Neurologic Exam

Year 1	Year 2	Year 3+ (clinical years): Disease Correlation
Do 1. Mental Status • Assess level of alertness, orientation to person, place and time, appropriateness of responses • Speech: grossly normal or abnormal, dysarthria (speech production abnormality) vs. aphasia (language abnormality) 2. Cranial Nerves • Visual Acuity (know how to use card) • Pupillary light reflex • Eye movements • Hearing • Facial sensation • Facial strength –1 upper and 1 lower facial movement (smile, eye closure) • Palatal elevation/Tongue protrusion • Trapezius and SCM strength 3. Motor System – strength • Every muscle should be tested comparing the muscle on one side of the body to the same muscle on the other side • Proper technique: all muscles tested should be tested with two hands at the same time (one hand across the joint to stabilize the limb and one hand pulling or pushing to test strength) • Strength testing requires encouragement from examiner for patient to give maximal effort • Strength - Shoulder/finger - abduction, thumb	Do: 1. Mental Status – if cognitive decline is present or suspected • Montreal Cognitive Assessment (administer from card) or other screen of the cognitive domains • Glasgow Coma scale (administer from card) • Questions for thought disorder, logic, hallucinations, judgment • Questions for mood disorder, mood ranking, suicidal ideation 2.Cranial Nerves • Visual Fields • Beginner fundoscopic examination skills without artificial pupil dilation • Look for gaze palsies • Examine for nystagmus 3. Motor System — 3 components: bulk, tone, and strength. • Observe for atrophy and fasciculations • Muscle tone: spasticity vs. rigidity vs. paratonia • Assess weakness according to MRC scale 4. Sensory System: • Two-point discrimination 5.Reflexes • Reinforcement maneuvers (including Jendrassik maneuver: finger-hooking) • Frontal release signs: glabellar, snout, routing, palmar-mental 6. General Exam • Orthostatic blood pressures	Do • Demonstrate proficiency with neurologic exam (identifying and executing core testing measures) • Begin to incorporate subspecialty exam maneuvers: 1. Mental Status • Complete evaluation of cognitive domains including language • Test for frontal release signs • Test for neglect 2.Cranial Nerves • Bedside fundoscopic examination • Test saccades (quick point to point eye movements) • Test brainstem reflexes (ie, optokinetic, corneal, etc) 3. Motor System • Refine tone and strength exam • Check advanced maneuvers to identify subtle weakness in large muscles (pronator drift, squats, toe and heel walking) • Observe for involuntary movements 4. Sensory System: • Test for cortical sensory signs (ie graphesthesia, stereognosis) • Test for extinction

opposition, elbow/wrist/hip/knee/ankle - flexion and extension, grasp 4. Sensory System – along dermatomes and with direct comparison of one side of body to the other • Assess pain sensation with sharp broken cotton swab throughout. Use sharp/dull testing with eyes closed *only* to test patient accuracy if needed. • Ask patient to respond to light touch with wisp of cotton swab • Test vibration sense with 128Hz tuning fork. Proper use of tuning fork includes tapping with reflex hammer and placing on distal interphalangeal joint of finger and toe. If vibration cannot be differentiated from pressure move up extremity proximally (wrist, elbow, medial malleolus, patella, ASIS, calvicles, spinous processes) Test proprioception (position sense) hold great toe away from other toes on the lateral aspect of the toe between examiners thumb and index finger. Demonstrate up and down clearly with patient observing the motion. Elicit up or down response multiple times bilaterally with patient's eyes closed – minute movements should be made since this is a very sensitive sensation. • Test Romberg (posterior columns) 5. Reflexes • Proper use of reflex hammer (pendulum swing, appropriate force) • Grade reflexes based on scale • Deep tendon reflexes upper extremity - Biceps, brachioradialis, triceps reflexes • Deep tendon reflexes lower extremity – patellar, achilles	• Test for meningismus, flexion resistance vs. rotation • Listen for bruits at neck • Patterns of sweating <u>Know</u> • Cognitive domains and their functions • Dermatomes and myotomes • Localization of spinal reflex levels • UMN vs LMN facial palsy • Motor system (tone, patterns of weakness, bulk), sensory, and reflex syndromes differentiating UMN vs LMN • Three types of increased tone and their localization (spasticity-CTS tracts, rigidity-basal ganglia, paratonia-UMN, less specific)	5.Reflexes • Refine reflex technique including testing for plantar response • Identify spread during testing • Test for pathologic reflexes, including clonus 6. General Exam • Identify common neurologic signs of medical disease (ie. Asterixis/myoclonus/delirium in metabolic disease, etc) or due to medication (ie parkinsonism from neuroleptics, etc) <u>Know</u> • Distinguish normal from abnormal findings on exam • Correct localization of abnormalities found on examination to specific subsections of the central or peripheral nervous system • Components of coma examination and localization • Components of brain death examination • Significance of frontal release signs • Signs that localize to the cortex • Types of aphasia • Saccadic vs smooth pursuits

• Test for Babinski 6. Coordination • Rapid alternating movements (one hand on top of the other, not on lap) • Finger-nose-finger examination with patient arm fully extended • Heel/Shin maneuver • Fine finger movements (note subtle differences with handedness) 7. Gait – • Casual walking in an open space (check for stride length, step amplitude off the floor, arms swing, turns) • Tandem (heel to toe walking) • Toes then heels <u>Know</u> • Neurologic exam is a complex multi-part exam that can be organized into sections of mental status, cranial nerves, motor, sensory reflexes, coordination, and gait • Cranial Nerves II-XII • The Medical Research Counsel (MRC) scale is used to grade strength on a scale of 0-5 and recognize it can be insensitive to subtle weakness in large muscles (deltoids, leg muscles) which may require other maneuvers to identify the weakness. 5- full strength, 4- some effort against examiner resistance, 3- anti-gravity strength, 2- movement across the joint with gravity eliminated (within the same plane), 1- muscle activation (twitching) without movement, 0- no movement • Dorsiflexion and plantar flexion • Sensory exam has 3 main modalities to test (1. light touch, 2. pain and temperature and 3.		• Approach exam with pathology pattern in mind (stocking/glove, hemibody, dermatomal, etc) • Identify common stroke syndromes on examination and localize to vascular territory • Types of gait abnormalities • Different types of tremor • Signs of cerebellar disease • Polyneuropathy, vs. mono multiplex, radiculopathy • Patterns of myopathy and myotonia • Neurologic findings in systemic disease (autoimmune, endocrinologic, infectious, paraneoplastic)

vibration or joint position sense), however only one modality in each category must be tested (highest sensitivities are with pain and vibration rather than temperature and joint position sense) • Always demonstrate components of sensory exam with patient eyes open then proceed to test with his or her eyes closed *if needed*. All sensation should feel the same everywhere unless there are sensory deficits. • Scale for grading reflexes [0/4 no reflex, ¼ hyporeflexia, 2/4 normal, 3/4 evidence of reflex SPREAD (not just subjective hyperreflexia), 4/4 clonus]		