

ASSESSING STRESS RESPONDING AND RECOVERY DURING HIGH FIDELITY TRAINING IN PRE-HOSPITAL EMERGENCY MEDICINE

Mark A Wetherell & Jeff Doran

Northumbria University Newcastle & South Tees Hospitals NHS Foundation Trust

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Background: Individuals who provide critical emergency care mount rapid psychobiological responses when faced with an incident. These responses are adaptive and ensure resources at time of demand; however, frequent activation with minimal opportunity for recovery can have negative consequences for health and wellbeing. Monitoring individuals engaging in real emergency situations would provide an understanding of their stress responses during critical care; however, this presents significant logistical challenges and could compromise patient care. A viable alternative is to assess individuals during high-fidelity training scenarios. This study is the first to assess the impact of pre-hospital emergency medicine training on multiple psychobiological stress indices. Moreover, the study represents the largest, most comprehensive assessment of psychobiological stress indices during an extended period of high-fidelity simulation.

Aims: To understand the impact of high-fidelity emergency medicine training on psychobiological indices related to health and wellbeing

Method: In a sample of doctors and paramedics (N=27), psychological (state, cognitive and somatic anxiety; stress and worry, perceived demands and control) and biological (diurnal cortisol; continuous heart rate and a heart rate variability [HRV] derived stress index) measures were recorded throughout 10 days of training and a weekend of no activities. Training involved the acquisition of human factors, non-technical and surgical skills, and the application of these skills in complex high-fidelity scenarios including road-traffic accidents, firearms incidents, and swift water rescues.

Results: All measures of psychobiological responding during training were distinct from the weekend and characterised by statistically significant increases in anxiety, stress and worry, elevated heart rate, HRV-derived stress, and diurnal cortisol secretion. The highest levels of psychobiological responding occurred on days characterised by greater perceived demand and lower perceived control of the day's events.

Conclusions: Patterns of higher psychobiological responding and lower control were most evident on the days comprising the application of skills in complex multiple scenarios. Given the high-fidelity of these scenarios, this study gives unique insight into stress responding and recovery in pre-hospital emergency medicine and could be used to identify patterns of responding that impact upon health and wellbeing.

Keywords: Stress, Emergency medicine, Cortisol, Heart rate, High-fidelity training

Publications:

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E-mail contact: mark.wetherell@northumbria.ac.uk