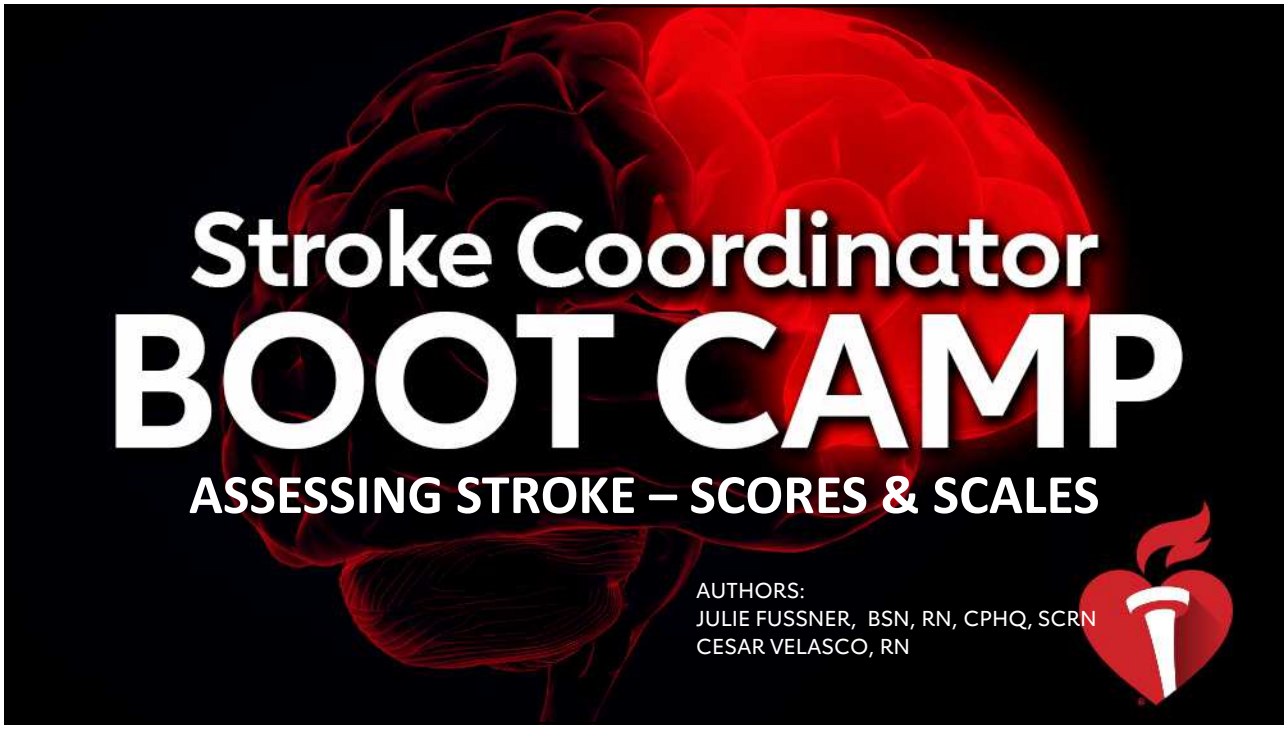

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DISCLOSURES

JULIE FUSSNER – I have no actual or potential conflict of interest in relation to this presentation.

CESAR VELASCO – I have no actual or potential conflict of interest in relation to this presentation.

2

2

OBJECTIVES

STROKE SCALES

- Discuss the most current, relevant scoring systems and scales being used for the stroke population
- Identify the strengths, limitations, and application of these scales
- Recognize each scoring system and scale property that is important and relevant to all assessment tools

3

3

WHY ARE SCORING SYSTEMS AND SCALES USED?

- ✓ Assess the impact of therapeutic interventions in research
- ✓ Aids in improving diagnostic accuracy
- ✓ Helps determine clinical pathways of treatment
- ✓ Severity measurement
- ✓ Handoff Communication
- ✓ Assists in predicting and evaluating a patient's clinical outcome

A "ONE SIZE FITS ALL" APPROACH DOES NOT APPLY TO STROKE EVALUATION AND TREATMENT.

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SCORING SYSTEMS AND SCALES

PREHOSPITAL STROKE ASSESSMENT SCALES

- Cincinnati Prehospital Stroke Scale (CPSS)
- Los Angeles Prehospital Stroke Scale (LAPSS)
- Rapid Arterial oCclusion Evaluation Scale (RACE)

ACUTE ASSESSMENT SCALES

- Glasgow Coma Scale (GCS)
- NIH Stroke Scale (NIHSS)
- Intracerebral Hemorrhage Scale (ICH)

FUNCTIONAL ASSESSMENT SCALES

- Berg Balance Scale
- Modified Rankin Scale (mRS)

OUTCOME ASSESSMENT SCALES

- Barthel Index
- Glasgow Outcome Scale

OTHER DIAGNOSTIC & SCREENING TEST

- Hachinski Ischaemia Score
- Hamilton Rating Scale for Depression

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DEFINITIONS

SENSITIVITY

- Sensitivity also called the true positive rate measures the proportion of actual positives that are correctly identified
- Refers to a test's ability to designate an individual with disease as positive.
- A highly sensitive test means that there are few false negative results, and thus fewer cases of disease are missed.

