stage disease usually have low, or even normal, CEA levels 	<p>When to get tested:</p> <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

Test	Range	Guidelines	Preventive Measures
28. Chlamydia	<p>Normal:</p> <ul style="list-style-type: none"> • No chlamydia antigens or DNA • If a culture is done, no chlamydia bacteria grow in culture <p>Abnormal:</p> <ul style="list-style-type: none"> • Chlamydia antigens or DNA found • If a culture is done, chlamydia bacteria grow in culture 	<ul style="list-style-type: none"> • If chlamydia infection is suspected, do not have sexual intercourse until test results come back; if chlamydia infection is present, do not have sexual intercourse for 7 days after the start of treatment • The health professional is required to report the chlamydia infection to the state health department • Screening/treating chlamydia can help prevent developing pelvic inflammatory disease (PID) • Other sexually transmitted diseases may be present at the same time as chlamydia so it is important to be tested and treated for all STDs 	<p>When to get tested:</p> <ul style="list-style-type: none"> • All sexually active women age 24 or younger • Women older than age 24 with high-risk sexual behaviors • All pregnant women in the first trimester and again in the 3rd trimester if high-risk sexual behaviors are reported • All women with pelvic inflammatory disease (PID) • All women with symptoms of a cervical infection • Check for infection in a newborn whose mother had a chlamydia infection at the time of delivery <p>How test is conducted:</p> <p>Direct Sample:</p> <ul style="list-style-type: none"> • For men: To collect a sample from the urethra or rectum, health professional will insert a swab into the opening of urethra or rectum • For women: Lie on back on an examination table with feet raised and supported by stirrups and health professional will insert a speculum into the vagina and collect from the cervix with a swab or small brush • To collect a sample from the eye, the health professional will gently brush the insides of the lower and upper eyelids with a swab • In rare cases, a throat culture may be done <p>Urine sample</p> <ul style="list-style-type: none"> • Do not urinate for 2 hours before the test or wipe genital area clean before urinating. Collect the first part of the urine stream, immediately upon urination

Test	Range	Guidelines	Preventive Measures
29. Chloride	<p>Chloride in blood</p> <ul style="list-style-type: none"> • Adults: 98–106 mEq/L or 98–106 mmol/L • Children: 90–110 mEq/L or 90–110 mmol/L <p>Chloride in urine</p> <ul style="list-style-type: none"> • Adult: 110–250 mEq per 24 hours or 110–250 mmol per day • Child: 15–40 mEq/24 hours or 15–40 mmol/day 	<p>High levels may be caused by:</p> <ul style="list-style-type: none"> • Anemia • Dehydration • High salt intake • Kidney disease • Overactive parathyroid gland <p>Low levels may be caused by:</p> <ul style="list-style-type: none"> • Conditions that cause too much water to build up in the body • Cushing's syndrome • Diabetic ketoacidosis • Heart failure • Kidney failure • Ongoing vomiting • Severe burns 	<p>When to get tested:</p> <p>How test is conducted:</p> <p>Blood test:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand <p>Urine test</p> <ul style="list-style-type: none"> • Start collecting urine in the morning. Upon rising, empty bladder but do not save this urine. Write down time of urination to mark beginning of 24-hour collection period • For the next 24 hours, collect all urine. Container will be provided and has a small amount of preservative in it. Urinate into a small, clean container and then pour the urine into the large container. Do not touch the inside of the container with fingers • Keep the large container in the refrigerator for the 24 hours • Empty bladder for the final time at or just before the end of the 24-hour period. Add this urine to the large container and record the time. • Do not get toilet paper, pubic hair, stool (feces), menstrual blood, or other foreign matter in the urine sample

Test	Range	Guidelines	Preventive Measures
30. Complete Blood Count with Differential	<p>White blood cell (WBC, leukocyte) count</p> <ul style="list-style-type: none"> Men and nonpregnant women: 4,500–11,000/mcL³ Pregnant women: <ul style="list-style-type: none"> 1st trimester: 6,600–14,100/mcL 2nd trimester: 6,900–17,100/mcL 3rd trimester: 5,900–14,700/mcL Postpartum: 9,700–25,700/mcL <p>White blood cell types (WBC differential)</p> <ul style="list-style-type: none"> Neutrophils: 50%–62% Band neutrophils: 3%–6% Lymphocytes: 25%–40% Monocytes: 3%–7% Eosinophils: 0%–3% Basophils: 0%–1% <p>Red blood cell (RBC) count</p> <ul style="list-style-type: none"> Men: 4.7–6.1 million RBCs/mcL Women: 4.2–5.4 million RBCs/mcL Children: 4.0–5.5 million RBCs/mcL Newborn: 4.8–7.1 million RBCs/mcL <p>Hematocrit (HCT)</p> <ul style="list-style-type: none"> Men: 42%–52% Women: 37%–47% Pregnant women: <ul style="list-style-type: none"> 1st trimester: 35%–46% 2nd trimester: 30%–42% 3rd trimester: 34%–44% Postpartum: 30%–44% Children: 32%–44% Newborns: 44%–64% <p>Hemoglobin (Hgb)</p> <ul style="list-style-type: none"> Men: 14–18g/dL Women: 12–16 g/dL Pregnant women: <ul style="list-style-type: none"> 1st trimester: 11.4–15.0 g/ 2nd trimester: 10.0–14.3 	<p>A standard CBC includes:</p> <ul style="list-style-type: none"> number of white blood cells (WBC) number of red blood cells (RBC) hemoglobin content (Hgb) hematocrit (Hct) mean corpuscular volume (MCV) mean corpuscular hemoglobin (MCH) mean corpuscular hemoglobin concentration (MCHC) platelet count and volume <p>High Results Indicate:</p> <ul style="list-style-type: none"> Red Blood Cells: blood's thickness is increased causing reduced blood flow and possible blood clots White Blood Cells: indication of infection Platelets: does not always indicate a medical problem, can be elevated due to secondary disease Hematocrit: seen in people living in high altitudes, chronic smokers, and dehydration Hemoglobin: seen with several conditions, most common is dehydration <p>Low Results Indicate:</p> <ul style="list-style-type: none"> Red blood cells: blood loss, chronic or acute White blood cells: result from chemotherapy, radiation or immune system diseases Platelets: can cause abnormal and excessive bleeding Hematocrit: indicate anemia Hemoglobin: can indicate anemia, excessive bleeding, cancers affecting the bone marrow, and kidney disease 	<p>When to get tested:</p> <ul style="list-style-type: none"> Acquire information about the kinds and numbers of cells in the blood Assist health professionals check any symptoms, such as weakness, fatigue, or bruising and diagnose conditions, such as anemia and infection Part of regular physical exam <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

g/dL
3rd trimester: 10.2–14.4
g/dL Postpartum: 10.4–
18.0 g/dL

- Children: 9.5–15.5 g/dL
- Newborn: 14–24 g/dL

**Red cell distribution
width (RDW)**

- Normal: 11.5%–14.6%

**Platelet (thrombocyte)
count**

Normal:

- Children: 150,000–
450,000 platelets per
 mm^3
- Adults: 150,000–
400,000 platelets per
 mm^3

**Mean platelet volume
(MPV)**

Normal:

- Children: 7.4–10.4 mcm^3
or 7.4–10.4 fL
- Adults: 7.4–10.4 mcm^3
or 7.4–10.4 fL

Blood smear

Normal:

- Blood cells are normal in
shape, size, color, and
number

Test	Range	Guidelines	Preventive Measures
31. Complete Blood Count with Platelet Count	<p>White blood cell (WBC, leukocyte) count</p> <ul style="list-style-type: none"> Men and nonpregnant women: 4,500–11,000/mcL³ Pregnant women: <ul style="list-style-type: none"> 1st trimester: 6,600–14,100/mcL 2nd trimester: 6,900–17,100/mcL 3rd trimester: 5,900–14,700/mcL Postpartum: 9,700–25,700/mcL <p>White blood cell types (WBC differential)</p> <ul style="list-style-type: none"> Neutrophils: 50%–62% Band neutrophils: 3%–6% Lymphocytes: 25%–40% Monocytes: 3%–7% Eosinophils: 0%–3% Basophils: 0%–1% <p>Red blood cell (RBC) count</p> <ul style="list-style-type: none"> Men: 4.7–6.1 million RBCs/mcL Women: 4.2–5.4 million RBCs/mcL Children: 4.0–5.5 million RBCs/mcL Newborn: 4.8–7.1 million RBCs/mcL <p>Hematocrit (HCT)</p> <ul style="list-style-type: none"> Men: 42%–52% Women: 37%–47% Pregnant women: <ul style="list-style-type: none"> 1st trimester: 35%–46% 2nd trimester: 30%–42% 3rd trimester: 34%–44% Postpartum: 30%–44% Children: 32%–44% Newborns: 44%–64% <p>Hemoglobin (Hgb)</p> <ul style="list-style-type: none"> Men: 14–18g/dL Women: 12–16 g/dL Pregnant women: <ul style="list-style-type: none"> 1st trimester: 11.4–15.0 g/dL 2nd trimester: 10.0–14.3 g/dL 	<p>A standard CBC includes:</p> <ul style="list-style-type: none"> number of white blood cells (WBC) number of red blood cells (RBC) hemoglobin content (Hgb) hematocrit (Hct) mean corpuscular volume (MCV) mean corpuscular hemoglobin (MCH) mean corpuscular hemoglobin concentration (MCHC) platelet count and volume <p>High Results Indicate:</p> <ul style="list-style-type: none"> Red Blood Cells: blood's thickness is increased causing reduced blood flow and possible blood clots White Blood Cells: indication of infection Platelets: does not always indicate a medical problem, can be elevated due to secondary disease Hematocrit: seen in people living in high altitudes, chronic smokers, and dehydration Hemoglobin: seen with several conditions, most common is dehydration <p>Low Results Indicate:</p> <ul style="list-style-type: none"> Red blood cells: blood loss, chronic or acute White blood cells: result from chemotherapy, radiation or immune system diseases Platelets: can cause abnormal and excessive bleeding Hematocrit: indicate anemia Hemoglobin: can indicate anemia, excessive bleeding, cancers affecting the bone marrow, and kidney disease 	<p>When to get tested:</p> <ul style="list-style-type: none"> Acquire information about the kinds and numbers of cells in the blood Assist health professionals check any symptoms, such as weakness, fatigue, or bruising and diagnose conditions, such as anemia and infection Part of regular physical exam <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand

