Simulator-based Elective Course for Medical Students: An Innovative, Simulator-Based Anesthesia Curriculum Designed for Medical Students by Medical Students

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Learner Audience: Third and fourth year medical students

Background *(previous data to support hypothesis)*:   Simulator-based learning centers have proven effective for teaching and evaluating staff and students of health care, including medical students and anesthesiology residents.[1] Despite national increase in these learning centers, data demonstrate underutilization.[1,2] A decrease in patient-based training opportunities for all health care providers highlights the need to further develop simulator-based learning experiences.[3]

Needs Assessment *(justification for change):* Anesthetic principles of cardiopulmonary management are rarely unified into clinical medical school learning objectives. Medical students are largely exposed to anesthesiology as passive observers, due to patient safety concerns, residents' and attendings' varied ability to teach, and time constraints. This passive approach can discourage career interest in the field, as well as delay assimilation of learning objectives critical for clinicians of every specialty.

Hypothesis *(justification for intervention and projected outcome)*:   This course provides the medical student with opportunity to integrate basic science and clinical knowledge, develop team communication, and improve decision-making and procedural skills in a safe environment. These active experiences may facilitate interest in the field of anesthesiology, as well as provide an opportunity for prospective data on the effectiveness of simulator-based learning centers for teaching medical students.

Curriculum Design *(methods, learner evaluation, if applicable link to ACGME competency)*: This five day elective course, limited to two to four students, utilizes the Meti HPS simulation suite. Each of the first four days is dedicated to a group of learning objectives: essential pharmacology, cardiopulmonary physiology and pathophysiology, and skills such as intubation and set-up of an anesthesia machine. The final day integrates all of the course objectives with a series of complex scenarios. Student evaluation is based on participation; grading is pass/fail.

Outcome *(curriculum assessment, future improvements, feasibility, reproducibility)*: Feasibility and effectiveness in achieving learning objectives will be assessed by pre- and post-course surveys completed by students. Data collection will conform to APS/NIH Guidelines and results published with the approval of the IRB.

Sources

[1] Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity simulations that lead to effective learning: a BEME systematic review. *Med Teach*. 2005;27(1):10-28.

[2] Morgan PJ, Cleave-Hogg D. A worldwide survey of the use of simulation in anesthesia. *Can J Anaesth*. 2002;49(7):659-62.

[3] Sanson-Fisher RW, Rolfe IE, Williams N. Competency based teaching: the need for a new approach to teaching clinical skills in the undergraduate medical education course. *Med Teach*. 2005;27:29-36.