SPECIFICITY

- Specificity also called the true negative rate measures the proportion of actual negatives that are correctly identified
- The percentage of healthy people who are correctly identified as not having the condition
- Specificity avoids false positives

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PREHOSPITAL STROKE ASSESSMENT SCALES

CINCINNATI PREHOSPITAL STROKE SCALE (CPSS)

- Identifies facial paresis, arm drift, and abnormal speech.
- 80% of stroke patients will exhibit one or more of these symptoms.
- However, it has the same limitations for certain stroke-related deficits that can occur in isolation. Does not identify posterior circulation strokes
- Strength: Quick and easy for EMS to use

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CINCINNATI PREHOSPITAL STROKE SCALE

Facial Droop

Normal:	Both sides of face move equally
Abnormal:	One side of face does not move at all

Arm Drift

Normal:	Both arms move equally or not at all
Abnormal:	One arm drifts compared to the other

Speech

Normal:	Patient uses correct words with no slurring
Abnormal:	Slurred or inappropriate words or mute

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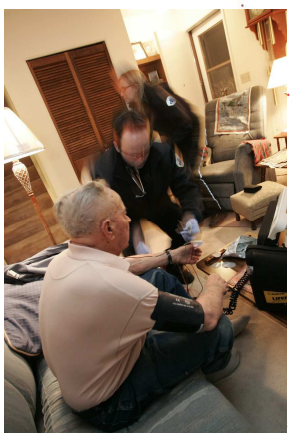
PREHOSPITAL STROKE ASSESSMENT SCALES (CONTINUED)

LOS ANGELES PREHOSPITAL STROKE SCALE (LAPSS)

- Assesses for unilateral deficit facial paresis, hand grip weakness, and arm drift
- Pre-hospital stroke screening criteria:
  1. Patient is >45 years of age
  2. Has no history of seizure/epilepsy
  3. Symptom duration is < 24 hours
  4. Patient is not bedridden or wheelchair dependent at baseline
  5. Blood glucose is between 60-400 mg/dL.
- Sensitivity = 91% and Specificity = 97%
- Strength: Allows rapid identification while excluding common mimics
- Limitation: Number of items for EMS to complete



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LOS ANGELES PREHOSPITAL STROKE SCREEN (LAPSS)

Patient Name: _____
Rater Name: _____
Date: _____

Screening Criteria	Yes	No
4. Age over 45 years	___	___
5. No prior history of seizure disorder	___	___
6. New onset of neurologic symptoms in last 24 hours	___	___
7. Patient was ambulatory at baseline (prior to event)	___	___
8. Blood glucose between 60 and 400	___	___

9. Exam: *look for obvious asymmetry*

	Normal	Right	Left
Facial smile / grimace:	☐	☐ Droop	☐ Droop
Grip:	☐	☐ Weak Grip ☐ No Grip	☐ Weak Grip ☐ No Grip
Arm weakness:	☐	☐ Drifts Down ☐ Falls Rapidly	☐ Drifts Down ☐ Falls Rapidly

Based on exam, patient has only unilateral (and not bilateral) weakness: Yes ☐ No ☐

10. If Yes (or unknown) to all items above LAPSS screening criteria met: Yes ☐ No ☐

11. If LAPSS criteria for stroke met, call receiving hospital with "CODE STROKE", if not then return to the appropriate treatment protocol. (Note: the patient may still be experiencing a stroke if even if LAPSS criteria are not met.)

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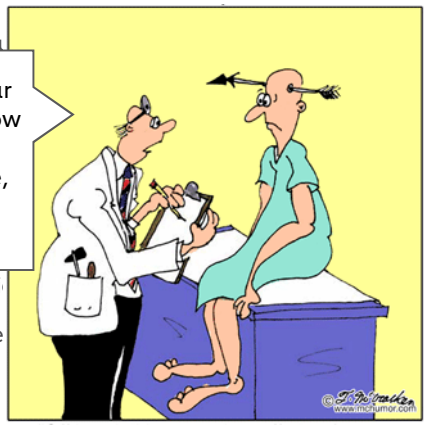
PREHOSPITAL STROKE ASSESSMENT SCALES (CONTINUED)

SEVERITY SCALES FOR LARGE VESSEL OCCLUSION

2018 AHA Guidelines: *Uncertainty exists over optimal algorithm and optimal prehospital LVO screen*

- **RACE**: Rapid Arterial Occlusion Evalu
- **LAMS**: Los
- **FAST-ED:** F
- **CSTAT**: Cir
- **VAN**: Visio
- **MEND**: Miami Emergency Neurologi
- **ROSIER**: Recognition of Stroke in the