	<p>3rd trimester: 10.2–14.4 g/dL Postpartum: 10.4–18.0 g/dL</p> <ul style="list-style-type: none"> • Children: 9.5–15.5 g/dL • Newborn: 14–24 g/dL <p>Red cell distribution width (RDW)</p> <ul style="list-style-type: none"> • Normal: 11.5%–14.6% <p>Platelet (thrombocyte) count</p> <p>Normal:</p> <ul style="list-style-type: none"> • Children: 150,000–450,000 platelets per mm³ • Adults: 150,000–400,000 platelets per mm³ <p>Mean platelet volume (MPV)</p> <p>Normal:</p> <ul style="list-style-type: none"> • Children: 7.4–10.4 mcm³ or 7.4–10.4 fL • Adults: 7.4–10.4 mcm³ or 7.4–10.4 fL <p>Blood smear</p> <p>Normal:</p> <ul style="list-style-type: none"> • Blood cells are normal in shape, size, color, and number 		
Test	Range	Guidelines	Preventive Measures
32. Creatinine	<p>Normal</p> <ul style="list-style-type: none"> • Male: 0.6-1.2 mg/dl • Female: 0.5-1.1 mg/dl • Infants: ≥ 0.2mg/dl • One kidney: 1.8-1.9 mg/dl 	<ul style="list-style-type: none"> • High levels warn of possible malfunction or kidney failure • Muscular young or middle-aged adults may have more creatinine in the blood than norm • Elderly persons may have less than the norm • Levels that reach ≥ 2.0 in babies and ≥ 10.0 in adults may indicate severe kidney impairment and the need for a dialysis machine to remove wastes from the blood 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Reliable indicator of kidney function <p>How test is conducted:</p> <ul style="list-style-type: none"> • Standard blood test
33. CRP- C-reactive protein	<p>C-Reactive Protein test</p> <ul style="list-style-type: none"> • Normal: 0–1.0 mg/dL or less than 10 mg/L (SI units) <p>High-sensitivity C-reactive protein test</p>	<ul style="list-style-type: none"> • Studies have found that the higher the hs-CRP levels, the higher the risk of having a heart attack • The risk for heart attack in people in the upper third of hs-CRP levels has been determined 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To measure general levels of inflammation in the body • Check for infection after surgery • Check for treatment effectiveness of cancers and infection • High sensitivity test - measures

	<ul style="list-style-type: none"> • Lowest risk: < 1.0 mg/dL • Average risk: 1.0 - 3.0 mg/dL • Highest risk: > 3.0 mg/dL 	to be twice that of those whose hs-CRP level is in the lower third	<p>risk for heart problems</p> <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
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Test	Range	Guidelines	Preventive Measures
34. DHEA	<p>Normal values for serum DHEA sulfate can differ by sex and age.</p> <p>Normal ranges -females:</p> <ul style="list-style-type: none"> • Age 18-19: 145-395 ug/dL • Age 20-29: 65-380 ug/dL • Age 30-39: 45-270 ug/dL • Age 40-49: 32-240 ug/dL • Age 50-59: 26-200 ug/dL • Age 60-69: 13-130 ug/dL • Age 69 and older: 17-90 ug/dL <p>Normal ranges - males:</p> <ul style="list-style-type: none"> • Age 18-19: 108-441 ug/dL • Age 20-29: 280-640 ug/dL • Age 30-39: 120-520 ug/dL • Age 40-49: 95-530 ug/dL • Age 50-59: 70-310 ug/dL • Age 60-69: 42-290 ug/dL • Age 69 and older: 28-175 ug/dL 	<p>An increase in DHEA-sulfate may signify:</p> <ul style="list-style-type: none"> • Congenital adrenal hyperplasia • Adrenal carcinoma • Tumor of the adrenal gland 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Evaluate function of the adrenal glands • Measured in women showing symptoms of male body characteristics or excessive hair growth and in children maturing too early <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
Test	Range	Guidelines	Preventive Measures

35. EBV	<p>Normal (negative):</p> <ul style="list-style-type: none"> • Titer < 1 to 40 (1:40) - never been exposed to EBV • No IgM is present. If IgG is present, it may mean exposure to EBV in the past. <p>Abnormal (positive):</p> <ul style="list-style-type: none"> • Titer > 1 to 40 (1:40) - have been exposed to EBV or have had mono in the past • Other diseases that can cause a positive result include some types of cancer, such as leukemia or Burkitt's lymphoma. • IgM is present. IgG may also be present but may mean exposure to EBV in the past. 	<ul style="list-style-type: none"> • The results of the antibody test to detect Epstein-Barr virus (EBV) are given in titers • A titer is a measure of how much the blood sample can be diluted before the antibodies against the Epstein-Barr virus (EBV) can no longer be detected • A titer of 1 to 40 (1:40) means that antibodies can be detected when 1 part of the blood sample is diluted by up to 40 parts of a salt solution (saline) • A larger second number means there are more antibodies in the blood - a titer of 1 to 80 indicates more EBV antibodies in the blood than a titer of 1 to 40 • The EBV antibody test can also detect the type of antibodies (immunoglobulins) present in the blood. The type of antibody indicates whether the infection is recent or old. • The antibody IgM is only found during the active phase of mono. The antibody IgG can be found later, when you are starting to get better. 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To diagnose mono • Help determine whether you have ever been infected with the virus and whether the infection has been recent • Usually done when you have symptoms of infectious mononucleosis and a monospot test result is negative • To check for antibodies to EBV when a person has a disease or uses medicine that causes problems with the immune system <p>How it is conducted:</p> <ul style="list-style-type: none"> • A sample of blood is mixed with a substance that attaches to antibodies against EBV
36. ESR	<p>Adults :</p> <ul style="list-style-type: none"> • Men under 50 years old: < 15 mm/hr • Men over 50 years old: < 20 mm/hr • Women under 50 years old: < 20 mm/hr • Women over 50 years old: < 30 mm/hr <p>Children:</p> <ul style="list-style-type: none"> • Newborn: 0-2 mm/hr • Neonatal to puberty: 3-13 mm/hr <p>mm/hr = millimeters per hour</p>	<p>ESR - erythrocyte sedimentation rate</p> <p>ESR is called an acute-phase reactant test, it reacts to acute conditions in the body, such as infection or trauma.</p> <p>The rate increase follows a rise in temperature and white blood cells count, peaks after several days, and usually lasts longer than the elevated temperature or white blood cells count.</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • Nonspecific screening test that indirectly measures how much inflammation is in the body <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures

37. Estradiol	<p>Normal Day 3 estradiol levels: ≤ 80 pg/mL</p>	<p>Women have particular levels of estradiol during different stages of their menstrual cycle. By analyzing these levels on Day 3, your reproductive endocrinologist can determine your ovarian reserve. The amount of estradiol in your blood on Day 3 can also indicate whether or not your FSH test was accurate or not.</p> <p>Elevated levels indicate a problem with ovarian reserve. In high amounts, estradiol can suppress the amount of FSH in your system. This can cause your Day 3 FSH test to be inaccurate. This can lead to:</p> <ul style="list-style-type: none"> • lower pregnancy rates • poor ovulation • poor response to ovulation-inducing fertility drugs • poorer success rate with IVF 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Diagnostic procedure used to measure the levels of estradiol in the blood stream • Determine a woman's ovarian reserve • Confirm a woman's FSH test • Performed on Day 3 of your menstrual cycle, the estradiol test is one of the most common fertility testing procedures <p>How test is conducted: Blood test performed in conjunction with the Day 3 FSH test</p>
38. Female Menopause (FSH & Estrogen++)	<p>The normal range of FSH depends on your age and gender:</p> <ul style="list-style-type: none"> • For women who are menstruating: 5-30 mIU/mL. • For women in menopause or after menopause: 50-100 mIU/mL. • For men: 5-20 mIU/mL <p>Other hormone tests are done with the FSH test. The results of the different tests are interpreted together to make a diagnosis.</p>	<p>In women FSH and the blood level of the hormone estradiol, a type of estrogen, are measured</p> <p>The level of FSH is increased and the level of estradiol is decreased in women who are in menopause or who have gone through menopause</p>	<p>When to get tested: To determine if menopause has been reached</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures

39. Ferritin	<ul style="list-style-type: none"> Men: 18–270 nanograms per milliliter (ng/mL) or 18–270 micrograms per liter (mcg/L) Women: 18–160 ng/mL or 18–160 mcg/L Children 6 months to 15 years: 7–142 ng/mL or 7–142 mcg/L Babies 2 to 5 months: 50–200 ng/mL or 50–200 mcg/L Babies 1 month: 200–600 ng/mL or 200–600 mcg/L Newborn babies: 25–200 ng/mL or 25–200 mcg/L 	<p>High values</p> <ul style="list-style-type: none"> > 1,000 ng/mL can mean a large buildup of iron in the body May be caused by liver disease, Hodgkin's disease, leukemia, infection, inflammatory conditions, or a diet that is too high in iron. Too much iron in body organs, such as the pancreas or heart, can affect how the organ works <p>Low values Iron deficiency is present</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> Find the cause of anemia, especially iron deficiency anemia See if inflammation is present. See if too much iron (hemochromatosis) is present Check to see if iron treatment to raise or lower the iron level is working <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
40. Fibrinogen	<p>Normal reference ranges are laboratory-specific, but are usually within the following:</p> <ul style="list-style-type: none"> Adult: 200 mg/dL-400 mg/dL Newborn: 125 mg/dL-300 mg/dL <p>Spontaneous bleeding can occur with values less than 100 mg/dL</p>	<p>Abnormal results may be due to:</p> <ul style="list-style-type: none"> Excessive fibrinogen use (as in disseminated intravascular coagulation) Fibrinolysis Hemorrhage Lack of fibrinogen production (acquired or from birth) 	<p>When to get tested: Aids in the diagnosis of suspected clotting or bleeding disorders caused by fibrinogen abnormalities</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
41. Folate	<ul style="list-style-type: none"> Vitamin B12 deficiency: < 200 pg/mL (picograms per milliliter) Normal: > 200-900 pg/mL Older adults may have symptoms: 200-500 pg/mL 	<p>High values</p> <ul style="list-style-type: none"> Occurs in liver disease and some types of leukemia In rare cases, may be found in people with diabetes or obese <p>Low values</p> <ul style="list-style-type: none"> Problems with absorption of the vitamin May occur following removal of part or all of the stomach, gastric bypass or gastric stapling surgery, or following surgery to remove part of the small intestine where vitamin is absorbed Infection with fish In rare cases, a person may not get enough vitamin B12 with food intake High levels of protein in the blood can falsely decrease blood levels 	<p>When to get tested:</p> <ul style="list-style-type: none"> Check for vitamin B12 deficiency anemia Diagnose cause of certain types of anemia Help find cause of dementia or other nervous system symptoms Determine presence of vitamin B12 deficiency anemia after diagnosis of atrophic gastritis <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood draw from a vein, usually from the inside of the elbow or the back of the hand
Test	Range	Guidelines	Preventive Measures

