

## A serious game for advanced cardiovascular life support education and training.

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## Abstract

### Background:

Similar to airline pilots, medical anesthesiologists must exert specific cognitive, (non-technical) skills to successfully manage the available resources during both normal and crisis situations. Summarized as the articulation of principles of individual and crew behaviour in ordinary and crisis situations that focuses on skills of dynamic decisionmaking, interpersonal behaviour, and team management (Helmreich et al., 1993), the Crew Resource Management (CRM) paradigm has been adapted to anesthesia training and known as the Anesthesia Crisis Resource Management (ACRM) paradigm. A subset of these skills dealing with crisis situations includes the Advanced Cardiovascular Life Support (ACLS) intervention, that includes a set of clinical interventions for the urgent treatment of cardiac arrest, stroke and other life-threatening medical emergencies, in addition to the knowledge and skills to deploy those interventions. These skills are typically taught through a teacher-centered approach that requires a staff anesthesiologist in the learning environment.

### Hypothesis:

We have recently developed a serious game whose purpose is to provide the opportunity for medical students and residents to practice and develop ACLS skills within a virtual operating room environment. The player (user) takes on the role of a health professional (anesthesiologist) within an ongoing virtual surgery scenario in which the patient encounters a cardiac arrest. We hypothesize that the serious game will provide students/trainees with a concrete learning experience that is difficult to simulate through traditional role-play focused learning in the real-world in a safe and cost-effective manner.

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