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

• 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, adrenocorticotropic 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)

**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**

*Cranietomy or Craniotomy* (61304-61576)
- Craniotomy – opening in the skull
- Craniectomy – excision of a portion of the skull
  - Know indication and approach of the surgery

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

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• 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)

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• “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
  – Osteophytectomy (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
  – Intraspinal 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