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

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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
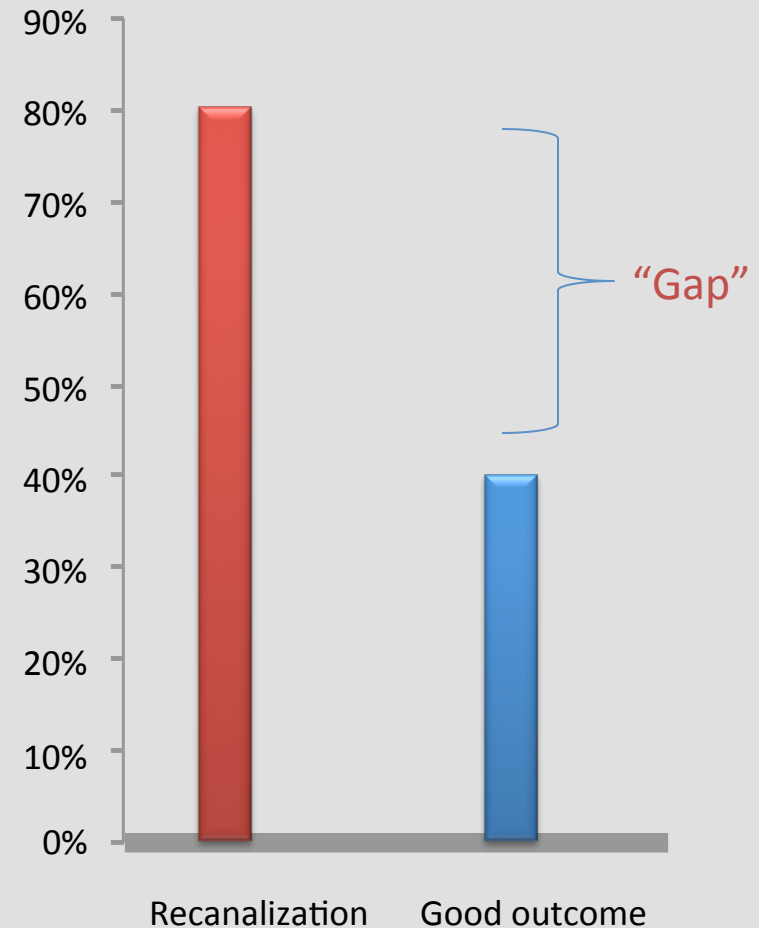
Background

- Clinical assessment

- Non-contrast CT$\rightarrow$ ASPECTS

- CT-Angiogram (CTA)

- Neuroimaging evidence of mismatch and reversibility
  - CT-Perfusion
  - MRI $\rightarrow$ DEFUSE/DEFUSE2/EPITHET

