Chapter 12

MEDICAL TERMINOLOGY & ANATOMY

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Learning Objectives

- Understand the importance of medical terminology as it relates to diagnosis coding.
- Identify the three word parts that make up medical terminology.
- Recognize common word parts associated with systems of the body.
- Define other common diagnostic and procedural medical terminology.

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Basic Word Structure

- Prefix/word root/suffix: ie, epi/gastro/cele
- Word root:
  - Foundation of the word to link word roots to other word roots or suffixes:
    - Combining vowel, usually “o,” used. Word root + combining vowel = combining form:
      - Gastr/o: stomach.
      - Cardi/o: heart.
      - Derm/o: skin.
      - Arthr/o: joint.

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Suffixes

- Word endings that are used to further describe or clarify word root or change meaning of the word:
  - -algia: pain.
  - -ectomy: removal or excision.
  - -tomy: incision (cutting) into.
  - -stomy: creating a new opening.
  - -cele: protrusion or hernia.
  - -itis: inflammation.

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Suffixes

- Rules for adding suffix to a word:
  - If suffix begins with a vowel, drop the vowel of the root and add the suffix:
    - Stomach pain – gastro + algia = gastralgia.
  - If suffix begins with a consonant, add it to the word root in total:
    - Incision into the stomach – gastro + tomy = gastrotomy.
  - Exceptions – in some cases, double the initial consonant before adding the suffix:
    - Rhexis: rupture; rupture of the stomach: gastro + rhexis = gastrorrhexis.

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More Suffixes

- centesis: puncture.
- pexy: fixation.
- al: pertaining to.
- ic: referring to.
- osis: abnormal condition of.
- emia: blood condition.
- genic: origin.
- logy: study of.

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Prefixes

- Word beginnings used to describe:
  - Amount.
  - Proximity.
  - Location.
- Examples:
  - ante-: before.
  - post-: after.
  - a-: without.
  - ec-: out from.
  - endo-: within.
  - peri-: around.

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Prefixes

- After removal of stomach:
  - post + gastro + ectomy = postgastrectomy.
- Inflammation within the heart:
  - endo + cardio + itis = endocarditis

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More Prefixes

- hyper-: above normal, excessive.
- hypo-: below.
- multi-: many.
- bi-: two or both.
- tri-: three.
- ab-: away from.
- ad-: to, near.
- epi-: upon.

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Terms of Disease and Basic Anatomy

Disease

- Disease: condition with characteristic symptoms that set it apart as abnormal.
- Infection: invasion by a pathogenic agent that multiplies and produces injurious effects.
- Inflammation: tissue reaction to injury.
- Diagnosis: the problem or nature of disease or injury.

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Terms of Disease and Basic Anatomy

Disease

- Prognosis: probable outcome or estimate of chance of recovery from disease or injury.
- Sign: objective evidence of a disease or injury.
- Symptom: subjective change in the body or its function not perceptible to an observer.
- Syndrome: a set of symptoms that occur together.
- Acute: rapid onset and of relatively short duration.

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Terms of Disease and Basic Anatomy

Disease

- Chronic: slow onset and relatively long duration.
- Localized: restricted to a definite area.
- Systemic: affects entire body.
- Morbid: disease or illness.
- Moribund: dying condition.
- Necrosis: decay of tissue.
- Mortality: death.

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Growth and Development Terms

- Anomaly: an irregularity; something out of the ordinary:
    - Acquired.
    - Congenital – present at birth.
    - Hereditary – transmission of characteristics from parent(s) to offspring.
- Neoplasm: a growth or tumor.
- Benign: noncancerous.

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Growth and Development Terms

- Malignant: deadly or cancerous.
- Carcinoma: cancerous tissue.
- Hyperplasia: increase in number of cells.
- Hypertrophy: increase in size of an organ or structure.
- Necrosis: death of tissue.
- Ptosis: dropping or drooping of an organ or part.

