

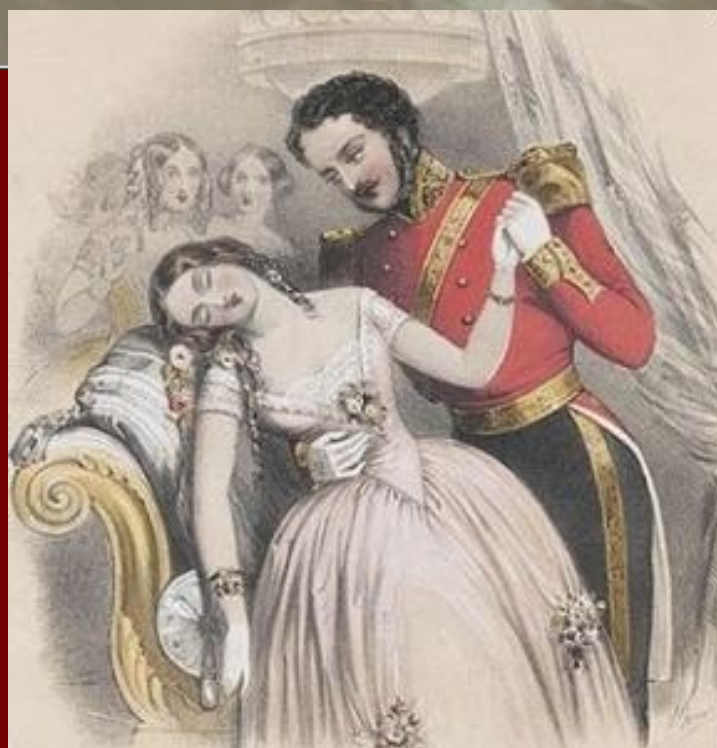
Nervous System Pathology

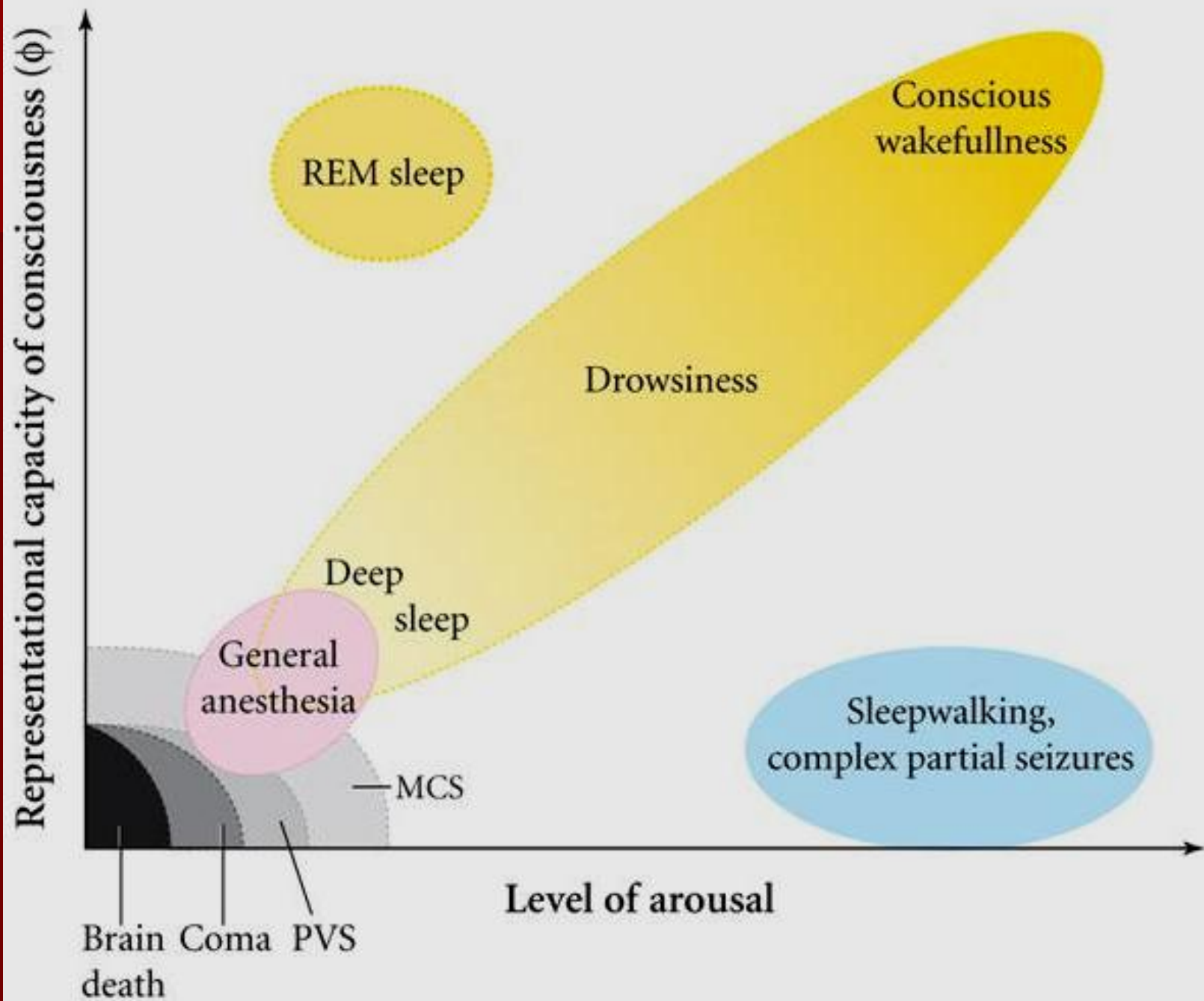


MMHS Science

Levels of Consciousness

- **Consciousness** (alert) = awake, alert and responding effectively.
- **Syncope**= fainting episode. Brief lack of consciousness due to low oxygen levels.
- **Lethargy**=lowered level of consciousness. Includes listlessness, drowsiness or apathy.
- **Stupor**=state of impaired consciousness marked by an absence of responsiveness to environmental stimuli.
- **Coma**= profound deep state of consciousness. No responsiveness to eye or pain stimulus.





Glasgow Coma Score

Eye Opening Response	Verbal Response	Motor Response
4 = Spontaneous	5 = Oriented	6 = Obeys commands
3 = To verbal stimuli	4 = Confused	5 = Localizes pain
2 = To pain	3 = Inappropriate words	4 = Withdraws from pain
1 = None	2 = Incoherent	3 = Flexion to pain or decorticate
	1 = None	2 = Extension to pain or decerebrate
		1 = None

Severe, GCS ≤ 8

Moderate, GCS 9 - 12

Minor, GCS ≥ 13 .

Brain Injuries- Types

- From a degeneration of brain cells.
- **TBI** = Traumatic Brain Injury
 - Incidental from accident, impact, etc.
- **ABI** = Acquired Brain Injury
 - Injury that happens sometime after birth.
- **CBI** = Congenital Brain Injury
 - An inherited BI before birth

Brain Injuries-Causes

- Illness
- Infection (viral or bacterial)
- Physical Trauma
- Hypoxia
- Stroke
- High grade fever
- Chemotherapy
- Iatrogenesis (related to medical mistakes)
- Heavy metal poisoning

Disorders of the Brain

- Alzheimers=progressive deterioration of the brain.

