

Endocrine and Nervous System



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Objectives

- Master anatomical concepts important to understand the endocrine and nervous systems
- Review terminology relevant to these systems
- Provide practical advice to overcome the most common CPT® coding dilemmas involving these systems
- Alert you to important documentation issues and possible shortcomings, as they apply to procedures of the endocrine and nervous systems
- Discuss application of most-frequently used CPT® modifiers
- Introduce ICD-9-CM and HCPCS codes and coding
- Supply hands-on examples and review material to improve your mastery of the above concepts



Anatomy: Endocrine

- The Endocrine System is comprised of ductless glands that secrete hormones into the circulatory system
- Glands – organized aggregations of cells functioning as secretory or excretory organs
- Hormones – chemical messengers
 - Proteins
 - Steroids
 - Target tissues or organs by binding to cell receptors located either on the cell membrane or within the cell



Anatomy: Endocrine

- Endocrinology – study of the endocrine system
- Thyroid
 - Located anteriorly in the neck
 - Two large lobes connected by isthmus
 - Composed of follicles – secrete:
 - T3 (Triiodothyronine)
 - T4 (tetraiodothyronine or thyroxine)
 - Main function – regulation of basal metabolic rate involving the whole body
 - Goiter – enlarged thyroid gland
 - Hyperthyroidism – too much thyroid hormone
 - Hypothyroidism – too little thyroid hormone



Anatomy: Endocrine

- Parathyroid
 - Deep and posterior on the lateral lobes of the thyroid
 - Regulate calcium metabolism
 - Hypocalcemia – results in sustained muscle contraction (tetany)
 - Hypercalcemia – results in fatigue, constipation and kidney stones
 - Secretes parathyroid hormone (PTH)



Anatomy: Endocrine

- Thymus
 - Two elongated lobes closely bound together by fibrous tissue
 - Large organ in fetus
 - Grows until puberty
 - Decreases in size and is largely replaced by fat
 - Contains lymphocytes
 - Secretes hormones to control immune functions
 - Thymectomy – removal of the thymus



Anatomy: Endocrine

- Adrenal glands (suprarenal)
 - Lying on the medial part of the superior end of each kidney
 - Two distinct parts:
 - Medulla
 - Secretes epinephrine and norepinephrine
 - Pheochromocytoma – tumor of the adrenal medulla
 - Cortex
 - Essential to life
 - Three zones (zona glomerulosa, zona fasciculate, zona reticularis)
 - Makes glucocorticoids, mineralocorticoids, and sex steroids



Anatomy: Endocrine

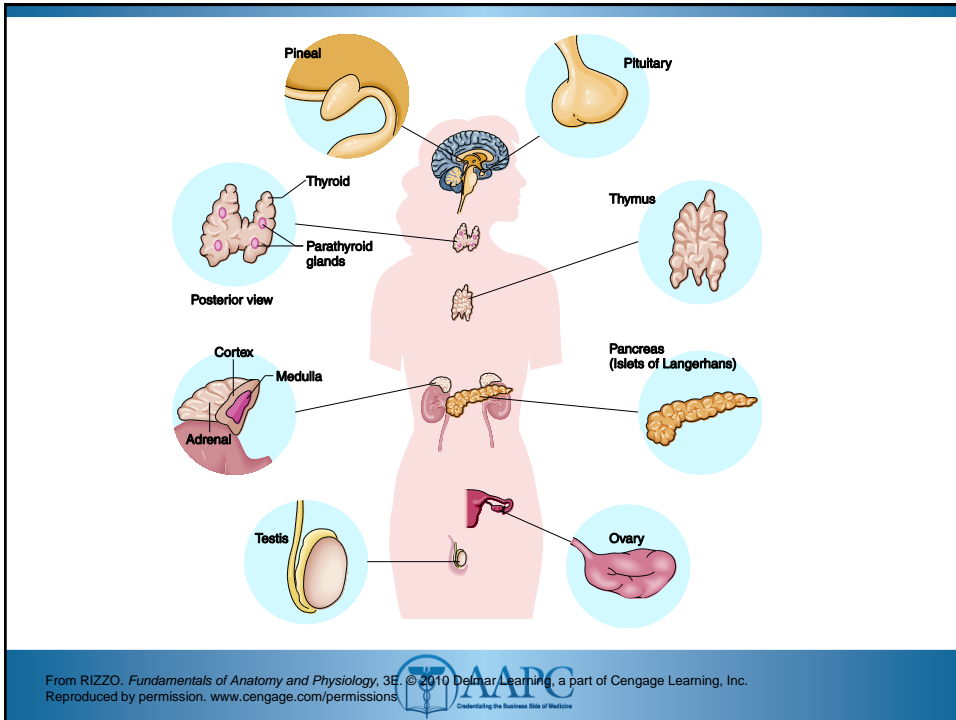
- Pancreas
 - Endocrine - Pancreatic islets secrete insulin
 - Exocrine – Secretes digestive enzymes
 - Hormones:
 - Insulin – released in response to increased blood glucose levels after eating, decreases as serum glucose levels decrease
 - Glucagon – increases serum glucose levels
- Carotid body
 - Chemoreceptor monitoring the level of oxygen in the blood
 - Located in the neck



