

Prediction Scores for Patient Selection- The Houston Intra-Arterial Therapy 2 “HIAT2” score

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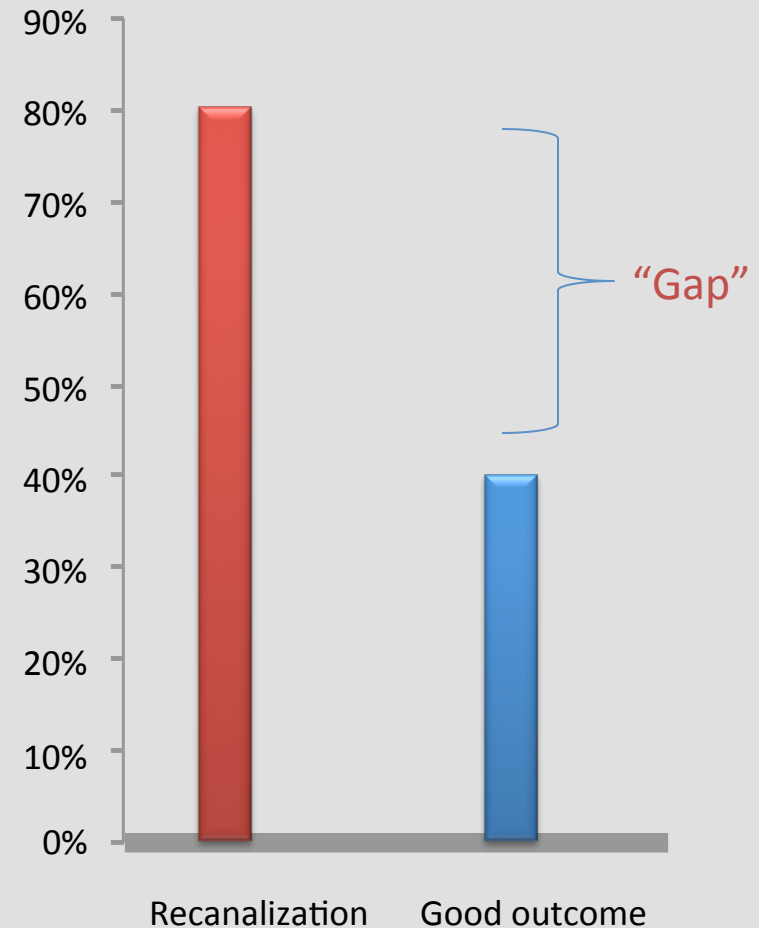
University of Texas-Houston

Disclosure

- No financial disclosures
- I'm a vascular Neurologist who believes that endovascular treatment for acute ischemic stroke works in selected patients

Intra-Arterial Therapy (IAT) The “Gap”

