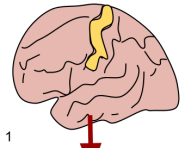
Neurological Deficits

Emergency Medicine Core Competences

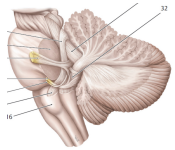
Approach to Neurodeficit

1-Danger?	Abnormal vital signs? Seizure?
2-Data	MAPLES OPQRST+ Neuro-screen
3-Diagnosis?	1-Where? 2-What?
4-Decisions	Further investigations / treatments?
5-Disposition	Verbal & written communication

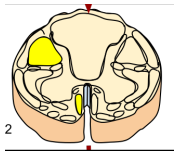
1-Where?



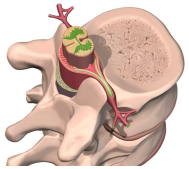
- Forebrain



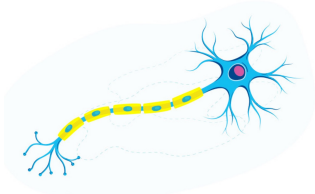
- Brainstem/cerebellum



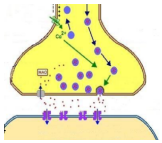
- Spinal cord



- Nerve root



- Nerve



- Neuromuscular junction

- Muscle

↑[K]

- Other

2-What?

Stroke Mimics

5 M	3 P
• Migraine • Metabolic (e.g potassium) • Meningoencephalitis+ • MS • Mass	• Post-ictal / non-convulsive • Peripheral • Psychiatric

1-Where?

OPQRST+

2-What?

OPQRST+

Neurological Exam

Hypothesis-Driven

- When history available
- Dix-Hallpike for BPPV

Neuro-Screen

- When no history
- Wanted: sensitive tests

Babinski

- Sensitivity 8-13-35-50-60%
- Specificity 77-99-100%

Neuro-Screen C543

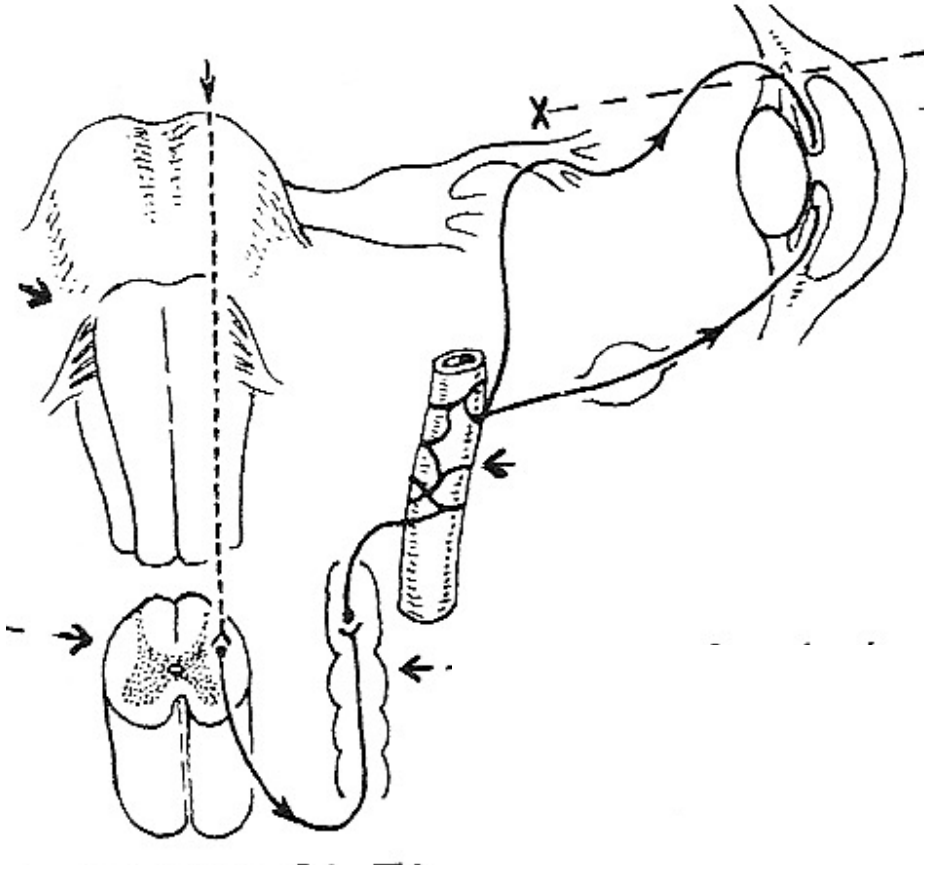
Cranial Nerves
Visual fields
Pupils (size, rxn to light)
Eye movements
Facial movements
Uvula + tongue

Clout
Shoulder abduction
Finger spreading
Rising from sitting/hip flex
Ankle dorsi/plantar flexion

Coordination
Finger-nose
Heel-shin
Romberg

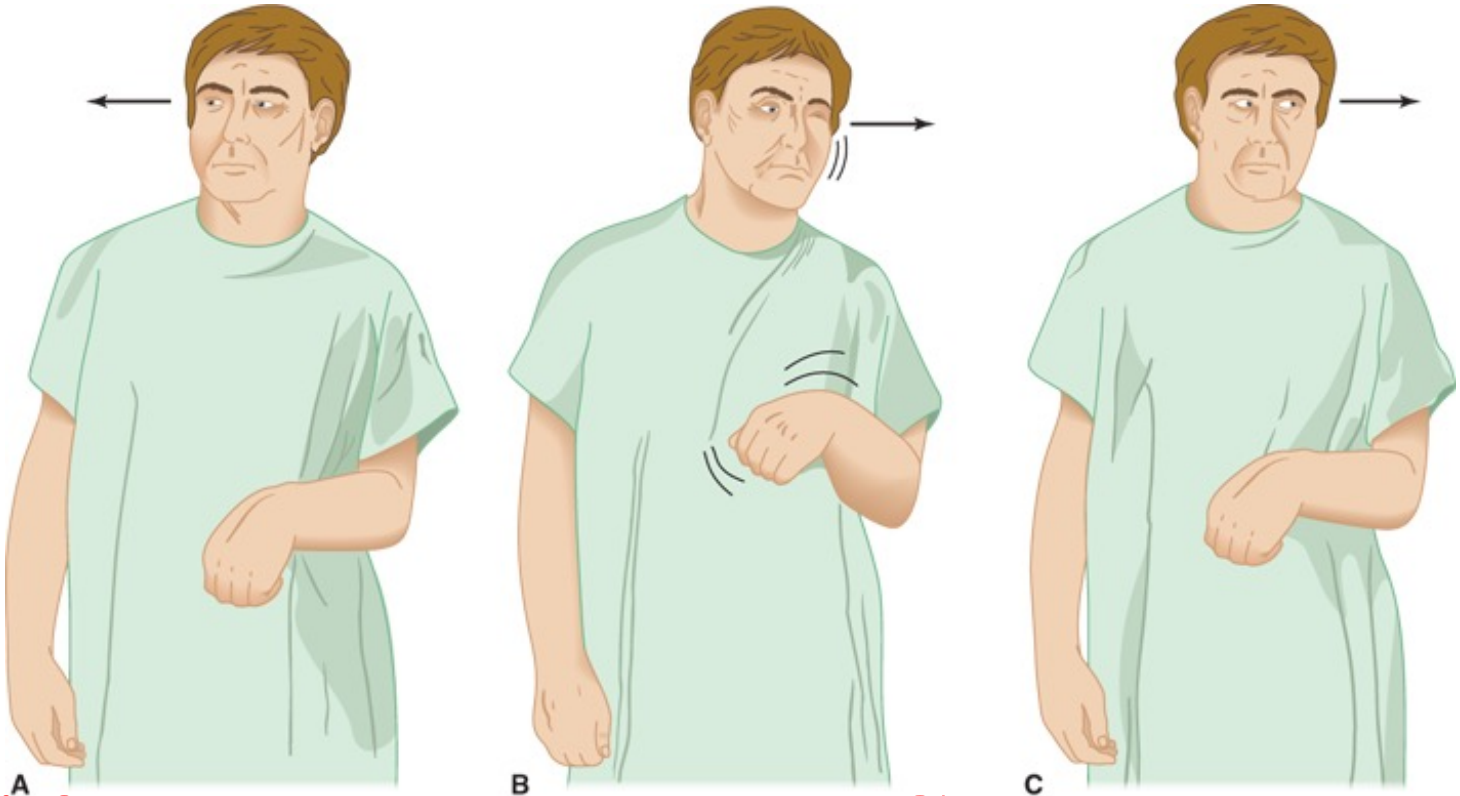
Dysphasia – Dysarthria – Disorientation
are identified during history-taking