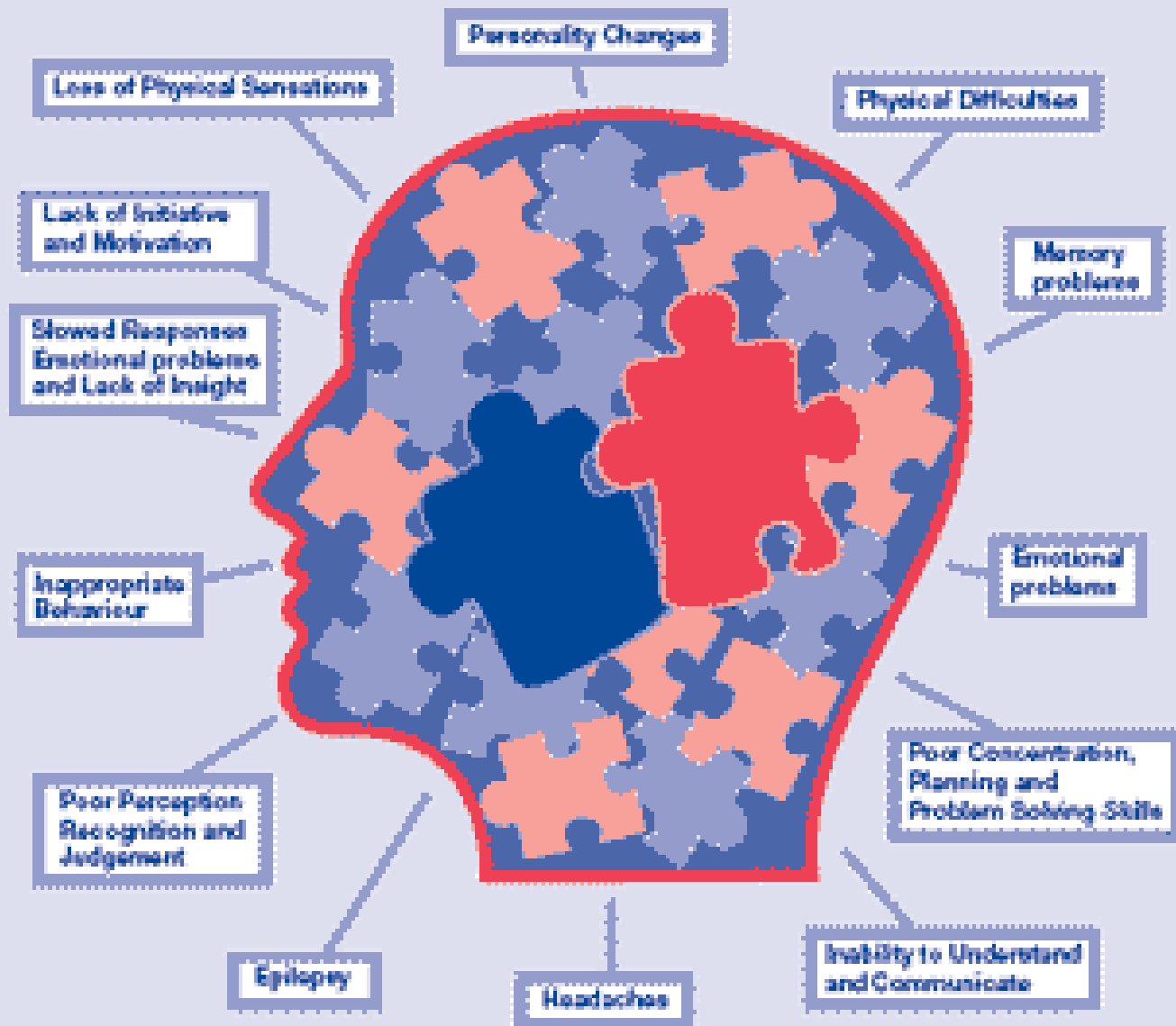
- Late Onset usu. in ages 65 and older.

Stages:

1. **Pre-Dementia** = confusion, misplacing things.
2. **Early** = poor hygiene, issues w/basic tasks.
3. **Moderate** = can't recognize friends
4. **Advanced** = can't recognize self, inability to communicate, loss of bowel control

