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Yale Center for Medical Simulation
2019 Education Project Grant - \$20,000
“Creating a Stress Inoculation Course Using Biofeedback and Physiologic Response”

The goal of this education research project is to conduct a randomized controlled trial to determine if a simulation-based stress inoculation training (SIT) protocol could be used during resident education to modulate the acute stress response, as measured by heart rate variability (HRV), in order to help decrease the incidence of developing the clinical syndrome of burnout as well as PTSD in physician trainees.

The aims of the project include:

Specific Aim 1: To establish whether variable levels of stress induced in resident physicians during simulation scenarios can be distinguished by Heart Rate Variability (HRV). Utilizing Hexoskin biometric vests to assess HRV and compared against the accepted standard of self-reported measures of anxiety using the State-Trait Anxiety Inventory (STAI), we will differentiate between low and high stress levels in residents participating in multiple, standardized simulation scenarios with pre-determined stress levels.

Hypothesis: Simulation scenarios can induce varying levels of stress response as measured by Heart Rate Variability and the State-Trait Anxiety Inventory.

Specific Aim 2: To determine whether simulation-based stress inoculation training (EM-SIT) can modulate stress response in a simulation setting with resident physicians as measured by HRV and subjective report using the STAI. This will allow us to determine whether stress inoculation training could have an impact on physician burnout and/or PTSD.

Hypothesis: Simulation-based stress inoculation training increases HRV and decreases state anxiety during subsequent stressful simulations as compared to pre-training.

Exploratory Aim: To determine if stress inoculation training has an effect on physician trainee burnout as measured by the Maslach Burnout Inventory administered prior to stress inoculation training and 3 months following.

Hypothesis: EM-SIT training will be associated with decreased indices of burnout in physician trainees 3 months following training.

Emergency Physicians and physicians in training suffer disproportionately from burnout and PTSD as compared to many other specialties. There have been several recent projects focusing on overall wellness and mindfulness aimed at combating the development of burnout. This project aims to develop and teach tools to reduce the body’s acute stress response during and immediately following a stressful situation in order to help prevent the development of burnout and PTSD in Emergency Physicians.