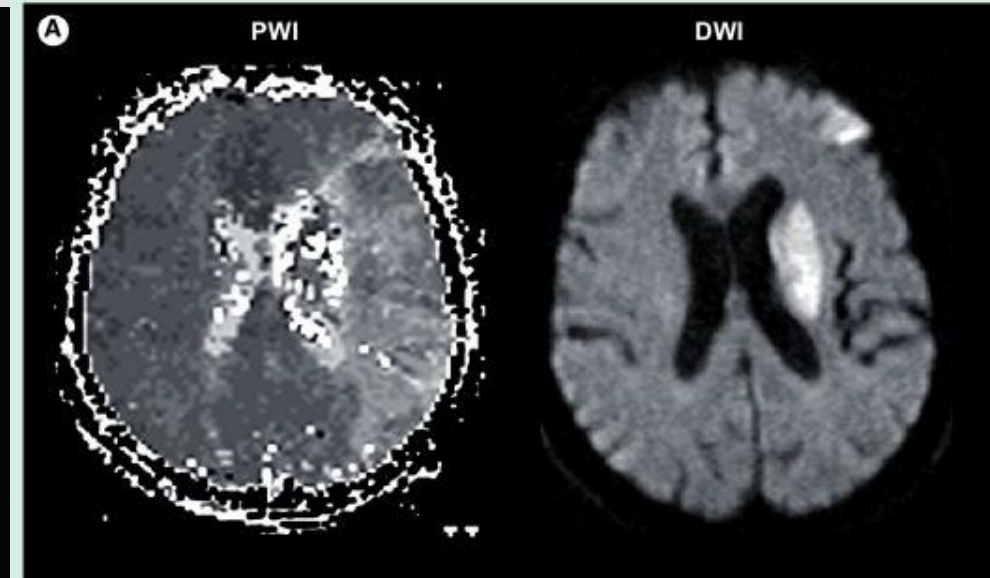
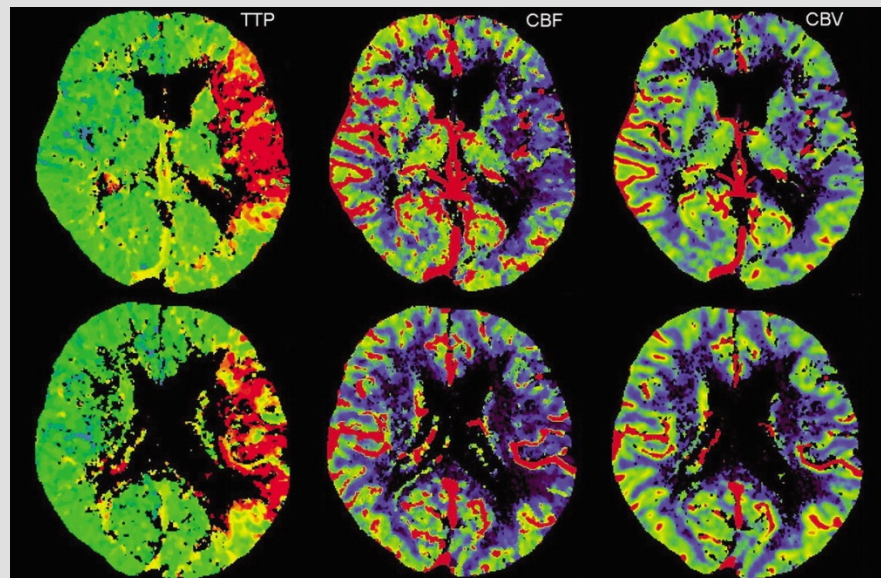
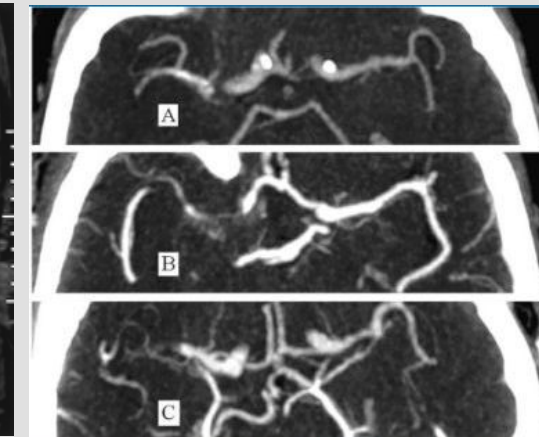
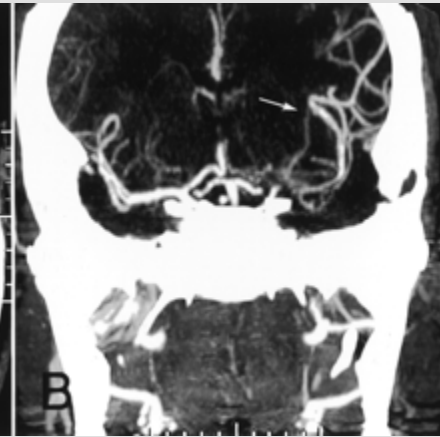
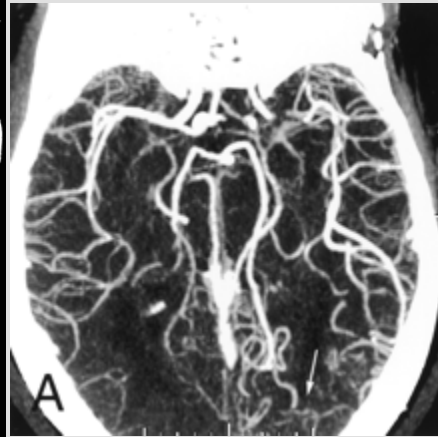
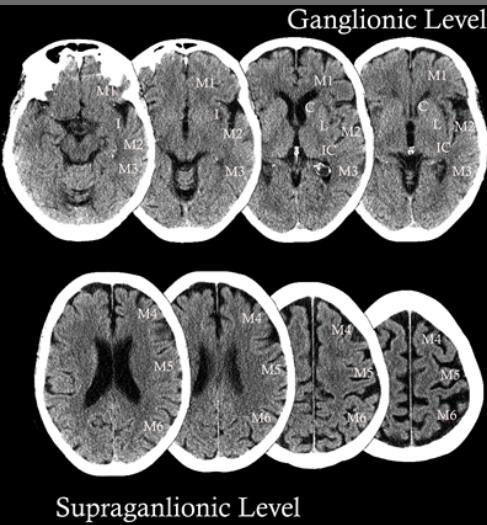
- The published rates of recanalization with IAT
- The rate of favorable outcome
- Need: Identify criteria that enable prediction of poor outcome BEFORE the decision to proceed to IAT is made