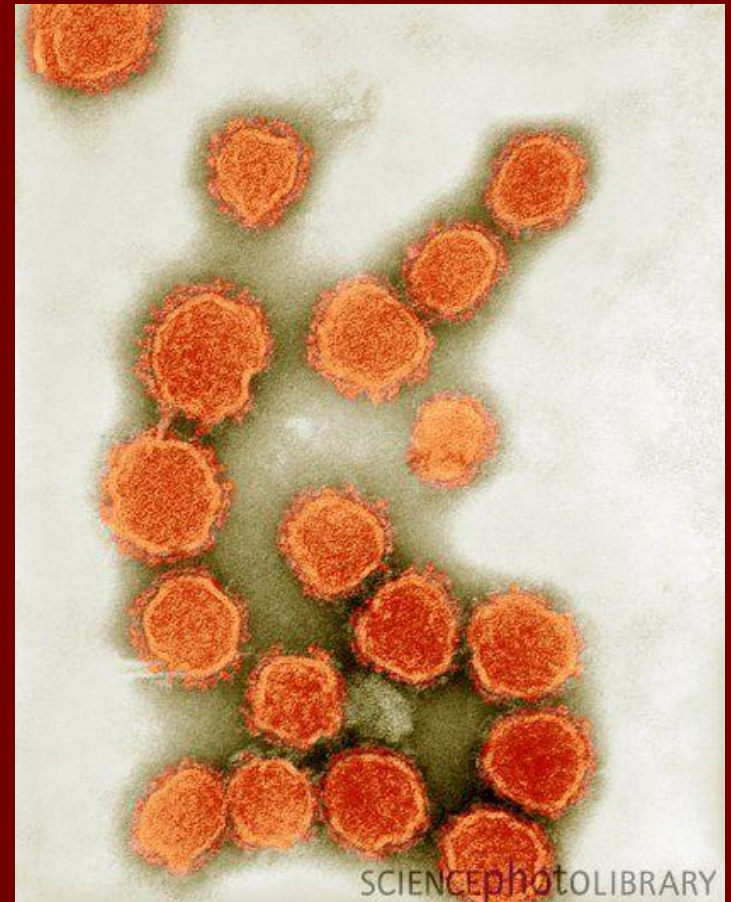
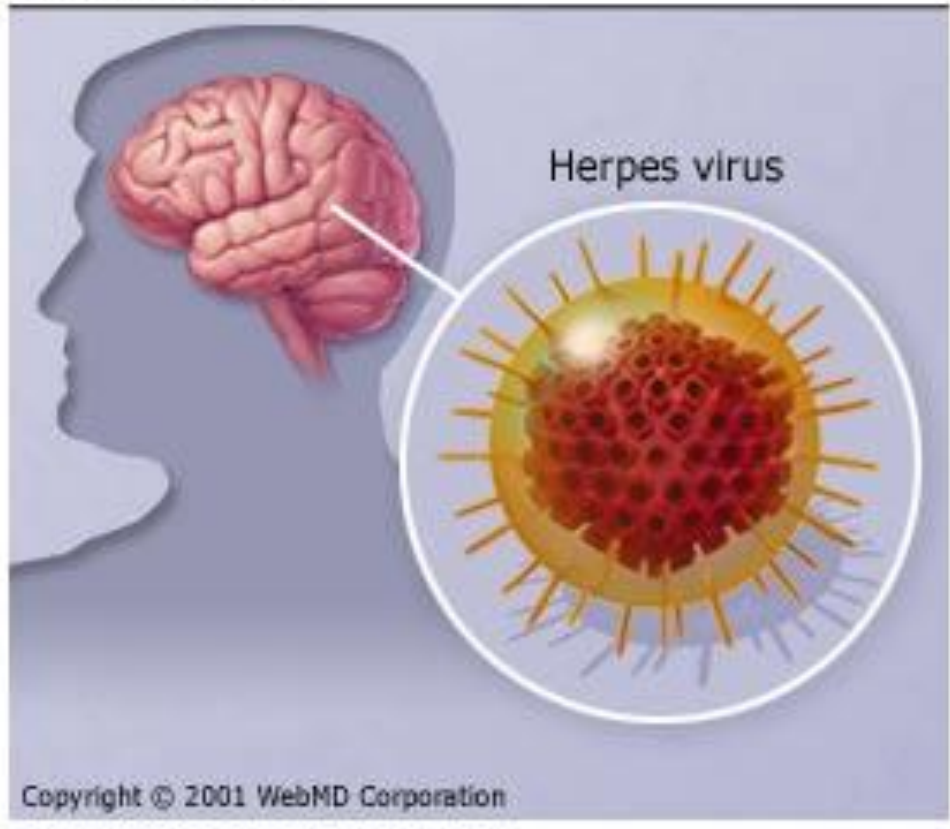
Disorders of the Brain

- Encephalitis = inflammation of the brain by infection.
 - Viral → rabies virus, Herpes simplex, poliovirus, measles virus, and JC virus
 - Bacterial → meningitis, syphilis , parasitic or protozoal infestations, such as toxoplasmosis, malaria, or primary amoebic encephalitis