Unilateral Miosis & Ptosis



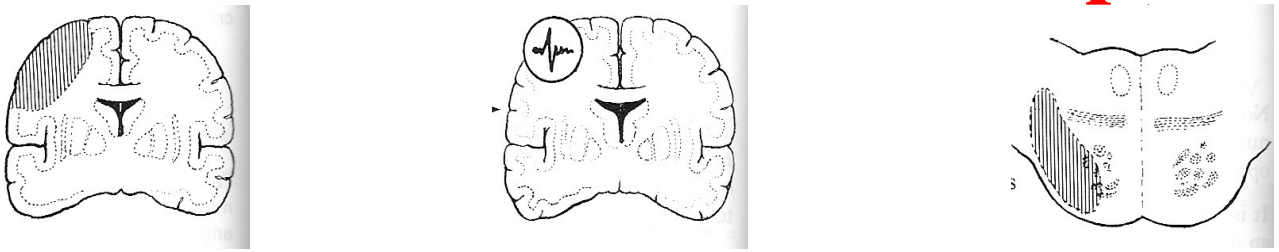
Horner's Syndrome

Conjugated Gaze Deviation



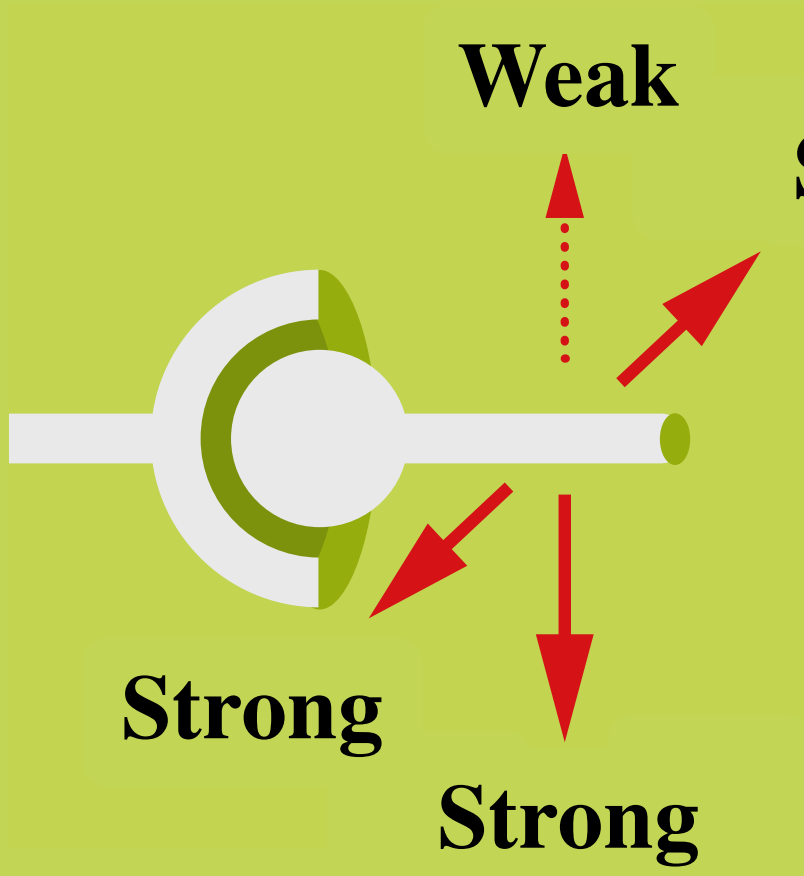
Ipsi frontal stroke

Contra pons stroke



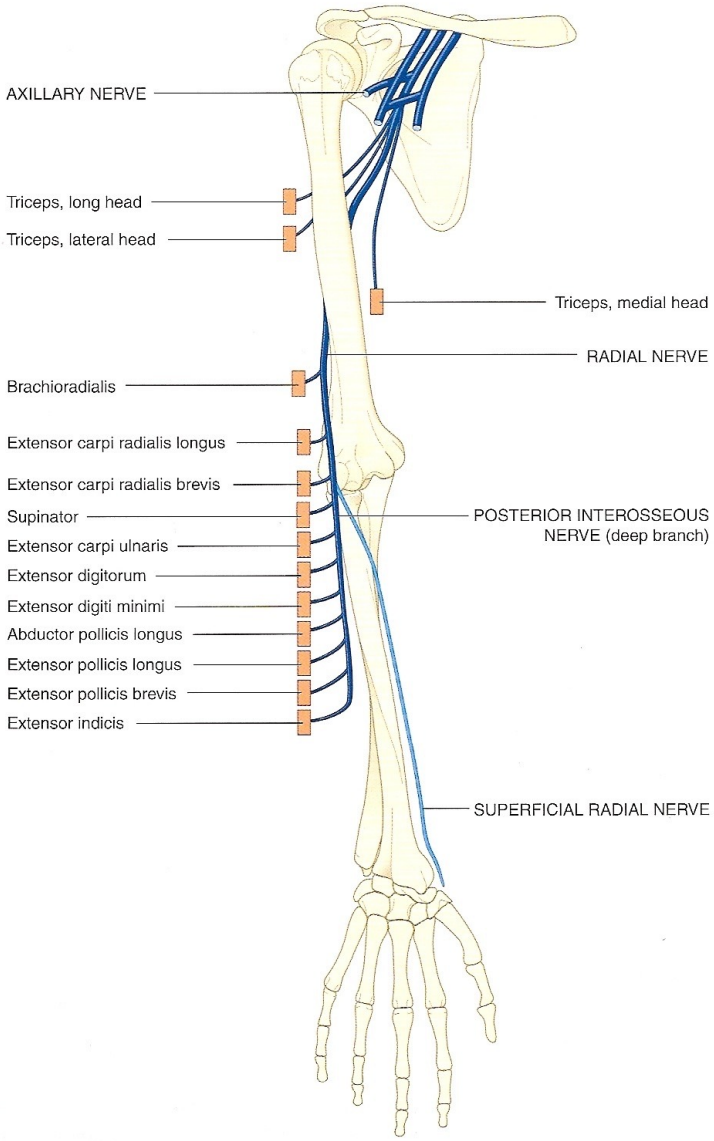
Contra frontal seizure

