APPENDIX E

NIH STROKE SCALE

Patient number/ Visit…...……
Date:……

NIH Stroke Scale

General Instructions

Administer stroke scale items in the order listed. Record performance in each category after each subscale exam. Do not go back and change scores. Follow directions provided for each exam technique. Scores should reflect what a patient does, not what the clinician thinks the patient can do. The clinician should record answers while administering the exam and work quickly. Expect where indicated, the patient should not be coached (i.e., repeated requests to patient to make a special effort).

If any item is left untested, a detailed explanation must be clearly written on the form.

Instructions	Scale Definition	Score
1a. Level of Consciousness: The investigator must choose a response, even if a full evaluation is prevented by such obstacles as an endotracheal tube, language barrier, orotracheal trauma/ bandages. A 3 is scored only if the patient makes no movement (other than reflexive posturing) in response to noxious stimulation. Comments: Ask the patient two or three general questions about the circumstances of the admission. Also, prior to beginning the scale, it is assumed that the examiner will have queried the patient informally about the medical history. Based on the answer; score the patient using the 4 point scale on the Stroke Scale form. Remember not to coach. A score of 3 is reserved for the severely impaired patient who makes, at best, reflex posturing movements in response to repeated painful stimuli. If it is difficult to choose between a score of 1 or 2, continue to question the patient about historical items until you feel comfortable in assessing level of consciousness.		…….

Instructions	Scale Definition	Score
1b. Level of Consciousness Questions: The patient is asked the month and his/her age. The answer must be correct-there is no partial credit for being close. Aphasic and stuporous patients who do not comprehend the questions will score 2. Patients unable to speak because of endotracheal intubation, orotracheal trauma, severe dysarthria from any cause, language barrier or any other problem not secondary to aphasia are given a 1. It is important that only the initial answer be graded and that the examiner not "help" the patient with verbal or non-verbal cues. Comments: Ask the patient "how old are you now" and wait for response. Then ask "what month is it now" or "what month are we in now". Count the number of incorrect answers and do not give credit for being "close". Patients who cannot speak are allowed to write. Do not give a list of possible responses from which to choose the correct answer. This may coach the patient. Only the initial answer is graded. This item is never marked "untestable". Deeply comatose (1a=3) patients are given a 2.	0=Alert; keenly responsive. 1=Not alert, but arousable by minor stimulation to obey, answer, or respond. 2=Not alert, requires repeated stimulation to attend, or is obtunded and requires strong or painful stimulation to make movement (not stereotyped) 3=Responds only with reflex motor or autonomic effects or totally unresponsive, flaccid, areflexic.	…….
1c. Level of Consciousness Commands: The patient is asked to open and close the eyes and then to grip and release the non-paretic hand. Substitute another one step command if the hands cannot be used. Credit is given if an unequivocal attempt it made but not completed due to weakness. If the patients does not respond to command, the task should be demonstrated to them (pantomine) and score the result (i.e., follows none, one or two commands). Patients with trauma, amputation, or the other physical impediments should be given suitable one-step commands. Only the first attempt is scored. Comments: Say to he patients "open your eyes...now close your eyes" and then "make a fist. now open your hand". Use the non-paretic limb. If amputation or other physical impediment	0=Answers both questions correctly. 1=Answers one question correctly. 2=Answers neither question correctly	…….

