9:00 - 10:30am Saturday, 4th February, 2023
Pacific Ballroom E

Moderated by: Anita Hamilton

## 1 Neuropsychological Outcome After Cardiac Arrest: Results from a Sub-study of the Targeted Hypothermia Versus Targeted Normothermia After Out-of-hospital Cardiac Arrest (TTM2) Trial

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**Objective:** To describe cognitive impairment in out-of-hospital cardiac arrest (OHCA) survivors, with the hypothesis that OHCA survivors would perform significantly worse on neuropsychological tests of cognition than controls with acute myocardial infarction (MI). Another aim was to investigate the relationship between cognitive performance and the associated factors of emotional problems, fatigue, insomnia, and cardiovascular risk factors following OHCA.
**Participants and Methods:** This was a prospective case control sub-study of The Targeted Hypothermia versus Targeted Normothermia after Out-of-Hospital Cardiac Arrest (TTM2) trial. Eight of 61 TTM2-sites in Sweden, Denmark, and the United Kingdom included adults with OHCA of presumed cardiac or unknown cause. A matched non-arrest control group with acute MI was recruited. We administered an extensive neuropsychological assessment at approximately 7 months post-cardiac event, including a neuropsychological test battery and questionnaires on anxiety, depression, fatigue, and insomnia, and collected information on the cardiovascular risk factors hypertension and diabetes. *Z*-scores of individual tests were converted to neuropsychological composite scores per cognitive domain (verbal, visual/constructive, working memory, episodic memory, processing speed, executive functions). Between-group differences on the neuropsychological composite scores were investigated with linear regression. Associations between anxiety, depression, fatigue, insomnia, hypertension, diabetes, and the neuropsychological composite scores among OHCA survivors were calculated with Spearman's rho.
**Results:** Of 184 eligible OHCA survivors, 108 were included (mean age = 62, 88% male), with 92 MI controls enrolled (mean age = 64, 89% male). Amongst OHCA survivors, 29% performed $z \leq -1$ indicating at least borderline–mild impairment in ≥2 cognitive domains, and

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14% performed $z \leq -2$ exhibiting major impairment in ≥1 cognitive domain. OHCA survivors performed significantly worse than MI controls in episodic memory (mean difference, *MD* = -0.37, 95% confidence intervals [-0.61, -0.12]), verbal (*MD* = -0.34 [-0.62, -0.07]), and visual/constructive functions (*MD* = -0.26 [-0.47, -0.04]) on linear regressions adjusted for educational attainment and sex. When additionally adjusting for anxiety, depression, fatigue, insomnia, hypertension, and diabetes, processing speed (*MD* = -0.41 [-0.74, -0.09]) and executive functions (*MD* = -0.69 [-1.13, -0.24]) were also worse following OHCA. Depressive symptoms were associated with worse executive functions ($r_s$ = -0.37, $p$ <0.001) and worse processing speed ($r_s$ = -0.27, $p$ = 0.01) post-OHCA. Anxiety symptoms ($r_s$ = -0.21, $p$ = 0.01) and general fatigue ($r_s$ = -0.24, $p$ = 0.01) were associated with worse executive functions. Diabetes was associated with worse processing speed ($r_s$ = -0.20, $p$ = 0.03), visual/constructive ($r_s$ = -0.29, $p$ <0.001) and executive functions ($r_s$ = -0.25, $p$ = 0.02), while hypertension and insomnia were not significantly associated with neuropsychological test performance.
**Conclusions:** Cognitive impairment is generally mild following OHCA, but most pronounced in episodic memory, executive functions, and processing speed. OHCA survivors performed worse than MI controls. We suggest that a post-OHCA follow-up service should screen for cognitive impairment, emotional problems, and fatigue.

**Categories:** Anoxia/Hypoxia
**Keyword 1:** hypoxia
**Keyword 2:** cardiovascular disease
**Keyword 3:** neuropsychological assessment
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## 2 The Role of Flexibility in Learning in Autistic Teens

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**Objective:** Autistic youth have impaired executive functioning (EF) and these challenges increase throughout adolescence. Deficits in EF have been associated with poor adult outcomes, decreased availability for learning, and linked to academic outcomes. Specifically, flexible problem solving is greatly reduced in autistic youth. We aim to investigate how flexibility contributes to learning in autistic youth and their typically developing peers.
**Participants and Methods:** Participants included 44 teens with (n=22) and without (n=22) ASD. All teens were 14-18 years old (ASD M = 15.77, SD = 1.05; TD M = 15.73, SD = .96) with FSIQ ³ 70 (ASD M = 105.92, SD= 16.17; TD M = 107.93, SD = 10.14). Teens with ASD met DSM-5 criteria for autism supported by the SCQ and/or ADOS-2. All participants completed the California Verbal Learning Task (Child or Third Edition) over zoom. Parents reported on their child's flexibility skills on the Flexibility Questionnaire (FQ) which encompasses 5 subscales: routines/rituals, transitions, special interests, social flexibility, and generativity. Independent samples t-tests examined group differences in performance on the CVLT, measured by the long delay recall and learning slope. Bivariate correlations examined the relationship between learning and flexibility in the autistic group. Linear regression was used to determine how flexibility contributes to learning above and beyond age, gender, and diagnosis.
**Results:** Autistic youth had significantly lower scores on the CVLT long-delay recall (t = 2.311, p = .026) and the learning slope (t = 1.186, p = .038) than their typically developing peers. Special interests on the FQ were related to both performance on the first trial of the CVLT (r = -.482 p = .023) and the short delay cued recall (r = -.469 p = .028) in the autistic group. Fewer transition related problems were predictive of higher scores on the CVLT above and beyond age, gender, and diagnosis (R2 = .366, B = -.088, p = .030).
**Conclusions:** Learning was significantly lower in autistic teens compared to their typically developing peers. Additionally, autistic youth had a less steep learning slope than their typically developing peers. Autistic youth may focus on the first group of words only and don't flexibly update their list to add new words as the

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