Background

- Clinical assessment
- Non-contrast CT → ASPECTS
- CT-Angiogram (CTA)
- Neuroimaging evidence of mismatch and reversibility
 - CT-Perfusion
 - MRI → DEFUSE/DEFUSE2/EPITHET


Imaging selection methods



HIAT score

Modality	Value	Score
Age (years)		
	≤ 75	0
	> 75	1
NIHSS score		
	≤ 18	0
	> 18	1
Glucose (mg/dL)		
	≤ 150	0
	> 150	1

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

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Identifying Patients at High Risk for Poor Outcome After Intra-Arterial Therapy for Acute Ischemic Stroke
Hen Hallevi, Andrew D. Barreto, David S. Liebeskind, Miriam M. Morales, Sheryl B. Martin-Schild, Anitha T. Abraham, Jignesh Gadia, Jeffrey L. Saver, the UCLA Intra-Arterial Therapy Investigators, James C. Grotta and Sean I. Savitz

Stroke 2009, 40:1780-1785; originally published online April 9, 2009

HIAT2 Score

MODALITY	VALUE	SCORE
Age (years)		
	≤ 59	0
	60 - 79	2
	≥ 80	4
NIHSS score		
	≤ 10	0
	11 - 20	1
	≥ 21	2
Glucose (mg/dL)		
	< 150	0
	≥ 150	1
ASPECTS		
	8 – 10	0
	≤ 7	3