Anatomy: Endocrine

- Pituitary (hypophysis) gland
 - Located at the base of the brain
 - Lobes
 - Anterior – secretes growth hormone (GH), thyroid stimulating hormone (TSH), follicle stimulating hormone (FSH), luteinizing hormone (LH), prolactin, adrenocorticotrophic hormone (ACTH), melanocyte-stimulating hormone (MSH).
 - Posterior – secretes oxytocin and antidiuretic hormone (ADH)
- Pineal gland – secretes melatonin
- Structures classified elsewhere
 - e.g., kidneys, testes, ovaries





Anatomy: Nervous System

- Central Nervous System (CNS)
 - Brain
 - Spinal Cord
- Peripheral Nervous System (PNS)
 - Nerves running throughout the body
- Controls and coordinates functions of the organ systems

Anatomy: Nervous System

The nerve (neuron)

- Soma (body)
 - Contains cell nucleus
- Dendrites
 - Tree-like structures
 - Receive impulses from other neurons
 - Transmit impulses to the cell body
- Axon
 - Long extensions carrying impulses away from the cell body



Anatomy: Nervous System

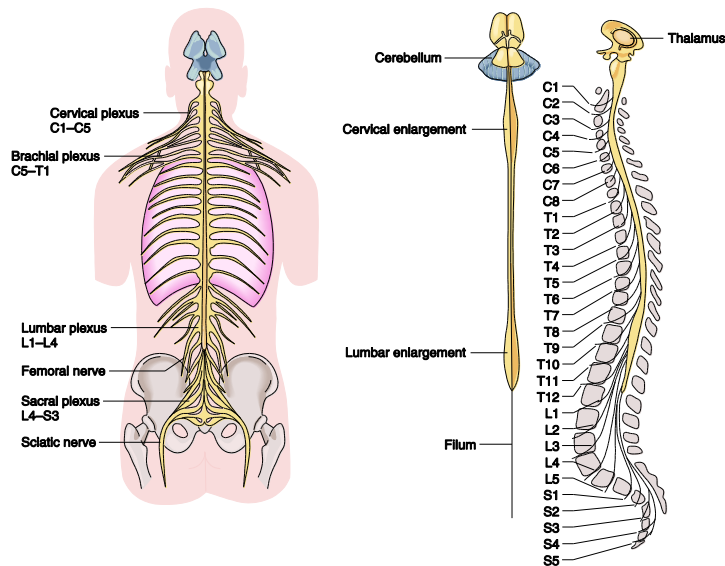
- Synapses
 - Space between dendrites and axons
 - Neurotransmitters transfer impulses
 - e.g., acetylcholine, epinephrine, serotonin, endorphins
- Myelin sheath
 - Fatty insulation coating axon
 - Nodes of Ranvier
 - Allow faster transmission of impulses
 - Damage to sheath causes difficulty with muscle control



