

## Component 3-Terminology in Healthcare and Public Health Settings

### Unit 9-Nervous System

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## Nervous System Objectives

- Define, understand and correctly pronounce medical terms related to nervous system
- Describe in relation to the nervous system
  - common diseases and conditions
  - laboratory and diagnostic procedures
  - medical and surgical procedures
  - medications

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## Nervous System Anatomy

- Central Nervous System
  - Brain encased in the skull
    - Protective coverings with three meninges
      - Pia mater
      - Arachnoid
      - Dura mater
  - Spinal Cord encased in the vertebral canal



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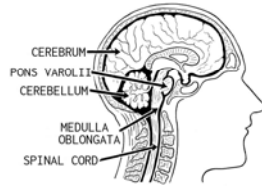
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## Nervous System Anatomy

- Cerebrospinal fluid
  - subarachnoid space
  - spinal cord
  - ventricles
- Cerebrum – largest part of brain
  - Divided into two hemispheres
  - Cerebral cortex – primary motor and sensory areas



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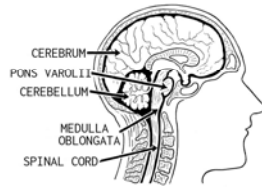
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## Nervous System Anatomy

- Hypothalamus
  - Regulation of appetite, heart rate, body temperature, water balance, digestion and sexual activity
- Cerebellum
  - Second largest part of brain
  - Controls unconscious actions



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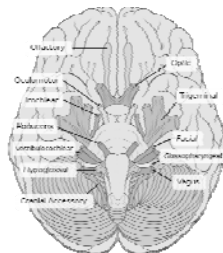
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## Cranial Nerves

- 12 pairs of cranial nerves
  - I Olfactory
  - II Optic
  - III Oculomotor
  - IV Trochlear
  - V Trigeminal
  - VI Abducens
  - VII Facial
  - VIII Auditory
  - IX Glossopharyngeal
  - X Vagus
  - XI Spinal Accessory
  - XII Hypoglossal



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## Cranial Nerve Functions

Cranial Nerves	Major Function
Olfactory	Smell
Optic	Vision
Oculomotor	Eyelid and eyeball movement
Trochlear	Innervates superior oblique eye muscle
Trigeminal	Chewing, face & mouth
Abducens	Turns eye laterally
Facial	Controls facial expressions
Auditory	Hearing; equilibrium
Glossopharyngeal	Taste; senses carotid blood pressure
Vagus	Senses aortic blood pressure; slows heart rate
Spinal Accessory	Controls neck & shoulder muscles
Hypoglossal	Controls tongue movements

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## Spinal Nerves

- 31 pairs
- Numbered according to the vertebra at which they exit the spinal column
  - Spinal nerve T4, exits the spinal column through the foramen in the 4<sup>th</sup> thoracic vertebrae



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## Brain Disorders and Diseases

- Alzheimer's Disease
  - Symptoms
    - Dementia
  - Progressive
  - Treatment
    - Medications

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## Brain Disorders and Diseases

- Alzheimer's Disease
  - Symptoms
  - Treatment
- **Brain Aneurysm**
  - **Symptoms**
    - Depend on location
  - **Treatment**
    - Depends on
      - location
      - size
      - presence of infection
      - whether ruptured

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## Brain Disorders and Diseases

- Alzheimer's Disease
  - Symptoms
  - Treatment
- Brain Aneurysm
  - Symptoms
  - Treatment
- **Brain Cancer**
  - **Primary vs Metastatic**
  - **Symptoms**

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## Brain Disorders and Diseases

- Epilepsy
  - Description
    - Recurring seizures
  - Causes
    - Brain injury
    - Abnormal brain development
    - Unknown
  - Diagnostic Tests
    - Brain scans
  - Treatment
    - Medicines
    - Surgery
    - Implanted nerve stimulators

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## Brain Disorders and Diseases