Stroke

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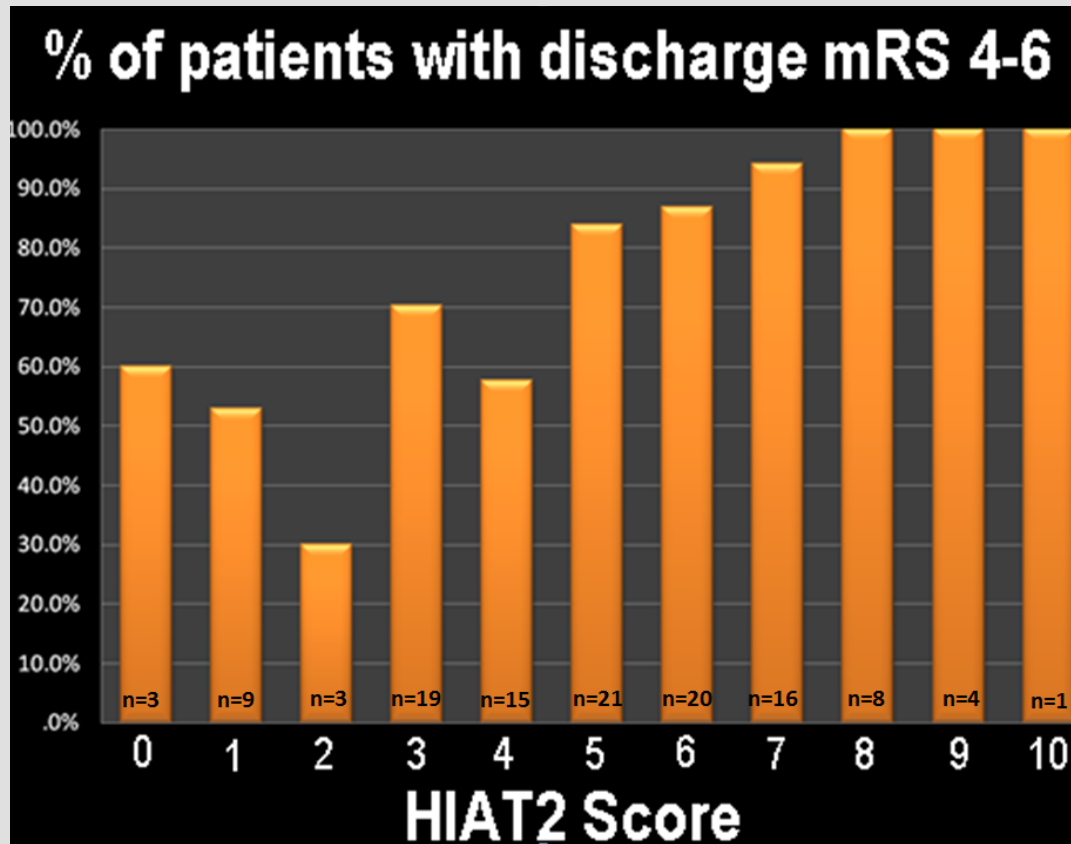


Optimizing Prediction Scores for Poor Outcome After Intra-Arterial Therapy in Anterior Circulation Acute Ischemic Stroke

Amrou Sarraj, Karen Albright, Andrew D. Barreto, Amelia K. Boehme, Clark W. Sitton, Jeanie Choi, Steven L. Lutzker, Chung-Huan J. Sun, Wafi Bibars, Claude B. Nguyen, Osman Mir, Tzu-Ching Wu, George A. Lopez, Nicole R. Gonzales, Randall Edgell, Sheryl Martin-Schild, Hen Hallevi, Jeffrey L. Saver, David S. Liebeskind, Raul G. Nogueira, Rishi Gupta, James C. Grotta and Sean I. Savitz

Stroke. published online August 8, 2013;

Poor Outcomes by HIAT2



HIAT2 \geq 5

OR 6.43 95% CI 2.8-15

p<.001

Results independent of:

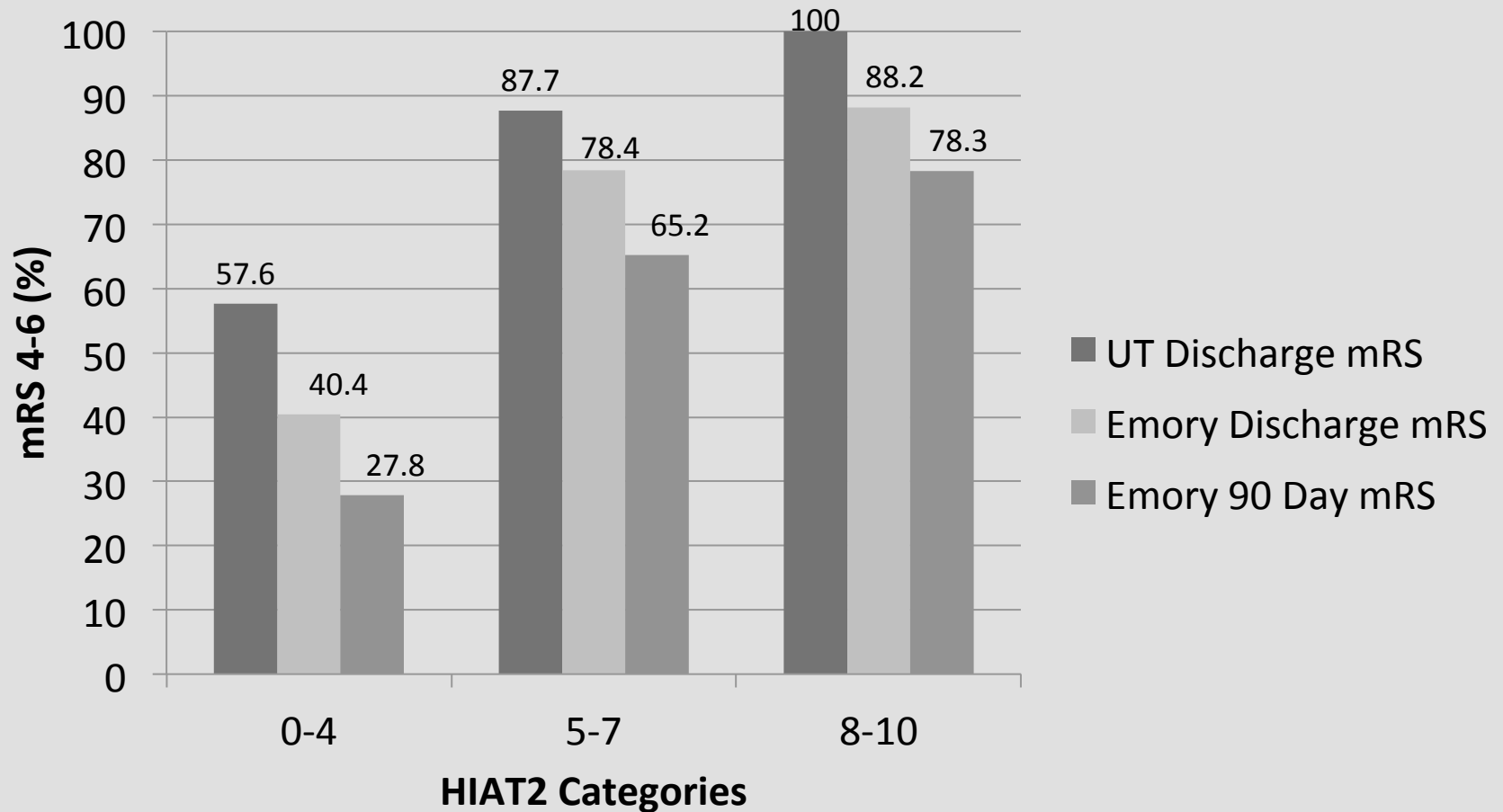
1-Recanalization, p=0.7

2-Time to recanalization, p=0.4

