

# Legacy Assessment Tool for Stroke

-- Paul Ash  
October, 2020



What do stroke impairment scales do?

They measure impairment to estimate severity,  
and, to predict disability

(The extended Scandanavian may predict quality of life)

What are they used for?

Clinical trials

Data mining

Therapeutic decision-making

Neurological evaluation

(Scroll down, page down)

# Criteria

Accuracy

Reliability

Validity

**Usability** (the forgotten element?)

Ease of learning

Ease of use

Data display



# Ease of use, learning



## Hand Strength

### Instructions:

Have the patient grasp your index and middle fingers as forcefully as they can, test simultaneously if possible. Pantomime if necessary. If the patient is structurally unable to clench, or if it is painful, test finger abduction, comparing the two sides.

### R hand scoring:

- Not scored
- Prob wnl or = to L, or, unable to test =0
- Some pressure, R weaker =1
- No pressure on R side =2

**Score R hand**

### L hand scoring:

- Not scored
- Prob wnl or = to R, or, unable to test =0
- Some pressure, L weaker =1
- No pressure on L side =2

**Score L hand**

Explanation R hand: \_\_\_\_\_

Explanation L hand: \_\_\_\_\_

### Dominant hand to be entered, cite the handedness prior to stroke(s)

Dominant hand  Right  Left  Ambidextrous  Unknown  Not scored

(If dominant arm+hand score  $\geq 2$  adds 1 - 2 points to adjusted LATS)

[Go Directly to Score Sheet](#)

[NEXT](#)

# Display



MRN	1234	Examiner: Paul A	AGE 56 Sex M	DateTime: 10/07/20-08:16		
Test	Instructions	Scoring	New	Old	Total	Explanations
						Return to Q's   GoTo END
			Communication			Score = 3
Co1	Receptive-verbal	Finger to opp ear, tongue protrusion If not "0", fist, if not done, Close Eyes	1st two correct=0, 1 correct=1, 0 correct=2. If fist not done, add 1, if eyes not closed, add another 1. Max score =4	0	0	
Co2	Receptive - mime	Performed if above score=4, Fist, Close your eyes	Both correct=0, 1 correct=1, none correct =2. (a proper attempt is scored)			
Co3	Fluency	Cartoon	Elements in 20": 0 =5, 1-3=4, 4-7=3, 8-11=2, 12-15=1, 16-20=0.5, >20=0	0	0	
Co4	Naming	Watch, thumb, pen, ring	All correct=0, 2-3 correct=1, 1correct=2, none correct, or mute=3			
Co5	Conduction	"No, ifs, ands, or buts"	Correct=0, Error -1(except missing "s's")			
Co6	Orientation	Month, Year, Age	All correct or unable to respond=0, 2 correct=1, 1 correct=2, none correct=3	2	2	
Co7	Dysarthria	The ripe tast of cheese improves with age	Dysarthria (.5), fails 1 word=1, more than one word=2	1	1	
<b>Cranial</b>			<i>Direct entry: enter into "New" &amp;/or "Old"</i>			1
Cr1	Visual fields	Both eyes simultaneous, individual if imperfect. Fingers or flashlight	Extinction only= 1, quadrant=1.5, Quad+Extinc=2 Hemi=3 Bilat =4	0	0	
Cr2	Gaze	Pursuit	Nl conj gaze wo pref=0, Nystag=1, 1 eye not Xing ML=2, Both eyes w a gaze palsy or no horiz mvmt or strong gaze pref=3	0	0	
Cr3	Facial Motor	Smile, upgaze to furrow brow	Nl=0, mild asym=.5, Mod lower face=1. No mvmt lower, or weak uppr&flwr=2	1	1	
<b>Motor</b>			<i>Direct entry: enter into "New" &amp;/or "Old"</i>			4.5
M1	R arm	Extend arms 45 deg, supinated for 10", if nl, R&L shldr=0, if not nl, test abn arm.	No pronator or drift=0, prntr&/or slow raise=.5 dnwd corctd or 2/3 minor=1, net dnwd=1.5, touch bed=2, can't raise off bed=2.5, sl mvmt=3, no mvmt=4	0	0	Some old
M2	R hand	Pt squeezes your 2 <sup>nd</sup> & 3 <sup>rd</sup> fingers, simultaneously, if possible	Equal & nl=0, some pressure, weaker R=1, no pressure R side=2	0	0	
M3	L arm	Extend arms 45 deg, supinated for 10", if nl, R&L shldr=0, if not nl, test abn arm.	No pronator or drift=0, prntr&/or slow raise=.5 dnwd corctd or 2/3 minor=1, net dnwd=1.5, touch bed=2, can't raise off bed=2.5, sl mvmt=3, no mvmt=4	2	2	
M4	L hand	Pt squeezes your 2 <sup>nd</sup> & 3 <sup>rd</sup> fingers, shldr=0, if not nl, test abn arm. simultaneously, if possible	Equal & nl=0, some pressure, weaker L=1, no pressure L side=2	1	1	
M5	R leg	30 deg for 5"; if no drift, apply force	No drift and force nl=0, slow to raise or weaker=.5, net dnwd=1, touch bed=2, cannot get heel off bed=3, can only drag heel=4, little/no mvmt=5	0	0	
M6	L leg	30 deg for 5"; if no drift, apply force	No drift and force nl=0, slow to raise=.5, no drift, weaker=1, net dnwd=1.5, touch bed=2, cannot get heel off bed=3, can only drag heel=4, little/no mvmt=5	0.5	0.5	
M7	Coordination	F-->N, H-->S	Nl=0, ataxia one limb=1, 2 limbs =2	1	1	L arm > weakness
<b>Sensory</b>			<i>Direct entry: enter into "New" &amp;/or "Old"</i>			0.5
S1	Touch	Face, arm/hand, leg	Nl=0, Extncn only=.5, Dec ≥1 site=1, Abs ≥1 site=2	0	0	
S2	Pin	face, arm, leg. Percent difference	No diff=0, at any site % diff <25%=.5, 25%-75%=1, ≥75%=2	0.5	0.5	
			<b>Total</b>			9
<b>Dominant Hand</b>			Note "R", "L", "A" for ambidextrous, or "Unk" if unknown			R
			Dom arm + hand score: 1-2=1, >2=2			0 Automatic calculation
			Nearly absent pin in both feet, add 1			0 <i>Enter if manual entry and present</i>
Last NIHSS:Score, Date, Time:			<b>Total Adjusted LATS score</b>			9
			<b>LATS score to predict 90 day function wo/w adjust*</b>			9 adjusted
			<b>LATS, calc NIHSS equiv to predict 90 day function wo/w adjust**</b>			7 adjusted