<p>42. Free Testosterone</p>	<p>Normal Men: 44-244 pg/mL (0.68-3.76 pmol/L) Women: 0.6- 9.2 pg/mL (0.01-0.14 pmol/L)</p>	<p>High values</p> <ul style="list-style-type: none"> In men, may be caused by cancer of testicles or adrenal glands In boys younger than 10, may mean early (precocious) puberty, a tumor in the testicles, or an abnormal adrenal gland In women may be caused by cancer of the ovaries or adrenal glands or polycystic ovary syndrome (PCOS) <p>Low values</p> <ul style="list-style-type: none"> In men or boys who have gone through puberty may be caused by a problem with the testicles or caused from treatment with the female hormone estrogen, a problem with the pituitary gland, or many long-term (chronic) illnesses In men can also be caused by certain inherited diseases, liver disease (cirrhosis), or treatment for cancer of the prostate gland Chronic alcohol use In women may be caused by an underactive pituitary gland, Addison's disease, loss of ovary function through disease or surgery, and some medicines (such as corticosteroids or estrogen) 	<p>When to get tested:</p> <ul style="list-style-type: none"> Determine infertility. A low amount of testosterone can lead to low sperm counts. Check man's sexual problems. A low level of testosterone may lower a man's sex drive or not allow him to have an erection (erectile dysfunction). See whether a high level of testosterone is causing a boy younger than age 10 to have early signs of puberty. Check a decreased sex drive in a woman Determine why a woman is developing male features Find out why a woman is having irregular menstrual periods. Determine if testosterone-lowering medicines are working in a man with advanced prostate cancer Find the cause of osteoporosis in a man <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
<p>43. Free-Thyroxine Index (FTI) T-7</p>	<p>Normal Adult Range: 4-12 ug/dl Optimal Adult Reading: 8 ug/dl</p>	<p>The FTI is obtained by multiplying the (Total T4) times (T3 Uptake) to obtain an index.</p> <p>The FTI is considered a more reliable indicator of thyroid status in the presence of abnormalities in plasma protein binding.</p> <p>It is elevated in hyperthyroidism and depressed in hypothyroidism.</p>	<p>When to get tested: Indicator of thyroid status in the presence of abnormalities in plasma protein binding</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
<p>Test</p>	<p>Range</p>	<p>Guidelines</p>	<p>Preventive Measures</p>

44. FSH/LH/Testosterone level	<p>FSH Normal: 3-20 mIU/ml</p> <p>LH Normal: < 7 mIU/ml</p> <p>Total Testosterone Normal: 6-86 ng/dl</p>	<p>Follicle Stimulating Hormone (FSH) is often used as a gauge of ovarian reserve. In general, under 6 is excellent, 6-9 is good, 9-10 fair, 10-13 diminished reserve, 13+ very hard to stimulate. In PCOS testing, the LH:FSH ratio may be used in the diagnosis. The ratio is usually close to 1:1, but if the LH is higher, it is one possible indication of PCOS.</p> <p>Luteinizing Hormone (LH) - A normal LH level is similar to FSH. An LH that is higher than FSH is one indication of PCOS.</p> <p>Total Testosterone is secreted from the adrenal gland and the ovaries. Most would consider a level above 50 to be somewhat elevated.</p>	<p>When to get tested: SH is often used in conjunction with other tests (LH, testosterone, estradiol, and progesterone) in the workup of infertility in both men and women</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
45. GGT	<p>Men normal: 2-30 U/L</p> <p>Women normal: 1-24 U/L</p>	<p>Abnormal levels of GGT can be found in the following conditions:</p> <ul style="list-style-type: none"> • Alcoholism • Brain tumor • Diabetes • Gallbladder disease or other diseases of the biliary system • Heart attack • Liver diseases such as hepatitis, cirrhosis, or cancer • Mononucleosis • Pancreatitis 	<p>When to get tested: Measured when a doctor suspects there is damage or disease in the liver or the biliary system.</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
46. Globulin	<ul style="list-style-type: none"> • Serum globulin: 2.0 to 3.5 g/dL • IgM component: 75 to 300 mg/dL • IgG component: 650 to 1850 mg/dL • IgA component: 90 to 350 mg/dL 	<p>This test is performed to look at globulin proteins in the blood. Identifying the types of globulins can help diagnose certain disorders.</p> <p>Globulins are roughly divided into three groups: alpha, beta, and gamma globulins. Gamma globulins include various types of antibodies such as immunoglobulins (Ig) M, G, and A.</p> <p>Certain diseases are associated with overproduction of immunoglobulins. For example, Waldenstrom's macroglobulinemia is a cancer of certain white blood cell that is associated with the overproduction IgM antibodies</p>	<p>When to get tested: Looks at proteins called globulins in the blood</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures

47. Glycosylated Serum Protein			<p>When to get tested:</p> <ul style="list-style-type: none"> • Yields information over a much shorter time-scale which may be particularly useful in diabetic pregnancy • Testing the serum proteins, like hemoglobin, can give information about your glucose control over shorter periods of time <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
48. HCV	<p>Positive antibody test- person was exposed to the virus at some time</p> <p>Negative – no infection or exposure</p>	<p>If the antibody test result is positive, you have probably been infected with hepatitis C, even if it was so mild you did not realize you had it</p> <p>A person will first get a screening test to determine if antibodies to the hepatitis C virus have developed</p> <p>If the antibody test is positive, a doctor will most likely order a second test to confirm whether the virus is still present in the person's bloodstream</p>	<p>When to get tested: CDC recommends in the following cases:</p> <ul style="list-style-type: none"> • If you have ever injected illegal drugs • If you received a blood transfusion or organ transplant before July 1992 • If you have received clotting factor concentrates produced before 1987 • If you were ever on long-term dialysis • For children born to HCV-positive women • For health care, emergency medicine, and public safety workers after needlesticks, sharps, or mucosal exposure to HCV-positive blood • For people with evidence of chronic liver disease <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
49. Hemaglobin A1c	Normal: < 7% or < 154 mg/dL	<ul style="list-style-type: none"> • Normal: < 7% or < 154 mg/dL 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To determine average blood glucose over last 3 months • To evaluate effectiveness of diabetes treatment plan <p>How it is conducted:</p> <ul style="list-style-type: none"> • Blood test
50. Hematocrit	<p>Normal:</p> <ul style="list-style-type: none"> • Newborns: 55%-68% • One week of age: 47%-65% • One month of age: 37%- 	<p>High levels:</p> <ul style="list-style-type: none"> • Can be seen in people living in high latitudes • Chronic smokers • Dehydration 	<p>When to get tested:</p> <p>How test is conducted:</p> <ul style="list-style-type: none"> • Measured from a blood sample by an automated machine that

	<p>49%</p> <ul style="list-style-type: none"> • Three months of age: 30%-36% • One year of age: 29%-41% • Ten years of age: 36%-40% • Adult males: 42%-54% • Adult women: 38%-46% 	<p>Other infrequent causes of elevated hematocrit:</p> <ul style="list-style-type: none"> • Lung disease • Certain tumors • A disorder of the bone marrow polycythemia rubra vera, • Abuse of the drug erythropoietin (Epogen) by athletes for blood doping purposes <p>Low levels: Anemia</p>	<p>makes several other measurements at the same time</p> <ul style="list-style-type: none"> • The hematocrit can also be determined by a manual method using a centrifuge. When a tube of blood is centrifuged, the red cells will be packed into the bottom of the tube
Test	Range	Guidelines	Preventive Measures
51. Hemochromatosis DNA	<p>Iron Overload:</p> <ul style="list-style-type: none"> • Fasting transferrin saturation: > 45 % or >35% in premenopausal women on at least two occasions <p>Normal:</p> <ul style="list-style-type: none"> • Serum ferritin test: Men and postmenopausal women: up to 300 ug/L • Premenopausal women: up to 200ug/L • Advanced hemochromatosis: may levels as high as 15,000 ug/L 	<p>Excess iron absorption and storage in organs and leads to high morbidity and mortality if untreated.</p> <p>Most cases have remained undiagnosed until late in the course of the disease when irreversible damage has already occurred.</p> <p>Early diagnosis allows for prevention of symptoms through treatment by phlebotomy.</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • Elevated transferrin saturation (>50%) or serum ferritin concentration (>400 ng/ml in men and >200 ng/ml in women) • Clinical diagnosis of hemochromatosis • Unexplained elevated serum concentrations of liver enzymes • Cirrhosis, liver failure, or hepatocellular carcinoma • Chronic unexplained fatigue, abdominal pain, or joint pain • Hepatosplenomegaly, cardiac arrhythmia, congestive heart failure, hyperpigmentation, hypothyroidism, impotence, hypogonadism, diabetes mellitus • Relative or spouse with hemochromatosis • Relative or spouse known to be homozygous or heterozygous for the Cys282Tyr mutation <p>How test is conducted:</p> <ul style="list-style-type: none"> • Transferrin saturation (related to the total iron-binding capacity, or TIBC) - the percentage of transferrin (a protein that carries iron in the blood) that is currently carrying iron. • Serum ferritin - an indirect measure of the amount of iron stored in your liver.
52. Hemoglobin	<p>The normal ranges are:</p> <ul style="list-style-type: none"> • Newborns: 17-22 gm/dl • One week of age: 15-20 gm/dl • month of age: 11- 	<p>High levels:</p> <ul style="list-style-type: none"> • Can be seen in people living in high latitudes • Chronic smokers • Dehydration 	<p>When to get tested: Part of the complete blood count (CBC) from a blood sample</p> <p>How test is conducted:</p>

	<p>15gm/dl</p> <ul style="list-style-type: none"> • Children: 11-13 gm/dl • Adult males: 14-18 gm/dl • Adult women: 12-16 gm/dl • Men after middle age: 12.4-14.9 gm/dl • Women after middle age: 11.7-13.8 gm/dl 	<p>Other infrequent causes of elevated hematocrit:</p> <ul style="list-style-type: none"> • Lung disease • Certain tumors • A disorder of the bone marrow polycythemia rubra vera, • Abuse of erythropoietin (Epogen) by athletes for blood doping purposes <p>Low levels:</p> <ul style="list-style-type: none"> • Anemia • Sickle cell 	<p>Blood test - Within the machine, the red blood cells are broken down to get the hemoglobin into a solution. The free hemoglobin is exposed to a chemical containing cyanide which binds tightly with the hemoglobin molecule to form cyanmethemoglobin. By shining a light through the solution and measuring how much light is absorbed (specifically at a wavelength of 540 nanometers), the amount of hemoglobin can be determined</p>
Test	Range	Guidelines	Preventive Measures
53. Hepatic Function Panel	<p>Albumin 3.2 - 5.5 g/dL</p> <p>Alkaline Phosphatase 26 - 100 IU/L</p> <p>Bilirubin, Total 0.0 - 1.4 mg/dL</p> <p>Bilirubin, Direct 0.0 - 0.2 mg/dL</p> <p>Total Protein 6.1 - 8.2 g/dL</p> <p>ALT < 60 U/L</p> <p>AST 8 - 40 U/L</p>	<p>This test measures the blood levels of total protein, albumin, bilirubin, and liver enzymes.</p> <p>High or low levels may mean that liver damage or disease is present</p> <p>It usually consists of seven tests that are run at the same time on a blood sample. These include:</p> <ul style="list-style-type: none"> • Alanine aminotransferase (ALT) – an enzyme mainly found in the liver; the best test for detecting hepatitis • Alkaline phosphatase (ALP) – an enzyme related to the bile ducts; often increased when they are blocked • Aspartate aminotransferase (AST) – an enzyme found in the liver and a few other places, particularly the heart and other muscles in the body • Bilirubin – two different tests of bilirubin often used together (especially if a person has jaundice): total bilirubin measures all the bilirubin in the blood; direct bilirubin measures a form that is conjugated (combined with another compound) in the liver • Albumin – measures the main protein made by the liver and tells whether or not the liver is making an adequate amount of this protein • Total Protein - measures albumin and all other proteins in blood, including antibodies made to help fight off infections 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Determine how well the liver is working • Detect, evaluate, and monitor liver disease or damage <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
54. Hepatitis C Ab	Negative:	Although false-negative tests are	When to get tested:

(Elisa)	<p>You do not have antibodies to the hepatitis C virus and you do not need to be tested further</p> <p>Positive: There are antibodies against HCV in your blood; however, it does not necessarily mean you have hepatitis C. It may be that you were infected in the past and have already cleared the infection.</p>	<p>very rare with the ELISA, they may sometimes occur in patients whose immune systems do not produce enough antibodies</p> <p>If the ELISA test is positive, your doctor or the specialist will probably perform an HCV RNA test to determine whether there is still virus in your blood or whether you have cleared the infection</p>	<p>Tests for the presence of antibodies to the hepatitis C virus</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
55. Hepatitis A&B Immune Status	<p>Normal Values:</p> <ul style="list-style-type: none"> • Hepatitis Bs Antigen: Negative • Hepatitis Bc Total Antibody: Negative • Hepatitis Be Antigen: None detected • Hepatitis Be Antibody: None detected • Hepatitis Bs Antibody: Negative 		<p>When to get tested:</p> <ul style="list-style-type: none"> • Determine stage of disease, degree of infectivity, prognosis, and immune status of patients exposed to hepatitis B virus • To identify the type of virus causing the infection <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
56. Hepatitis B Panel	No presence of antibodies (a negative test) is normal	<p>Positive tests may indicate:</p> <ul style="list-style-type: none"> • Chronic hepatitis B or hepatitis B carrier • Hepatitis A (active infection or recovery from a prior infection) • Hepatitis B (recovery from prior infection, or immunity from hepatitis B vaccine) • Hepatitis C (chronic carrier of this disease) • Hepatitis D, when found along with hepatitis B 	<p>When to get tested: To detect the presence of antibodies to viruses that cause hepatitis A, hepatitis B, or hepatitis C. The panel of tests can be used to screen blood samples for more than one kind of hepatitis virus at the same time</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
57. HGH level	<p>Normal</p> <p>Men: 5 ng/ml Women: < 10 ng/ml Children: 10 ng/ml Newborns: 10-40 ng/ml</p>	Excess HGH levels indicate gigantism and acromegaly. A decrease in the level indicates HGH deficiency and dwarfism.	<p>When to get tested: Highlight growth deficiencies, reduced pituitary gland function and pituitary tumors</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

Test	Range	Guidelines	Preventive Measures
58. HIV	<p>Individuals not infected with HIV, the CD4 count in the blood is normally above 500 cells/mm³ of blood</p> <p>HIV-infected people generally do not become at risk for complications until their CD4 cells are fewer than 200 cells/mm³</p>	<p>HIV tests Normal: No HIV antibodies are found. Normal results are called negative. If an antibody test is done during the seroconversion period and is negative, repeat testing is needed. Most people have antibodies to HIV within 6 months after becoming infected. If a repeat test at 6 months is negative, there is no infection.</p> <p>Another test to look for genetic material can be used to find infection in people who still have a negative ELISA but who may have a chance of being infected.</p> <p>Uncertain: Test results do not clearly show whether a person has an HIV infection. This is usually called an indeterminate result. It may occur before HIV antibodies develop or when some other type of antibody is interfering with the results. If this occurs, a PCR test, which detects HIV RNA, may be done to see if the virus is present. A person who still has indeterminate results for 6 months or longer is called "stable indeterminate" and is not considered to be infected with HIV.</p> <p>Abnormal: HIV antibodies are found. These results are called positive. A positive ELISA is repeated using the same blood sample. If two or more ELISA results are</p>	<p>When to get tested: Anyone who has had more than one sex partner should be tested</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

		positive, they must be confirmed by a Western blot or IFA test. The ELISA test can cause false-positive results. No one is considered HIV-positive until he or she has a positive Western blot, IFA, or PCR test.	
Test	Range	Guidelines	Preventive Measures
59. HPV	<p>Over age 30:</p> <ul style="list-style-type: none"> • If test shows a high-risk type of the HPV virus, but Pap is normal, then guidelines recommend that both tests be repeated in 12 months. If HPV infection is still active at that time, and/or if your Pap is now abnormal, another exam called a colposcopy is needed to help determine if any "bad cells" are present. If abnormal cells are found early, before they become cancerous, treatment is highly effective. • If test shows you have a high-risk type of HPV, and your Pap result is abnormal or inconclusive, the guidelines say you should have a colposcopy exam right away. <p>Under 30 years: Experts say that the only type of routine cervical cancer screening you need is a yearly Pap test. When your Pap is read by the lab, it is classified as one of the following:</p> <ul style="list-style-type: none"> • Normal. No further testing is needed until your next annual exam. • Inconclusive, borderline 	<ul style="list-style-type: none"> • If under 30, you don't need routine HPV testing. However, check with your doctor or nurse to make sure he or she will instruct the lab to automatically do the HPV test if your Pap result is inconclusive or abnormal. • If over 30, it is recommended that you get an HPV test whether or not your Pap is normal. However, many doctors and nurses are not yet ordering the HPV test for all their patients over 30. It's a good idea to call the office before your annual appointment to request the HPV test along with your Pap. Then, remind him or her when you go in for your appointment 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Young women over the age of 20 should have the HPV test if their Pap result is inconclusive • Women 30 years of age or older can benefit from the added peace of mind offered by getting the HPV test along with their Pap, no matter what their Pap result. <p>How test is conducted: The <i>digene</i> HPV Test – which can usually be run by the lab on the same sample of cells used for the Pap – uses molecular technology to detect the presence of high-risk types of HPV, which is what causes cervical cells to become abnormal</p>

	<p>or – in medical terminology – “ASC-US” (atypical squamous cells of undetermined significance). Simply put, this means the cells don’t look clearly abnormal, but they don’t look clearly normal either. An HPV test (which the lab can usually do on the same sample of cells used for the Pap) is needed to determine if a high-risk type of the virus is present. If so, a colposcopy procedure is usually needed to allow your doctor to examine your cervix for pre-cancerous cells that need to be removed. For girls under 20, HPV testing is not recommended, even in this situation.</p> <ul style="list-style-type: none"> • Abnormal. In this case, your doctor or nurse will do a colposcopy procedure to further examine your cervix and determine whether any pre-cancerous cells are present that need to be removed. A biopsy – in which a portion of tissue is removed for analysis in the lab – may be performed at the same time. 		
Test	Range	Guidelines	Preventive Measures
60. hTSH	<p>Adults: 0.4–4.5 mIU/L or 0.4–4.5 mU/L (SI units)</p> <p>Babies: 3–18 mIU/L or 3–18 mU/L (SI units)</p>	<p>High TSH levels may be caused by:</p> <ul style="list-style-type: none"> • An underactive thyroid (hypothyroidism) • A pituitary gland tumor that is making too much TSH • Not taking enough thyroid hormone medicine for treatment of an underactive thyroid gland <p>Low TSH levels may be caused</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • To check for thyroid gland problems • Find the cause of an underactive thyroid gland (hypothyroidism) • Keep track of treatment with thyroid replacement medicine for people who have hypothyroidism • Keep track of thyroid gland function in people who are

		by: <ul style="list-style-type: none"> Overactive thyroid gland (hyperthyroidism) Damage to the pituitary gland that prevents it from making TSH (a condition called secondary hypothyroidism) Taking too much thyroid medicine for treatment of an underactive thyroid gland Pregnancy during the first trimester 	being treated for hyperthyroidism <ul style="list-style-type: none"> Double-check the diagnosis of an underactive thyroid gland in a newborn How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
61. Iron, Total (TIBC) Total Iron Biding Capacity	<ul style="list-style-type: none"> Iron: 60-170 mcg/dL TIBC: 240-450 mcg/dL Transferrin saturation: 20-50% 	Total Iron Biding Capacity (TIBC) is usually higher-than-normal when the body's iron stores are low. Higher-than-normal TIBC may mean: <ul style="list-style-type: none"> Iron deficiency anemia Pregnancy (late) Lower-than-normal TIBC may mean: <ul style="list-style-type: none"> Cirrhosis Hemolytic anemia Hypoproteinemia Inflammation Liver disease Malnutrition Pernicious anemia Sickle cell anemia 	When to get tested: <ul style="list-style-type: none"> To determine if there is too much or too little iron in the blood Measures the ability of a protein called transferrin to carry iron in the blood How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
Test	Range	Guidelines	Preventive Measures
62. LD	Typical range: 105 - 333 IU/L (international units per liter)	Elevated levels of LDH may be seen with: <ul style="list-style-type: none"> Cerebrovascular accident (CVA, stroke) Drugs: anesthetics, aspirin, narcotics, procainamides, alcohol Hemolytic anemias Pernicious anemias (megaloblastic anemias) Infectious mononucleosis 	When to get tested: <ul style="list-style-type: none"> To help identify the cause and location of tissue damage in the body and to monitor its progress LDH is released into the bloodstream when cells are damaged or destroyed, can be used as a general marker of injury to cells How test is conducted:

		<p>(Mono)</p> <ul style="list-style-type: none"> • Intestinal and pulmonary infarction • Kidney disease • Liver disease • Muscular dystrophy • Pancreatitis • Lymphoma or other cancers <p>Low and normal levels of LDH do not usually indicate a problem. Low levels are sometimes seen when a patient ingests large amounts of vitamin C</p>	<ul style="list-style-type: none"> • Blood is taken from a vein, heel, finger, toe, or earlobe. • The blood sample is sent to a laboratory, where it is placed in a centrifuge. The machine quickly spins the blood, which causes the liquid part (the serum) to separate from the cells. The LDH measurement is done on the serum.
63. Lactate Dehydrogenase (LDH)	Typical range: 105 - 333 IU/L (international units per liter)	<p>Elevated levels of LDH may be seen with:</p> <ul style="list-style-type: none"> • Cerebrovascular accident (CVA, stroke) • Drugs: anesthetics, aspirin, narcotics, procainamides, alcohol • Hemolytic anemias • Pernicious anemias (megaloblastic anemias) • Infectious mononucleosis (Mono) • Intestinal and pulmonary infarction • Kidney disease • Liver disease • Muscular dystrophy • Pancreatitis • Lymphoma or other cancers <p>Low and normal levels of LDH do not usually indicate a problem. Low levels are sometimes seen when a patient ingests large amounts of vitamin C</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • To help identify the cause and location of tissue damage in the body and to monitor its progress • LDH is released into the bloodstream when cells are damaged or destroyed, can be used as a general marker of injury to cells <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is taken from a vein, heel, finger, toe, or earlobe. • The blood sample is sent to a laboratory, where it is placed in a centrifuge. The machine quickly spins the blood, which causes the liquid part (the serum) to separate from the cells. The LDH measurement is done on the serum.
Test	Range	Guidelines	Preventive Measures
64. LDL/HDL Ratio	<p>Men:</p> <ul style="list-style-type: none"> • Very Low: 1 mg/dL • Average: 3.6 mg/dL <p>Women:</p> <ul style="list-style-type: none"> • Very Low: 1.5 mg/dL • Average: 3.2 mg/dL 	<p>Men:</p> <ul style="list-style-type: none"> • Very Low: 1 mg/dL • Average: 3.6 mg/dL • Moderate Risk: 6.3 mg/dL • High Risk: 8 mg/dL <p>Women:</p> <ul style="list-style-type: none"> • Very Low: 1.5 mg/dL • Average: 3.2 mg/dL • Moderate Risk: 5.0 mg/dL • High Risk: 6.1 mg/dL 	<p>When to get tested:</p> <ul style="list-style-type: none"> • National Cholesterol Education Program (NCEP) guidelines for detection of high cholesterol: <ul style="list-style-type: none"> ○ Everyone age 20 and older should have a fasting "lipoprotein profile" every five years ○ This test is done after a 9- 12-hour fast <p>How test is conducted:</p>