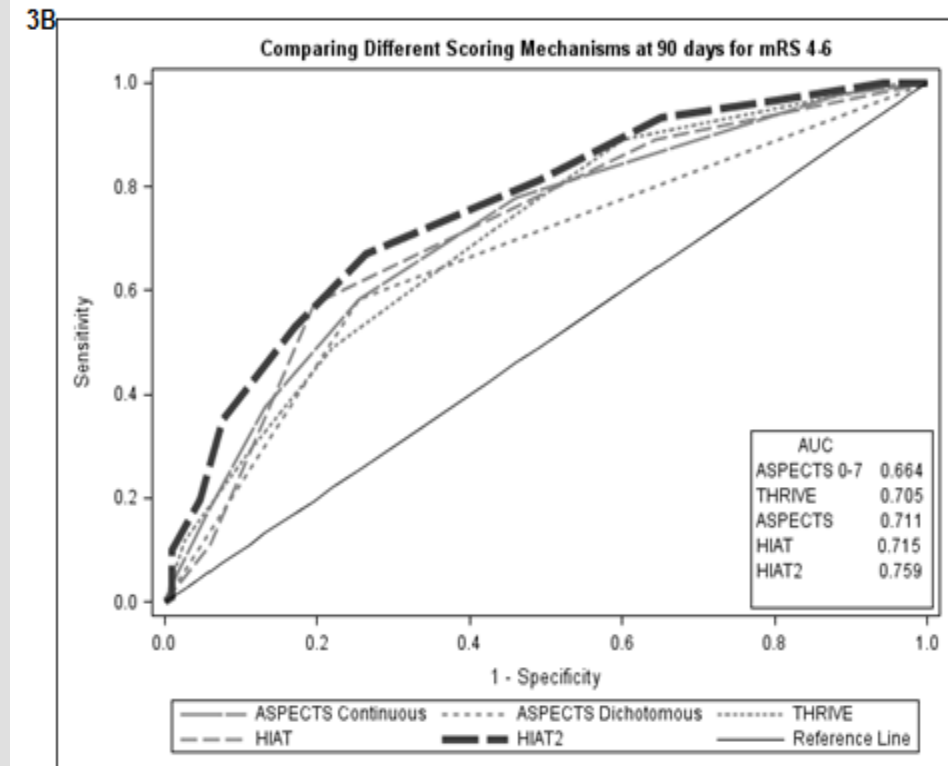
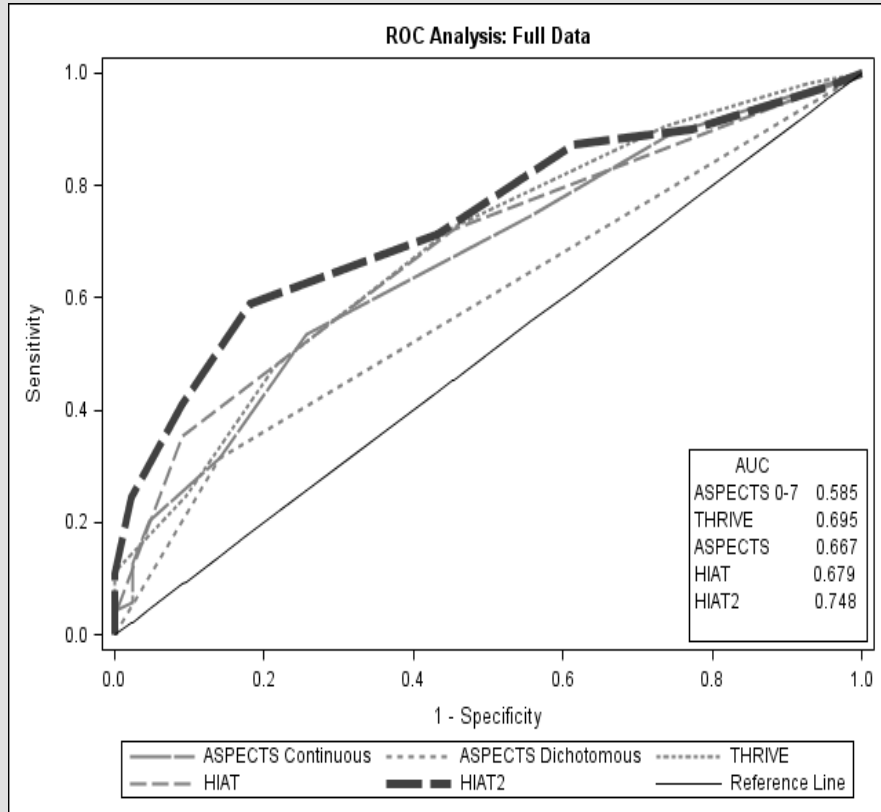
OR 5.88 95% CI 1.96-17.6