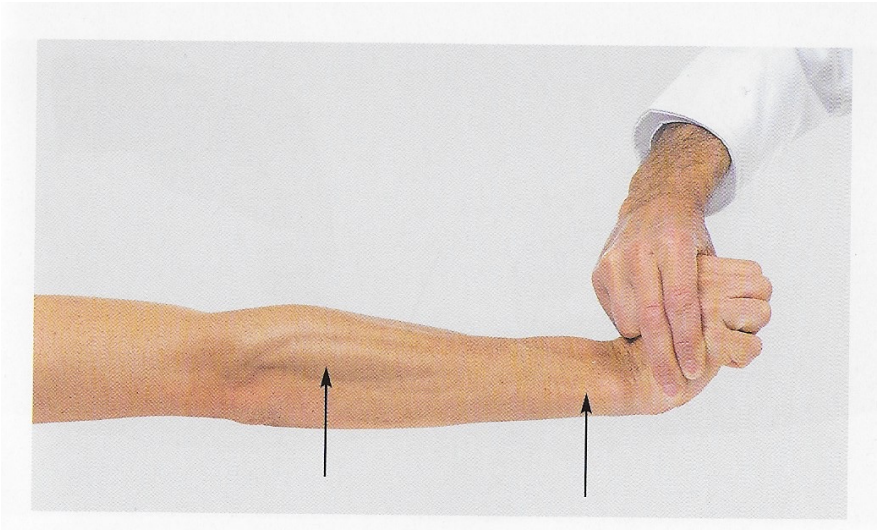
Side of Extremity

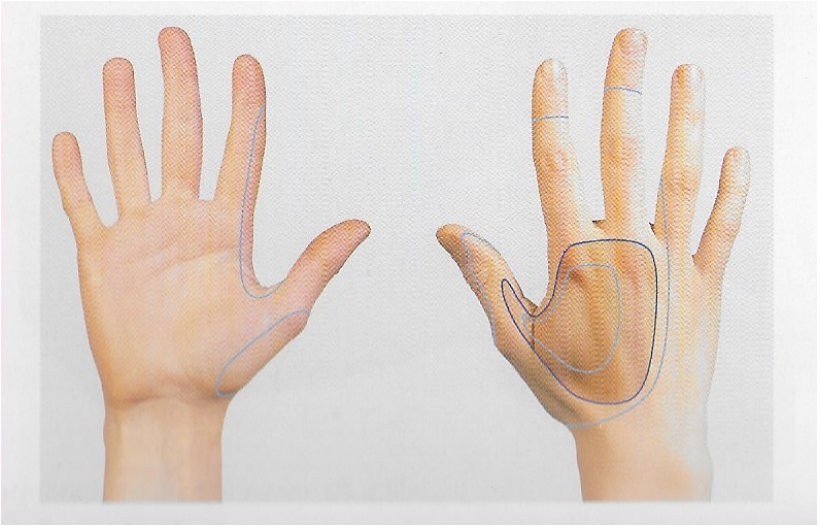


Mononeuropathy

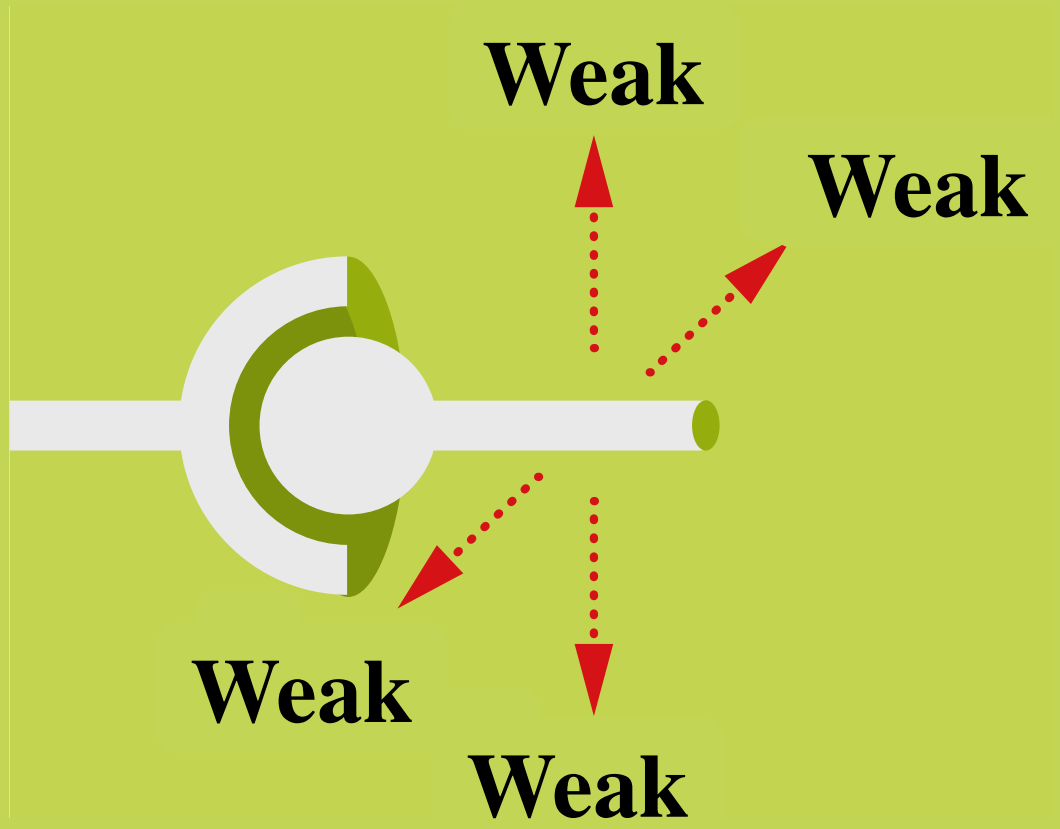
Radial Nerve





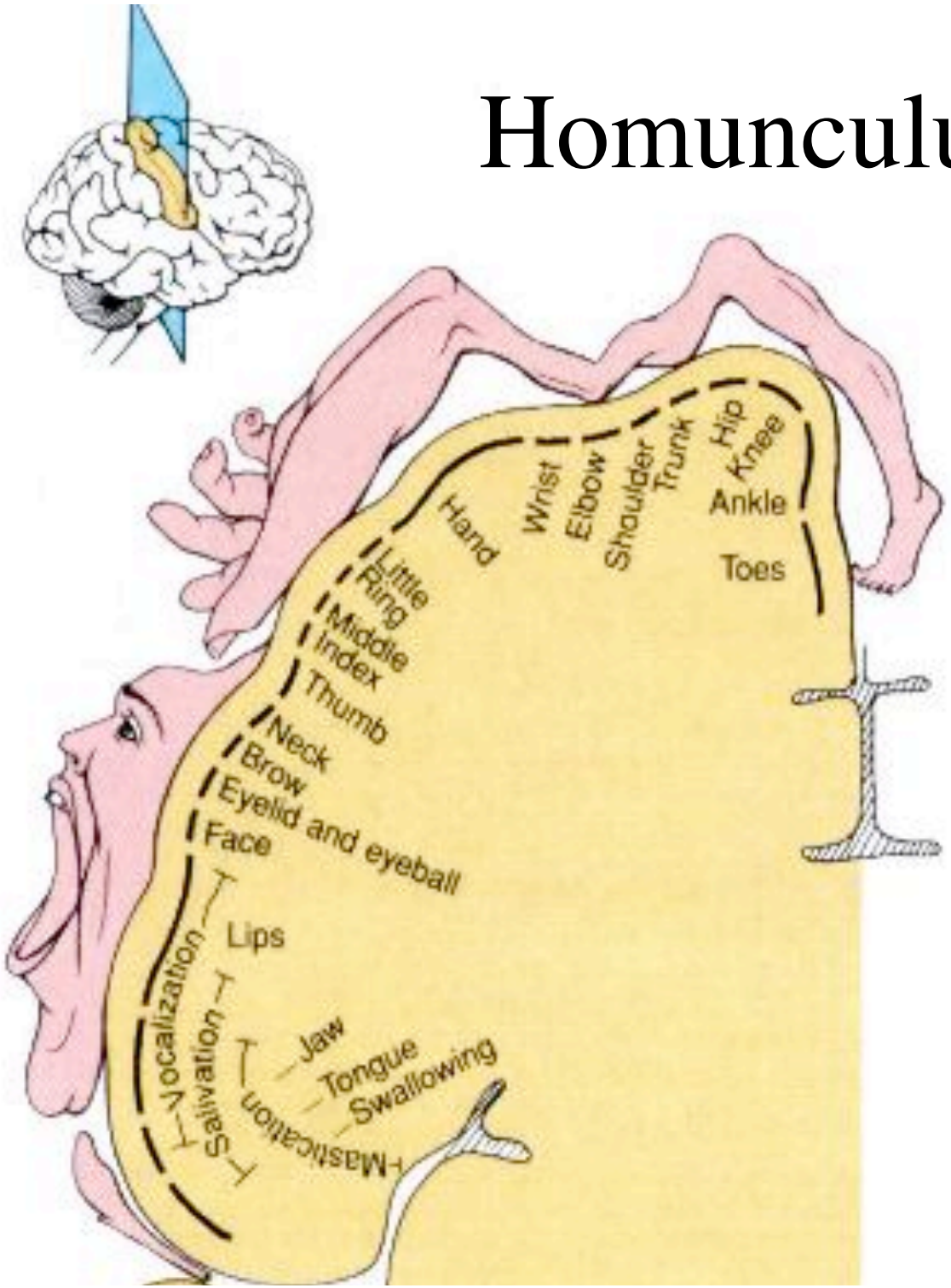


Whole Body Part

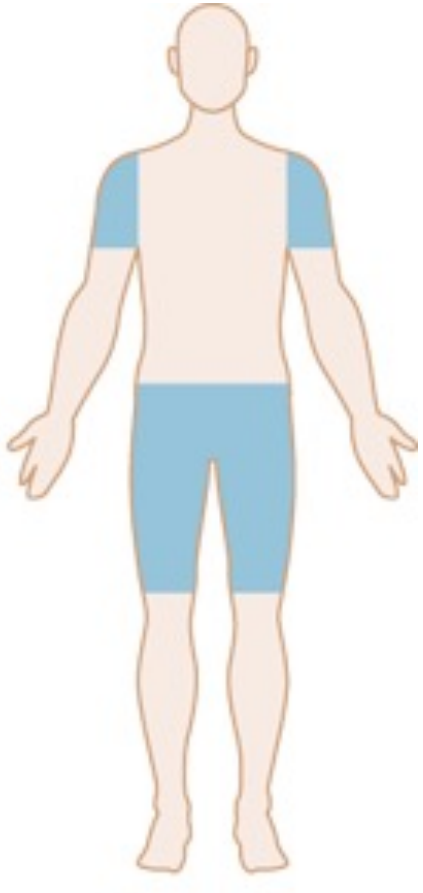