			<ul style="list-style-type: none"> • A small sample of blood will be drawn from your arm or a finger prick will be performed • Blood sample is then analyzed by a lab
65. LDL-Direct	Optimal: <100 mg/dL	<ul style="list-style-type: none"> • Optimal: <100 mg/dL • Near Optimal/ Above Optimal: 100-129 mg/dL • Borderline High: 130-159 mg/dL • High: 160-189 mg/dL • Very High: ≥190 mg/dL 	<p>When to get tested:</p> <ul style="list-style-type: none"> • National Cholesterol Education Program (NCEP) guidelines for detection of high cholesterol: <ul style="list-style-type: none"> ○ Everyone age 20 and older should have a fasting "lipoprotein profile" every five years ○ This test is done after a 9- 12-hour fast <p>How test is conducted:</p> <ul style="list-style-type: none"> • A small sample of blood will be drawn from your arm or a finger prick will be performed • Blood sample is then analyzed by a lab
Test	Range	Guidelines	Preventive Measures
66. Lead	<p>Adults:</p> <ul style="list-style-type: none"> • < 20 micrograms/dL of lead in the blood <p>Children:</p> <ul style="list-style-type: none"> • < 10 micrograms/dL of lead in the blood <p>Non-pregnant adults: < 25 micrograms/deciliter is acceptable</p>	<p><i>For screening children:</i></p> <p>The CDC released guidelines for testing children for lead in 1997 and guidelines for managing children found to have elevated blood lead levels in 2002. At a minimum, screening be offered to:</p> <ul style="list-style-type: none"> • Every Medicaid-eligible child and those children whose families are part of an 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Evaluate the concentration of lead in your blood • To screen for exposure to harmful levels of lead • To monitor the effectiveness of treatment and to confirm that lead levels are decreasing over time <p>How test is conducted:</p>

	<p>If a worker has levels > 45 micrograms /deciliter, must be removed from lead exposure until blood lead level drops below 40 micrograms/deciliter</p> <p>Removal may also be recommended if symptomatic at any level below 70 micrograms per deciliter.</p> <p>A child with a lead level > 45 micrograms/deciliter should be treated with succimer in the hospital unless the patient is encephalopathic.</p> <p>Any lead level > 70 micrograms/deciliter, whether in a child or an adult, should be considered a medical emergency</p>	<p>assistance program. These children should be screened at age 1 and again at 2 years of age.</p> <ul style="list-style-type: none"> • At risk children 3-6 years of age who have not been previously tested. • Children who live in or regularly visit a house or apartment built before 1950, or before 1978 if the dwelling has been/or is undergoing renovation or remodeling. • Children with a playmate or sibling who has or did have lead poisoning. <p><i>For screening adults:</i> Blood lead tests may be ordered to screen people in the workplace if lead contamination is a possibility. Family members also may be screened because lead can be carried home on clothing. This testing conforms to federal and state laws for occupational exposure.</p> <p>There is not yet a national guideline for blood lead screening in adults as there is for children. Adults who work in industries known for lead exposure, such as smelter facilities, lead plating, auto repair, and construction, should be screened for lead exposure. Adults who have hobbies that involve lead-based paints, ceramics, or gasoline also should be tested.</p>	<p>Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
67. Lp-PLA (2)	<p>The expected values are measured in ng/mL.</p> <p>Average value - females: 174 ng/mL</p> <p>Average value – males: 251 ng/mL</p>	<p>Individuals with normal LDL but elevated levels of Lp-PLA2 are roughly twice as likely to experience a coronary event as those individuals with normal levels of both LDL and Lp-PLA2</p> <p>Risk is even higher for patients with elevated levels of both Lp-PLA2 and CRP</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • To identify patients at risk for CHD who do not have elevated LDL levels • Aids in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis <p>How test is conducted: Blood is drawn from a vein,</p>

			usually from the inside of the elbow or the back of the hand
68. Lyme Disease Ab IgG	<p>Healthy adult: No antibodies to the <i>Borrelia burgdorferi</i> bacterium</p> <p>Positive: Exposure to the bacterium and most likely have Lyme Disease</p> <p>Negative: Could still have the disease, but antibody level is too low to detect</p>	<p>A rash appears in only about 50% of those infected. This rash may be the classic “bull’s eye,” but may also be blotchy or red and may be confused with poison ivy, spider bites, or ringworm. It may appear between a few days and a few weeks after being bitten and can disappear quickly. If possible, take a picture of the rash to show your doctor, since the rash may be gone before you can get an appointment with him/her.</p> <p>Other symptoms of Lyme disease include fatigue, chills and fever, headache, muscle and joint pain, and swollen lymph nodes. Check with your doctor if you have any of these symptoms and cannot explain how you got them.</p>	<p>When to get tested: If you show symptoms of Lyme disease, especially if you have recently been in an area with a large population of deer and/or suspect you have been bitten by a tick</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
69. Lymphocytes	The normal values of lymphocytes are 20 – 40% of total leukocyte count or 10,000-4,000/mm ³	<p>Higher than normal T-cell levels may be due to:</p> <ul style="list-style-type: none"> • Acute lymphocytic leukemia • Infectious mononucleosis • Multiple myeloma <p>Lower than normal T-cell levels may be due to:</p> <ul style="list-style-type: none"> • AIDS • Acute viral infection 	<p>When to get tested: T cells are a type of white blood cells (lymphocytes). They make up part of the immune system. T cells help the body fight diseases or harmful substances. A test can be done to measure the number of T cells in your blood.</p> <p>How test is conducted: Blood is drawn from a vein,</p>

		<ul style="list-style-type: none"> • Aging • Cancer • Congenital T-cell deficiency (rare) • Hodgkin's disease • Immunodeficiency disorders • Leukemias • Side effect of radiation therapy • Waldenstrom's macroglobulinemia <p>Lymphocytosis (a potentially abnormal increase in the amount of circulating lymphocytes) is measured with the following values:</p> <ul style="list-style-type: none"> • Above 9000/mm³ in infants and young children ages 4 years and younger • Above 7000/mm³ in children ages 5 through 12 years • Above 4000/mm³ in people 13 years and older 	usually from the inside of the elbow or the back of the hand
70. Mean Corpuscular Hemoglobin	<ul style="list-style-type: none"> • MCV: 80 to 100 femtoliter • MCH: 27 to 31 picograms/cell 	<p>Anemias are based on cell size (MCV) and amount of Hgb(MCH).</p> <ul style="list-style-type: none"> • MCV less than lower limit of normal: microcytic anemia • MCV within normal range: normocytic anemia • MCV greater than upper limit of normal: macrocytic anemia • MCH less than lower limit of normal: hypochromic anemia • MCH within normal range: normochromic anemia • MCH greater than upper limit of normal: hyperchromic anemia <p>Calculation of the average amount of oxygen-carrying hemoglobin inside a red blood cell. Macrocytic RBCs are large so tend to have a higher MCH, while microcytic red cells would have a lower value</p>	<p>When to get tested: Used to help diagnose the cause of anemia, a condition in which there are too few red blood cells</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
71. Mean Corpuscular Hemoglobin Concentration	<ul style="list-style-type: none"> • MCHC: 32 to 36 grams/deciliter 	<p>Calculation of the average concentration of hemoglobin inside a red cell</p> <p>Decreased MCHC values (hypochromia) are seen in conditions where the hemoglobin is abnormally diluted inside the red cells, such as in iron deficiency anemia and in thalassemia.</p> <p>Increased MCHC values</p>	<p>When to get tested: Used to help diagnose the cause of anemia, a condition in which there are too few red blood cells</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

		(hyperchromia) are seen in conditions where the hemoglobin is abnormally concentrated inside the red cells, such as in burn patients and hereditary spherocytosis, rare congenital disorder.	
72. Mean Corpuscular Volume (MCV)	<p>Normal</p> <p>Over age 18: 78 -98 um³</p> <p>Newborns: 95- 121 um³.</p> <p>6 months-2 years: 70- 86 um³</p> <p>Boys ages 12-18: 78- 98 um³</p> <p>Girls ages 12- 18: 78-102 um³</p> <p>Note: Ranges mentioned above will be different depending on the machine used to do the blood test.</p>	<p>Average amount of space occupied by each red blood cell</p> <p>The MCV is elevated when your RBCs are larger than normal (macrocytic), for example in anemia caused by vitamin B12 deficiency.</p> <p>When the MCV is decreased, your RBCs are smaller than normal (microcytic) as is seen in iron deficiency anemia or thalassemias.</p> <p>In patients with anemia, it is the MCV measurement that allows classification as either a microcytic anemia (MCV below normal range) or macrocytic anemia (MCV above normal range)</p>	<p>When to get tested: Used to help diagnose the cause of anemia, a condition in which there are too few red blood cells</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
73. Metabolic Panel, Basic	<ul style="list-style-type: none"> • BUN: 7 to 20 mg/dL • CO₂ (carbon dioxide): 20 to 29 mmol/L • Creatinine: 0.8 to 1.4 mg/dL • Glucose: 64 to 128 mg/dL • Serum chloride: 101 to 111 mmol/L • Serum potassium: 3.7 to 5.2 mEq/L 	<p>Includes 8 tests:</p> <ul style="list-style-type: none"> • Glucose • Calcium <p>Both increased and decreased levels can be significant.</p> <p><i>Electrolytes</i></p> <ul style="list-style-type: none"> • Sodium • Potassium • CO₂ (carbon dioxide, bicarbonate) 	<p>When to get tested: For information about the current status of your kidneys, blood sugar, and electrolyte and acid/base balance</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