Imaging selection methods
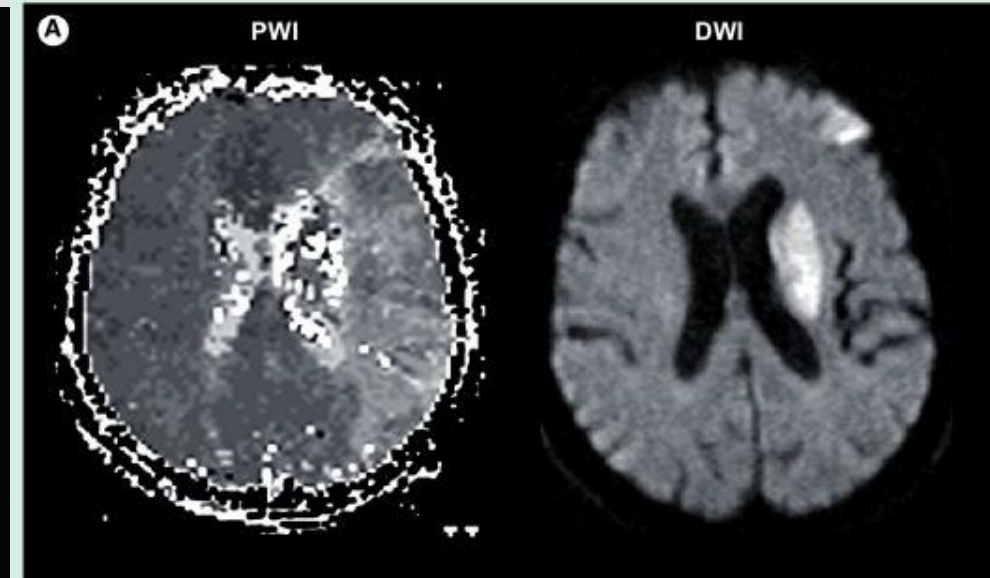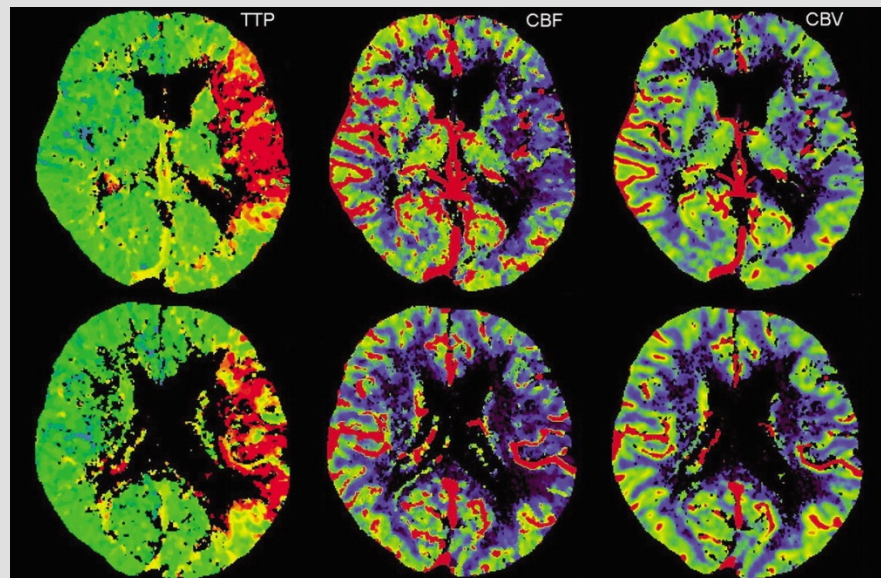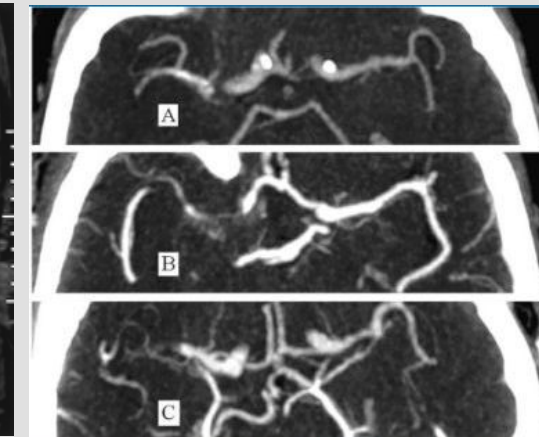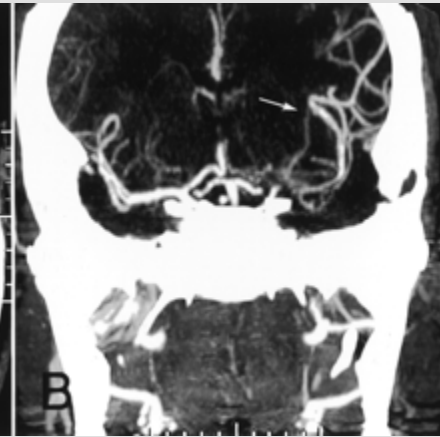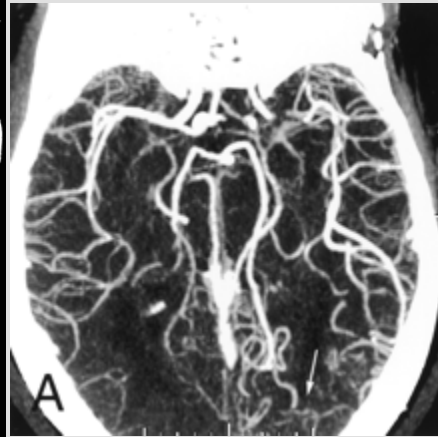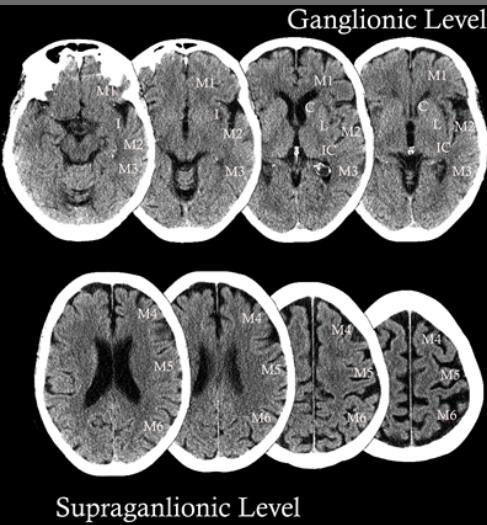
HIAT score