Instructions	Scale Definition	Score
prevents the response, use the other one-step command. The priming phrase is not scored, and these are used only to set the eyes or hand in a testable position. That is, the patients may be asked to open the eyes if they are closed when you begin the test. Scoring is done on the second phrase “close your eyes”. Count the number of incorrect responses and give credit if an unequivocal attempt is made to perform to operative task, but is not completed due to weakness, pain or other obstruction. Only the first attempt is scored and the questions should be asked only once. **2. Best Gaze**: Only horizontal eye movements will be tested. Voluntary or reflexive (oculocephalic) eye movements will be scored but caloric testing is not done. If the patient has a conjugate deviation of the eyes that can be overcome by voluntary or reflexive activity, the score will be 1. If a patient had an isolated peripheral nerve paresis (CN III, IV or VI) score a1. Gaze is testable in all aphasic patients. Patients with ocular trauma, bandages, pre-existing blindess or other disorder of visual acuity or fields should be tested with reflexive movements and a choice made by the investigator. Establishing eye contact and then moving about the patient from side-to-side will occasionally clarify the presence of a partial gaze palsy. Comments: The purpose of this item is to observe and score horizontal eye movements. To this end, use voluntary or reflexive stimuli and record a score of 1 is an abnormal finding in one or both eyes. A score of two is reserved for forced eye deviation that cannot be overcome by the oculocephalic manoeuvre. Do not do caloric testing. In aphasic or confused patients it is helpful to establish eye contact and move about the bed. This item is an exception to the rules of using the first observable response and not coaching. In the patient who fails voluntary	0=Normal 1=Partial gaze palsy. This score is given when gaze is abnormal in one or both eyes, but where forced deviation or total gaze paresis are not present. 2=Forced deviation, or total gaze paresis not overcome by the oculocephalic manoeuvre.	…….

Instructions	Scale Definition	Score
gaze, the oculocephalic manoeuvre, eye fixation, and tracking with the examiner's face, are used to provide stronger testing stimuli. **3. Visual**: Visual fields (upper and lower quadrants) are tested by confrontation, using finger counting or visual threat as appropriate. Patient must be encouraged, but if they look at the side of the moving fingers appropriately, this can be scored as normal. If there is unilateral blindness or enucleation, visual fields in the remaining eye are scored. Score 1 only if a clear-cut asymmetry, including quadrantanopia is found. If patient blind from any cause score 3. Double simultaneous is performed at this point. If there is extinction patient receives a 1 and the results are used to answer question 11. Comments: Use finger counting or movement to confrontation and evaluate upper and lower quadrants separately. A score of 3 is reserved for blindness from any cause, including cortical blindness. A score of 2 is reserved for a complete hemianopia, and any partial visual field defect, including quadrantanopia, scores a 1. **4. Facial Palsy**: Ask, or use pantomime to encourage the patient to show teeth or raise eyebrows and close eyes. Score symmetry of grimace in response to noxious stimuli in the poorly responsive or non-comprehending patient. If facial trauma/bandages, orotracheal tube, tape or other physical barrier obscures the face, these should be removed to extent possible. Comments: Ask the patient "Show me your teeth..now raise your eyebrows..now close your eyes tightly". Assess the response to noxious stimulation in the aphasic or confused patient. A useful approach to scoring may be as follows: score a 2 for any clear-cut upper	0=No visual loss. 1=Partial hemianopia 2=Complete hemianopia. 3=Bilateral hemianopia (blind including cortical blindness) 0=Normal symmetrical movement. 1=Minor paralysis (flattened nasolabial fold, asymmetry on smiling). 2=Partial paralysis (total or near total paralysis of lower face). 3=Complete paralysis of one or both sides (absence of facial movement in upper and lower face).	……. ……

Instructions	Scale Definition	Score
motor neuron facial palsy. Normal function must be clearly demonstrated to obtain the score of 0. Anything in between, including flattened nasolabial fold, is scored a 1. The severely obtunded or comatose patient; patients with bilateral paresis, patients with unilateral lower motor neuron facial weakness would receive a score of 3. **5&6. Motor Arm and leg**: The limb is placed in the appropriate position: extend the arms (palms down) 90 degrees (if sitting) or 45 degrees (if supine) and the leg 30 degrees (always tested supine). Drift is scored if the arm falls before 10 seconds or leg before 5 seconds. The aphasic patient is encouraged using urgency in the voice and pantomime but not noxious stimulation. Each limb is tested in turn, beginning with the non-paretic arm. Only in the case of amputation or joint fusion at the shoulder or hip may the score be "9" and the examiner must clearly write the explanation for scoring as a "9". Comments: When testing arms, palms must be down. Count out loud to the patient, until the limb actually hits the bed or other support. The score of 3 is reserved for the patient who exhibits no strength whatsoever, but does minimally move the limb on command when it is resting on the bed. The aphasic patient mayunderstand what you are testing if you use the non-paretic limb first. Do not test both limbs simultaneously. Be watchful for an initial dip of the limb when released. Only score abnormal if there is a drift after the dip. Do not coach the patient verbally. Count out loud in strong voice and indicate count using your fingers in full view of the patient. Begin counting the instant you release the limb. When testing motor leg the patient must be I the supine position to fully standardize the effect of gravity. Note that the examiner is no longer asked to identify the paretic arm or leg.	Motor arm 0=No drift, limb holds 90 (or 45) degrees for full 10 seconds. 1=Drift, limb holds 90 (or 45) degrees but drifts down before full 10 seconds; does not hit bed or other support. 2=Some effort against gravity, limb cannot get to or maintain (if cued) 90 (or 45) degrees, drifts down to bed, but has some effort against gravity. 3=No effort against gravity, limb falls. 4=No movement. 9=Amputation, joint fusion explain: 5a. Left arm 5b. Right armMotor leg 0=No drift, leg holds 30 degrees position for full 5 seconds. 1=Drift, leg falls by the end of the 5 second period but does not hit bed. 2=Some effort against gravity, leg falls to bed by 5 seconds, but has some effort against gravity. 3=No effort against gravity, leg falls to bed. 4=No movement. 9=Amputation, joint fusion explain: 5a. Left leg 5b. Right leg	…… …… ……. ……