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PREHOSPITAL STROKE ASSESSMENT SCALES (CONTINUED)

SEVERITY SCALES FOR LARGE VESSEL OCCLUSION

Why you can't have a perfect scale:

- Up top 29% of patient with baseline of NIHSS =0 had a proximal occlusion on CTA
- Most scales are subsets of NIHSS scores
- Patients with ICH, post seizure paralysis, hyperglycemia in the field can have high NIHSS

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PREHOSPITAL STROKE ASSESSMENT SCALES (CONTINUED)

RAPID ARTERIAL OCCLUSION EVALUATION SCALE (RACE)

- This tool is based on the items of the NIHSS with the highest predictive value for large vessel occlusion (LVO).
- Focuses on facial palsy, extremity motor function, head and gaze deviation, and aphasia or agnosia.
- The RACE scale score range is 0-9 points
- RACE scale score >5 points is associated with detection of a LVO
- RACE has as a sensitivity of 85% and specificity of 68%

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RAPID ARTERIAL OCCLUSION EVALUATION SCALE (RACE)

ITEM	INSTRUCTION	SCORE
Facial palsy	Ask patient to smile	Absent = 0 Mild = 1 Moderate to severe = 2
Arm motor function	Extend patient's arm 90 degrees if sitting; 45 degrees if supine	Normal to mild = 0 Moderate = 1 Severe = 2
Leg motor function	Extend patient's leg 30 degrees in supine position	Normal to mild = 0 Moderate = 1 Severe = 2
Head and gaze deviation	Observe deviation to one side	Absent = 0 Present = 1
Aphasia (right side)	Ask patient to close their eyes and make a fist	Normal = 0 Moderate = 1 Severe = 2
Agnosia (left side)	Ask patient to recognize familiar objects	Normal = 0 Moderate = 1 Severe = 2

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ACUTE ASSESSMENT SCALES

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GLASGOW COMA SCALE (GCS)

- Identifies ocular, verbal, and motor response to examination
- Tool is used to communicate the level of consciousness (LOC) of patients with an acute brain injury
- The scale was developed to complement and not replace assessments of other neurological functions
- Strength: Fast and easy to use
- Limitation: Developed as a trauma scale. Stroke patient with plegic arm can be scored a 6 on the motor response if they follow commands

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Glasgow Coma Scale

OPENS EYES	Spontaneous	4
	To verbal command	3
	To pain	2
	No response	1
BEST MOTOR RESPONSE	Obeys verbal command	6
	Localizes to pain	5
	Flexion withdrawal to pain	4
	Flexion abnormal to pain	3
	Extension to pain	2
	No response	1
BEST VERBAL RESPONSE	Oriented, converses	5
	Disoriented, converses	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
TOTAL	3 – 15	3 – 15

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ACUTE ASSESSMENT SCALES

Emergency Evaluation

2.1 Stroke Scales

Standardized severity scales quantify neurologic deficit.

- Facilitate communication
- Identify patients for acute treatments
- Monitor for improvement or worsening

National Institute of Health Stroke Scale

- Preferred severity scale
  - Rapid
  - Accurate
  - Reliable
  - Can be performed by broad spectrum of providers

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science is why

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ACUTE ASSESSMENT SCALES

NATIONAL INSTITUTES OF HEALTH STROKE SCALE (NIHSS)

- Uses a 11 Item scale to measure neurological impairment
- Originally developed to be a research tool for Alteplase patients to determine 90 day outcomes
- NIHSS has become the "gold standard" scale in clinical trials and as part of clinical practice in the United States
- Baseline NIHSS scores are predictive values of an acute stroke patient's clinical outcomes
- Quality metric for PSC, TSC and CSC Certifications
- Score what the patient does, not what you think they can do

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NATIONAL INSTITUTES OF HEALTH STROKE SCALE (NIHSS)

Item	Title	Responses and Scores
1a.	Level of consciousness	0—alert 1—drowsy 2—obtunded 3—coma/unresponsive
1b.	Orientation questions (2)	0—answers both correctly 1—answers one correctly 2—answers neither correctly
1c.	Response to commands (2)	0—performs both tasks correctly 1—performs one task correctly 2—performs neither
2.	Gaze	0—normal horizontal movements 1—partial gaze palsy 2—complete gaze palsy
3.	Visual fields	0—no visual field defect 1—partial hemianopia 2—complete hemianopia 3—bilateral hemianopia
4.	Facial movement	0—normal 1—minor facial weakness 2—partial facial weakness 3—complete unilateral palsy
5.	Motor function (arm) a. Left b. Right	0—no drift 1—drift before 10 seconds 2—falls before 10 seconds 3—no effort against gravity 4—no movement

Item	Title	Responses and Scores
6.	Motor function (leg) a. Left b. Right	0—no drift 1—drift before 5 seconds 2—falls before 5 seconds 3—no effort against gravity 4—no movement
7.	Limb ataxia	0—no ataxia 1—ataxia in 1 limb 2—ataxia in 2 limbs
8.	Sensory	0—no sensory loss 1—mild sensory loss 2—severe sensory loss
9.	Language	0—normal 1—mild aphasia 2—severe aphasia 3—mute or global aphasia
10.	Articulation	0—normal 1—mild dysarthria 2—severe dysarthria
11.	Extinction or inattention	0—absent 1—mild loss (1 sensory modality lost) 2—severe loss (2 modalities lost)

Scoring range is 0–42 points. The higher the number, the greater the severity.