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

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

Poor Outcomes by HIAT2

% of patients with discharge mRS 4-6

HIAT2 Score: 0 (n=3), 1 (n=9), 2 (n=3), 3 (n=19), 4 (n=15), 5 (n=21), 6 (n=20), 7 (n=16), 8 (n=8), 9 (n=4), 10 (n=1)

HIAT2 ≥ 5
OR 6.43 95% CI 2.8-15
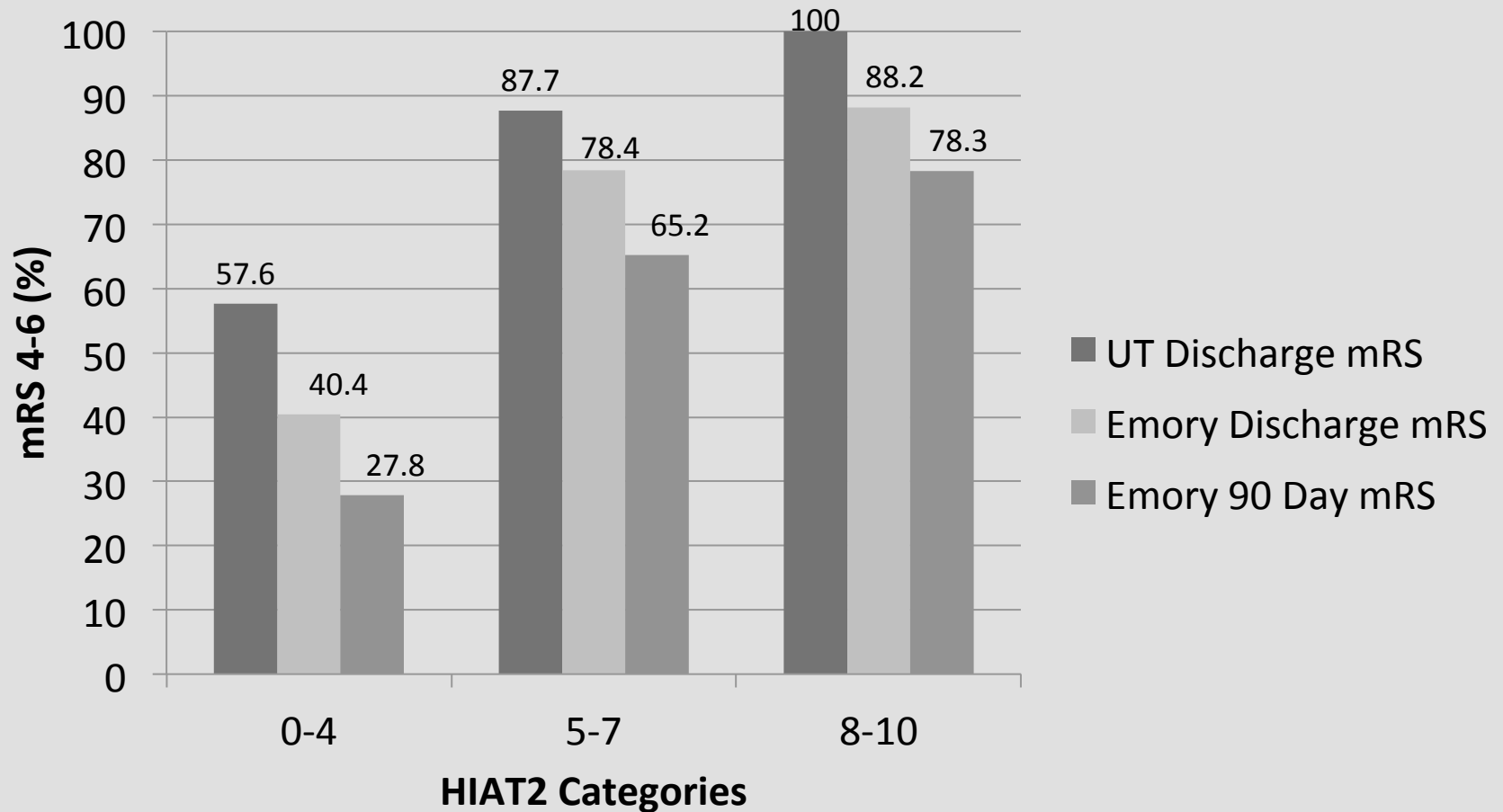p<.001

Results independent of:
 1-Recanalization, p=0.7
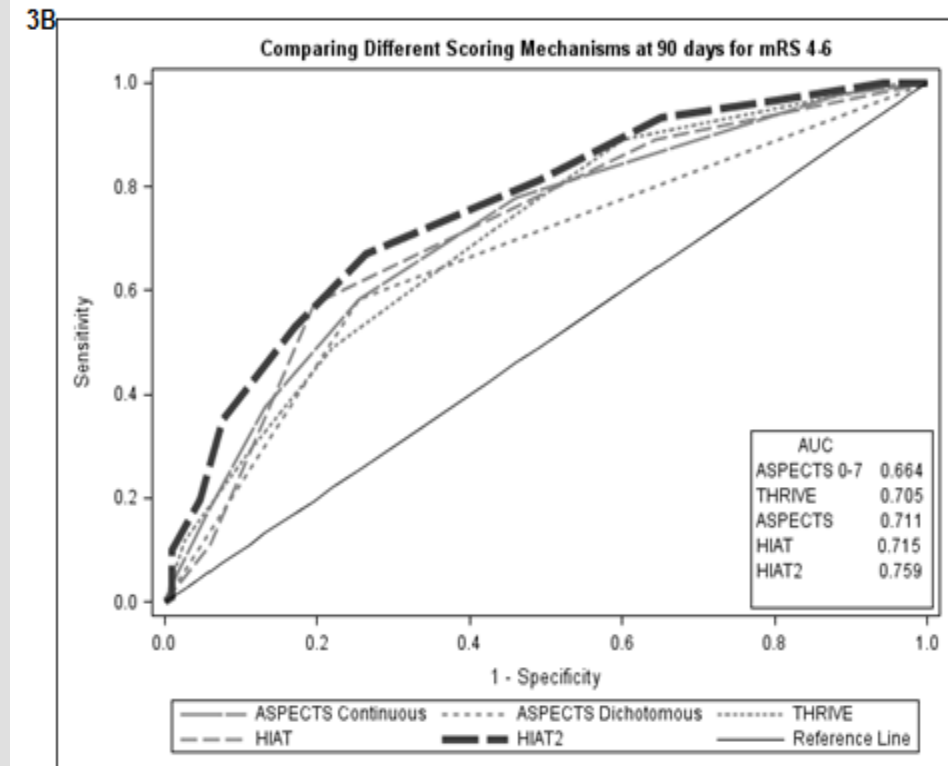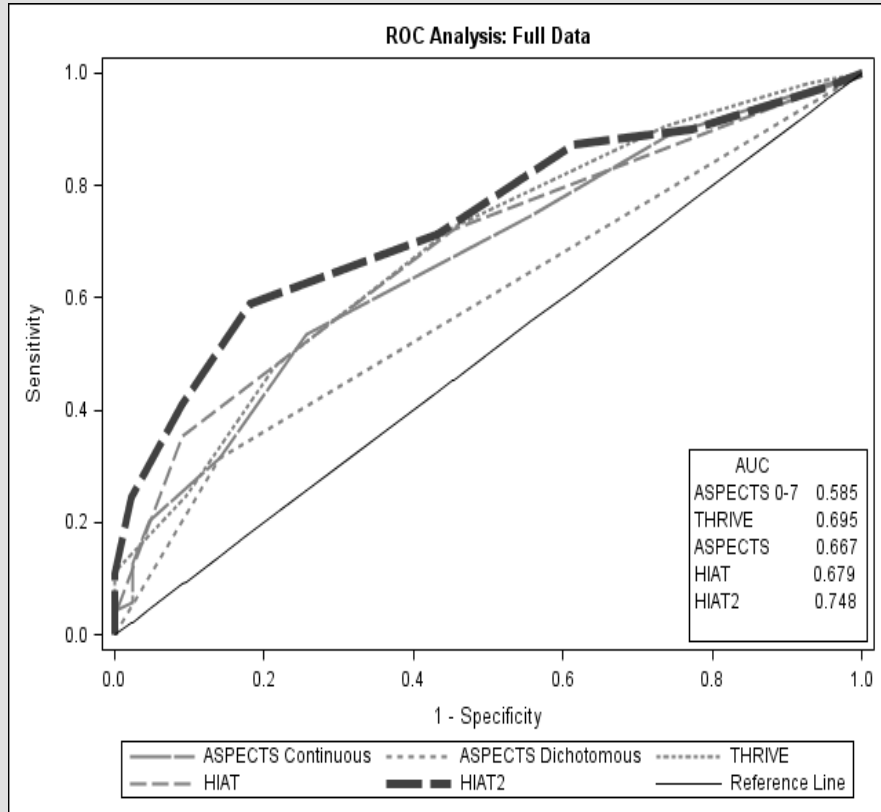 2-Time to recanalization, p=0.4
OR 5.88 95% CI 1.96-17.6
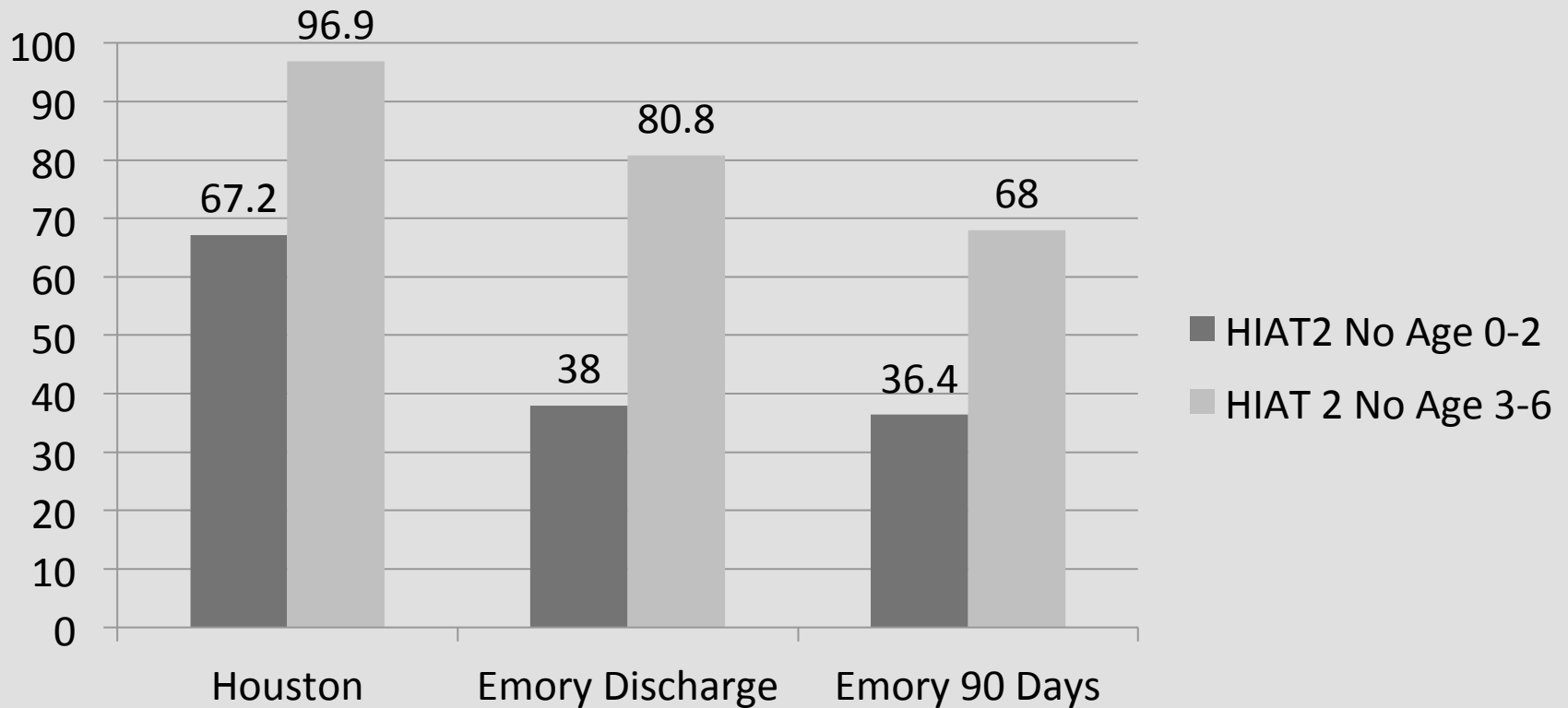p=.02