A less complex table intended for display will be provided by the program.

# Display

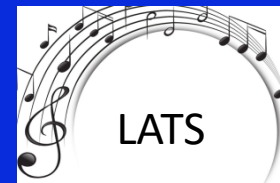


**NIHSS = 7**

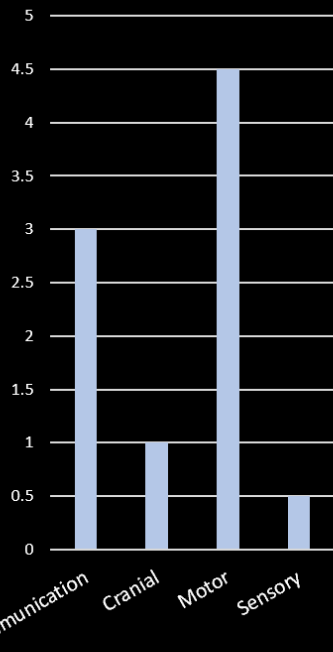
**NIHSS @ 7 = 10/5/2020 ~12:15**

1a. LOC:	NI 0	<b>ALERTS</b>	Minor stim 1, Strong stim 2, Comatose 3
1b. Q's	NI 2	<b>ANSWERS</b>	One 1, None 2
1c. FCs	NI 0	<b>PERFORMS</b>	One 1, None 2
2. Gaze	NI 0	<b>GAZE PALSY</b>	Partial 1, Forced Deviation 2
3. Fields	NI 0	<b>HEMIANOPIA</b>	Partial 1, Complete 2, Blind 3
4. Face	NI 1 R	<b>DROOP</b>	Minor 1, Partial 2, Complete paralysis 2
5a. Lt Arm	NI 1	<b>STRENGTH</b>	Drift 1, Drift + touch 2, No anti-gravity 3, No moves 4
5b. Rt Arm	NI 0	<b>STRENGTH</b>	Drift 1, Drift + touch 2, No anti-gravity 3, No moves 4
6a. Lt Leg	NI 0	<b>STRENGTH</b>	Drift 1, Drift + touch 2, No anti-gravity 3, No moves 4
6b. Rt Leg	NI 0	<b>STRENGTH</b>	Drift 1, Drift + touch 2, No anti-gravity 3, No moves 4
7. Limb Coord	NI 1 RUE	<b>DYSMETRIA</b>	One limb 1, Two limbs 2
8. Sensory	NI 0	<b>LOSS</b>	Mild - moderate 1, Severe 2
9. Language	NI 1	<b>APHASIA</b>	Mild - moderate 1, Severe 2 Mute or global 3
10. Dysarthria	NI 1	<b>DYSARTHRIA</b>	Mild - moderate 1, Severe 2
11. Extinction	NI 0	<b>EXTINCTION</b>	One modality 1, Profound loss 2