Score	Stroke Severity
0	No stroke symptoms
1-4	Minor stroke
5-15	Moderate stroke
16-20	Moderate to severe stroke
21-42	Severe stroke

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ACUTE ASSESSMENT SCALES

NATIONAL INSTITUTES OF HEALTH STROKE SCALE (NIHSS)

- Strength: Reliable tool to rapidly assess effects of stroke
  - Medical providers and registered nurses expertly trained in the use of the scale are proven to have similar levels of accuracy
  - Further reliability improved through the use of a standard training video
- Limitation: Tool does not capture ALL stroke-related impairments
  - Unsteady gait, dizziness, or diplopia attributed to posterior circulation stroke
  - More complicated with patient in coma, intubated or aphasic

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ACUTE ASSESSMENT SCALES

INTRACEREBRAL HEMORRHAGE SCALE (ICH SCORE)

- Uses a 5-item scale
- Predictor of 30 day mortality
- Developed to standardize clinical grading to improve communication and consistency between healthcare providers.
- **Sensitivity** = 66% in predicting 30 day mortality

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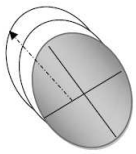
Intracerebral Hemorrhage Volume

XYZ/2 = volume in CC^3 (ml)

X = largest width in cm
Y = largest length in cm
Z = (# slices) (image slice width in cm)



Intracerebral Hemorrhage Score

Glasgow Coma Score	3 – 4	2
	5 – 12	1
	13 – 15	0
ICH Volume	≥ 30cc	1
	< 30cc	0
Intraventricular Hemorrhage	yes	1
	no	0
Infratentorial Hemorrhage	yes	1
	no	0
Age	≥ 80 years	1
	< 80 years	0
Total		**0 – 6**

Stroke 2001; 32:891

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FUNCTIONAL ASSESSMENT SCALES

BERG BALANCE SCALE (BBS)

- 14-item scale designed to measure the balance of older patients in the clinical setting
- Scoring range is 0-4 points. The greater the number, the higher the level of function
  - **41-56** = Independent
  - **21-40** = Walking with assistance
  - **0-20** = Wheelchair bound
- Sensitivity = 91% and Specificity = 82%

Patient with a score < 55 and history of falls is at a greater risk of falling

Patient with a score < 40 has a 100% risk of falling

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BERG BALANCE SCALE

Patient Name: _____
Rater Name: _____
Date: _____

Balance Item	Score (0-4)
1. Sitting unsupported	_____
2. Change of position: sitting to standing	_____
3. Change of position" standing to sitting	_____
4. Transfers	_____
5. Standing unsupported	_____
6. Standing with eyes closed	_____
7. Standing with feet together	_____
8. Tandem standing	_____
9. Standing on one leg	_____
10. Turning trunk (feet fixed)	_____
11. Retrieving objects from floor	_____
12. Turning 360 degrees	_____
13. Stool stepping	_____
14. Reaching forward while standing	_____
TOTAL (0–56):	_____

Interpretation

0–20, wheelchair bound
21–40, walking with assistance
41–56, independent

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FUNCTIONAL ASSESSMENT SCALES

MODIFIED RANKIN SCALE(mRS)

- 7-grade scale measuring functional independence and gait stability
- mRS has been used to measure stroke outcomes and functional impact post-stroke
- The scale is used a "core metric" of Comprehensive Stroke Centers; evaluating 90-day clinical outcomes of post-IV tPA (Alteplase) or endovascular intervention (EVT) patients
- A mRS score appears to show moderate correlation with the volume of cerebral infarction
- Good Outcome: 0-2

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Modified Rankin Score: Disability Score

Can the patient walk without the assistance of a person? (may use a cane or walker)

YES → NO → **5 Severe:** bed-bound, incontinent, requiring 24-hour care and supervision

YES → NO → **4 Mod-severe:** not bed-bound but requires the assistance of a person to walk, unable to attend to own bodily needs without assistance, might be able to be left alone for a few hours a day

Can the patient live alone without any help from another person? (independent in ADLs, preparing meals and managing finances)

YES → NO → **3 Moderate:** can walk without a person but needs assistance, might be able to be left alone for a few days at a time, could not live alone

Is the patient back to all prestroke activities? (albeit slower or modified in some fashion)

YES → NO → **2 Slight:** unable to carry out usual activities, usually able to look after own affairs, able to live alone with some outside assistance

Did the stroke symptoms completely resolve?

