

O'Hara—A Novel Online Curriculum Addressing Acute Stress Management for Healthcare Trainees

Introduction

Physician trainees report significant amounts of stress, especially during critical events in healthcare such as cardiorespiratory arrest and other emergencies. These acute situations can generate a considerable stress response that can positively and negatively affect the performance of individuals and healthcare teams. Previous authors have stated that institutions should supplement with training on stress and coping strategies necessary to ensure optimal performance of providers under stressful conditions. Our team plans to develop a novel, innovative curriculum of short modules addressing key topics related to acute stress, performance, and coping strategies for healthcare providers based on existing research in the psychological domain and other high-risk industries.

Specific Educational Aims

The goals of this project are three-fold. First, to engage the Education Technology (EdTech) department in the development of an engaging online course that empowers trainees to take control of their stress response to improve performance during critical events. Second, to pilot our curriculum among a group of anesthesiology trainees to assess its impacts. Third, to foster collaboration among medical educators across the institution through dissemination of our results and curriculum for implementation. Our project addresses three of the funding priorities for the Teaching and Mentoring Academy: *Collaboration* among medical educators, a *rigorous approach to scholarship and innovation* and the potential for large scale *impact and sustainability* of the project beyond the grant funding period.

Project Rationale

Contemporary theories of stress state that if the demands of a situation outweigh the available resources, an individual will label the situation as a threat and a stress response will ensue. Certain aspects of this response can have positive effects on performance, but acutely stressful conditions can also be detrimental to task performance. Once in a threatening situation, individuals apply both conscious and unconscious modalities to compensate for the inability to meet the demands of the situation. The degree to which an individual can compensate determines the nature and magnitude of their stress response and its impact on their performance. This has implications for both medical education and patient safety, given the effects of acute stress on an individual's cognitive abilities, memory and decision making. One stress researcher has suggested that supplemental "interventions aimed at developing the trainees' ability to cope with and withstand important stressors" are needed since existing training models will be "insufficient to prepare trainees to perform optimally under high-stress situations."

Currently there are limited curricula specifically addressing these compensatory skills in medical education. We believe that a course covering acute stress and coping strategies delivered in a convenient online format will have a positive impact on trainees perceived ability to perform during critical events. The two main interventions proposed within our course are: 1) a comprehensive preparatory information strategy designed to enhance the sense of control over a stressful event; and 2) Performance Enhancing Psychological Skills (PEPS) training which encompasses techniques to regulate arousal and improve performance. We selected our planned educational interventions because they can be readily developed into an interactive course that is accessible online for self-directed learning and practice.

Approach

Our team will begin with development of specific and measurable goals and objectives for the curriculum, as well as the overall structure of the course. We will then consult with the Instruction Design & Production team at EdTech to assist with refinement of the proposed curriculum and to help with production of the curriculum. EdTech provides the necessary resources to the School of Medicine community including audio/video capture and editing booths and course production assistance including graphic arts, illustration, animation and interactive learning design and production. Our project relies on

funding to support course production and software acquisition designed to minimize overhead and maximize use of targeted services for specific needs of curricular development, implementation and data collection. This will allow us to maintain a small research team with the majority of grant funds dedicated to curriculum development, production and implementation.

Once course development is complete, we will recruit anesthesiology trainees (PGY-2 & above) to participate in a pilot study to evaluate our curriculum. There are approximately 80 anesthesia trainees in the eligible population and we hope to recruit at least 30 for our study. Participation in the course and submission of assessments and surveys will be incentivized with electronic gift cards dispersed for completing activities throughout the study period.

Timeline and Implementation

June-July 2018: Develop and refine curricular goals, objectives and proposed modules, EdTech consult

Aug-Sep 2018 *Prepare*: complete learning objectives, define creative approach, refine concept

Oct 2018 *Design*: Determine content, graphic designs, interactions, generate prototype

Nov-Dec 2018 *Develop*: Build course, refine, produce final product

Jan 2019: Recruitment of subjects

Feb-Jun 2019: Pilot curriculum; collect assessment and survey data

July 2019: Begin data analysis, statistician assistance, Collaboration meeting

Aug-Oct 2019: Complete data analysis, produce poster/presentation/manuscript for dissemination

Anticipated Work Product

At the end of the grant period, we hope to produce a high-quality online curriculum addressing key topics related to acute stress and stress management strategies composed of modules totaling approximately 120 minutes. The course will build over 2-4 weeks with audio/video lessons composed of interviews, animations, specific skills trainings and imbedded high-quality materials already freely available online. In addition, our rigorous scholarly approach will provide rich quantitative and supporting qualitative data to evaluate the impacts and effect size of our curricular intervention. The curriculum and supporting assessments and surveys will then be packaged together with recommendations for further course refinements and implementation for use by medical educators and submitted to AAMC MedEd Portal. These recommendations will be enhanced by a collaborative meeting of key medical education stakeholders from within the Stanford Medicine community (Center for Immersive and Simulation-based Learning, WellMD Center staff, Goodman Surgical Education Center, Center on Stress and Health, etc.).

Evaluation Plan

Participants will complete pre- & post-intervention assessments and surveys measuring (1) Self-efficacy, (2) Knowledge and (3) Satisfaction related to topics in individual modules. They will also complete a follow up assessment and survey 3-6 months after completion of the intervention. Surveys will contain open-ended questions to allow for qualitative feedback regarding the curriculum. Our learning management software will also monitor and analyze metrics related to engagement of the course by the participants.

Dissemination of Results

After piloting the curriculum, we plan to invite relevant stakeholders in medical education from across the institution together to introduce our curricular tool and present any preliminary data at a collaboration meeting. We hope that this will foster collaborative relationships between disciplines for further implementation and study of the curriculum. Once our data is fully analyzed, we plan to disseminate our work both throughout the Stanford Medicine community and broadly. We plan to submit our abstract for presentation at the Stanford Innovations in Medical Education Conference, Western Anesthesia Residents Conference, and the California Society of Anesthesiologists meeting. We also will prepare a manuscript for submission to relevant medical education journals for further dissemination.

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