	<ul style="list-style-type: none"> • Serum sodium: 136 to 144 mEq/L 	<ul style="list-style-type: none"> • Chloride <p>The concentrations of sodium and potassium are tightly regulated by the body as is the balance between the four molecules. Electrolyte (and acid-base) imbalances can be present with a wide variety of acute and chronic illnesses. Chloride and CO₂ tests are rarely ordered by themselves.</p> <p><i>Kidney Tests</i></p> <ul style="list-style-type: none"> • BUN (blood urea nitrogen) • Creatinine <p>BUN and creatinine are waste products filtered out of the blood by the kidneys. Increased concentrations in the blood may indicate a temporary or chronic decrease in kidney function. When not ordered as part of the BMP, they are still usually ordered together.</p>	
74. Monocytes	<ul style="list-style-type: none"> • Adults: <ul style="list-style-type: none"> ○ Absolute: 0.2-0.95 x 10³ cells/microL ○ Relative: 4%-11% • Adults, 21 years: <ul style="list-style-type: none"> ○ Absolute: 0-0.8 x 10³ cells/microL ○ Relative: 4% 	<p>An increased number of monocytes in the blood (monocytosis) occurs in response to chronic infections, in autoimmune disorders, in blood disorders, and in cancers</p> <p>A low number of monocytes in the blood (monocytopenia) can occur in response to the release of toxins into the blood by certain types of bacteria (endotoxemia), as well as in people receiving chemotherapy or corticosteroids</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • To evaluate and manage blood disorders, certain problems with the immune system, and cancers, including monocytic leukemia • To evaluate for the risk of complications after a heart attack <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
75. MPV	Normal: 7.5-11.5 fl	<p>A machine-calculated measurement of the average size of your platelets.</p> <p>New platelets are larger, and an increased MPV occurs when increased numbers of platelets are being produced.</p> <p>Vary with platelet production; younger platelets are larger than</p>	<p>When to get tested: Information about platelet production in bone marrow</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

		older ones	
76. Neutrophils	Normal range 1500 -8000 mm ³	<p>Neutropenia, a decreased proportion of neutrophils, may be seen with viral infections and after radiotherapy and chemotherapy; lowers the immunologic barrier to bacterial and fungal infection.</p> <p>Neutrophilia, an increased proportion of neutrophils in the blood, is a common finding with acute bacterial infections.</p>	<p>When to get tested: To determine neutrophils count</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
77. NMR Lipoprofile	<p>LDL Particle Numbers LDL-P (LDL Particle Number)</p> <ul style="list-style-type: none"> • Optimal: < 1000 nmol/L • Near or above optimal: 1000 - 1299 nmol/L 	<p>Patients with a high number of LDL particles (LDL-P) are at increased risk for heart disease, even if they have "normal" cholesterol levels. By knowing how many of these particles are circulating in the blood, a</p>	<p>When to get tested: If your cholesterol is normal, being lowered by treatments like diet, exercise, or medication; or you have any of the following:</p> <ul style="list-style-type: none"> • Diabetes • Previous heart attack

	<ul style="list-style-type: none"> • Borderline-high: 1300-1599 nmol/L • High: 1600-2000 nmol/L • Very High: > 2000 nmol/L <p>Small LDL-P</p> <ul style="list-style-type: none"> • Low: < 600 nmol/L • Moderate: 600-849 nmol/L • Borderline-high: 850-1200 nmol/L • High: > 1200 nmol/L <p>Patient Goals</p> <p>High-Risk Patients</p> <ul style="list-style-type: none"> • primary goal: LDL-P < 1000 nmol/L • secondary goal: small LDL-P < 850 nmol/L <p>Moderate High-Risk Patients</p> <ul style="list-style-type: none"> • primary goal: LDL-P < 1300 nmol/L • secondary goal: small LDL-P < 850 nmol/L <p>LIPIDS</p> <p>LDL-C (calculated)</p> <ul style="list-style-type: none"> • Optimal < 100 mg/dL • Near or above optimal: 100-129 mg/dL • Borderline-high: 130-159 mg/dL • High: 160-189 mg/dL • Very High: \geq 190 mg/dL <p>HDL-C Desirable: \geq 40 mg/dL</p> <p>Triglycerides Desirable: < 150 mg/dL</p> <p>Total Cholesterol Desirable: < 200 mg/Dl LDL-C cannot be reported if triglycerides are > 400 mg/dL. LDL-C will be inaccurate if the sample is nonfasting.</p> <p>Metabolic Syndrome Markers</p>	<p>physician can get a more accurate picture of a patient's heart health and, therefore make better patient care decisions.</p> <p>This test measures size and volume of the particles that carry cholesterol. The higher the number, the higher the patient is at risk for atherosclerosis.</p> <p>50% of patients with normal cholesterol still have heart events and this test is a direct measurement of cholesterol.</p> <p>Patients who present with a high LDL-P number should have the test every six weeks, especially if medication is prescribed or changed - to monitor progress. Typically, the next test is at three months, and then recommended every 6 to 12 months thereafter</p>	<ul style="list-style-type: none"> • Family history of heart attack • High blood pressure • Obesity/Overweight • Metabolic syndrome / cardiometabolic risk • Low HDL (dyslipidemia) • High triglycerides <p>How test is conducted: Blood draw - NMR spectroscopy measures the actual number of atherogenic LDL particles that build up in the arteries and cause heart disease</p>
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	<p>These markers increase the risk of developing Type 2 Diabetes Mellitus.</p> <p>LDL Particle Size</p> <ul style="list-style-type: none"> • Large (Pattern A): 23.0-20.6 nm • Small (Pattern B): 20.5-18.0 nm <p>Large HDL-P</p> <ul style="list-style-type: none"> • Low Risk: > 9.0 mol/L • Intermediate: 4.0-9.0 mol/L • High Risk: < 4.0 mol/L <p>Large VLDL-P</p> <ul style="list-style-type: none"> • Low Risk: < 0.5 nmol/L • Intermediate: 0.5-5.0 nmol/L • High Risk: > 5.0 nmol/L 		
78. NTX Bone Loss Study	<p>Premenopausal value: 36 bone collagen equivalent units/mmol creatinine</p> <p>The range is 5–65</p> <p>A number somewhere between 30 to mid-40's bone collagen equivalent units/mmol creatinine should indicate a safe amount of bone turnover</p>	<p>Women with elevated baseline levels of urine NTx (approximately twice the reference value) who do not use HRT have vastly elevated risk of bone loss within one year. Likewise, lower baseline NTx values indicate lower risk</p> <p>Once a patient initiates therapy, NTx measurements can be repeated as soon as three months later</p>	<p>When to get tested: Indicate your rate of bone breakdown relative to normal ranges</p> <p>To identify an increase or decrease in bone breakdown in as little as 60-90 days, more immediate check on the success of lifestyle changes or other interventions to improve bone health</p> <p>To identify patients most at risk for osteoporosis</p> <p>How test is conducted: Urine test</p>
Test	Range	Guidelines	Preventive Measures
79. Occult Blood, Stool	<p>A positive fecal occult blood test means that blood has been found in the stool. Your doctor will have to determine the source of the bleeding, either by doing a colonoscopy, or by doing</p>	<p>Positive test results may indicate the following:</p> <ul style="list-style-type: none"> • Angiodysplasia of the colon • Bleeding esophageal varices • Colon polyp or colon cancer 	<p>When to get tested: Detects hidden (occult) blood in the stool. Such blood may come from anywhere along the digestive tract. Hidden blood in stool is often the first, and in many cases the only, warning sign that a person has colorectal disease</p>

	<p>an examination to determine if the bleeding is coming from the stomach or small intestine</p> <p>A negative test result is normal, it means no blood was found in the stool.</p>	<ul style="list-style-type: none"> • Complications of recent GI surgery • Esophagitis • Fissures (cracks around the anus) • Gastritis • GI (gastrointestinal) trauma • GI tumor • Hemorrhoids • Inflammatory bowel disease • Peptic ulcer <p>Once a year</p>	<p>How test is conducted: There are two types:</p> <ol style="list-style-type: none"> 1) Traditional guaiac smear test completed and interpreted by a medical professional, usually available from a laboratory or a doctor's office 2) Flushable reagent pads available without a prescription at many drugstores
80. Phosphorous/ Phosphate	Normal values range from 2.4 - 4.1 mg/dl	<p>Higher than normal levels may indicate:</p> <ul style="list-style-type: none"> • Bone metastasis • Hypocalcemia • Hypoparathyroidism • Increased dietary or intravenous (IV) intake of phosphate • Liver disease • Renal failure • Sarcoidosis <p>Lower than normal levels may indicate:</p> <ul style="list-style-type: none"> • Diabetic ketoacidosis • Hypercalcemia • Hyperinsulinism • Hyperparathyroidism • Too little dietary intake of phosphate or vitamin D, resulting in rickets (childhood) or osteomalacia (adult) 	<p>When to get tested:</p> <ul style="list-style-type: none"> • To evaluate the level of phosphorus in your blood • To aid in the diagnosis of conditions known to cause abnormally high or low levels • As a follow-up to an abnormal calcium level, if you have a kidney disorder or uncontrolled diabetes, and if you are taking calcium or phosphate supplements <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
81. Platelets	<p>Normal count for adult: 150,000 to 450,000 platelets per microliter (x 10⁻⁶/Liter) of blood</p> <p>If platelet levels fall below 20,000 per microliter, spontaneous bleeding may</p>	<p>Platelets below normal (thrombocytopenia):</p> <ul style="list-style-type: none"> • Cancer chemotherapy • Disseminated intravascular coagulation (DIC) • Hemolytic anemia • Hypersplenism • Idiopathic 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Often ordered as part of a complete blood count • When a patient has unexplained bruises or takes what appears to be an unusually long time to stop bleeding from a small cut or wound

	occur and is considered a life-threatening risk	<p>thrombocytopenic purpura (ITP)</p> <ul style="list-style-type: none"> • Leukemia • Massive blood transfusion • Prosthetic heart valve <p>Higher than normal (thrombocytosis):</p> <ul style="list-style-type: none"> • Anemia • Certain types of cancer • Early chronic myelogenous leukemia (CML) • Polycythemia vera • Primary thrombocytosis • Recent spleen removal 	<p>How test is conducted:</p> <p>Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
82. Platelet Count	<p>Normal count for adult: 150,000 to 450,000 platelets per microliter ($\times 10^{-6}$/Liter) of blood</p> <p>If platelet levels fall below 20,000 per microliter, spontaneous bleeding may occur and is considered a life-threatening risk</p>	<p>Platelets below normal (thrombocytopenia):</p> <ul style="list-style-type: none"> • Cancer chemotherapy • Disseminated intravascular coagulation (DIC) • Hemolytic anemia • Hypersplenism • Idiopathic thrombocytopenic purpura (ITP) • Leukemia • Massive blood transfusion • Prosthetic heart valve <p>Higher than normal (thrombocytosis):</p> <ul style="list-style-type: none"> • Anemia • Certain types of cancer • Early chronic myelogenous leukemia (CML) • Polycythemia vera • Primary thrombocytosis • Recent spleen removal 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Often ordered as part of a complete blood count • When a patient has unexplained bruises or takes what appears to be an unusually long time to stop bleeding from a small cut or wound <p>How test is conducted:</p> <p>Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
83. Potassium	The normal range is 3.7 to 5.2 mEq/L	<p>Low levels of potassium cause increased heart muscle activity, which can lead to an irregular heartbeat. High levels cause decreased heart muscle activity. Either situation can lead to a heart attack in some cases.</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • This test is routinely done as part of an electrolyte level test • Diagnose or monitor kidney disease • If you have signs of high blood pressure or heart problems <p>How test is conducted:</p> <p>Blood is drawn</p>
Test	Range	Guidelines	Preventive Measures
84. Pre Gen Plus	Positive result will dictate the need for a colonoscopy	<p>PreGen-Plus was four times more sensitive than the fecal occult blood test, currently the only other non-invasive screening method for colorectal cancer</p> <p>This is an enhancement of the standard hemoccult test. It is used</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • To detect colorectal cancer • Patients who have indications for structural exam (symptoms, plus screening test, etc) • Hereditary colorectal cancer syndromes • Family/personal history of

