

Motor Neurons and Cranial Nerves

- Distinguish between upper (UMN) and lower motor neurons (LMN) by location and by lesion effects
- Know corticobulbar and corticospinal tracts
- CN I – receptors, pathway does not include thalamus, cortical regions for conscious smell
- CN III, IV, VI – know their functions & lesion effects (in class) are a group of nerves
- CN V – sensory (general – three branches) & motor divisions; lesion effects (tic doloureux)
- CN VII – branchial motor divisions with UMN and LMN lesion effects to upper and lower face related to bilateral and contralateral motor innervation from cortex (homunculus); visceral motor (glands); special taste sensation; lesion effects when combined with CN VIII
 - Taste – receptors, pathways, all CN involved (not just VII)
- CN IX – motor innervation and general sense to and from what muscles, area?; taste
- CN X – branchial motor branches and group of muscles they innervate; lesion effects, especially superior and inferior recurrent laryngeal branches
- CN XI – corticospinal tract to two main muscles (sternomastoid, trapezius), lesion effects
- CN XII – motor only to all muscles of tongue; CB is contralateral innervations only; understand UMN and LMN lesion effects
- Review CN study questions at end of last lecture

General senses

- Difference between general and specific (examples of each)
- Pain, temperature & touch receptors and tracts (origin, type of info, location of info, contralateral or ipsilateral, **where it ends**)
 - Medial lemniscus system
 - Spinothalamic tracts (ventral, lateral)
 - Dorsal spinocerebellar tract
 - Trigeminothalamic tract

Functional organization of cortex

- Topographic organization of cortex
- Functions of specific lobes, cortical areas, & homunculus
 - Also specifically functions of Wernicke's and Broca's in contributing to speech and language
 - Processes served by lobes
 - What kind of information does the parietal lobe integrate?
 - Prefrontal cortex – what processes, relies on what other cognitive functions

- Characteristics of dysfunction of specific lobes or cortical areas (eg, speech, language, auditory, or frontal dysfunction)
 - Be able to differentiate the following, know the damaged area associated with each, main characteristics
 - Broca's aphasia
 - Wernicke's aphasia
 - Apraxia
 - Dysarthria
 - UMN vs. LMN, relate to cranial nerve function above
- Left neglect and other characteristics of right hemisphere stroke
 - Left neglect vs. visual field loss
 - Other deficits associated with right hemisphere strokes
 - General function of right versus left hemispheres
- Cortical pathways for auditory comprehension, verbal expression
- Hippocampus - location, connection with other areas of cortex, short-term memory & working memory impairment
- Limbic system – structures included, location, functions of specific structures
- Anterior cingulate gyrus (also known as anterior cingulate cortex [ACC]) – location, function, role in working with frontal lobe
- Posterior cingulate cortex (PCC) – location, function

Traumatic brain injury (TBI)

- Statistics, age groups, military with TBI
- Types of TBI – open, closed, blast, range of severity
- Range of disability – coma to 'no visible' disability
- Primary mechanisms of injury – what they are, how they occur, most serious ones
- Secondary mechanisms of injury – edema & its other physiological consequences
- Typical cognitive and memory effects of TBI – attention, anterograde amnesia, retrograde amnesia, executive functions, sense of self
- Social communication, speech, and language effects of TBI

Functional Scenario:

Review functional neurological-behavioral scenarios like we did in class. Be prepared to identify the various neurological systems involved in a sequence of behaviors. There are four steps or groups of behaviors in the scenario, each worth 3 points; 3 additional points are designated for explicit identifying how/where these neurological systems are working together and/or at the same time. Therefore, the scenario is worth 15 points.