YES → NO → **1 No significant disability:** despite residual symptoms from stroke, able to return to all usual duties and responsibilities

YES → NO → **0 No stroke symptoms:** at all (may have other complaints)

Stroke 2010; 41:1048

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OUTCOME ASSESSMENT SCALES

BARTHEL INDEX (BI)

- The index measures 10 basic aspects of self-care and patient's physical dependency.
- A normal Barthel Index score = **100**
  - **>60** = Assisted independence
  - **<40** = Severe dependency
- Strength: An excellent validity and reliability rate and widely used for stroke.
- Limitation: A low sensitivity for high-level functioning or chronically disabled.

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Barthel Activities of Daily Living Index:
Score what the patient actually does, not what you think he or she can do.

Feeding	10 normal food, served but not cut up by others 5 requires assist, supervison or modified diet 0 dependent
Dressing	10 independent, can use devices 5 requires assist, can do >50 percent alone 0 dependent
Grooming	5 independent 0 requires assist or supervision
Bathing	5 independent, alone 0 requires assist or supervision
Transfers	15 independent transfers 10 requires one-person assist or supervision 5 can sit, needs two-person assist 0 cannot sit or transfer without max assist
Mobility	15 walks 150 feet independently 10 walks 150 feet with assist or rolling walker 5 propels a wheelchair 150 feet 0 cannot complete a 150-foot distance
Stairs	10 independent, one flight, must carry walking aid 5 requires assist or supervision for one flight 0 cannot ascend one flight
Toilet Use	10 independent, alone 5 requires assist, can do >50 percent alone 0 requires assist, does <50 percent alone
Bladder	10 no accidents or self-care of collecting device 5 occasional accidents <one per day 0 accidents daily or more
Bowel	10 no accidents 5 occasional accidents <one per week 0 accidents weekly or more

BARTHEL ADL INDEX: GUIDELINES

1. The index should be used as a record of what a patient does, not as a record of what a patient could do.
2. The main aim is to establish degree of independence from any help, physical or verbal, however minor and for whatever reason.
3. The need for supervision renders the patient not independent.
4. A patient's performance should be established using the best available evidence. Asking the patient, friends/relatives and nurses are the usual sources, but direct observation and common sense are also important. However, direct testing is not needed.
5. Usually the patient's performance over the preceding 24–48 hours is important, but occasionally longer periods will be relevant.
6. Middle categories imply that the patient supplies over 50% of the effort.
7. Use of aids to be independent is allowed.

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OUTCOME ASSESSMENT SCALES

GLASGOW OUTCOME SCALE (GOS)

- Global scale evaluating functional outcome of patients status post traumatic brain injury
- GOS predicts the long-term course of rehabilitation to return to work and everyday life
- The scale rates a
  - Death → **Severe injury or death without recovery of consciousness**
  - Vegetative state → **Severe damage with prolonged state of unresponsiveness; lack of mental functions**
  - Severe disability → **Severe injury with permanent need for help with daily living**
  - Moderate disability → **No need for assistance, employment is possible but may require special equipment**
  - Good recovery → **Light damage with minor neurological and psychological deficits**

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GLASGOW OUTCOME SCALE

Patient Name: _____
Rater Name: _____
Date: _____

Note: The scale presented here is based on the original article by Jennett and Bond. It has become common practice in clinical trial administration, however, to use a modified version that places the scores in reverse order (i.e., "good recovery" = 1, "moderate disability" =2, etc.).

Score	Description
1	DEATH
2	PERSISTENT VEGETATIVE STATE Patient exhibits no *obvious cortical* function.
3	SEVERE DISABILITY (Conscious but disabled). Patient depends upon others for daily support due to mental or physical disability or both.
4	MODERATE DISABILITY (Disabled but independent). Patient is independent as far as daily life is concerned. The disabilities found include varying degrees of dysphasia, hemiparesis, or ataxia, as well as intellectual and memory deficits and personality changes.
5	GOOD RECOVERY Resumption of normal activities even though there may be minor neurological or psychological deficits.