Instructions	Scale Definition	Score
7. Limb Ataxia: This item is aimed at finding evidence of a unilateral cerebellar lesion. Test with eyes open. In case of visual defect, insure testing is done in intact visual field. The finger-nose-finger and heel-shin tests are performed on both sides, and ataxia is scored only if present out of proportion to weakness. Ataxia is absent in the patient who cannot understand or is paralyzed. Only in the case of amputation or joint fusion may the item be scored "9", and the examiner must clearly write the explanation for not scoring. In case of blindness test by touching nose from extend arm position. Comments: Ataxis must be clearly present out of proportion to any weakness. Using the finger-nose-finger and the heel- test, count the number of ataxic limbs, up to maximum of two. The aphasic patient will often perform the test normally if first the limb is passively moved by the examiner. Otherwise the item is scored 0 for absent ataxia. If the weak patient suffers mild ataxia, and you cannot be certain that it is out of proportion to the weakness, give a score of 0. Remember this is scored positive only when ataxia is present..	0=Absent 1=Present in one limb. 2=Present in two limbs. NOTE WELL: SUBITEMS ARE NEVER INCLUDED IN THE TOTAL SCORE. If present, is ataxia in: (circle the appropriate score) Right arm 1=Yes 2=No 9=amputation or joint fusion, explain Left arm 1=Yes 2=No 9=amputation or joint fusion, explain: Right leg 1=Yes 2=No 9=amputation or joint fusion, explain: Left leg 1=Yes 2=No 9=amputation or joint fusion, explain:	…… …… …… …… ……
8. Sensory: Sensation or grimace to pinprick when tested, or withdrawal from noxious stimulis in the obtunded or aphasic patient. Only sensory loss attributed to stroke is scored as abnormal and examiner should test as many body areas (arms(not hands), legs, trunk, face).as needed to accurately check for hemisensory loss. A score of 2,"severe or total", should only be given when a severe or total loss of sensation can be clearly demonstrated. Stuporous and aphasic patients will therefore probably score 1 or 0. The patient with brain stem stroke who has bilateral loss of sensation is scored 2. If the patient does not respond and is quadriplegic score 2. Patients in coma (item 1a=3) are	0=Normal; no sensory loss. 1=Mild to moderate sensory loss; patient feels pinprick ia less sharp or is dull on the affected side; or there is a loss of superficial pain with pinprick but patient is aware he/she is being touched. 2=Severe to total sensory loss; patient is not aware of being touched in the face, arm, and leg.	