Forebrain

Homunculus

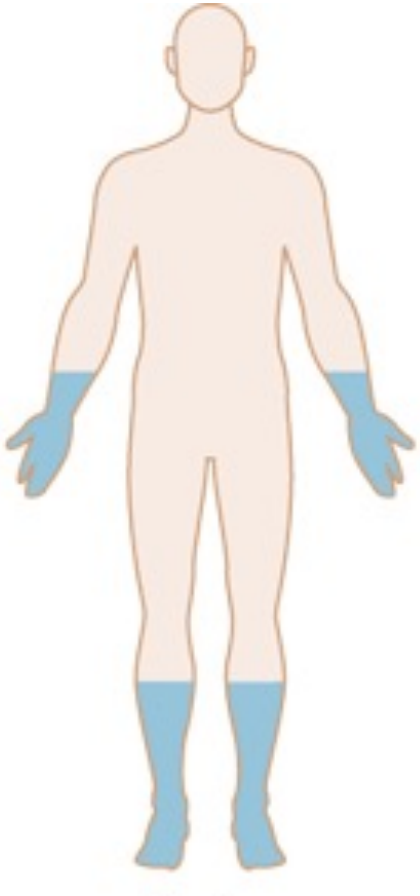

Hand
Wrist
Elbow
Shoulder
Trunk
Hip
Knee
Ankle
Toes
Little
Ring
Middle
Index
Thumb
Neck
Brow
Eyelid and eyeball
Face
Lips
Jaw
Tongue
Swallowing
Mastication
Salivation
Vocalization