TOTAL (1–5): _____

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OTHER DIAGNOSTIC & SCREENING SCALES

HACHINSKI ISCHAEMIA SCORE (HIS)

- 13-item scale used for differentiating various types of dementia
- A high HIS score of 7 or greater = vascular dementia
- A low HIS score of 6 or less = a non-vascular dementia neurological change
- Valid in predicting a true diagnosis based on acceptable sensitivity and specificity defining vascular dementia.
- Research suggests that high HIS scores may indicate the presence of another vascular factor, such as stroke, as the cause for a patients decrease in cognitive function

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HACHINSKI ISCHAEMIA SCORE

Patient Name: _____
Rater Name: _____
Date: _____

Feature	Score
Abrupt onset	2
Stepwise deterioration	1
Fluctuating course	2
Nocturnal confusion	1
Relative preservation of personality	1
Depression	1
Somatic complaints	1

Feature	Score
Emotional incontinence	1
History of hypertension	1
History of strokes	2
Evidence of associated atherosclerosis	1
Focal neurological symptoms	2
Focal neurological signs	2

TOTAL SCORE ____

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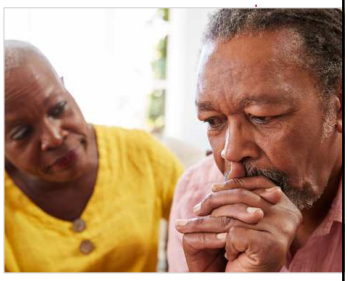
OTHER DIAGNOSTIC & SCREENING SCALES



HAMILTON RATING SCALE FOR DEPRESSION (HAM-D)

- 17-item questionnaire used to evaluate for depression and evaluate a patient's recovery status.
- Score of 0-7 is normal while a score of 20 or high is indicating a least moderate severity
- Designed for adults and rates the severity of individual patient depression by examining; mood, feelings of guilt, thoughts of suicide, insomnia, agitation, cognitive delay, anxiety, loss of weight, and somatic symptoms.
- Limitation: Focuses on insomnia; rather than feelings of hopelessness, suicidal ideation or action.

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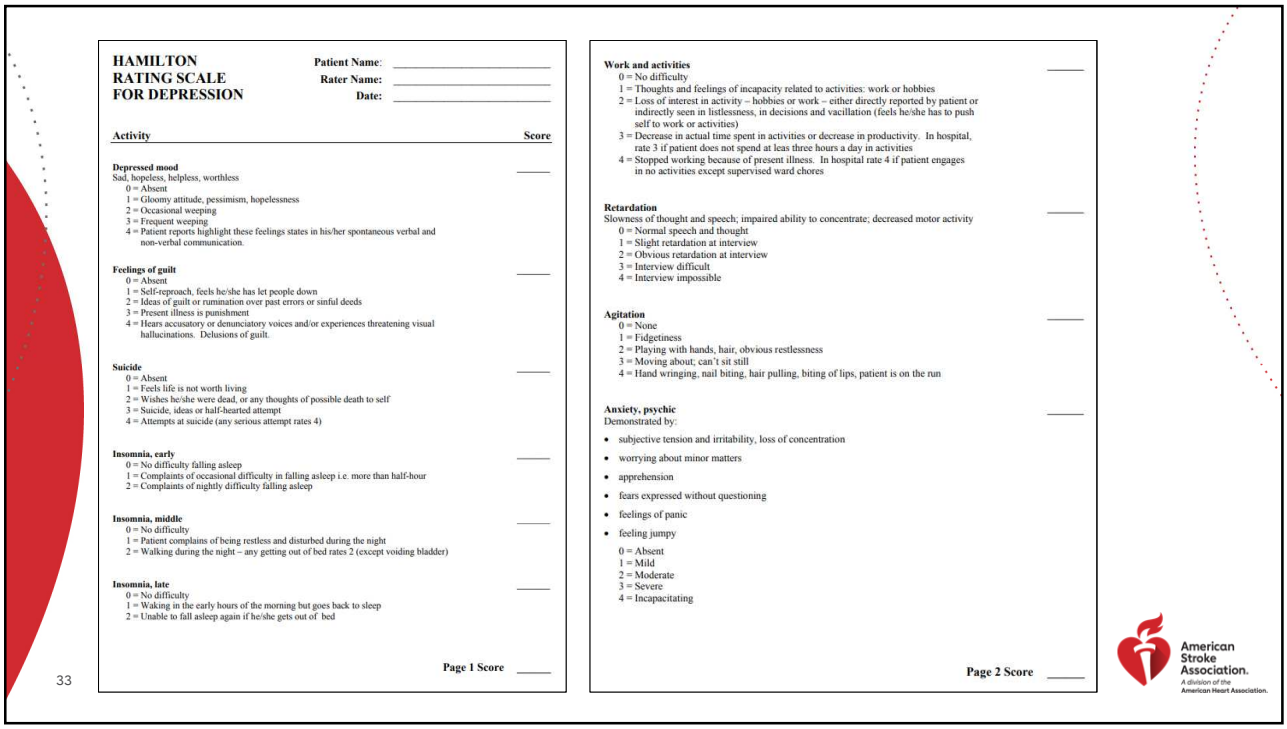

HAMILTON RATING SCALE FOR DEPRESSION

Patient Name: _____
Rater Name: _____
Date: _____

Activity — **Score**

Depressed mood
Sad, hopeless, helpless, worthless
0 = Absent
1 = Gloomy attitude, pessimism, hopelessness
2 = Occasional weeping
3 = Frequent weeping
4 = Patient reports highlight these feelings states in his/her spontaneous verbal and non-verbal communication. _____