		for the detection of clinically significant colorectal cancer in asymptomatic, average-risk patients who are 50 years old and older. It is not intended as a replacement for colonoscopy in patients who are willing to undergo the procedure	colorectal neoplasia <ul style="list-style-type: none"> Long-standing inflammatory bowel disease <p>How test is conducted: Non-invasive test that isolates and analyzes DNA extracted from a stool sample for alterations associated with the presence of colorectal cancer</p>
85. Pregnancy Test (Blood)	<ul style="list-style-type: none"> The test is negative if you are not pregnant. The test is positive if you are pregnant 	<p>If your serum HCG is positive and you do not have a pregnancy properly implanted in the uterus, it may indicate:</p> <ul style="list-style-type: none"> Ectopic pregnancy Miscarriage Testicular cancer (in men) Trophoblastic tumor Hydatidiform mole Ovarian cancer <p>When the test is negative but pregnancy is still suspected, the test should be repeated in 1 week</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> To determine pregnancy; measuring the concentration of hCG hormone in the blood Can detect a pregnancy earlier than a urine test at about 7-12 days from possible conception <p>How test is conducted: One of two ways -</p> <ul style="list-style-type: none"> Quantitative blood test measures the exact amount of hCG in the blood Qualitative hCG blood test gives a simple yes or no answer to whether you are pregnant or not
86. Prenatal Panel w/HBsAg		<p>You have the right to refuse any or all of the following tests that are included in the panel:</p> <ul style="list-style-type: none"> Complete Blood Count (CBC): This blood test determines how efficiently your blood can carry oxygen, whether you are anemic, have an infection, allergies or the possibility of leukemia Hepatitis B Virus Screen HIV Rh Titer: This test is done to determine if you have antibodies to rhesis factor Rubella Titer Screen Syphilis Screen 	<p>When to get tested: Used to detect infection, collect basic information, and to determine a 'baseline' to compare against future results should a complication arise that this information will help benefit</p> <p>How test is conducted: Blood draw during first prenatal visit</p>
Test	Range	Guidelines	Preventive Measures
87. Protein, Total	<ul style="list-style-type: none"> Typically, there is a little more albumin than globulins Normal A/G ratio slightly over 1 	<ul style="list-style-type: none"> Proper albumin to globulin ratio is 2:1 <1.7 may need to increase stomach acidity >3.5 may need stomach acidity and pepsin 	<p>When to get tested:</p> <ul style="list-style-type: none"> Provide general information about nutritional status, such as a recent weight loss Ordered along with several other tests to provide information if symptoms suggest liver or kidney disorder Investigate the cause of abnormal

			pooling of fluid in tissue (edema) How test is conducted: • Blood sample is taken with a needle from a vein in the arm
88. PTH	Normal: 10–65 pg/mL or 10–65 ng/L	<p>Calcium - PTH Relationship</p> <ul style="list-style-type: none"> • If calcium levels are low and PTH levels high, then the parathyroid glands are responding as they should and producing appropriate amounts of PTH • If calcium levels are low and PTH levels are normal or low, then PTH is not responding and you probably have hypoparathyroidism • If calcium levels are high and PTH levels are high, then your parathyroid glands are producing inappropriate amounts of PTH. X-rays may be used to check for cause and severity of hyperparathyroidism • If calcium levels are high and PTH levels are low, then the parathyroid glands are responding properly 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Diagnose the reason for a low or high calcium level • Distinguish between parathyroid-related and non-parathyroid-related causes • Monitor the effectiveness of treatment when a patient has a parathyroid-related condition <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
89. RAST Food Profile	The RAST test is scored on a scale from 0 to 6: 0: Absent or undetectable allergen specific 1: Low or allergen specific 2: Moderate level of allergen specific 3: High level of allergen specific 4: Very high level of allergen specific 5: Very high level of allergen specific 6: Extremely high level of allergen specific		<p>When to get tested:</p> <ul style="list-style-type: none"> • To test for food allergies • Detect the amount of IgE that reacts specifically with suspected or known allergens <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
90. RBC	Normal: <ul style="list-style-type: none"> • Male: 4.7 to 6.1 million cells/mcL • Female: 4.2 to 5.4 million cells/mcL 	<p>The RBC count is almost always part of the complete blood count test</p> <p>Decreased RBC</p> <ul style="list-style-type: none"> • Trauma • Burns • Pregnancy 	<p>When to get tested: Diagnose anemia and other conditions affecting red blood cells</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

		<ul style="list-style-type: none"> • Hemolytic anemia • Hemorrhagic infections • Gastrointestinal (GI) or other vascular bleed • Iron deficiency anemia • Vitamin B12 or folate deficiency • Bone marrow damage • Metabolic disorders • Chronic inflammation <p>Increased RBC</p> <ul style="list-style-type: none"> • Dehydration • Pulmonary disease • Congenital heart disease • Renal problems • Over-transfusion of whole blood • Tissue hypoxia 	
91. RDW	Normal range: 11 - 15%	<p>Conditions such as pernicious anemia cause changes in red blood cell size</p> <p>Higher RDW is indicative of disorders such as anemia</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • Calculates any variation in size of red blood cell • To determine anemia <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
92. Red Blood Cell Count	<p>Normal:</p> <ul style="list-style-type: none"> • Male: 4.7 to 6.1 million cells/mcL • Female: 4.2 to 5.4 million cells/mcL 	<p>The RBC count is almost always part of the complete blood count test</p> <p>Decreased RBC</p> <ul style="list-style-type: none"> • Trauma • Burns • Pregnancy • Hemolytic anemia • Hemorrhagic infections • Gastrointestinal (GI) or other vascular bleed • Iron deficiency anemia • Vitamin B12 or folate deficiency • Bone marrow damage • Metabolic disorders • Chronic inflammation <p>Increased RBC</p> <ul style="list-style-type: none"> • Dehydration • Pulmonary disease • Congenital heart disease • Renal problems 	<p>When to get tested: Diagnose anemia and other conditions affecting red blood cells</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>

		<ul style="list-style-type: none"> • Over-transfusion of whole blood • Tissue hypoxia 	
93. Red Cell Distribution Width	Normal range: 11 - 15%	<p>Conditions such as pernicious anemia cause changes in red blood cell size</p> <p>Higher RDW is indicative of disorders such as anemia</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • Calculates any variation in size of red blood cell • To determine anemia <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
94. Rubella Antibodies, IgM	<p>Rubella Antibody, IgM</p> <ul style="list-style-type: none"> • Negative - no significant level of detectable rubella IgM antibody: ≤ 0.89 IV • Equivocal - repeat testing in 10-14 days may be helpful: 0.90-1.09 IV • Positive - IgM antibody to rubella detected, which may indicate a current or recent infection or immunization: ≥ 1.10 IV 	<p>Take time to appear so tests may be repeated in 2 to 3 weeks to see if the antibody levels have become detectible</p> <p>Should be tested prior to or at the beginning of pregnancy to verify immunity</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • When pregnant or planning on becoming pregnant • Whenever a check of immunity against rubella is required <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult or the umbilical cord of a newborn</p>
95. Rubeola Ab IgM	<ul style="list-style-type: none"> • Negative - no significant level of IgM antibodies to measles: ≤ 0.79 AU or less (Rubeola) virus detected • Equivocal - repeat testing in 10-14 days may be helpful: 0.80-1.20 AU 	<p>Rubeola IgM antibody responses normally occur 7-14 days after the onset of disease. Testing immediately post- exposure is of no value without a later specimen.</p> <p>Low levels of IgM antibodies may occasionally persist for more than 12 months post-infection or immunization.</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • Determine acute-phase infection with rubeola (measles) virus • As an aid in identifying nonimmune individuals <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>

	<ul style="list-style-type: none"> Positive - IgM antibodies to measles (Rubeola) virus detected: ≥ 1.21 AU or greater 		
96. Rubeola Antibodies, IgG	<ul style="list-style-type: none"> Negative - no significant level of detectable measles (rubeola) IgG antibody: ≤ 0.89 IV Equivocal - repeat testing in 10-14 days may be helpful: 0.90-1.09 IV Positive - IgG antibody to measles (rubeola) detected, which may indicate a current or past exposure/ immunization to measles (rubeola): ≥ 1.10 IV or greater 	<ul style="list-style-type: none"> Rubeola IgG first appears 1-2 days after the onset of rash and peak levels are achieved 2-3 weeks later Measles IgG persists for lifetime of patient 	<p>When to get tested:</p> <ul style="list-style-type: none"> To establish the immune status of the patient As an aid in the detection of an active or recent infection <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>
Test	Range	Guidelines	Preventive Measures
97. Sodium	<p>Adult: 136–145 mEq/L or 136–145 mmol/L</p> <p>Children: 138–145 mEq/L or 138–145 mmol/L</p>	<ul style="list-style-type: none"> Too much sodium in the diet may raise blood pressure in some people. For those who have high blood pressure, eating foods with a lot of sodium increases chance of heart disease, stroke, and kidney damage. Heart failure gets worse when too much sodium is eaten. 	<p>When to get tested:</p> <ul style="list-style-type: none"> Check the water and electrolyte balance of the body. Find the cause of symptoms from low or high levels of sodium. Check the progress of diseases of the kidneys or adrenal glands <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>
98. T-3 uptake	Normal values range from 24 - 37%	<p>This test helps estimate the availability of thyroxin binding globulin (TBG), the protein that carries most of the T3 and T4 in the blood.</p> <p>The higher the level of TBG , the lower the value of T3RU; higher T3RU value means less TBG is available, possibly as a result of hyperthyroidism</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> As part of an evaluation of thyroid function If there are signs of thyroid disorder To diagnose hyper- and hypothyroidism <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>
99. THC (Cannabinoids , Marijuana)	Blood levels of THC above 3-5 ng/ml are a sign of likely impairment	<ul style="list-style-type: none"> Cannabis is detectable in the blood for approximately 2-3 days after use in an infrequent 	<p>When to get tested:</p> <ul style="list-style-type: none"> To determine level of current impairment

Blood		<p>user</p> <ul style="list-style-type: none"> • Frequent use can be detected in the blood for approximately 2 weeks • It is difficult to establish a relationship between a person's THC blood or plasma concentration and performance impairing effects 	<ul style="list-style-type: none"> • To detect the actual presence of THC in the system <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>
100. Thyroid Cascade	If s-TSH is <0.3 mIU/L or >5.0 mIU/L, free thyroxine (FT4) is performed	<p>The Thyroid Test Cascade starts with a TSH. If the TSH result is abnormal a free T4 is performed. In cases where a TSH is suppressed and the free T4 is low or normal a total T3 is done to test for T3 toxicosis.</p> <p>Only intended for ambulatory patients and is not recommended for inpatients, patients with pituitary or hypothalamic disorders or patients with acute illness or neuropsychiatric disease</p>	<p>When to get tested: Evaluation of primary thyroid dysfunction</p> <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>
Test	Range	Guidelines	Preventive Measures
101. Thyroid Panel	<p>Normal Values:</p> <p>TSH: 0.4 – 4.5mIU/L</p> <p>T4: 4.5 to 11.2 mcg/dL</p> <p>T3: 24-37%</p>	<p>The thyroid panel usually includes:</p> <ul style="list-style-type: none"> • TSH (thyroid stimulating hormone or thyrotropin)– to test for hypothyroidism, hyperthyroidism and to monitor thyroid replacement therapy • T4 or free T4 (thyroxine)– to test for hypothyroidism and hyperthyroidism • T3 or free T3 (triiodothyronine)– to test for hyperthyroidism <p>Sometimes a T3 uptake test is included to calculate Free Thyroxine Index (FTI)</p> <p>Everyone should receive regular screening for thyroid problems beginning at age 35</p>	<p>When to get tested: To evaluate thyroid gland function To diagnose thyroid disorders</p> <p>How test is conducted: A blood sample is drawn from a vein in the arm of an adult</p>
Test	Range	Guidelines	Preventive Measures
102. Total Protein	<ul style="list-style-type: none"> • Typically, there is a little more albumin than globulins • Normal A/G ratio 	<ul style="list-style-type: none"> • Proper albumin to globulin ratio is 2:1 • <1.7 may need to increase stomach acidity 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Provide general information about nutritional status, such as a recent weight loss