Anatomy: Nervous System

Nerve Plexi

- Cervical
 - Head, neck, shoulders
- Brachial
 - Chest, shoulders, arms, hands
- Lumbar
 - Back, abdomen, groin, thighs, knees, calves
- Sacral
 - Pelvis, buttocks, genitals, thighs, calves, feet
- Solar (Coccygeal)
 - Internal organs



Anatomy: Nervous System

Spinal cord functions

- Motor information to muscles
- Sensory information to brain
- Reflex coordination

31 pairs of spinal nerves:

- Cervical (8 nerve pairs)
- Thoracic (12 nerve pairs)
- Lumbar (5 nerve pairs)
- Sacral (5 nerve pairs)
- Coccygeal (1 nerve pair)



Anatomy: Nervous System

- Segment (bone) vs. interspace (space between)
- Segments made up of...
 - Body
 - Lamina
 - Process
 - Spinous
 - Transverse
 - Foramen
- Facet joints
 - One per side, where segments meet



Anatomy: Nervous System

The Brain:

- Cerebrum
 - Largest portion of the brain
 - Divided in the hemispheres which is divided into lobes
 - Frontal – primary motor area of the brain
 - Parietal
 - Occipital – mainly concerned with vision
 - Temporal
- Cerebellum – primarily concerned with coordination of voluntary muscles

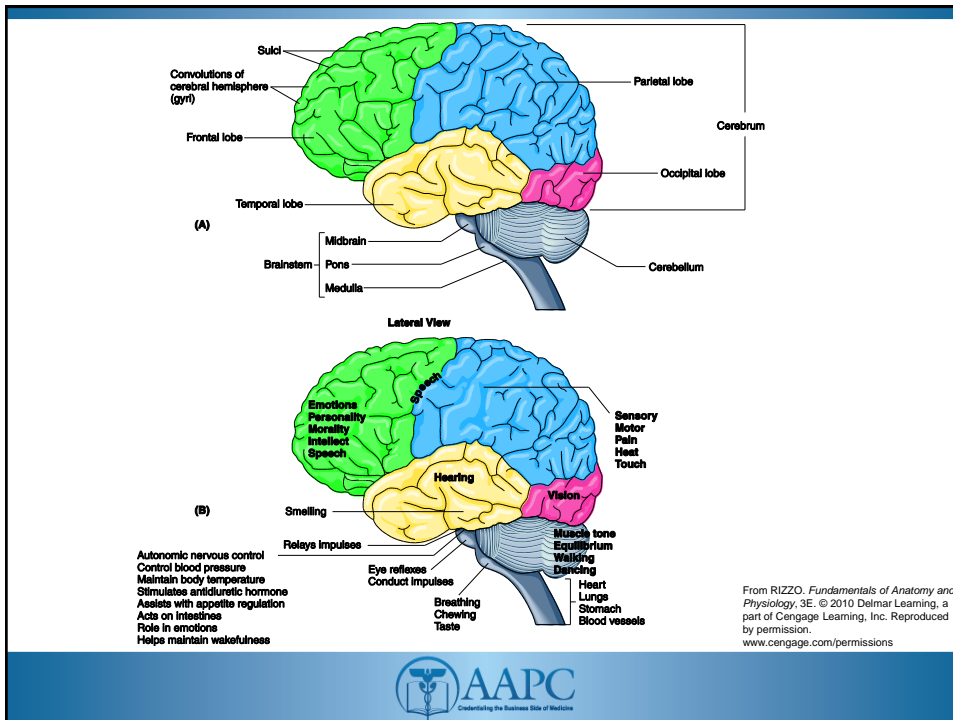


Anatomy: Nervous System

The Brain:

- Brainstem – connects to the spinal cord and controls functions such as breathing, heart rate and blood pressure
 - Medulla
 - Pons
- Ventricles
 - Contain cerebrospinal fluid (CSF)





ICD-9-CM: Endocrine

Endocrine, nutritional and metabolic diseases, and immunity disorders (240-279), by location:

- *Disorders of thyroid gland (240-246)*
- *Disorders of parathyroid gland (252)*
- *Disorders of the pituitary gland and its hypothalamic control (253)*
- Disorders of adrenal glands (255)
- etc.