Feelings of guilt
0 = Absent
1 = Self-reproach, feels he/she has let people down
2 = Ideas of guilt or rumination over past errors or sinful deeds
3 = Present illness is punishment
4 = Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations. Delusions of guilt. _____

Suicide
0 = Absent
1 = Feels life is not worth living
2 = Wishes he/she were dead, or any thoughts of possible death to self
3 = Suicide, ideas or half-hearted attempt
4 = Attempts at suicide (any serious attempt rates 4) _____

Insomnia, early
0 = No difficulty falling asleep
1 = Complaints of occasional difficulty in falling asleep i.e. more than half-hour
2 = Complaints of nightly difficulty falling asleep _____

Insomnia, middle
0 = No difficulty
1 = Patient complains of being restless and disturbed during the night
2 = Walking during the night – any getting out of bed rates 2 (except voiding bladder) _____

Insomnia, late
0 = No difficulty
1 = Waking in the early hours of the morning but goes back to sleep
2 = Unable to fall asleep again if he/she gets out of bed _____

Page 1 Score _____

Work and activities
0 = No difficulty
1 = Thoughts and feelings of incapacity related to activities: work or hobbies
2 = Loss of interest in activity – hobbies or work – either directly reported by patient or indirectly seen in listlessness, in decisions and vacillation (feels he/she has to push self to work or activities)
3 = Decrease in actual time spent in activities or decrease in productivity. In hospital, rate 3 if patient does not spend at leas three hours a day in activities
4 = Stopped working because of present illness. In hospital rate 4 if patient engages in no activities except supervised ward chores _____

Retardation
Slowness of thought and speech; impaired ability to concentrate; decreased motor activity
0 = Normal speech and thought
1 = Slight retardation at interview
2 = Obvious retardation at interview
3 = Interview difficult
4 = Interview impossible _____

Agitation
0 = None
1 = Fidgetiness
2 = Playing with hands, hair, obvious restlessness
3 = Moving about; can't sit still
4 = Hand wringing, nail biting, hair pulling, biting of lips, patient is on the run _____

Anxiety, psychic
Demonstrated by:
- subjective tension and irritability, loss of concentration
- worrying about minor matters
- apprehension
- fears expressed without questioning
- feelings of panic
- feeling jumpy

0 = Absent
1 = Mild
2 = Moderate
3 = Severe
4 = Incapacitating _____

Page 2 Score _____

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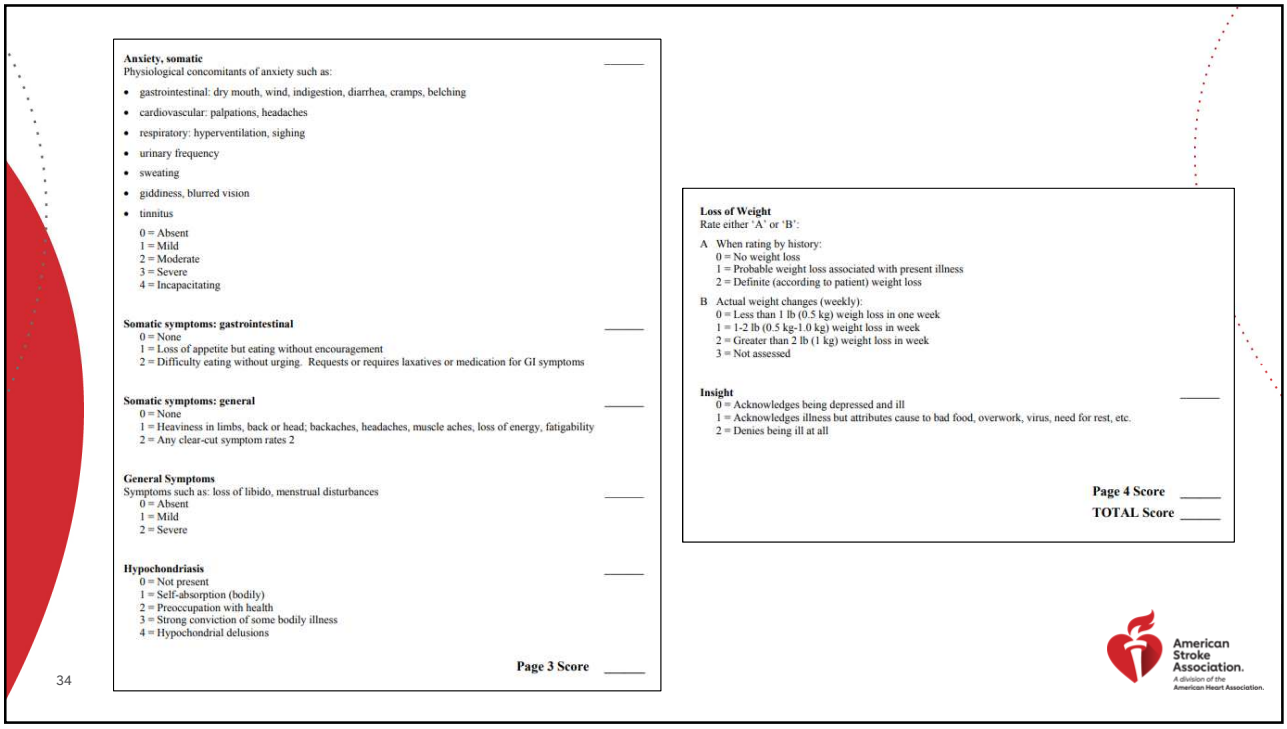