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Mental Health

- Terms classified by cause:
  - Organic: lesion in the body causing disturbance.
  - Functional: no identifiable lesion.
- Word roots:
  - Psycho: mind.
  - Phreno: mind.
  - Somato: body.
  - Phobo: fear.
  - Schizo: split.

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Anatomy

- The body:
  - Single structure made up of structural units that build together to form the entire body.
- Four major structural units:
  - Cells: smallest living structural unit of all living things.
  - Tissues: groups of like cells.
  - Organs: structures composed of several kinds of tissues that work together to perform a specific function.
  - System: groups of organs that work together to perform a specific or similar function.

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Body Systems

- The body has nine systems:
  - Skeletal and muscular.
  - Circulatory.
  - Respiratory.
  - Endocrine.
  - Nervous (including the senses).
  - Urinary.
  - Digestive.
  - Reproductive.
  - Integumentary (skin).

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Skeletal and Muscular System

- Skeletal system has six functions.
- Body has total of 206 bones.
- Muscular system has three functions.
- There are three types of muscles.
- Body has more than 600 muscles.
- Movement terms:
  - Abduct: to move away from the midline.
  - Adduct: to move toward the midline.

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Skeletal and Muscular System

  - Flexion: contraction; to bend a part.
  - Extension: relaxation; to straighten a part.
- Position terms:
  - Front vs. back:
    - Anterior/posterior.
    - Ventral/dorsal.
  - Top vs. bottom (transverse/horizontal):
    - Superior/inferior.
    - Cephalad/caudad.

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Skeletal and Muscular System

- Right vs. left (sagittal/vertical):
  - Lateral (side).
  - Medial (midline).
- Face-up vs. face-down:
  - Supine/prone.
- Near attachment vs. far from attachment:
  - Proximal/distal.

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Skeletal and Muscular System

- Other terms:
  - Ataxia: loss of muscle coordination and power.
  - Fracture: broken bone.
  - Reduction: to set a broken bone into alignment.
  - Gluteal: of or near the buttocks.
  - Hemiplegia: paralysis of one side of the body.
  - Orthostatic: pertains to an erect position.
  - Paralysis: loss of voluntary motion.

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Skeletal and Muscular System

- Prosthesis: artificial replacement.
- Sprain: injury to the ligamentous structure of a joint.
- Strain: injury to a muscle.
- Scoliosis: abnormal lateral division of the spine.
- Kyphosis: hunchback.
- Lordosis: swayback.

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Skeletal and Muscular System

- More prefixes:
  - uni-: one.
  - bi-: two or both.
  - mono-: single.
  - anti-: against.
  - inter-: between.
  - dys-: painful or difficult.

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Skeletal and Muscular System

- More suffixes:
  - malacia: softening condition.
  - desis: binding.
  - genesis: producing.
  - oid: like.
  - scopy: examination or visualization of a part with a scope.
  - scope: instrument used to examine or visualize.

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Circulatory System

- Three functions:
  - Carry oxygen and nourishment to body cells.
  - Exchange oxygen and nourishment for waste products.
  - Carry waste products to point of elimination.
- Parts of circulatory system:
  - Heart, blood vessels, blood, lymph and lymph vessels, spleen.

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Circulatory System

- The heart is a muscular pump:
  - Atrium: upper chamber of the heart.
  - Ventricle: lower chamber of the heart.
- Layers of the heart:
  - Pericardium: around/heart.
  - Myocardium: muscle/heart.
  - Endocardium: within/heart.
  - Contraction phase: systole.
  - Relaxation phase: diastole.

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Circulatory System

- Blood vessels: carry blood to and from the heart and the body:
  - Word roots: angio/vaso.
- Arteries: carry blood away from the heart:
  - Word root: arterio.
  - Veins: carry blood toward the heart:
  - Word roots: phlebo/veno.
  - Capillaries: microscopic blood vessels:
  - Word root: capillo.