Neoplasms (Chapter 2)

- Report neoplasm first
- Additional diagnosis as a result of neoplasm are secondary

ICD-9-CM: Endocrine

- *Disorders of adrenal glands (255)*
 - Cushing's syndrome (255.0)
 - *Glucocorticoid deficiency (255.41)* - Addison's disease
 - Hyperparathyroidism



ICD-9-CM: Endocrine

- *Diseases of other endocrine glands (249-259)*
 - Diabetes (250.xx)
 - Type I – requires insulin therapy, these patient's do not make insulin
 - Type II – patient's cannot process insulin properly
 - Secondary diabetes (249.xx) - Always has an underlying cause
 - Gestational diabetes presents during pregnancy and subsides after pregnancy



ICD-9-CM: Endocrine

- 4th digit complications/manifestations
 - Report complications/manifestations as secondary
- 5th digit type I/II and controlled/uncontrolled



ICD-9-CM: Nervous System

Diseases of the Nervous System and Sense Organs (320-389)

- Inflammation
 - Meningitis (lining of brain/spinal cord)
 - Encephalitis (brain)
 - Myelitis (spinal cord)
 - Encephalomyelitis (brain and spinal cord)
 - Report underlying disease as primary
 - E codes?



ICD-9-CM: Nervous System

- Sleep disorders (organic 327) (other 307.4)
 - Insomnia
 - Hypersomnia
 - Apnea
 - Parasomnia
- Hereditary/degenerative disease of CNS (330-337)
 - Report underlying disease when instructed
- Disorders of the autonomic nervous system (337)



ICD-9-CM: Nervous System

Pain, not elsewhere classified (338)

- If the pain is not specified as acute or chronic, codes from 338 aren't applied... unless, it is for post-thoracotomy pain, postoperative pain, neoplasm related pain, or central pain syndrome.
- Pain control is reason for visit
- Do not report as primary if you know the underlying cause, and visit is to manage that diagnosis



ICD-9-CM: Nervous System

Pain, not elsewhere classified (338)

- Acute – indicates severe, sudden, or sharp pain of brief duration
- Chronic – indicates long-standing or long-lasting in duration; time periods are months or years
- Chronic pain syndrome – associated with significant psychosocial dysfunction and must be clearly documented to be reported



ICD-9-CM: Nervous System

- *Other Headache Syndromes (339)*
 - Cluster headache
 - Tension type headache
 - Post-traumatic headache
- *Other disorders of the Central Nervous System (340-349)*
 - Multiple sclerosis
 - Hemiplegia and hemiparesis
 - Epilepsy
 - Migraine headache



ICD-9-CM: Nervous System

- *Disorders of the Peripheral Nervous System (350-359)*
 - Carpal tunnel syndrome
 - Trigeminal nerve disorders
 - Trigeminal neuralgia (Tic douloureux)
- Neoplasms (Chapter 2)
 - Search in Volume 2 (alphabetic index)
 - Use neoplasm table, by location and type



CPT®: Endocrine

Endocrine system is 60000-60699

- Arranged anatomically
- Four glands addressed (thyroid, parathyroid, adrenal, and thymus)
- Covered in other sections
 - Pituitary and pineal glands – Nervous System
 - Pancreas – Digestive System
 - Ovaries and testes – Female and Male Genital Subsections



CPT®: Endocrine

Thyroid Gland (60000-60300)