Anxiety, somatic
Physiological concomitants of anxiety such as:
- gastrointestinal: dry mouth, wind, indigestion, diarrhea, cramps, belching
- cardiovascular: palpations, headaches
- respiratory: hyperventilation, sighing
- urinary frequency
- sweating
- giddiness, blurred vision
- tinnitus

0 = Absent
1 = Mild
2 = Moderate
3 = Severe
4 = Incapacitating _____

Somatic symptoms: gastrointestinal
0 = None
1 = Loss of appetite but eating without encouragement
2 = Difficulty eating without urging. Requests or requires laxatives or medication for GI symptoms _____

Somatic symptoms: general
0 = None
1 = Heaviness in limbs, back or head; backaches, headaches, muscle aches, loss of energy, fatigability
2 = Any clear-cut symptom rates 2 _____

General Symptoms
Symptoms such as: loss of libido, menstrual disturbances
0 = Absent
1 = Mild
2 = Severe _____

Hypochondriasis
0 = Not present
1 = Self-absorption (bodily)
2 = Preoccupation with health
3 = Strong conviction of some bodily illness
4 = Hypochondrial delusions _____

Page 3 Score _____

Loss of Weight
Rate either 'A' or 'B':

A When rating by history:
0 = No weight loss
1 = Probable weight loss associated with present illness
2 = Definite (according to patient) weight loss

B Actual weight changes (weekly):
0 = Less than 1 lb (0.5 kg) weigh loss in one week
1 = 1-2 lb (0.5 kg-1.0 kg) weight loss in week
2 = Greater than 2 lb (1 kg) weight loss in week
3 = Not assessed

Insight
0 = Acknowledges being depressed and ill
1 = Acknowledges illness but attributes cause to bad food, overwork, virus, need for rest, etc.
2 = Denies being ill at all _____

Page 4 Score _____

TOTAL Score _____

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WHAT SCALE TO USE?

- Most Common:
  - CPS
  - NIHSS
  - mRS
  - Barthel
- No one scale fits every situation
- Which scale you use should be based on the question you are trying to answer and the scales properties.
- They do not always tell the whole story

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THANK YOU

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REFERENCES

Beck, A., Ward, C., Mendelson, M., Mock, J., And erbaugh, J. (1961). An inventory for measuring depression. *Arch gen psychiatry;* 4:561-71.

Beck, a. And steer, R. (1987). Beck depression inventory: manual (revised edition). *NY psychological corporation.*

Bonita, R. and Beaglehole, R. (1988). Recovery of motor function after stroke. *Stroke;* 19:1497-1500.

Bruno, A., Shah, N., Lin, C., Close, B., Hess, D., Davis, K., et al. (2010). Improving Modified Rankin Scale assessment with a simplified questionnaire. *Stroke;* 41:1048-1050. doi: 10.1161/STROKEAHA.109.571562

Goldstein, L. (2019). Use and utility of stroke scales and grading systems. *Up To Date.* Retrieved from https://www.uptodate.com/contents/use-and-utility-of-stroke-scales-and-grading-systems

Maas, M., Furie, K., Lev, M., Ay, H., Singhal, A., Greer, D., et al. (2009). National Institutes of Health Stroke Scale score is poorly predictive of proximal occlusion in acute cerebral ischemia. *Stroke;* 40:2988-2993. doi: 10.1161/STROKEAHA.109.555664

Mahoney, F. and Barthel, D. (1965). Functional evaluation: The Barthel Index. *Maryland State Medical Journal;* 14:56-61.

Powers, W., Rabinstein, A., Ackerson, T., Adeoye, O., Bambakidis, N., Becker, K., et al. (2018). 2018 Guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke;* 49:e46-e99. doi: 10.1161/STR.0000000000000158

Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *J appl psychol meas;* 1:385-401.

Ver hage et al. (2011). The NIH stroke scale: A window into neurological status. *Nurse.com. Nursing Spectrum;* 24:44-49.

Yesavage, j., Brink, T., Rose, T., Lum, O., Huang, V., Adey, M., And leirer, V. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. J psychiatr res; 17:37-49.

American Stroke Association.
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