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Circulatory System

- Blood--word roots: hemo/hemat/heme.
  - Plasma: liquid portion of blood.
  - Erythrocytes: red blood cells.
  - Hemoglobin: iron-containing pigment; helps carry oxygen in the blood.
  - Leukocytes: white blood cells.
  - Thrombocytes: platelets; assist in clotting process.

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Circulatory System

- Lymph and lymph vessels:
  - Work with circulatory system to return tissue fluid to general circulation, filter out harmful substances, and form some white blood cells.
- Spleen:
  - Body’s blood bank.
  - Acts as reservoir of blood in emergency and manufactures lymphocytes and monocytes.

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Circulatory System

- Other terms:
  - Aneurysm: weakening of the wall of an artery.
  - Angina: chest pain.
  - Arteriosclerosis: hardening of the arteries.
  - Atherosclerosis: fatty deposits in the arteries.
  - Thrombus: blood clot.
  - Thrombosis: condition of forming blood clot.

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Circulatory System

- Embolus: clot, fat, or air bubble that circulates, causing an obstruction.
- Embolism: state of obstruction caused by an embolus.

- Electrocardiogram: graphic recording of heart's action potential (abbreviated ECG or EKG).
- Infarction: death of tissue due to lack of oxygen.

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Circulatory System

- More prefixes:
  - brady-: slow.
  - tachy-: rapid, fast.
  - intra-: within.
  - dia-: through.
  - in-: not.
- More suffixes:
  - megaly: enlargement.
  - plasty: repair.

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Circulatory System

- spasm: involuntary contraction.
- penia: deficient condition.
- oleor,-ule: smallness.
- emia: blood condition.
- ism: state of.
- graphy: process of recording.
- gram: record or tracing.

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Respiratory System

- Its four functions are:
  - Exchange of gases between the body and its environment.
  - Production of sound.
  - Elimination of waste gases and water.
  - Elimination of excess heat from the body.
- Parts of the respiratory system:
  - Nose: warms, moistens, filters incoming air:
    - Word roots: rhin/o, nas/o.

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Respiratory System

- Pharynx: common passageway for food and air:
  - Word root: pharyng/o.
- Epiglottis: covers entrance to air tube:
  - Word root: epiglott/o.
- Larynx: beginning of air tube; aids in production of sound:
  - Word root: laryng/o.
- Trachea: passageway for air into lungs:
  - Word root: tracheo.
- Bronchus (bronchi): airway from the trachea into each lung:
  - Word root: broncho.

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Respiratory System

- Bronchioles: smaller branches of bronchi that carry air into the aveoli:
  - Word root: bronchi/o.
- Alveoli: air sacs in the lungs, where gas exchange occurs:
  - Word root: alveol/o.
- Lungs: major organ of respiration:
  - Word roots: pulm/o, pulmon/o.
- Chest: area where lungs are housed:
  - Word root: thorac/o.

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Respiratory System

- Diaphragm: major muscle of respiration:
  - Word root: phren/o.
- Ribs: protect and absorb shock to the chest cavity:
  - Word root: cost/o.
- Intercostal muscles: help elevate the ribs during inspiration.
- Respiratory cycle: composed of:
  - Inhalation: pulling air into the lungs.
  - Exhalation: pushing air out of the lungs.

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Respiratory System

- Terms:
  - pnea: suffix that means breathing.
  - Eupnea: good breathing.
  - Dyspnea: painful or difficult breathing.
  - Orthopnea: straight breathing.
  - Apnea: without breathing.
  - Asphyxia: suffocation.
  - Anoxia: deficient oxygen supply to tissues.

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Respiratory System

  - Hemoptysis: coughing up blood.
  - Spirometry: measurement of air capacity of the lungs.
- Suffixes:
  - ectasis: dilation.
  - ary: relating to.
  - metry: to measure (test).
  - meter: to measure (instrument).

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Endocrine System

- Two types of glands:
  - Exocrine: secrete substances through ducts.
  - Endocrine: secrete substances (hormones) directly into the bloodstream.
- Major glands of the endocrine system:
  - Pituitary: “master gland”:
    - Word root: pituitar/o.
  - Thyroid: controls metabolism and growth:
    - Word root: thyr/o.