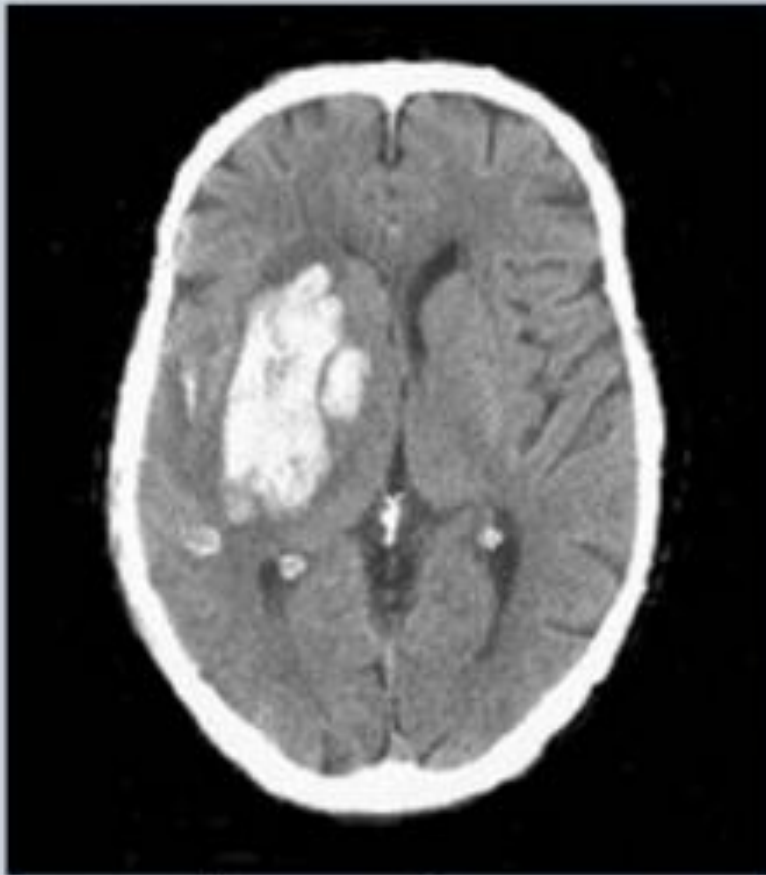


Encephalitis

Encephalitis



Encephalitis



2.0 hours after onset



6.5 hours after onset

Encephalitis

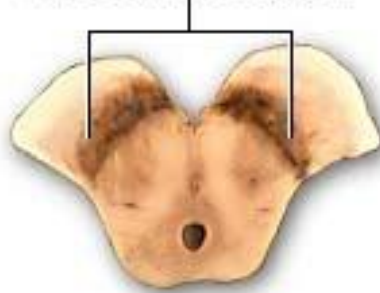
Disorders of the Brain

- Parkinsons = chronic, slow progressing, degenerative CNS disorder.
 - Death of dopamine-generating cells in midbrain.
- Characterized by: fine muscle tremors, facial distortion, shuffling gait, behavior issues and dementia in later stages.
- Cause: is idiopathic, but exposure to pesticides can increase the risk.