p=.02

Poor Outcomes by HIAT2

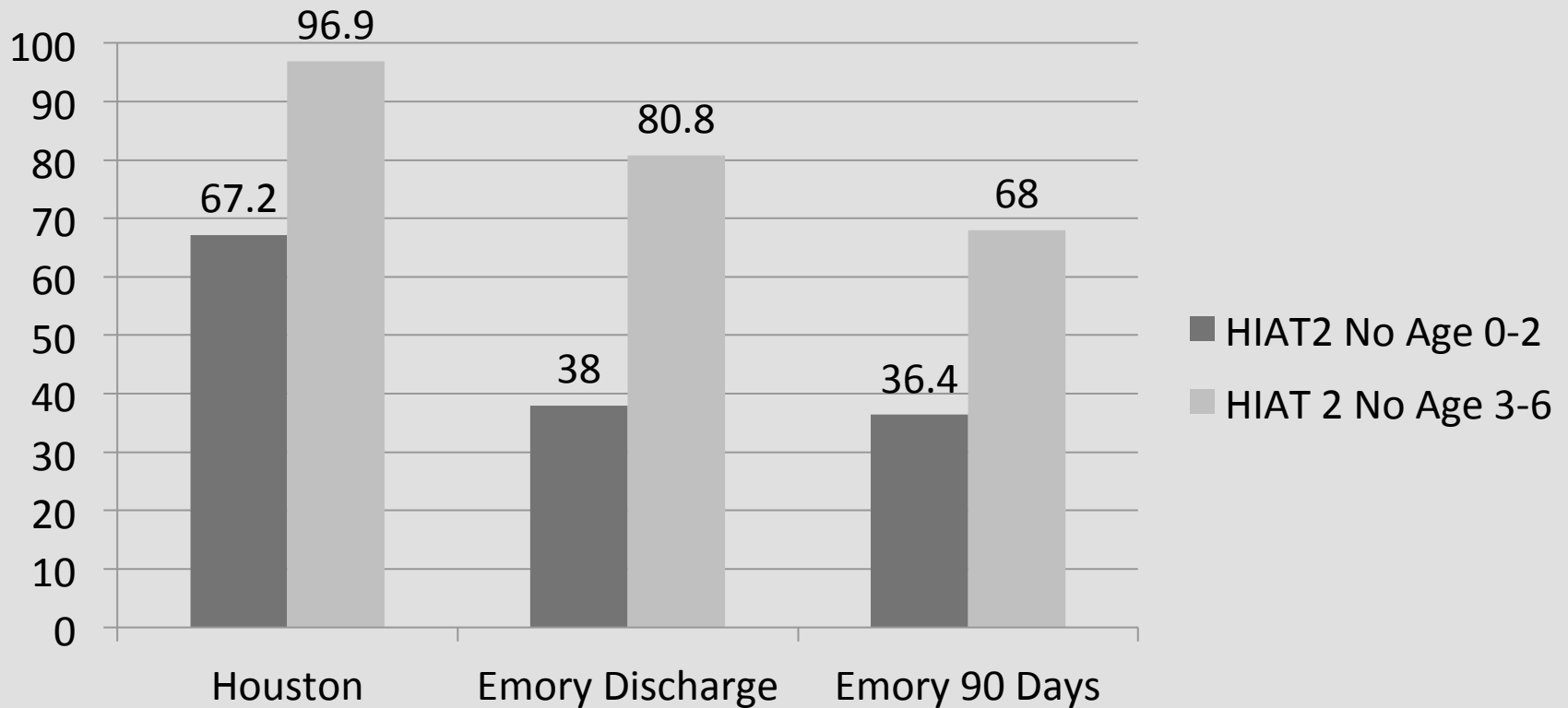


Prediction Scores Predictability



“Ageless” HIAT2

Percentage of Patients with mRS 4-6 based on Ageless HIAT2



HIAT2

- Quick assessment
- Combine clinical and radiographic variables
- Reliable tool in patients selection for IAT

How to use the score

- Patients selection vs. triaging
- Family discussions in ED
- Excluding patients with HIAT2 ≥ 8
- Utility in excluding patients who would do poorly rather than predicting the ones who may do well