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Endocrine System

- Other glands:
  - Parathyroid: maintains normal calcium and phosphorus levels:
    - Word root: parathyroid/o.
  - Adrenal: controls chemical balance in the blood and regulates metabolism:
    - Word roots: adren/o, adrenal/o.
  - Thymus: affects development of the immune system:
    - Word root: thym/o.

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Endocrine System

- Islets of Langerhans (in pancreas): regulate blood glucose level with hormone insulin:
  - Word root: pancreat/o.
- Gonads: organs of reproduction:
  - Female: ovaries (produce estrogen and progesterone):
    - Word root: oophoro.
  - Male: testes (produce testosterone):
    - Word roots: testo, orchio, orchido.

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Nervous System

- Major parts of nervous system:
  - Central nervous system (CNS).
  - Peripheral nervous system (PNS).
- CNS includes:
  - Brain.
  - Spinal cord.

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Nervous System

- Brain--word root: encephalo:
  - Cerebrum: center for mental processes:
    - Word root: cerebro.
  - Cerebellum: center of muscular coordination and balance:
    - Word root: cerebello.
  - Hypothalamus: controls hormonal secretion:
    - Word root: hypothalamo.
  - Thalamus: controls sensation and emotion:
  - Word root: thalamo.

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Nervous System

- Brain stem: medulla, pons, and midbrain:
  - Controls vital functions (eg, blood pressure, respiration, heartbeat, and diameter of blood vessels).
- Peripheral nervous system (PNS) includes:
  - All nerves that extend from the central nervous system (CNS) to all parts of the body:
    - Word root for nerve: neuro.
- Cranial nerves.

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Nervous System

- Spinal nerves.
- Autonomic nerves.
- Other terms:
  - Hyperglycemia: increased blood glucose level.
  - Hypothyroidism: decreased activity of the thyroid gland.
  - Aphasia: inability to speak, write, or comprehend.

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Nervous System

  - Hydrocephalus: abnormal increase in cerebrospinal fluid around the brain.
  - Syncope: fainting.
  - Vertigo: a sensation of dizziness.
- Cerebrovascular accident (CVA); also called “stroke.”
- Anesthesia: lack of feeling or sensation.
- Gait: the manner and style in which a person walks.

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Urinary System

- Four major parts:
  - Kidneys: major functions include infiltration, absorption, and excretion:
    - Word roots: nephro, reno.
  - Ureters: carry urine from kidneys to bladder:
    - Word roots: uro, urino.
  - Bladder: muscular storage reservoir for urine:
    - Word roots: cysto, vesico.
  - Urethra: passageway through which urine is expelled from the body:
    - Word root: urethro.

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Urinary System

- Other terms:
  - uria: suffix for a condition of the urine (eg, hematuria: blood in the urine).
  - Pyelonephritis: inflammation of the filtration part of the kidneys.
  - Calculus: a stone.
  - Ureterolithiasis: presence of stones in the ureter.
  - Lithotripsy: procedure to crush stones.

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Urinary System

- More prefixes:
  - olig-: few.
  - poly-: many.
  - py-: pus.
  - noct-: night.
  - dys-: painful or difficult.
- More suffixes:
  - uria: urine condition.
  - rhage, rhagia: burst forth; hemorrhage.

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Urinary System

- tripsy: crush.
- clasis, clasia: breaking.
- rhaphy: suture.
- dynia: pain.
- rhea: flow; discharge.
- rhexis: rupture.
- ist: specialist.
- iasis: presence of.

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Digestive System

- Also called “gastrointestinal” or “GI” system.
- Mouth--word roots: oro, stomo, stomato.
  - Tongue: glosso, lingu.
  - Teeth: denti, dento, odonto.
  - Salivary glands: sialo.
  - Cheeks: bucco.
  - Lips: cheilo, labio.
  - Gums: gingivo.

