**Poster Number: 39**

# MetroHealth Medical Center

## RESEARCH DAY 2023

### Abstract Submission Form

**Poster Title:** **The Predictive Validity of the Rotterdam CT Score on Withdrawal of Life-Sustaining Therapies in Patients with Traumatic Brain Injury**

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**Category:** **Clinical Research**

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The Rotterdam Computed Tomography (RCT) score is a prognostic metric used to predict mortality in patients with traumatic brain injury (TBI) using injury characteristics observed on initial CT, such as the quality of basal cisterns, severity of midline shift, presence of epidural mass lesions, and presence of intraventricular blood or traumatic subarachnoid hemorrhage. Withdrawal of life-sustaining therapies (WLST) following trauma may be related to certain patient factors such as age and injury severity, but its relationship to RCT remains unknown.

The present study aims to determine whether the RCT score can be used as a reliable predictor of WLST in patients with TBI. All patients ≥ 18 years old with TBI were identified from the MetroHealth TBI Database, a registry of patients admitted to MetroHealth Medical Center with TBI between 2018-2021. We collected factors related to RCT score, baseline demographic data, clinical presentation, neurosurgical intervention, and do not attempt resuscitation (DNAR) orders. The primary outcome measure was WLST. Binary logistic regression was subsequently performed to determine factors independently associated with WLST. A total of 1110 patients were identified. The median age was 61 years old and 69.3% (770/1110) were male. In this cohort, 11.3% (n = 125) of patients underwent WLST. A bivariate logistic regression model revealed that RCT score (continuous) (odds-ratio (OR) 1.6 [95% confidence-interval (95%-CI) 1.2-2.2]), Glasgow Coma Scale (continuous; GCS) (OR 0.84 [95%-CI 0.78-0.91]), Injury Severity Scale score (continuous; ISS) (OR 1.04 [95%-CI 1.01-1.07]), ventricular drain (OR 4.7 [95%-CI 1.1-19.6]), and DNAR (OR 47.8 [23.8-95.6]) were all independently associated with WLST. This model demonstrated excellent discrimination ability with a concordance statistic of 0.970.

Given the complex nature of WLST with respect to the ethical, cultural, and religious considerations of patients and their families, utilizing an additional, objective tool in the discussion surrounding whether to perform WLST may be useful and may merit implementation by clinicians.