Proximal Symmetrical Weakness



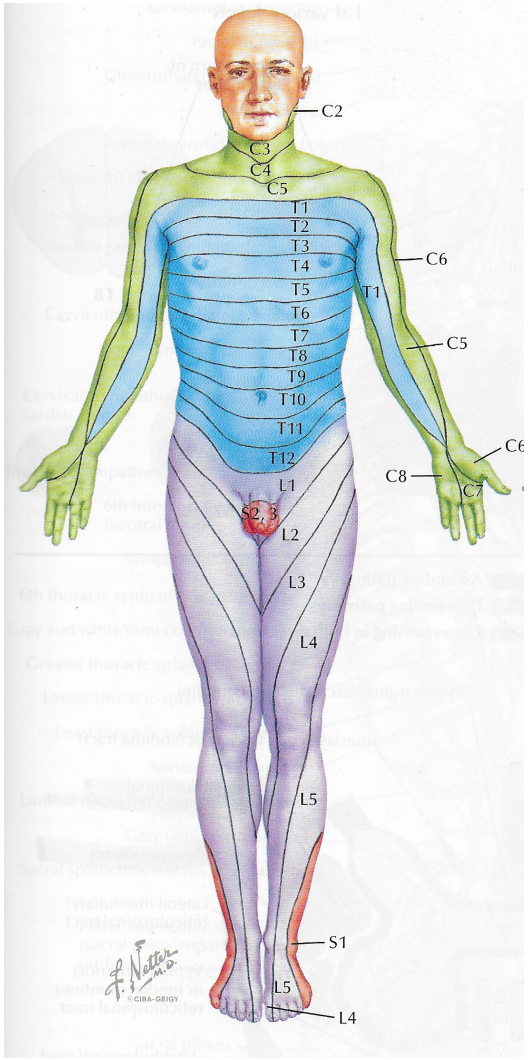
Myopathy

Distal Symmetrical Weakness



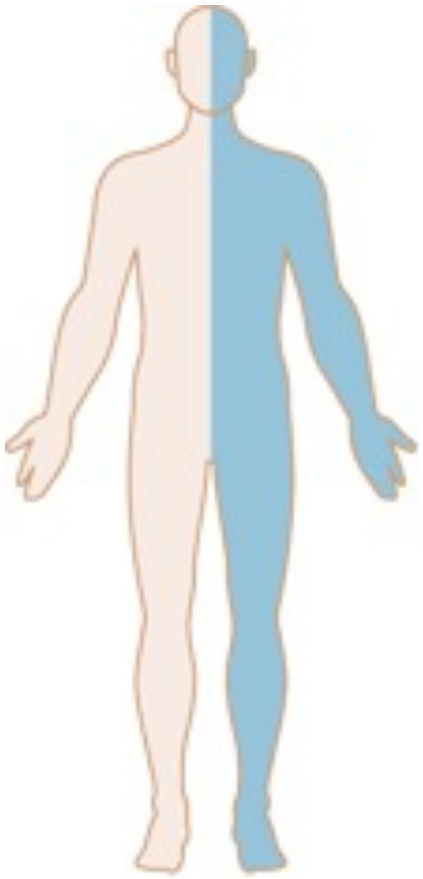
Polyneuropathy

Strip Along Extremity



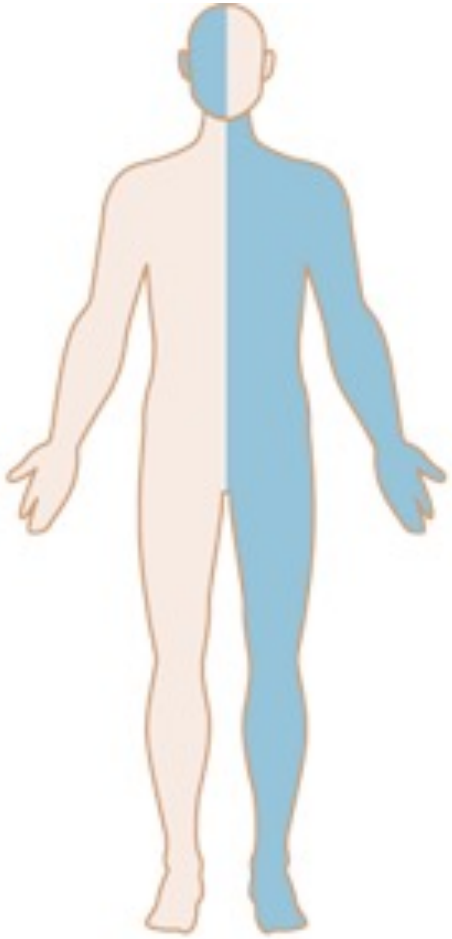
Radiculopathy

Face Ipsilateral to Arm/Leg

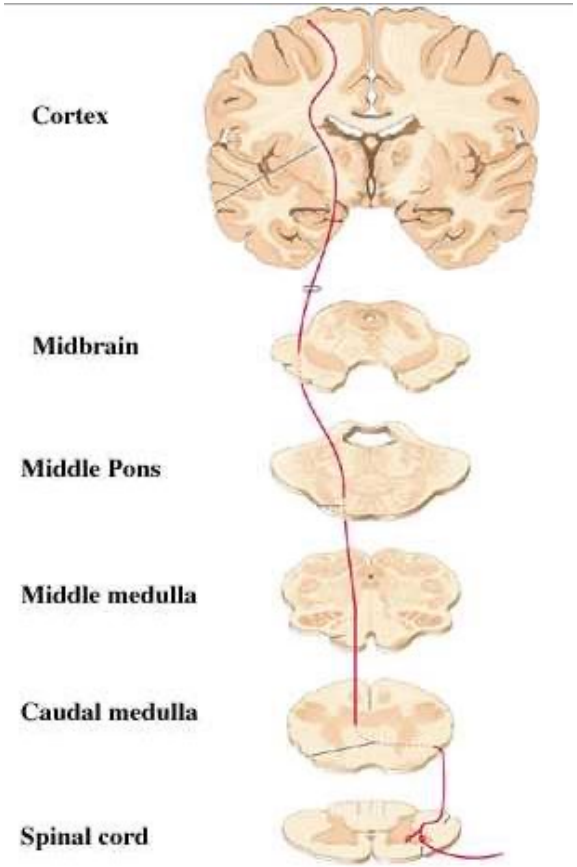


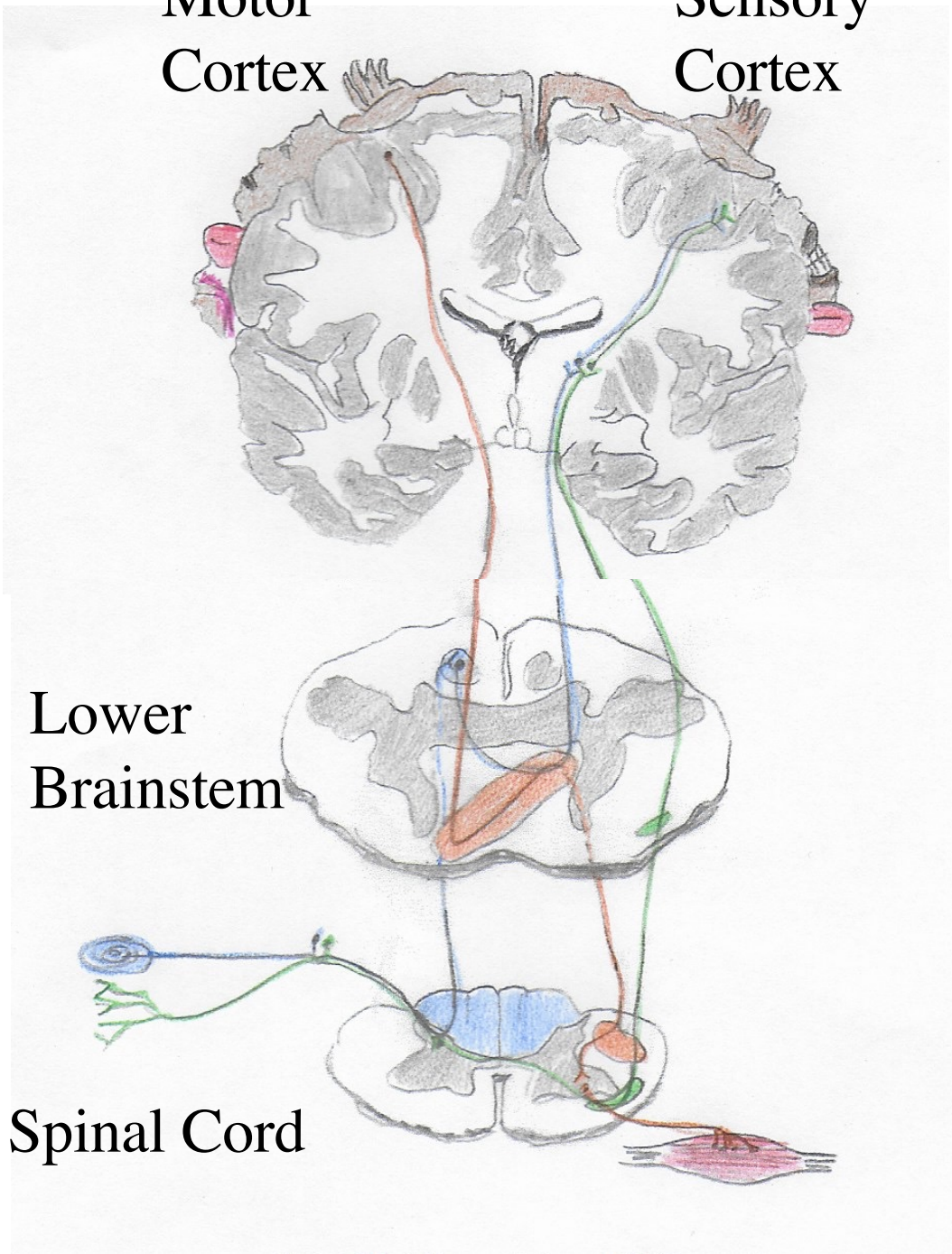
Forebrain