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Digestive System

- More structures:
  - Pharynx: common passageway for food and air:
    - Word root: pharyngo.
  - Esophagus: carries food from throat to stomach:
    - Word root: esophago.
  - Stomach: muscular pouch; reservoir for ingested food:
    - Word roots: gastro, pepso, pepto.

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Digestive System

- Small intestines: where digestion and absorption are completed:
  - Word root: entero.
- Sections of small intestines:
  - Duodenum: duodeno.
  - Jejunum: jejuno.
  - Ileum: ileo.
- Large intestines: water absorption and passage of feces.

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Digestive System

- Sections of large intestines:
  - Cecum: ceco.
  - Appendix: appendo, appendico.
  - Colon: colo.
  - Rectum: recto.
  - Anus: ano.
  - Procto also used for rectum and anus.

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Digestive System

- Accessory organs:
  - Pancreas: pancreato.
  - Liver: hepa, hepato.
  - Gallbladder: cholecysto.
  - Common bile duct: choledocho.

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Digestive System

- Other terms:
  - Dysphagia: inability to swallow.
  - Edentia: the condition of being without teeth.
  - Anorexia: loss of appetite.
  - Peristalsis: wavelike movement in digestive organs that propels the contents forward.
  - Jaundice: yellowish discoloration of the skin.

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Reproductive System

- Female reproductive system:
  - Uterus:
    - Word roots: hystero, metro.
  - Fallopian tubes:
    - Word root: salpingo.
  - Ovaries:
    - Word root: oophoro (for egg: oo).
  - Cervix:
    - Word root: cervico.
  - Vagina:
    - Word roots: colpo, vagino.

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Reproductive System

- Male reproductive system:
  - Testes (testis, testicle):
    - Word roots: testo, orchio, orchido (for sperm: spermato).
  - Epididymis:
    - Word root: epididymo.
  - Prostate:
    - Word root: prostato.
  - Penis:
    - Word root: balano.

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Reproductive System

- Other terms:
  - Amenorrhea: absence or suppression of menstrual flow.
  - Menses: menstrual flow.
  - Ectopic pregnancy: implantation of fertilized egg cell outside uterus.
  - Lactation: period of suckling a child.
  - Mammary: pertaining to the breast.
  - Primipara: a woman who has given birth to her first child.

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The Senses

- Sight: provided by specialized receptors located in the eye:
  - Word roots:
    - op: vision.
    - opsy: to view.
    - eye: ophthalmo, oculo.
- Parts of the eye:
  - Conjunctiva
    - Word root: conjunctivo.

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The Senses

- Eyelid
  - Word root: blepharo.
- Cornea
  - Word root: corneo.
- Tear system (ducts/glands)
  - Word root: lacrimo.
- Retina
  - Word root: retino.

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The Senses

- Hearing: provided by specialized receptors located in the ear:
  - Word roots:
    - hear: acou, acu.
    - ear: oto, aur.
  - Other word roots pertaining to the ear:
    - ear drum: tympano, myringo.
    - sound: audio.
    - voice: phono.
    - speech: phaso.

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The Senses

- Smell: provided by specialized receptors located in the nose:
  - Word roots:
    - smell: olfacto, osmo.
    - nose: rhino, naso.
- Taste: provided by specialized receptors located on the tongue:
  - Word roots:
    - act of tasting: gusto, gustato.
    - tongue: glosso.

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The Senses

- Touch: provided by specialized receptors located on the surface of the skin:
  - Word roots:
    - feeling/sensation: esthes.
    - skin: cutaneo, dermo, dermato.
    - nail: onycho.

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The Senses

- Other terms:
  - Amblyopia: reduced or dull vision.
  - Diplopia: double vision.
  - Photophobia: hypersensitivity to light.
  - Epistaxis: nosebleed.
  - Pruritus: itching.
  - Cataract: opacity of the lens of the eye.
  - Urticaria: hives.
  - Cerumen: earwax.

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