# Display



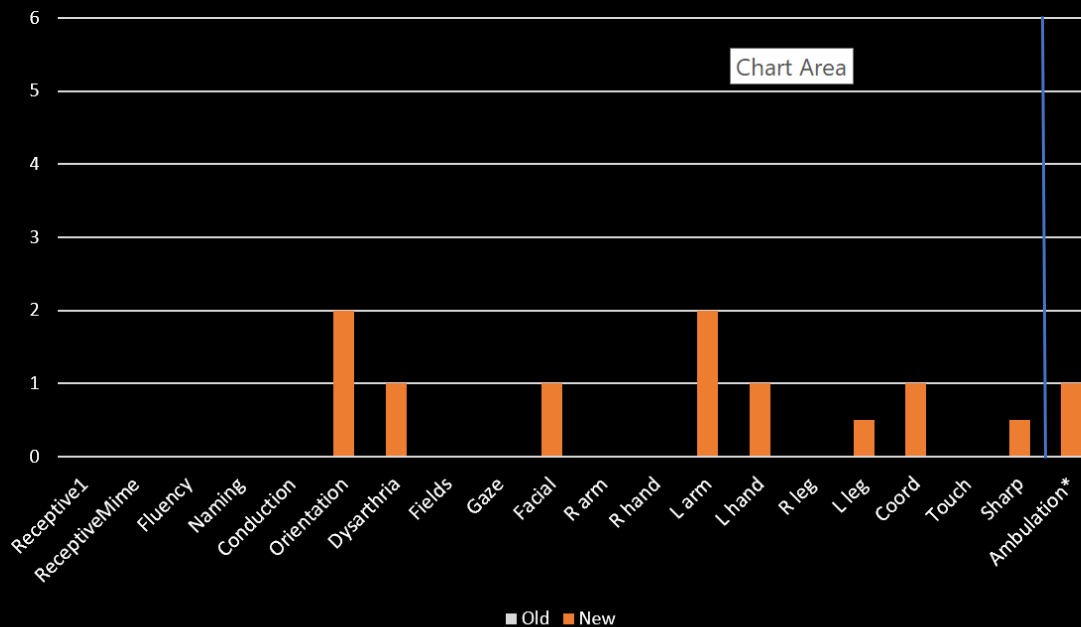
### Categories



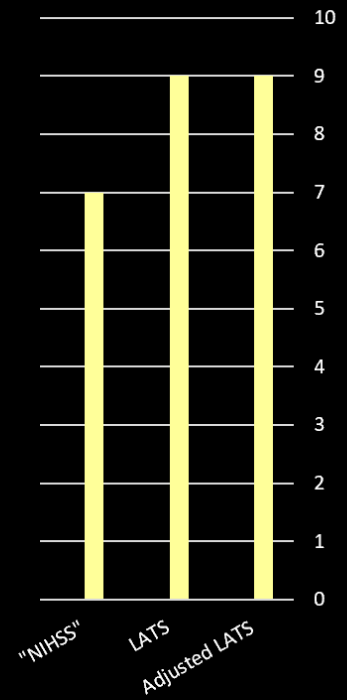
MRN 1234

10/7/20 8:19

### Stroke Impairments



### Totals



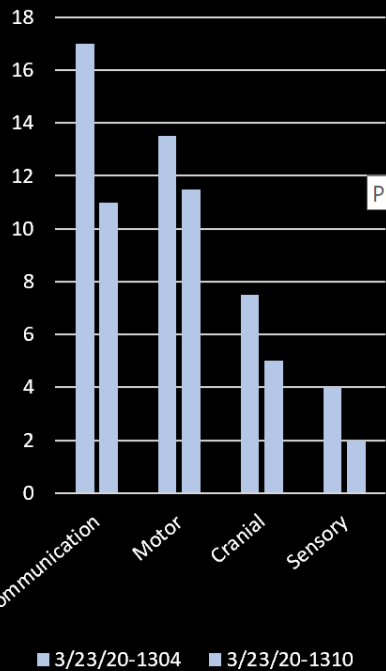
\* Ambulation score is not included in totals  
"NIHSS" is a converted approximation

Return to "END"

# Display

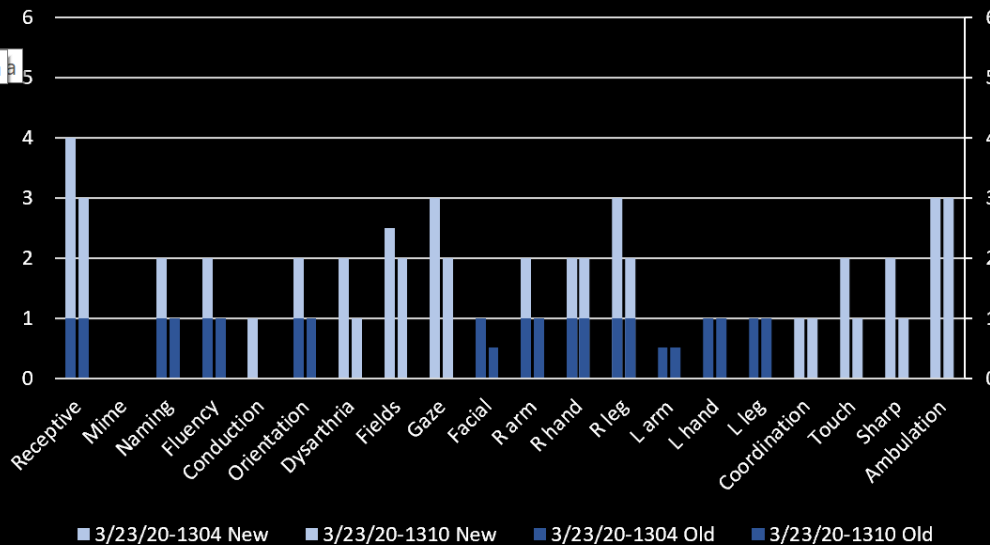


### Categories

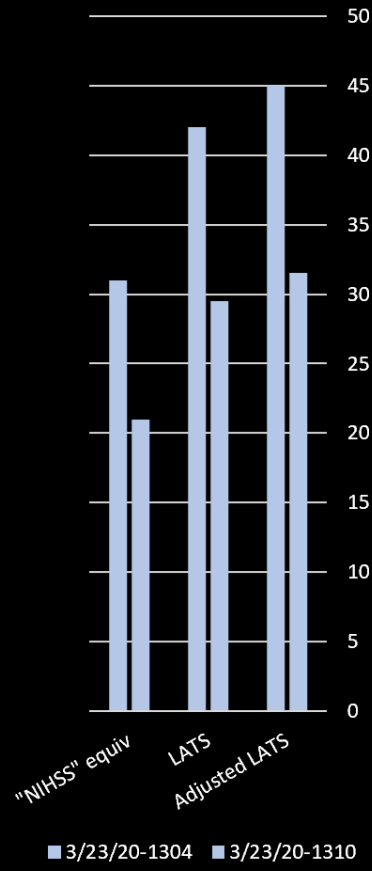


Plot Area

### Individual



### Total



Sample 2 test display

LATS may be downloaded from <http://LATStrial.ash2o.com>. If you do administer it (on a presumed virtual patient), I will appreciate your completing the survey at the end. Your responses will appear as an *xls* “survey” file in the same folder as your download. You can contribute by emailing this to me at [ashpra@gmail.com](mailto:ashpra@gmail.com). I will value additional comments.

As stated in the presentation, COVID has turned the development of this scale topsy turvy. But, when we do get to the validation steps, we will be looking for additional sites. We will provide support. Please let me know of your interest.

Thank you for your time and attention.

--Paul Ash  
October, 2020