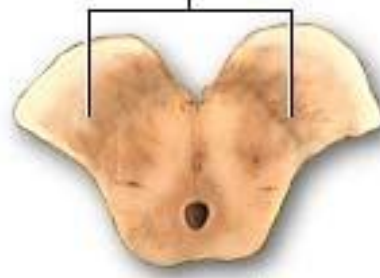


Cut section of the midbrain where a portion of the substantia nigra is visible

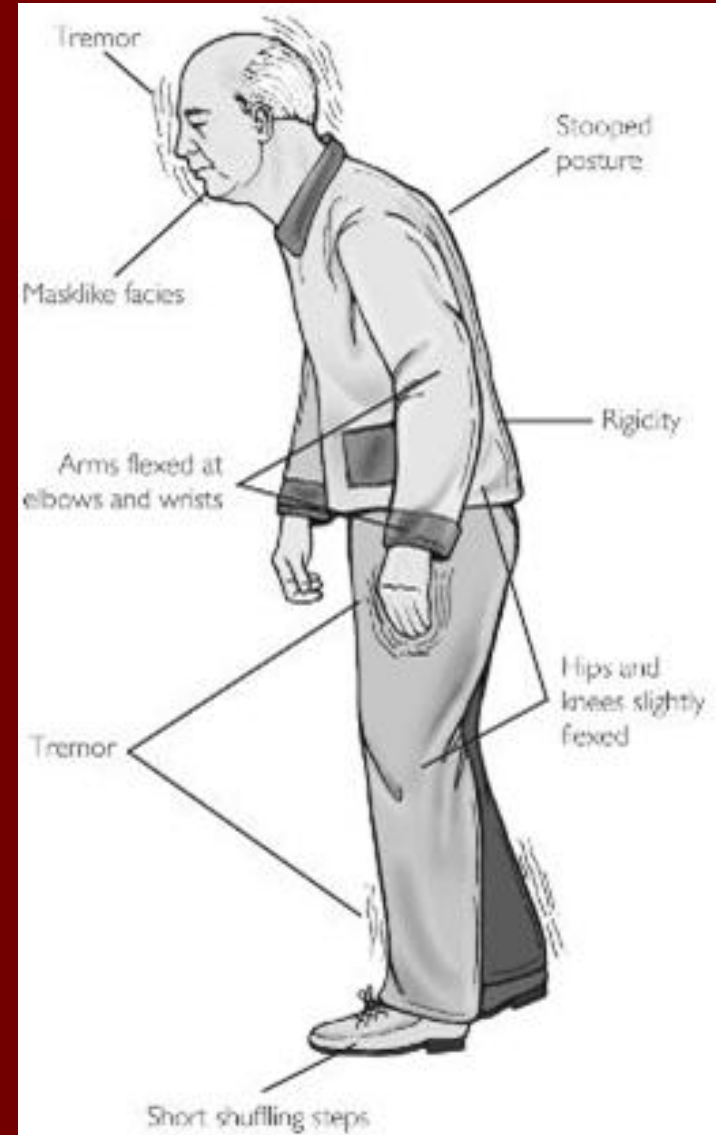
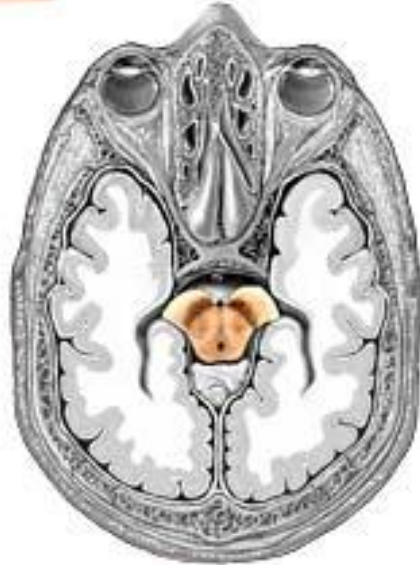
Substantia nigra



Diminished substantia nigra as seen in Parkinson's disease



ADAM.



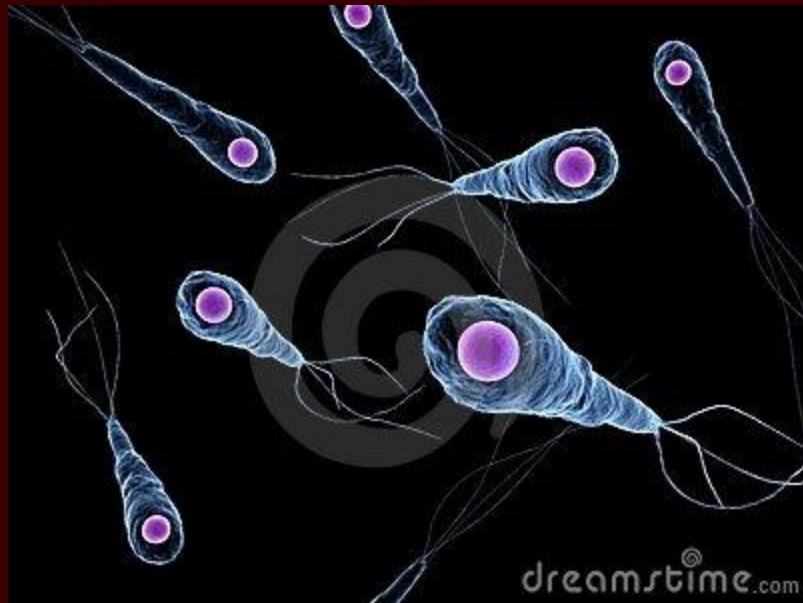
Parkinson's Disease

Tetanus “Lockjaw”