Face Contralateral to Arm/Leg



Brainstem



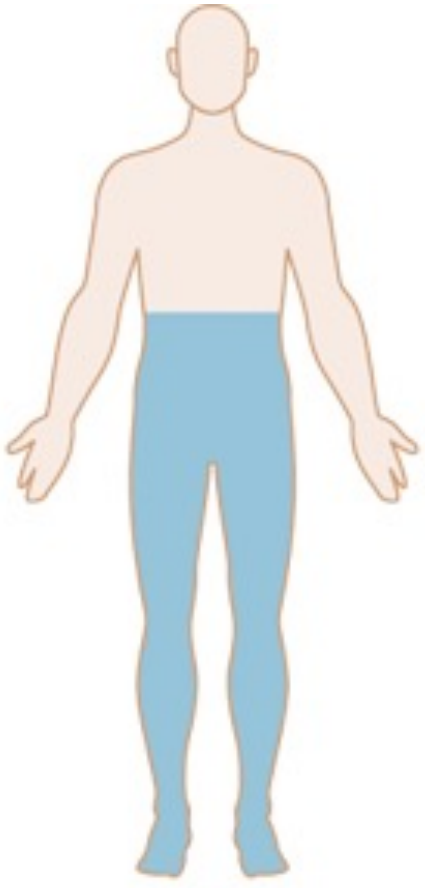


Motor:
1-Crosses where brainstem meets spinal cord
2-Goes down postero-lateral spinal cord

Touch:
1-Goes up posterior spinal cord
2-Crosses where spinal cord meets brainstem

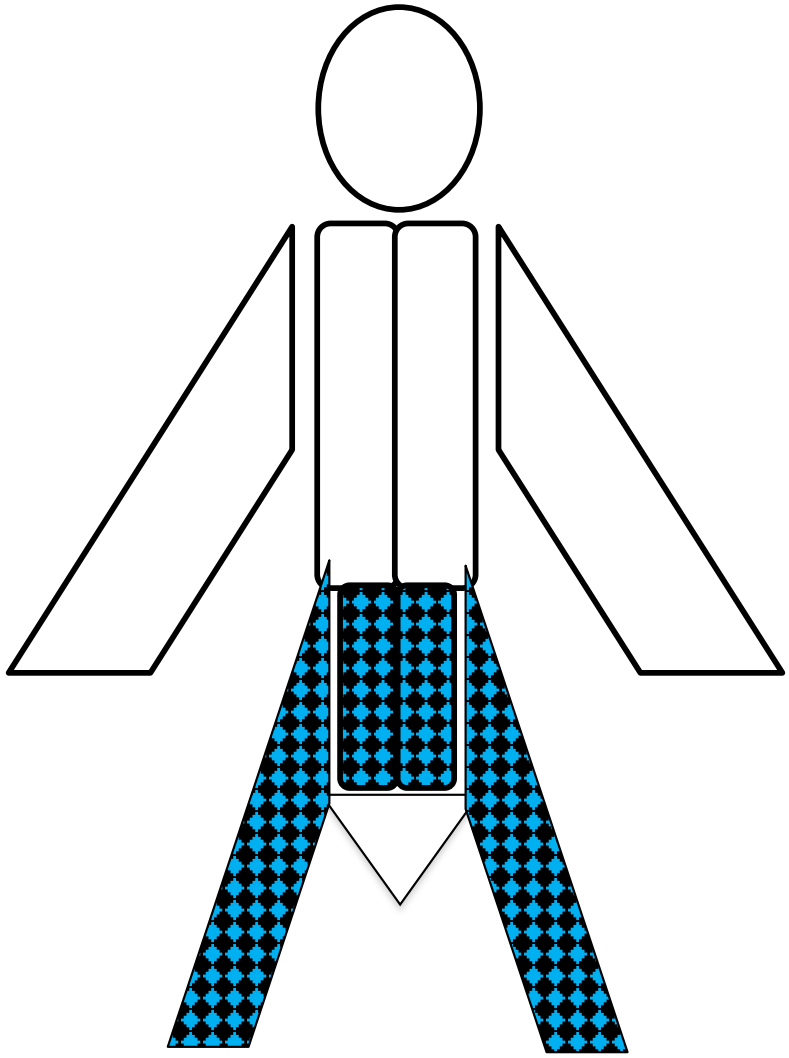
Pain:
1-Crosses directly within the spinal cord
2-Goes up antero-lateral spinal cord

