**CNS EXAM LOWER LIMB**

1. **INTORDUCTION AND CONSENT**
* Might be to parents depending on age of the child
* Ask patient’s name and age (if you can)
1. **ADEQUATE EXPOSURE**
* Ideal exposure is from the umbilicus (nipple line) to the toes, covering the pelvic area for privacy
* Position patient in the supine position if able to do so
1. **INSPECTION**
* Walk from foot of the bed to top of the bed and look/observe
* Affect and state of wellness
* Comment on any **Cardio-Respiratory Distress**
* With limbs in anatomical position comment on:
	+ Posture/position with emphasis on the abnormal
	+ Deformities
	+ Wasting (temple, buttock muscle groups), guttering
	+ Spontaneous fasciculations
	+ Bilateral ptosis in Myasthenia gravis
	+ Facial asymmetry
	+ Oedema (Swelling)
	+ Any movement of limbs: symmetrical, preference and spontaneity
	+ Attitude of the limbs: bilateral foot drop, scissoring, external rotation of limb
	+ Joints (MS)
	+ Inspect soles of feet
* Presence of any neuro-cutaneous lesions – *cafe’ –au – lait* spots, neurofibromas, etc.
* Scars that may point to nerve lesions
* Physique- Deformities and proportions
* Dysmorphic features
* **Supportive therapy** – O2 (how many litres) via facemask, nasal cannula, O2 tanks, IV, wheelchair
* **Nutritional status** – skin and hair changes, muscle (wasting) and fat
	+ Must ask for patient’s age, weight, height
	+ Appears small for age
* Head Shape, Back, Skin-striae (long term corticosteroid use), Tanner Stage, Abnormal movements, Posture
1. **PALPATION**
* Move to side of the bed and ask patient if there is any pain anywhere
* Elicit **fasciculations** commenting – such as, “there are no spontaneous or elicited fasciculations
	+ Demonstrate this somewhere else on the body like the arm
	+ Assess fasciculations at the Anterior, Medial aspects of the thighs and legs (alternate sides)
	+ Remember to always look at the patient’s face as you do this
	+ Comment: “there are no spontaneous or elicited fasciculations”
* **Bulk**
	+ Anterior and medial aspect of the thighs and legs: Quadriceps femoris, Triceps femoris and calf muscles
	+ Compare both limbs (alternately)
	+ Turn patient on the side to assess the Gluteus maximus muscle as well (looking for wasting)
	+ Comment: Increase or decrease bulk
* **Tone**
	+ Can do log roll
	+ Hip: Abduction, Adduction, Flexion and Extension
	+ Knee: Flexion and Extension (Straight then bent)
	+ Ankle: Plantarflexion and Dorsiflexion (fix leg)
	+ Toes: Flexion and Extension (stabilise ankle joint)
	+ Compare both limbs (alternately)
* **Power**
	+ Ask patient to lift both legs (can do one at a time depending on the patient)🡪 this is atleast Grade 3 power
	+ **Abduction at Hip**: Ask the patient to open their legs as wide as they can (apply resistance)
	+ **Adduction at Hip**: Then ask patient to squeeze their legs closed as tightly as they can (apply resistance)
	+ **Flexion at Hip**: Knee bent at 900, Right hand proximal to knee and other hand proximal to ankle: Say to patient “pull the knee towards you”
	+ **Extension at Hip**: Knee bent, Right hand on patient’s posterior thigh: Say to patient “push out”
	+ **Flexion at Knee**: Bend knee, ankle held “pull the heel towards the bottom”
	+ **Extension at Knee**: Bend knee, ankle held and hand proximal to knee “push out/kick out”
	+ **Dorsiflexion Ankle**: Ankle held and dorsum of foot “pull your foot towards my hand” (bring toes towards face)
	+ **Plantarflexion**: “push against my hand”
	+ **Flexion of Great Toe**: “pull your toe towards my hand”
	+ **Extension of Great Toe**: “push your toe against my hand”
	+ Compare both limbs (alternately)
* **Reflexes**
	+ Knee and Ankle
	+ Clonus
	+ Babinksi – Place hand below ipsilateral knee, run blunt object along the lateral aspect of the patient’s foot and onto the ball of the foot (tell patient this might tickle)
		- Outward fanning of the toes, dorsiflexion of the great toes, extension of the toes, flexion of the ankle and knee and exension of the contralateral foot
* **Coordination**
	+ Heel to shin: demonstrate then ask patient to do it
	+ Rapid alternating movements

**Put on patient’s clothes**

* **Gait**
	+ Patient should be barefoot
	+ Stance and Gait: Ask patient to walk away from you then towards you
	+ Tandem walk (>5 years) remember to demonstrate to the patient first
	+ Romberg’s Sign

**Thank Patient**

* **Report Findings**
	+ Must summarize findings
	+ Do this in the way in which you examined the patient i.e. each muscle group