- Incision
- Excision
 - Biopsy
 - Total or partial removal of the thyroid (thyroidectomy)
 - Thyroid goiter – chronic enlargement of the thyroid
 - Thyroid tumors



CPT®: Endocrine

Parathyroid, Thymus, Adrenal Glands, Pancreas, and Carotid Body (60500-60699)

- Excision
 - Parathyroidectomy
 - Wermer Syndrome (Multiple Endocrine Neoplasias Type 1)
 - Thymectomy
 - Adrenalectomy
 - Pheochromocytomas

Medicine: Endocrinology (95250-95251)



CPT®: Nervous System

- Skull, meninges, and brain (61000-62258)
 - Skull or cranium (eight bones)
 - Fontanelles – membranous intervals at the margins of the cranial bones of infants
- Spine and spinal cord (62263-63746)
- PNS, autonomic nerves (64400-64999)



CPT®: Nervous System

Twist Drill, Burr Hole(s), or Trephine (61105-61253)

- Trephine – cylindrical or crown saw used for removal of bone or disc
- Burr holes – about the diameter of an index finger
- Performed for:
 - Injection
 - Drainage (hematoma)
 - Insertion (device, dye or contrast)
 - Biopsy of the brain or a tumor



CPT®: Nervous System

Craniectomy or Craniotomy (61304-61576)

- Craniotomy – opening in the skull
- Craniectomy – excision of a portion of the skull
 - Know indication and approach of the surgery



CPT®: Nervous System

- Craniotomy for lobotomy (61490)
- Intracavitary chemotherapy (61517)
- Electrocorticography (61536-61539)
- Transsphenoidal hypophysectomy (61546, 61548)
- Craniosynostosis (61550-61559)
- Excision of amygdala and hippocampus (61566)
 - Epilepsy control



CPT®: Nervous System

Surgery of Skull Base (61580-61619)

- Approach procedure
- Definitive procedure
 - Approach and definitive procedure should match
- Repair/reconstruction of surgical defects of skull base



CPT®: Nervous System

Endovascular therapy (61623-61642)

- Balloons or stents to treat arterial disease
- Angioplasty – reconstitution or recanalization of a blood vessel.



CPT®: Nervous System

- AV malformation (61680-61692)
 - Simple vs. complex
- Intracranial aneurysm (61697-61703)
 - Simple vs. complex
- Other techniques (61705-61710)
- Anastomosis to bypass aneurysm (61711)
- ☒ Stereotaxis/Radiosurgery (61796-61799)
 - Lesion treatment



CPT®: Nervous System

- Cranial neurostimulators (61850-61888)
 - Pulse generator
 - Electrodes
 - e.g., for Parkinson's, epilepsy
- Repair of skull (62000-62148)
 - Skull fracture
 - Encephalocele (62120, 62121)
- Neuroendoscopy (62160-62165)



CPT®: Nervous System

- CSF Shunt
 - Drain accumulation of CSF
 - May require revision (e.g., 62194)

Spine and Spinal Cord

- Injection, Drainage, Aspiration (62263-62319)
 - Pay careful attention to notes and parentheticals
 - Spinal tap (diagnostic 62270/therapeutic 62272)
 - Neurolytic injections (62280-62282)



CPT®: Nervous System

- “Pain pumps” (62350-62368)
 - Programmable or non-programmable
- Intrathecal catheter (62350, 62351)
- Laminectomy vs. Laminotomy
 - Complete vs. partial excision of lamina
 - Code by spinal region
 - Include decompression
- Decompression (63055-63103)
 - Must consider approach



CPT®: Nervous System

- More on decompression...
 - Discectomy
 - Osteophyctectomy (removal of bony outgrowth)
 - Corpectomy (vertebral body resection)
 - Watch for co-surgery (mod. 62)
- Laminectomy/cordotomy (63194-63199)
- Laminectomy for other than herniated disk
 - AV malformation
 - Intraspinous lesion