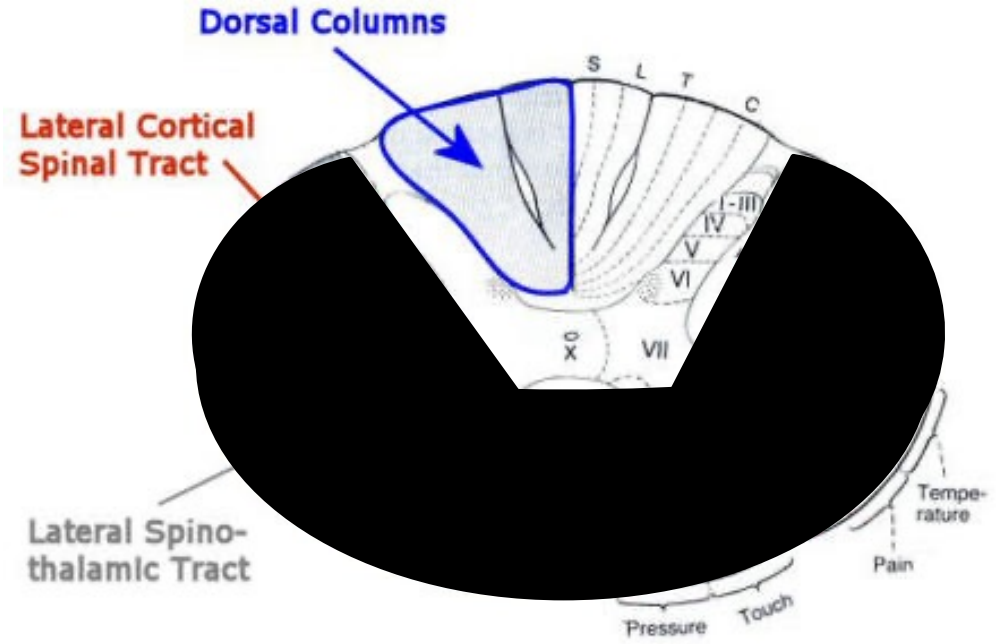
Truncal Level



Myelopathy

Weak + No Pain Below Navel



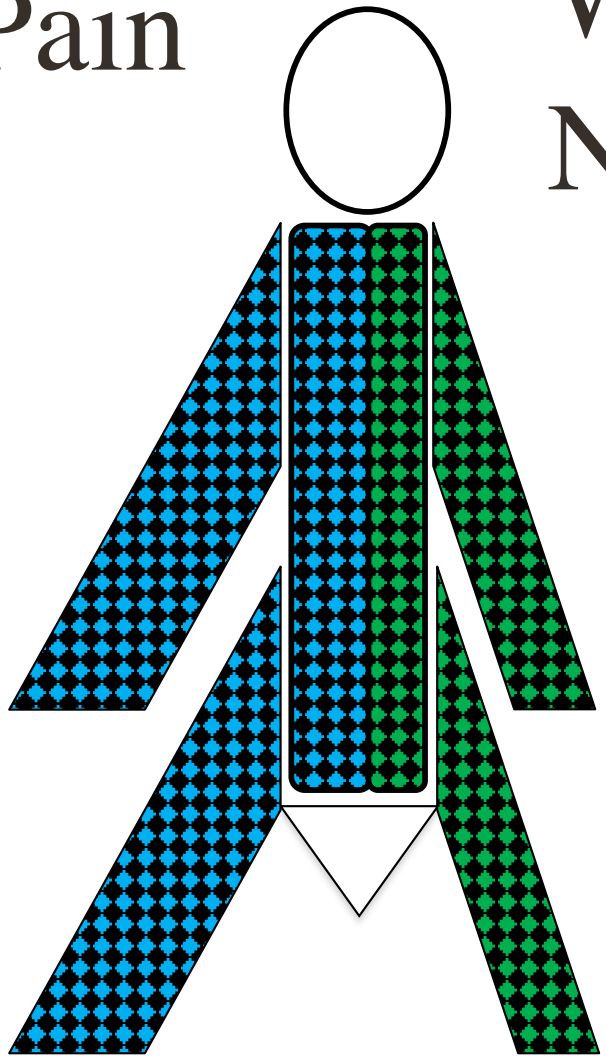


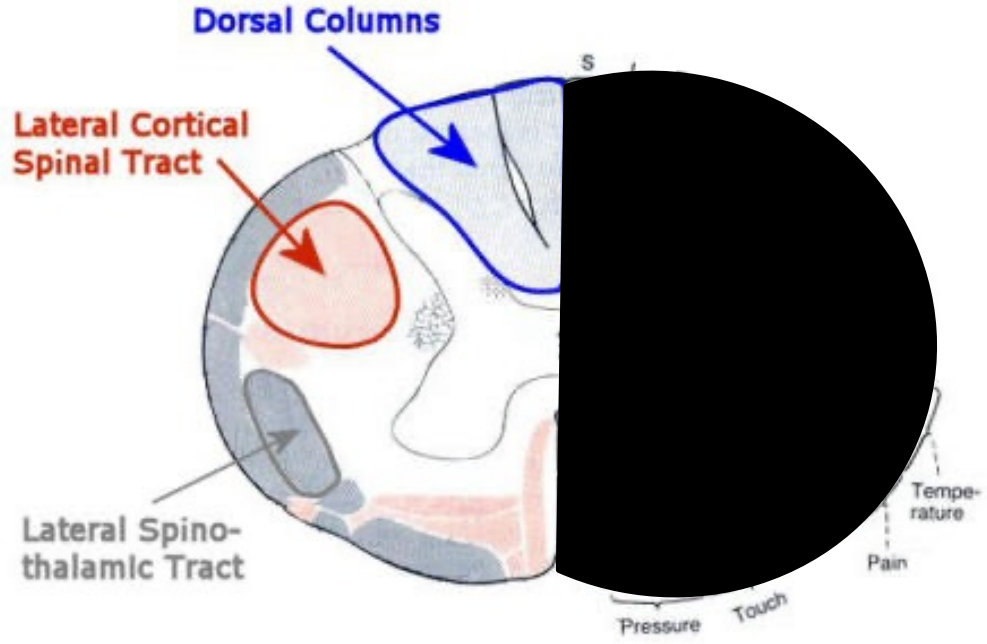
Anterior Cord (T10)

No Pain

Weak

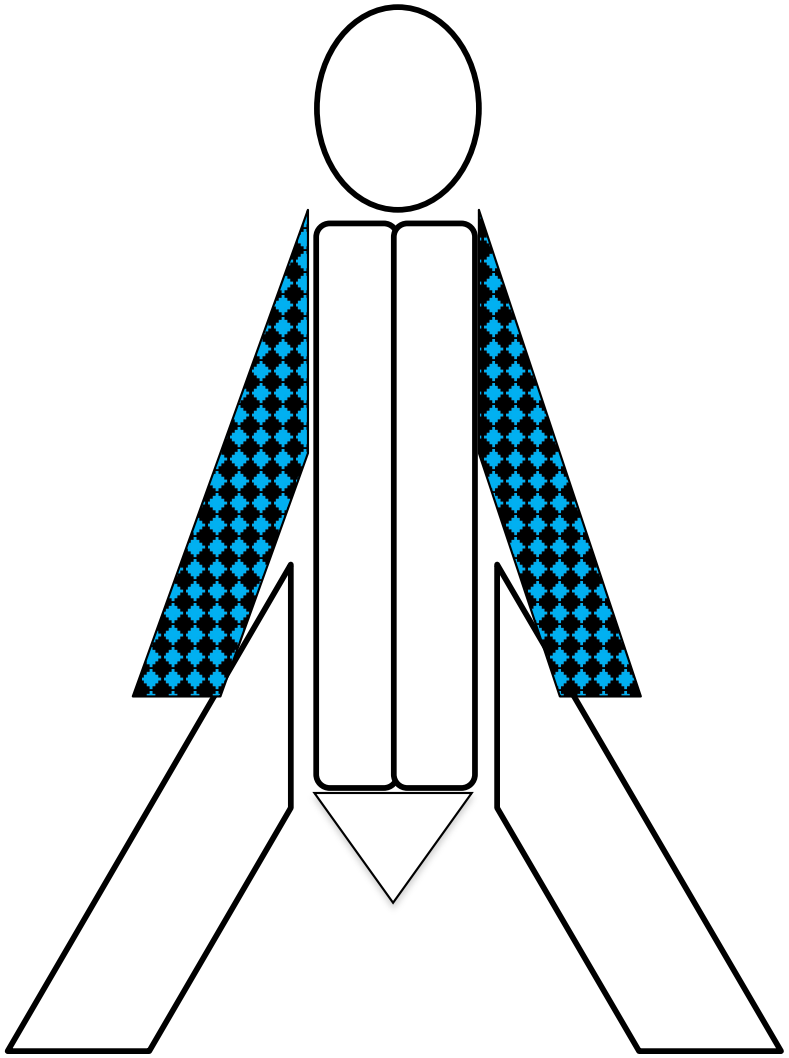
No Touch

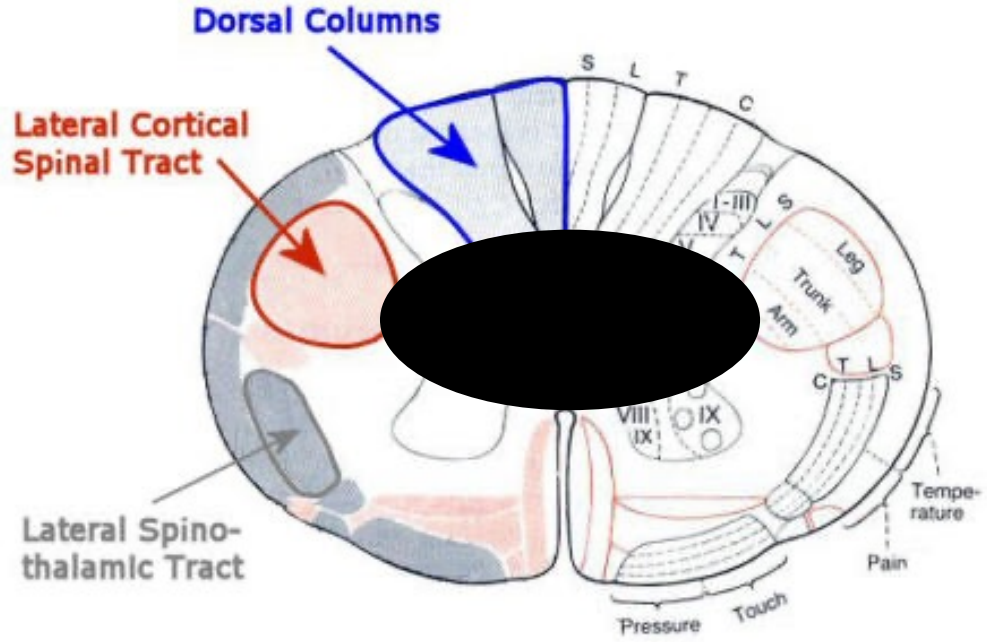




Brown-Séquard (C4 left)