**Power Grades:**

* 0 – No engagement of the muscle
* 1 – Flicker of movement
* 2 – Able to move the limb when gravity is eliminated (horizontal plane)
* 3 – Able to lift against gravity – not resistance
* 4 – Able to lift against gravity and resistance – power normal
* 5 – Able to resist resistance

**CNS EXAM UPPER LIMB**

**INTORDUCTION AND CONSENT**

* Might be to parents depending on age of the child
* Ask patient’s name and age (if you can)

**ADEQUATE EXPOSURE**

* Ideal exposure is from the umbilicus (nipple line) to the toes, covering the pelvic area for privacy
* Position patient, sitting position is ideal (if able to do so)

**INSPECTION**

* Walk from foot of the bed to top of the bed and look/observe
* Affect and state of wellness
* Comment on any **Cardio-Respiratory Distress**
* With limbs in anatomical position comment on:
	+ Posture/position with emphasis on the abnormal
	+ Deformities
	+ Wasting (temple), guttering
	+ Spontaneous fasciculations
	+ Bilateral ptosis in Myasthenia gravis
	+ Facial asymmetry
	+ Oedema (Swelling)
	+ Any movement of limbs: symmetrical, preference and spontaneity
	+ Attitude of the limbs: bilateral foot drop, scissoring, external rotation of limb
	+ Joints (MS)
* Presence of any neuro-cutaneous lesions – *cafe’ –au – lait* spots, neurofibromas, etc.
* Scars that may point to nerve lesions
* Physique- Deformities and proportions
* Dysmorphic features
* **Supportive therapy** – O2 (how many litres) via facemask, nasal cannula, O2 tanks, IV, wheelchair
* **Nutritional status** – skin and hair changes, muscle (wasting) and fat
	+ Must ask for patient’s age, weight, height
	+ Appears small for age
* Head Shape, Back, Skin-striae (long term corticosteroid use), Tanner Stage, Abnormal movements, Posture

**PALPATION**

* Move to side of the bed and ask patient if there is any pain anywhere
* Elicit **fasciculations** commenting – such as, “there are no spontaneous or elicited fasciculations
	+ Demonstrate this somewhere else on the body like the arm
	+ Assess fasciculations at the Anterior, Medial aspects of the arm and forearm (alternate sides)
	+ Remember to always look at the patient’s face as you do this
	+ Comment: “there are no spontaneous or elicited fasciculations”
* **Bulk**
	+ Arm and forearm: Triceps, Biceps (flexors and extensors together)
	+ Compare both limbs (alternately)
	+ Comment: Increase or decrease bulk
* **Tone**
	+ **Shoulder**: Abduction, Adduction, Flexion and Extension
	+ **Elbow:** Flexion and Extension (Straight then bent)
	+ **Wrist:** Flexion and Extension (cogwheel rigidity – leadpipe)
	+ Compare both limbs (alternately)
* **Power**
	+ Ask patient to raise both arms (can do one at a time depending on the patient)🡪 this is atleast Grade 3 power
	+ **Pronator Drift** – ask patient to extend the arms, palms up to the sky, usually about shoulder width apart. Ask patient to close eyes
		- Patient with normal power will be able to maintain hands a this level (look for pronation and a drift)
	+ **Abduction and Adduction at Shoulder**: Ask the patient to hold out arms abducted to horizontal with elbows flexed and fists facing each other, ask patient not to allow you to push them down or push them up
	+ **Flexion at Elbow**: With your hand on biceps and the other on the distal aspect of the wrist, ask patient to pull you towards them
	+ **Extension at Elbow**: With your hand on triceps, tell the patient to push you away
	+ **Flexion and Extension at Wrist**: Ask patient to make a fist, hold patient’s forearm just below the wrist. Ask the patient to push against your fisted hand 🡪 Extension

Ask the patient to push down on your fist 🡪 Flexion

* + Compare both limbs (alternately)
	+ **Interossei** (small muscles of the hand) – Abduct and Adduct thumbs: keep palm flat and patient thumb towards face, apply pressure to metacarpal joint
	+ **Flexion at metacarpophalangeal joints**: Ask patient to make a fist by gripping your index finger and try to extend the metacarpophalangeal joint
	+ **Flexion of distal interphalangeal joint**: Tell patient to keep fingertips bent and not allow you to straighten them
	+ **Dorsal and Palmer Interossei Muscles**: Adduction and Abduction – sheet of paper between two fingers, while examiner gently tries to remove it
* **Reflexes**
	+ Biceps Tendon and Triceps Tendon
	+ Supinator
	+ Hoffman’s – check for flexion of associated fingers and thumb
* **Coordination**
	+ Nose to finger tipping (intention tremor and past pointing - Dysmetria)
	+ Rapidly alternating movements (Dysdiadochokinesis)

**Put on patient’s clothes**

**Thank Patient**

* **Report Findings**
	+ Must summarize findings
	+ Do this in the way in which you examined the patient i.e. each muscle group