	slightly over 1	<ul style="list-style-type: none"> • >3.5 may need stomach acidity and pepsin 	<ul style="list-style-type: none"> • Ordered along with several other tests to provide information if symptoms suggest liver or kidney disorder • Investigate the cause of abnormal pooling of fluid in tissue (edema) <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood sample is taken with a needle from a vein in the arm
103. Total T-4	Normal: 4.5 to 11.2 mcg/dL	<ul style="list-style-type: none"> • Ordered in response to an abnormal TSH test result • A high value can indicate hyperthyroidism, a low value can indicate hypothyroidism. Total T4 levels can be elevated due to pregnancy, and other high estrogen states, including use of estrogen replacement or birth control pills 	<p>When to get tested: To help diagnose hyper- and hypothyroidism</p> <p>How test is conducted: Blood sample is taken with a needle from a vein in the arm</p>
104. Urea Nitrogen (renal function) - BUN	Normal: 10 - 20 mg/dl	<p>Higher levels may be due to:</p> <ul style="list-style-type: none"> • Congestive heart failure • Excessive protein levels • Gastrointestinal bleeding • Hypovolemia • Heart attack • Kidney disease • Kidney failure • Shock • Urinary tract obstruction <p>Lower levels may be due to:</p> <ul style="list-style-type: none"> • Liver failure • Low protein diet • Malnutrition • Over-hydration 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Urea nitrogen is what forms when protein breaks down • Measure the amount of urea nitrogen in the blood to check kidney function <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
Test	Range	Guidelines	Preventive Measures
105. Uric Acid (Gout Screening and Renal	<p>Normal Values:</p> <ul style="list-style-type: none"> • Men: 3.4–7.0 mg/dL • Women: 2.4–6.0 mg/dL 	Uric acid crystals can form in joints at levels < 7 mg/dL, especially in men, leading to a gout attack, even though the uric	<p>When to get tested:</p> <ul style="list-style-type: none"> • Help diagnose gout • Determine if kidney stones may be caused by high uric acid levels

function)	<ul style="list-style-type: none"> Children: 2.5–5.5 mg/dL 	<p>acid levels are within the normal range</p> <p>Greater-than-normal levels of uric acid (hyperuricemia) may be due to:</p> <ul style="list-style-type: none"> Acidosis Alcoholism Diabetes Gout Hypoparathyroidism Lead poisoning Leukemia Nephrolithiasis Polycythemia vera Renal failure Toxemia of pregnancy Purine-rich diet Excessive exercise <p>Lower-than-normal levels of uric acid may be due to:</p> <ul style="list-style-type: none"> Fanconi syndrome Wilson's disease SIADH Low purine diet 	<p>in the body</p> <ul style="list-style-type: none"> Evaluate uric acid levels in people who are undergoing chemotherapy or radiation therapy <p>How test is conducted:</p> <ul style="list-style-type: none"> Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand 24-hour urine test
106. Urinalysis	<p>Normal urine may vary in color from almost colorless to dark yellow. Some foods (like beets and blackberries) may turn the urine a red color.</p> <p>Usually, glucose, ketones, protein, bilirubin, are not detectable in urine. The following are not normally found in urine:</p> <ul style="list-style-type: none"> Hemoglobin Nitrites Red blood cells White blood cells 	<p>Three basic steps to a complete urinalysis:</p> <p>Physical color and appearance:</p> <ul style="list-style-type: none"> What does the urine look like to the naked eye? Is it clear or cloudy? Is it pale or dark yellow or another color? <p>The urine specific gravity test reveals how concentrated or dilute the urine is</p> <p>Microscopic appearance:</p> <ul style="list-style-type: none"> The urine sample is examined under a microscope, to look at cells, urine crystals, mucus, and other substances, and to identify any bacteria or other microorganisms that might be present <p>Chemical appearance:</p> <ul style="list-style-type: none"> A special stick ("dipstick") tests for various substances in the urine; stick contains little pads of chemicals that change color when they come in contact with the substances of interest 	<p>When to get tested:</p> <ul style="list-style-type: none"> As part of a routine medical exam to screen for early signs of disease If you have signs of diabetes or kidney disease, or to monitor you if you are being treated for these conditions To check for blood in the urine To diagnose a urinary tract infection <p>How test is conducted:</p> <ul style="list-style-type: none"> 24-hour urine collection Clean catch urine specimen
Test	Range	Guidelines	Preventive Measures
107. Urinalysis Routine	Normal urine may vary in color from almost colorless to dark yellow. Some foods (like beets and	<p>Three basic steps to a complete urinalysis:</p> <p>Physical color and appearance:</p> <ul style="list-style-type: none"> What does the urine look 	<p>When to get tested:</p> <ul style="list-style-type: none"> As part of a routine medical exam to screen for early signs of disease

	<p>blackberries) may turn the urine a red color.</p> <p>Usually, glucose, ketones, protein, bilirubin, are not detectable in urine. The following are not normally found in urine:</p> <ul style="list-style-type: none"> • Hemoglobin • Nitrites • Red blood cells • White blood cells 	<p>like to the naked eye?</p> <ul style="list-style-type: none"> • Is it clear or cloudy? • Is it pale or dark yellow or another color? <p>The urine specific gravity test reveals how concentrated or dilute the urine is</p> <p>Microscopic appearance:</p> <ul style="list-style-type: none"> • The urine sample is examined under a microscope, to look at cells, urine crystals, mucus, and other substances, and to identify any bacteria or other microorganisms that might be present <p>Chemical appearance:</p> <ul style="list-style-type: none"> • A special stick ("dipstick") tests for various substances in the urine; stick contains little pads of chemicals that change color when they come in contact with the substances of interest 	<ul style="list-style-type: none"> • If you have signs of diabetes or kidney disease, or to monitor you if you are being treated for these conditions • To check for blood in the urine • To diagnose a urinary tract infection <p>How test is conducted:</p> <ul style="list-style-type: none"> • 24-hour urine collection • Clean catch urine specimen
108. VAP	<p>Desirable Values:</p> <ul style="list-style-type: none"> • LDL: < 130 mg/dL • HDL: \geq 40 mg/dL • Triglycerides: < 150 mg/dL • Total Cholesterol: < 200 mg/dL • VLDL: < 30 mg/dL • Non-HDL: < 160 mg/dL • apoB 100 < 109 mg/dL • Lp(a): < 10 mg/dL • IDL: < 20 mg/dL • LDL-R: < 100 mg/dL • LDL-R Subclass Pattern: LDL4=10, LDL3=45, LDL2=15, LDL1=5 (mg/dL) • Remnant Lipoproteins: < 30 mg/dL • HDL2: > 10 mg/dL • HDL3: > 30 mg/dL 	<p>Measures 15 lipid components:</p> <ol style="list-style-type: none"> 1. LDL 2. HDL 3. Triglycerides 4. Total Cholesterol 5. VLDL 6. Non-HDL 7. apoB 100 8. Lp(a) 9. IDL 10. LDL-R 11. LDL-R Subclass Pattern 12. Remnant Lipoproteins 13. Metabolic Syndrome 14. HDL2 15. HDL3 <ul style="list-style-type: none"> • Identifies twice the number of people at risk for cardiovascular diseases than of routine cholesterol tests • Additional information provided improves the ability to predict heart disease risk to more than 90% and directly measures LDL cholesterol. 	<p>When to get tested:</p> <ul style="list-style-type: none"> • Early detection and treatment of cardiovascular disease and diabetes • To identify the cholesterol markers for Metabolic Syndrome <p>How test is conducted:</p> <ul style="list-style-type: none"> • Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
Test	Range	Guidelines	Preventive Measures
109. Varicella Zoster	Normal: No antigen detected	Adults with no antibodies to chickenpox may want to be vaccinated against the disease because having chickenpox as an	<p>When to get tested:</p> <ul style="list-style-type: none"> • To check for the presence of chickenpox antibodies in adults, which indicate a previous

		adult is generally more painful and severe than in childhood, and scarring of the face and body from the pox marks is of increased concern	infection with chickenpox <ul style="list-style-type: none"> Identify an active infection How test is conducted: <ul style="list-style-type: none"> Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand
110. Vitamin D OH	Normal: 30.0-74.0 ng/mL	<p>Lower-than-normal levels suggest a vitamin D deficiency. This condition can result from:</p> <ul style="list-style-type: none"> Lack of exposure to sunlight Lack of adequate vitamin D in the diet Liver and kidney diseases Malabsorption <p>Low vitamin D levels are more common in African-American children, particularly in the winter, as well as in infants who are exclusively breastfed.</p> <p>Higher-than-normal levels suggest excess vitamin D, a condition called hypervitaminosis D</p>	<p>When to get tested: To determine if you have too much or too little vitamin D in your blood</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
111. VLDL	Normal VLDL cholesterol level is between 5 and 40 mg/dL	<p>High levels may be associated with a higher risk for heart disease and stroke</p> <p>There is no simple, direct way of measuring VLDL</p> <p>Most labs estimate VLDL based on triglyceride level</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> To determine risk of heart disease May be included in a coronary risk profile <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
Test	Range	Guidelines	Preventive Measures
112. WBC	Normal: 4,500-10,000 white blood cells per microliter (mcL)	An elevated number of white blood cells is called leukocytosis. This can result from bacterial infections, inflammation,	<p>When to get tested:</p> <ul style="list-style-type: none"> Determine the presence of an infection or leukemia Monitor the body's response to

		<p>leukemia, trauma, intense exercise, or stress.</p> <p>A decreased WBC count is called leukopenia. It can result from many different situations, such as chemotherapy, radiation therapy, or diseases of the immune system.</p> <p>Counts that continue to rise or fall to abnormal levels indicate that the condition is getting worse. Counts that return to normal indicate improvement.</p>	<p>various treatments and bone marrow function</p> <p>How test is conducted: Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand</p>
113. West Nile Virus (WNV)	Normal: non-reactive	<p>Testing involves measurement of WNV antibodies, specific proteins created by the body's immune system in response to infection</p> <p>There are two types of WNV antibodies: IgM and IgG.</p> <p>IgM antibodies are the first to be produced by the body in response to a WNV infection and are present in most individuals within 8 days of the initial exposure. If the IgM test is negative, but symptoms and clinical signs still suggest WNV, the test may be repeated on a new specimen collected a few days later.</p> <p>IgG WNV antibody testing can be used, along with IgM testing, to help confirm the presence of a recent or previous WNV infection. If the IgG test is positive, then another blood sample should be collected and tested a few weeks later.</p>	<p>When to get tested:</p> <ul style="list-style-type: none"> • When symptoms are present such as headache, fever, stiff neck, and muscular weakness and a diagnosis of encephalitis and/or meningitis <p>How test is conducted:</p> <ul style="list-style-type: none"> • Cerebrospinal fluid collected from a spinal tap • Blood sample drawn from a vein in your arm