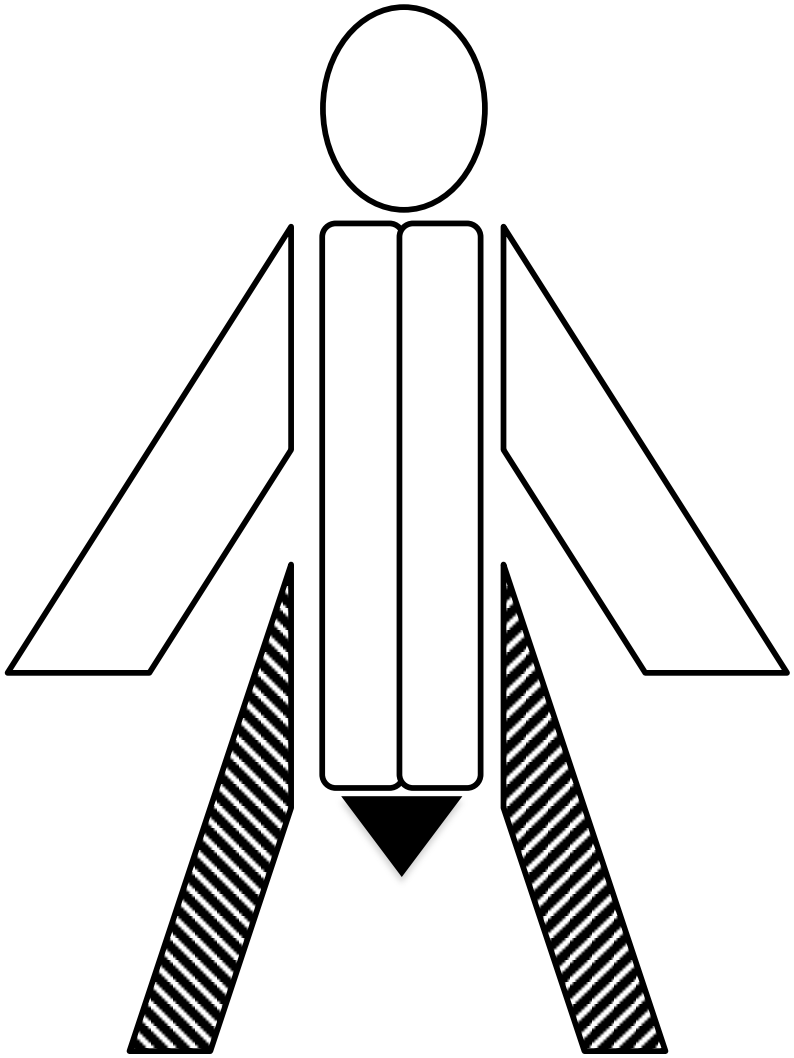
Arms: Weak + No Pain

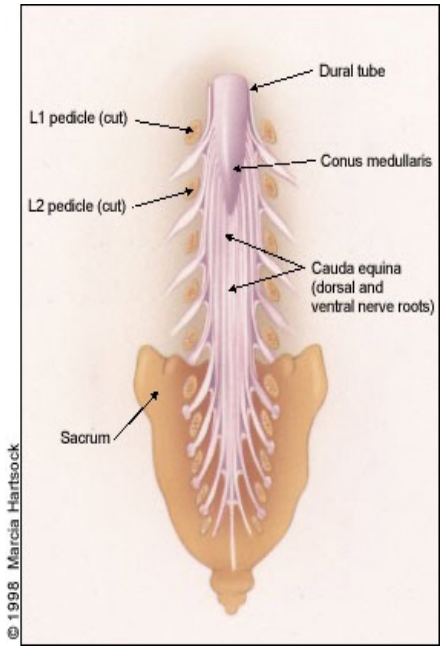




Central Cord (Cervical)

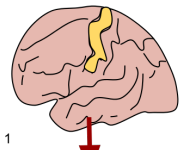
Urinary Retention-Perineal Paresthesia





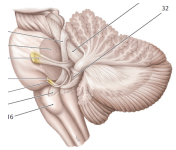
Conus Medullaris

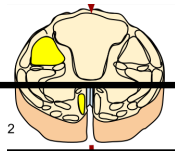
Cauda Equina



Upper Motor Neuron Syndrome

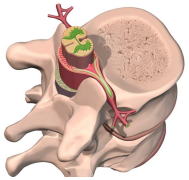
- Spastic
- Hyperreflexia
- Babinski



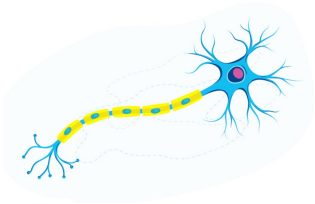


Corticospinal tract

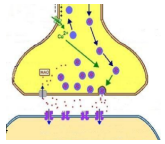
Anterior horn

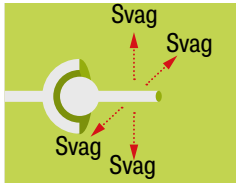


Lower Motor Neuron Syndrome



- Decreased tonus
- Hyporeflexia
- No Babinski

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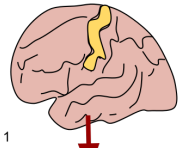
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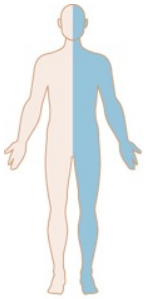

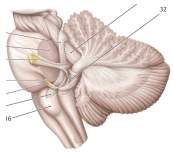

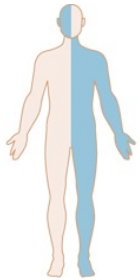

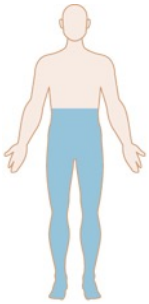

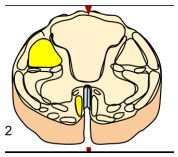
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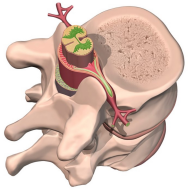

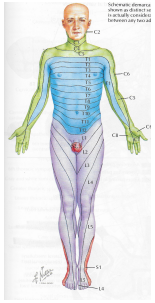

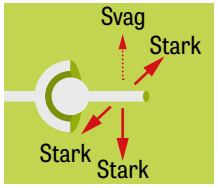
Svag
Stark
Stark
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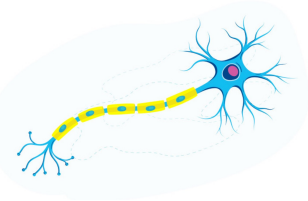

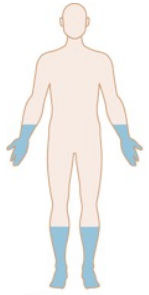

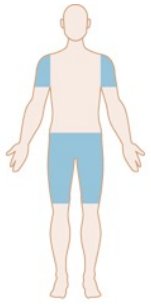

Neurocases

- Introduction
- Neuro-Screen
- Hypothesis-driven examinations
- Questions