

Abbrev.	Name	Functions	Deficiency and Toxicity	Vitamin-Drug Interactions
<b>A</b>	Retinol	Formation of rhodopsin (a photoreceptor pigment in the retina), integrity of epithelia, lysosome stability, glycoprotein synthesis	Night blindness, eye disorders <b>Toxicity:</b> hepatotoxicity	Cholestyramine, mineral oil
<b>D</b>	cholecalciferol ergocalciferol	Calcium and phosphate absorption, mineralization and repair of bone, tubular reabsorption of calcium, insulin and thyroid function, improvement of immune function, reduced risk of autoimmune disease	Rickets (sometimes with tetany), osteomalacia	Antipsychotics, corticosteroids, mineral oil, antiseizure drugs, rifampin
<b>E</b>	Alpha-tocopherol, other tocopherols	Intracellular antioxidant, scavenger of free radicals in biologic membranes	Skin disorders <b>Toxicity:</b> Tendency to bleed	Mineral oil, warfarin
<b>K</b>	Phylloquinone, menaquinones	Formation of prothrombin, other coagulation factors, and bone proteins	Bleeding due to deficiency of prothrombin and other factors, osteopenia	Antibiotics, antiseizure drugs, mineral oil, rifampin, warfarin
<b>B1</b>	Thiamin	Carbohydrate, fat, amino acid, glucose, and alcohol metabolism, central and peripheral nerve cell function, myocardial function	Beriberi	Alcohol; oral contraceptives; thiamin antagonists in coffee, tea, raw fish, and red cabbage
<b>B2</b>	Riboflavin	Many aspects of carbohydrate and protein metabolism, integrity of mucous membranes	Cheilosis, angular stomatitis, sores at the corners of the mouth	Alcohol, barbiturates, phenothiazines, thiazide diuretics, tricyclic antidepressants
<b>B3</b>	Niacin / Nicotinic acid, nicotinamide	Oxidation-reduction reactions, carbohydrate and cell metabolism	Pellagra (4 D's: dermatitis, dementia, diarrhea, death)	Alcohol
<b>B6</b>	Pyridoxine, pyridoxal, pyridoxamine	Many aspects of nitrogen metabolism, nucleic acid biosynthesis, fatty acid, lipid, and amino acid metabolism	Seizures, anemia, neuropathies	Alcohol, antiseizure drugs, corticosteroids
<b>B9</b>	Folate/ Folic Acid	Maturation of red blood cells, synthesis of purines, pyrimidines, and methionine, development of fetal nervous system	Megaloblastic anemia, neural tube birth defects, confusion	Alcohol
<b>B12</b>	Cobalamins	Maturation of red blood cells, neural function, DNA synthesis, myelin synthesis and repair	Pernicious anemia,	Antacids, metformin, nitrous oxide (repeated exposure)
<b>C</b>	Ascorbic acid	Collagen formation Bone and blood vessel health Carnitine, hormone, and amino acid formation Wound healing	Scurvy, slow healing sores	Corticosteroids

Cranial Nerve	Function	Test
<b>CNI Olfactory</b> <small>SENSORY</small>	Smell	Ask the person to identify items with very specific odors (such as soap, coffee, and cloves) placed under the nose. Each nostril tested separately.
<b>CNII Optic</b> <small>SENSORY</small>	Vision	The ability to see is tested by asking the person to read an eye chart. Peripheral (side) vision is tested by asking the person to look straight ahead while the doctor gradually moves a finger toward the person's center of vision from above, below, left, and right. The person is then asked to say when the finger is first seen.
	Detection of Light	The ability to detect light is tested by shining a bright light (as from a flashlight) into each pupil in a darkened room.
<b>CNIII Oculomotor</b> <small>MOTOR</small>	Eye movement upward, downward, and inward	The ability to move each eye up, down, and inward is tested by asking the person to follow a target moved by the examiner.
	Narrowing (constriction)	The pupils' response to light is checked by shining a bright light (as from a flashlight) into each pupil in a darkened room.
	Raising the eyelids	The upper eyelid is checked for drooping (ptosis).
<b>CNIV Trochlear</b> <small>MOTOR</small>	Eye movement downward and inward	The ability to move each eye down and inward is tested by asking the person to follow a target moved by the examiner.
<b>CNV Trigeminal</b> <small>MOTOR/SENSORY</small>	Facial sensation	Sensation in areas of the face is tested using a pin and a wisp of cotton. The blink reflex is tested by touching the cornea of the eye with a cotton wisp
	Chewing	Strength and movement of muscles that control the jaw are tested by asking the person to clench the teeth and open the jaw against resistance.
<b>CNVI Abducens</b> <small>MOTOR</small>	Eye movement outward	The ability to move each eye outward beyond the midline is tested by asking the person to look to the side.
<b>CNVII Facial</b> <small>MOTOR/SENSORY</small>	The ability to move muscles in the face (for example, in facial expressions), taste in the front two thirds of the tongue, production of saliva and tears, and control of a muscle involved in hearing	The ability to move the face is tested by asking the person to smile, to open the mouth and show the teeth, and to close the eyes tightly. Taste is tested using substances that are sweet (sugar), sour (lemon juice), salty (salt), and bitter (aspirin, quinine, or aloes).
<b>CNVIII Auditory (vestibulocochlear)</b> <small>SENSORY</small>	Hearing	Hearing is tested with a tuning fork or with headphones that play tones of different frequencies (pitches) and loudness.
	Balance	Balance is tested by asking the person to walk a straight line.
<b>CNIX Glossopharyngeal</b> <small>MOTOR/SENSORY</small>	Swallowing, the gag reflex, and speech	Because both the 9th and 10th cranial nerves control swallowing and the gag reflex, they are tested together. The person is asked to swallow. The person is asked to say "ah-h-h" to check movement of the palate (roof of the mouth) and uvula (the small, soft projection that hangs down at the back of throat). The back of the throat may be touched with a tongue blade, which evokes the gag reflex in most people. The person is asked to speak to determine whether the voice sounds nasal (another test of palate movement).
<b>CNX Vagus</b> <small>MOTOR/SENSORY</small>	Swallowing, the gag reflex, and speech	
	Control of muscle in some internal organs and the heart rate	This function is not tested as part of the cranial nerve examination.
<b>CNXI Accessory</b> <small>MOTOR</small>	Neck turning and shoulder shrugging	The person is asked to turn the head and to shrug the shoulders against resistance provided by the examiner.
<b>CNXII Hypoglossal</b> <small>MOTOR</small>	Tongue movement	The person is asked to stick out the tongue, which is observed for deviation to one side or the other.