- Cause: by the bacterium *Clostridium tetani*
 - Anaerobic bacterium w/ endospores.
 - Produces neurotoxins that affect skeletal muscle tissue.
 - Enters body via a wound.
- Symptoms: Start as mild spasm of jaw, then moves to core body muscles.
 - Create violent contraction of muscle groups which result in arching, muscle tears and bone breaks. (50-75% mortality rate of affected)

Tetanus “Lockjaw”

- Prevention: vaccination (DTaP)
- Dtap = Diphtheria, Tetanus, Acellular pertussis
- Treatment: Clean/debride wound. Injection of Metranidizole (antibiotic) for those w/out vaccination.
 - Anti-tetanospasmin immunoglobulin
 - Diazepam = treats anxiety, insomnia, seizures, spasms.

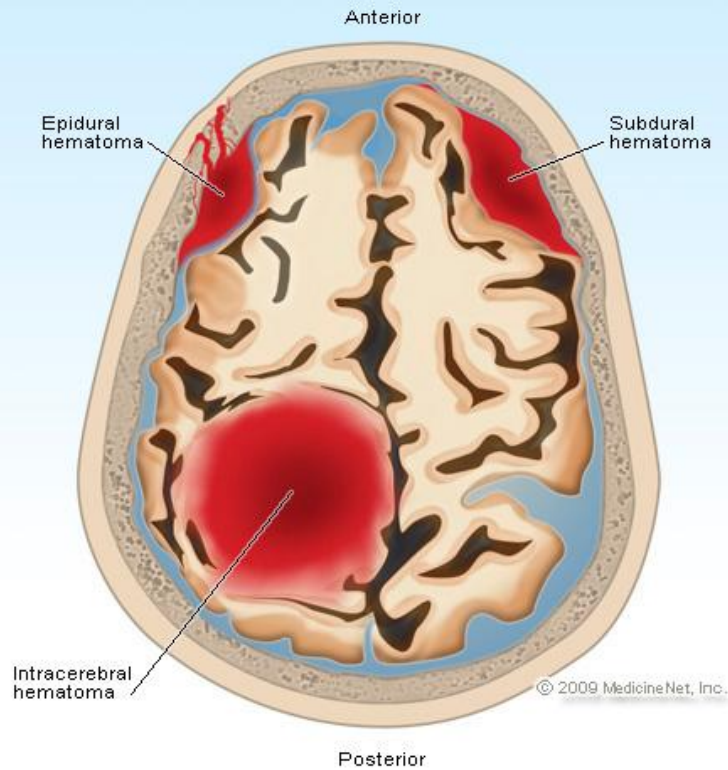


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Brain Injuries

- **Amnesia:** lapse of memory due to injury, illness or psychological disturbance.
- **Concussion:** jarring of the brain.
- **Contusion:** bruising of the brain tissue.
- **Cranial Hematoma:** blood trapped in brain tissue.
 - Epidural = outside of the duramater.
 - Subdural = below the duramater.
 - Intracerebral = between the cerebrum.

Brain Hematoma



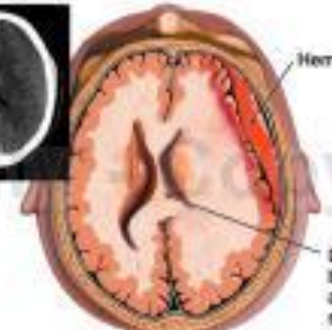
Cranial Hematoma Drainage

Post-Accident Injury

Hematoma over right frontoparietal region



Lateral view of brain



Hematoma

Distortion of brain tissue and midline shift

Axial view of brain

Surgical Drainage of Hematoma



Step 1: Parietal and frontal incisions are made.



Step 2: Burr holes are made through the skull.

Step 3: Dark liquidified blood is expressed under high pressure and evacuated.