How about other scores

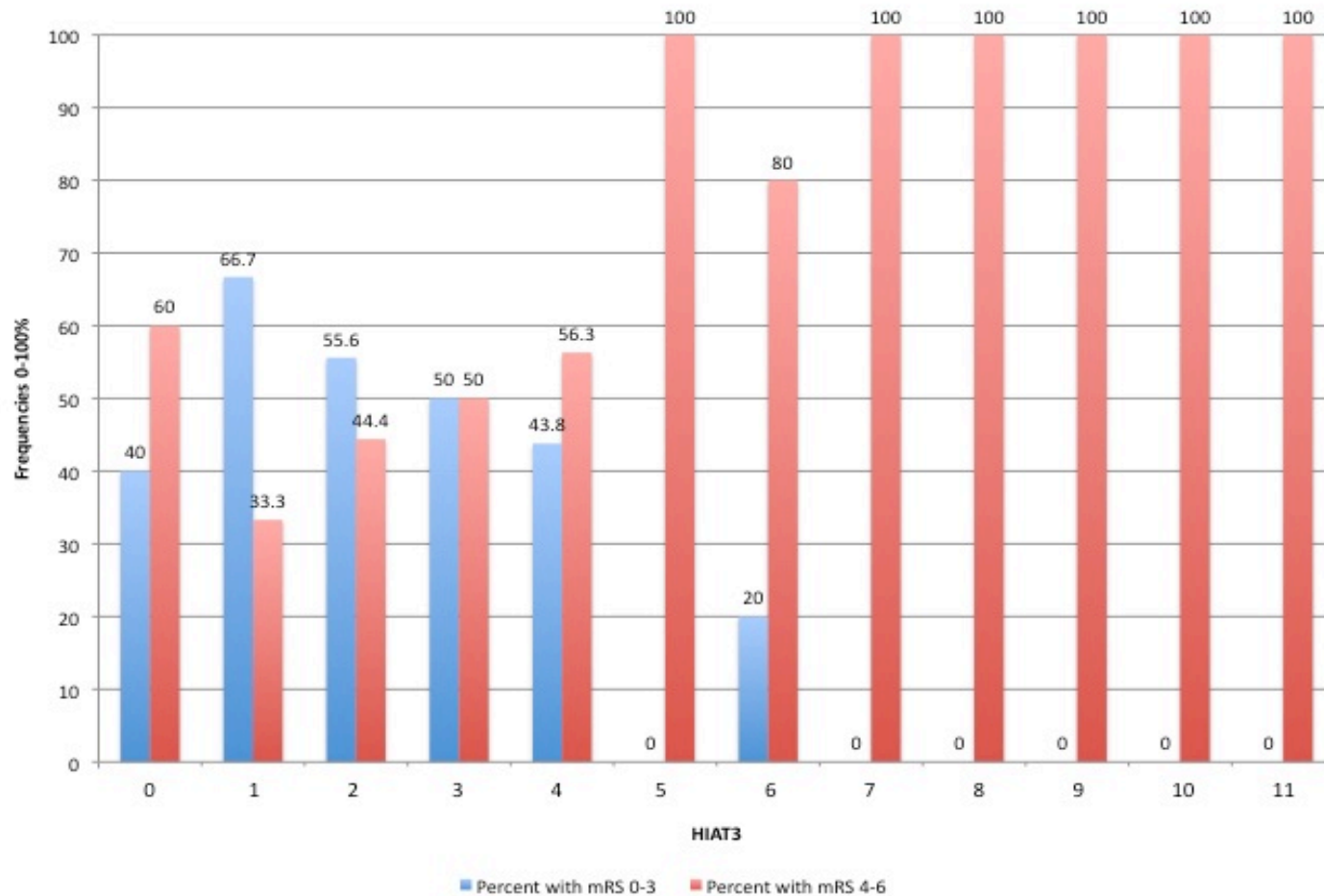
- All helpful to an extent
- Depends heavily on history taking which may not be available in ED
- Do not include both imaging and clinical variables

Future steps

<p><u>Age</u></p> <p>≤ 59 = 0 points</p> <p>60-79 = 2 pts</p> <p>≥ 80 = 4 pts</p>	<p><u>NIHSS</u></p> <p>≤ 10 = 0 points</p> <p>11-20 = 1 pt</p> <p>≥ 21 = 2 pts</p>	<p><u>CTA Collateral</u> <u>Score</u></p> <p>0-1 = 1 pt</p> <p>2-3 = 0</p>
<p><u>Glucose</u></p> <p>< 150 = 0 points</p> <p>≥ 150 = 1 pt</p>	<p><u>ASPECTS</u></p> <p>8-10 = 0 points</p> <p>≤ 7 = 3 pts</p>	<p><u>Score</u></p> <p>0-11</p>

Future steps

Comparison of mRS groups on Discharge for Each HIAT3 Score



Future Steps

- Patient selection in future clinical trials
- Analyzing results from recently published RCTs based on HIAT2 (IMS III and MR-RESCUE) as well as SWIFT data