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

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

Future steps

Comparison of mRS groups on Discharge for Each HIAT3 Score
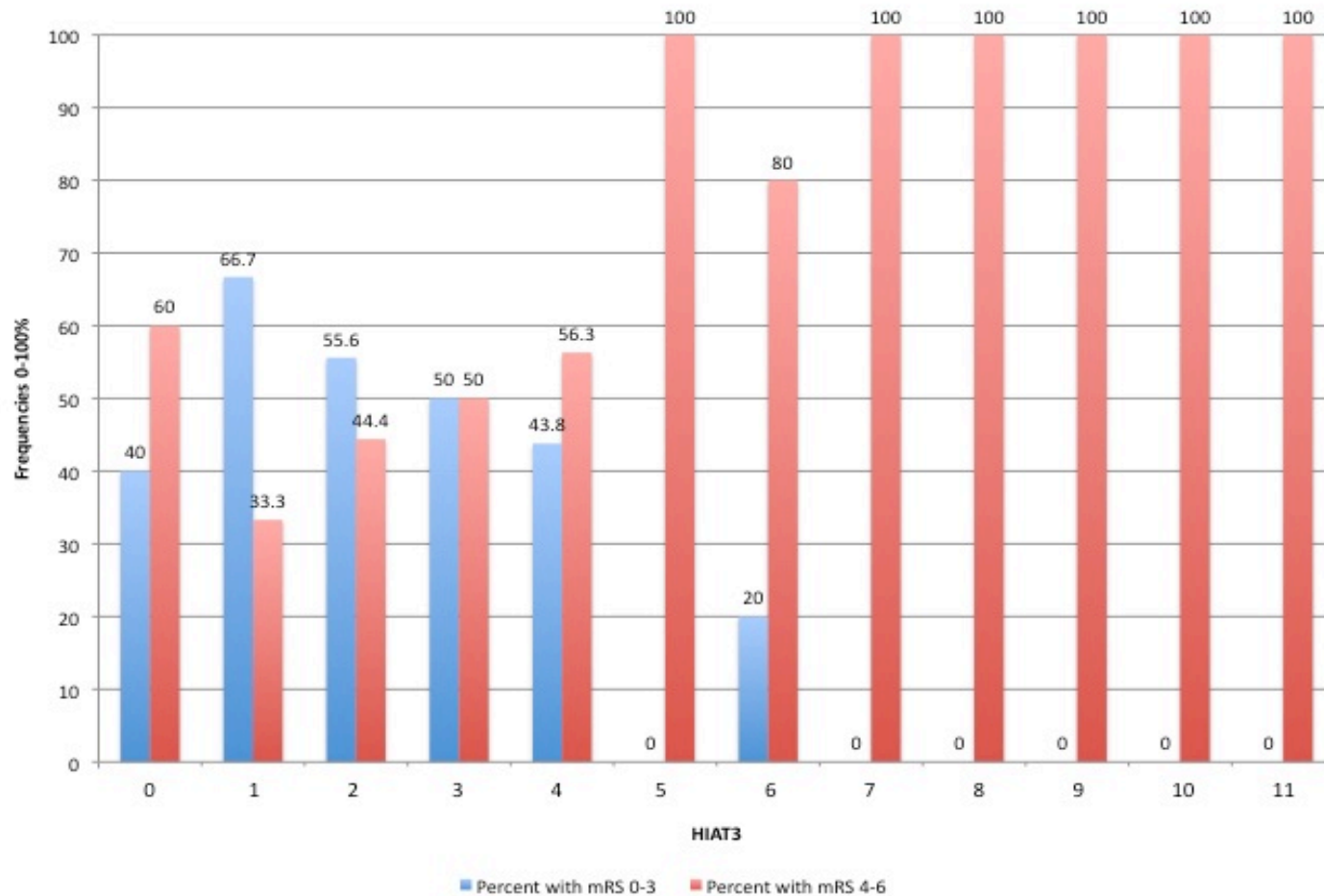
Future Steps

- 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