- Epilepsy
  - Description
  - Causes
  - Diagnostic tests
  - Treatments
- **Parkinson's Disease**
  - Affects nerve cells that control muscle movement
  - Causes
    - Failure of dopamine neurons
  - Symptoms
    - Trembling
    - Stiffness
    - Slowness
    - Poor balance and coordination
  - Treatment
    - No cure
    - Medicines can help reduce symptoms

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## Brain Disorders and Diseases

- Epilepsy
  - Description
  - Causes
  - Diagnostic tests
  - Treatments
- Parkinson's Disease
  - Description
  - Causes
  - Symptoms
  - Treatment
- **Stroke**
  - Ischemic
  - Hemorrhagic
  - Transient ischemic attacks (TIAs)
  - Symptoms
    - Sudden headache, weakness, numbness
    - Trouble speaking, balancing, walking
  - Treatments
    - Medicines

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## Spinal Cord Disorders and Diseases

- Arteriovenous Malformations
  - Description
    - Snarled tangle of arteries and veins
  - Treatment
    - Surgery
    - Radiation

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## Spinal Cord Disorders and Diseases

- Arteriovenous Malformations (AVM)
  - Description
  - Treatment
- **Meningitis**
  - **Inflammation of meninges**
    - Viral
    - Bacterial
  - **Symptoms**
    - Sudden fever
    - Severe headache
    - Stiff neck
  - **Treatment**
    - Medications
    - Vaccination for prevention

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## Spinal Cord Disorders and Diseases

- Arteriovenous Malformations
  - Definition
  - Treatment
- Meningitis
  - Description
  - Symptoms
  - Treatment
- **Multiple Sclerosis (MS)**
  - **Damage to myelin sheath**
  - **Visual disturbances**
  - **Sensory, Muscle and Balance problems**
  - **Thinking and memory problems**
  - **Medicines, physical and occupational therapy**

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## Nerve Disorders and Diseases

- Bell's Palsy
  - Temporary paralysis of face muscles
  - May be due to a viral infection
  - Most people recover in 3-6 months

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## Nerve Disorders and Diseases

- Bell's Palsy
- **Carpal Tunnel Syndrome (Median nerve entrapment)**
  - Nerve compression at the base of the hand
  - **Symptoms**
    - Inability to grasp
    - Pain
  - **Treatment**
    - Splints
    - Anti-inflammatory medicines
    - Surgery

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## Nerve Disorders and Diseases

- Bell's Palsy
- Carpal Tunnel Syndrome (Median nerve entrapment)
- **Peripheral Nerve Disorders**
  - Also called neuritis or peripheral neuropathy
  - **Symptoms**
    - Numbness or tingling
    - Pain or burning
    - Muscle weakness
    - Sensitivity to touch
  - **Treatment**
    - Treat underlying problem
    - Reduce pain and control symptoms

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## Neurofibromatosis

- Recklinghausen's (or von Recklinghausen's) Disease
- Genetic disorder of the nervous system
- Type 1
  - Skin changes and deformed bones
  - Usually present at birth
- Type 2
  - Hearing loss, ringing in ears, poor balance
  - Usually starts in teens
- Type 3 (Schwannomatosis)
  - Intense pain
- Treatment
  - Surgery, radiation, medications

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## Nervous System Combining Forms

Word Part	Meaning	Key Terms
• cerebell/o	cerebellum	cerebellar
• cerebr/o	cerebrum	cerebral
• crani/o	cranium	cranioclasia
• mening/o	meninges	meningioma
• myel/o	marrow	myelitis
• plegia	paralysis	quadriplegia
• thalam/o	thalamus	thalamotomy

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## Unit 9

Tell me, Detective . . . .

The patient presents urgently to the Emergency Department with complaints of double vision, pain behind the eye, and numbness on the side of the face. The physician notes a dilated pupil and a droopy eyelid. Based on the symptoms, what is a likely diagnosis to investigate?



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For additional information on content covered in this unit, please visit :

<<http://www.nlm.nih.gov/medlineplus/brainandnerves.html>>

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