CPT®: Nervous System

- Stereotaxis/radiosurgery (63600-63621)
- Spinal Neurostimulators
 - Electrodes
 - Pulse generator
 - Catheter array
 - “paddle”
- Repair (63700-63710)



CPT®: Nervous System

- Shunt (spinal CSF)
 - Hydrocephalus

Extracranial nerves, PNS, Autonomic

- 12 pair cranial nerves
- 31 pair spinal nerves
- Autonomic ganglia/plexi
- PNS
 - Somatic nerves
 - Autonomic nerves
 - Sympathetic and parasympathetic



CPT®: Nervous System

- Facet Joint injections
 - Nerve block
 - Unilateral
 - Focus on “joint” between vertebrae
 - Nerve “destruction”
 - What was injected?
 - Somatic or sympathetic nerve
 - Number of levels
 - If infused, duration



CPT®: Nervous System

- More on nerve blocks...
 - Trigeminal (64400)
 - Facial (64402)
 - Spinal accessory (64412)
 - Cervical plexus (64413)
 - Brachial plexus (64415)
 - Intercostal (64420, 64421)
 - Sciatic (64445)
 - Largest nerve of the body



CPT®: Nervous System

- Injection of sympathetic nerves (64505-64530)
- Peripheral Neurostimulators
 - surface or percutaneous
- Destruction by neurolytic agent (64600-64681)
- Neuroplasty
 - Freeing of nerves from scar tissue
- Transection/avulsion (divide/tear away)
 - By nerve



CPT®: Nervous System

- Excision
 - By nerve
- Neurorrhaphy
 - Suturing of nerve
 - Without (64831-64876) or with (64885-64911) graft
 - By nerve
- Operating microscope (69990)
 - Beware bundling issues



CPT®: Nervous System

Neurology/Neuromuscular

- Sleep studies
 - Technical (TC) / professional (26) components
 - < 6 hours, append 52
- EEG
 - 20-40 min (95816-95822)
 - > 40 min (95812-95813)
 - Special/24 hour (95950-95953)
 - Mod. 52 < 24 hrs.
 - 95957 Digital



CPT®: Nervous System

- Muscle/ROM testing
 - Manual muscle testing (95831-95934)
 - ROM (995851, 95852)
 - Tensilon test (95857)
 - EMG
 - Limbs (95860-95864)
 - 3 nerves or 4 spinal levels, 5 muscles per limb
 - Paraspinals (95869)
- Chemodenervation



CPT®: Nervous System

- NCS (95900-95905)
 - Motor fibers
 - Sensory fibers
 - w or w/o F-wave
 - CPT® Appendix J for separately-reportable nerves
- IOM (95920)
 - Time-based
 - Baseline studies coded separately



CPT®: Nervous System

- EP/Reflex testing
 - Auditory (92585, 92586)
 - Sensory (95925-95927)
 - Central motor EP (95928, 95929)
 - Visual (95930)
- Neurostimulator analysis/programming
 - Code by type/location
 - Simple vs. complex



Endocrine and Nervous System

- Category III (e.g., 0201T)
- HCPCS Level II (e.g., J0585)
- Modifiers
 - 22 Increased procedural service
 - Use sparingly for unusual level of work
 - 24 Unrelated E/M during global
 - 25 Separate, significant E/M with minor procedure
 - 26/TC Professional and technical components
 - 50 Bilateral procedure



Endocrine and Nervous System

- 52 Reduced
 - Voluntary
- 53 discontinued
 - To protect patient
- 54, 55, 56 Pre-, surgical, post-
- 57 Decision for surgery (E/M w/ major service)
- 58 more extensive during global
 - Related to underlying diagnosis that prompted surgery
 - Anticipated at time of surgery



Endocrine and Nervous System

- 59 Distinct service
 - “unbundling modifier”
 - Different location, lesion, separate injury, etc.
- 62 Co-surgeons
 - Each surgeon must dictate a report/document
- 78 Related procedure during global
 - “complications” modifier
- 79 Unrelated procedure during global



The End

