Assessment of the Rapid Arterial oCclusion Evaluation (RACE) Scale in Real-World Practice for Prediction of Large Vessel Occlusion and Reducing Time to Thrombectomy

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Disclosures

- No relevant disclosures

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About

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Background

- Pre-hospital identification of potential large vessel occlusion (LVO) stroke patients may lead to faster triage and treatment
- Several quantitative scales exist and have been introduced to the pre-hospital setting
- In 2013, Perez de la Ossa et. al (Barcelona) reported a high predictive value of RACE to predict LVO (Score ≥5)
  - Sensitivity 85%
  - Specificity 68%
  - PPV 42%
  - NPV 94%

4 ** Transcranial Doppler used to determine LVO

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Study Aim / Hypothesis

- To examine whether the Rapid Arterial oCclusion Evaluation (RACE) scale can:
  - Be reliably implemented in a real-world setting with multiple EMS agencies
  - Accurately detect LVO in an urban EMS system
  - Reduce time to endovascular treatment

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Methods

- A prospective study was performed at a high volume comprehensive stroke center

- Eight EMS agencies were educated on use of the RACE scale using an online training video

- All EMS stroke alerts were documented upon arrival to the ED

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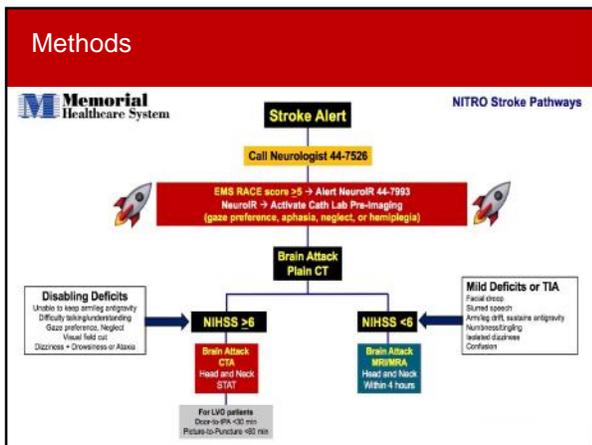**Memorial** Healthcare System

Methods

- For an EMS RACE score of 5 or higher:
  - The endovascular team was alerted prior to EMS arrival as part of a <u>parallel</u> workflow

- Following characteristics were tracked upon arrival to ER:
  - NIHSS score
  - RACE score
  - CT findings
  - Presence of LVO
  - Workflow time metrics

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Methods

Results

- During the study period (January 2016 to June 2017), RACE score was provided for 797 of 1498 EMS stroke alerts (53%)

- Of the 797 patients, LVO was found in 13% of patients with an available RACE score

- Higher pre-hospital RACE scores correlated with higher NIHSS scores

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Results

Correlation of RACE Score with NIHSS Score
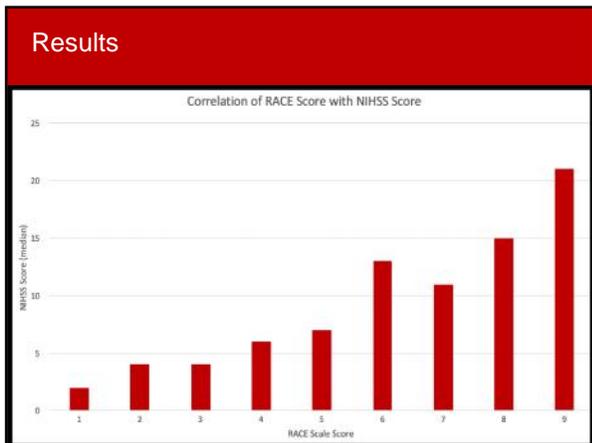
Results

- A RACE score of 5 or higher was able to identify 64% of all LVO patients
  - Sensitivity: 64% and Specificity: 72%
  - PPV: 30% and NPV: 93%
  - Accuracy: 71% (Youden's index)
- Of the 260 patients with a RACE score 5 or higher, 68 patients (26%) were found to have LVO while 29 patients (11%) had ICH
- Among 499 patients with a RACE score less than 5, LVO was present in 38 patients (8%)

Results

Correlation Between EMS RACE Score & LVO/ICH
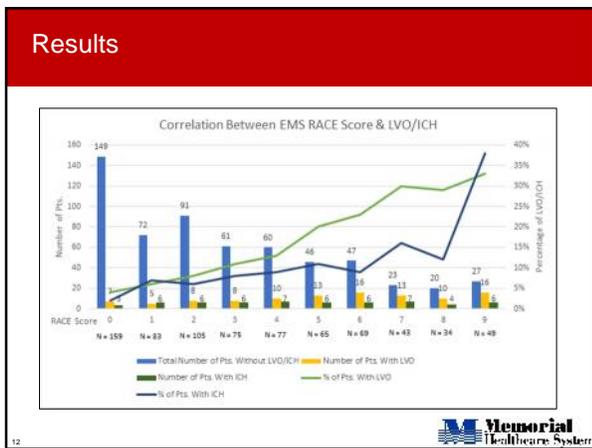
Results

- EMS stroke alert with high RACE score triggered early alert of the endovascular team (parallel workflow)
  - Median door to groin puncture time was **68 minutes**

- EMS stroke alert without RACE score pre-activation (sequential workflow)
  - Median door to groin puncture time was **91 minutes**

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Discussion

- RACE scale can be successfully implemented across EMS agencies and results in faster door to groin puncture times

- While a RACE score of 5 or higher is associated with greater likelihood of LVO, there are a significant number of false positives (based on screening imaging)

- Further refinement of pre-hospital stroke severity scales is warranted to improve the accuracy of this approach

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Limitations

- The RACE scale was not utilized in 43% of patients transported by EMS (Original study was 60% non-use)

- The RACE scale was designed based on data from patients with anterior circulation acute ischemic stroke, but this prospective study also included patients with posterior circulation ischemic stroke and brain hemorrhage

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Thank You

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