Instructions	Scale Definition	Score
arbitrarily given a 2 on this item. Comments: Do not test limb extremities, i.e., hands and feet when testing sensation because an unrelated neuropathy may be present. Do not test through clothing.		
9. Best Language: A great deal of information about comprehension will be obtained during the preceding sections of the examination. The patient is asked to describe what is happening in the attached picture, to name the items on the attached naming sheet, and to read from the attached list of sentences. Comprehension is judged from responses here as well as to all of the commands in the preceding general neurological exam.If visual loss interferes with the tests, ask the patient to identify objects placed in the hand, repeat, and produce speech. The intubated patient should be asked to write. The patient in coma (question 1a=3) will arbitrarily score 3 on this item. The examiner must choose a score in the patient with atupor or limited cooperation but a score of 3 should be used only if the patient is mute and follows no one step commands. Comments: It is anticipated that most examiners will be ready to score thisitem based on information obtained during the history taking and the 8 prior items. The attached picture and naming sheet therefore should be used to confirm your impression. It is common to find unexpected difficulties when the formal testing is done, and therefore every patient must be tested with the picture, naming sheet, and sentences. The score of 3 is reserved for the globally mute or comatose patient. Mild aphasia would score a 1. To choose between a score of 1 or 2 use all the provided materials; it is anticipated that a patient who missed more than two thirds of the naming objects and sentences or who followed only very few and simple one-step commands	0=No aphasia, normal. 1=Mild to moderate aphasia; some obvious loss of fluency or facility of comprehension, without significant limitation on ideas expressed or form of expression. Reduction of speech and/or comprehension, however, makes conversation about provided material difficult or impossible. For example in conversation about provided materials examiner can identify picture or naming card from patient's response. 2=Severe aphasia; all communication is through fragmentary expression; great need for inference, questioning, and guessing by the listener. Range of information that can be exchanged is limited; listener carries burden of communication. Examiner cannot identify materials provided from patient response. 3=Mute, global aphasia; no usable speech or auditory comprehension.	…….

Instructions	Scale Definition	Score
would score a 2. This item, is an exception to the rule that the first response is used, since several different tools are used to assess language. The stroke scale form contains lengthy examples of the defects associated with each score because of the great potential for variability in answering this question.		
10. Dysarthria: If patient is thought to be normal, an adequate sample of speech must be obtained by asking patient to read or repeat words from the attached list. If the patient has severe aphasia, the clarity of articulation of spontaneous speech can be rated. Only if the patient is intubated or has other physical barrier to producing speech, may the item be score "9", and the examiner must clearly write an explanation for not scoring. Do not tell the patient why he/she is being tested. Comments: Use the attached word list in all patients and do not tell the patient that you are testing clarity of speech. It is common to find slurring of one or more words in patients one might otherwise score as normal. The score of 0 is reserved for patients who read all words without any slurring. Aphasic patients and patients who do not read may be scored based on listening to the speech that they do produce or by asking them to repeat the words after you read them out loud. The score of 2 is reserved for the patient who cannot be understood in any meaningful way, or who is mute. On the question, normal speech must be identified to score a 0, so the unresponsive patient receives the score of 2.	0=Normal 1=Mild to moderate; patient slurs at least some words and, at worst, can be understood with some difficulty. 2=Severe; patient's speech is so slurred as to be unintelligible in the absence of or out of proportion to any dysphasia, or is mute/anarthric. 9=patient is intubated or has other physical barrier to producing speech. Explain:	…….
11. Extinction and Inattention (formerly Neglect): Sufficient information to identify neglect may be obtained during the prior testing. If the patient has a severe visual loss preventing visual double simultaneous stimulation, the cutaneous stimuli are normal,	0=No abnormality. 1=Visual, tactile, auditory, spatial, or personal inattention or extinction to bilateral simultaneous stimulation in one of the	…….

Instructions	Scale Definition	Score
the score is normal. If the patient has aphasia but does appear to attend to both sides, the score is normal. The presence of visual spatial neglect or anosagnosia may also be taken as evidence of abnormality. Since the abnormality is scored only if present, the item is never untestable. Comments: This item is open to significant variation among examiners, and all neurologists have slightly different methods of assessing neglect. Therefore, to the extent possible, test only double simultaneous stimulation to viaual and tactile stimuli and score 2 if one side extinguishes to both modalities, a 1 if only to one modality. If the patient does not extinguish, but does show other well-developed evidence of neglect, score a 1.	sensory modalities. 2=Profound hemi-inattention or hemi-inattention to more than one modality. Does not recognize own hand or orients to only one side of space.	
	TOTAL SCORE:	…….