THE USE OF MICROSIMULATION IN MODERN HEALTH CARE EDUCATION

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Background

Simulators and simulation has for almost two decades been used only sporadically in health care education. Most initiatives have been related to training of anaesthesia. This training has focused on diverse subjects incl. team training (crisis resource management incl. team leadership and communication), difficult airway management, handling of rare critical emergencies etc. Lately, simulation has been widely adopted by nursing education, emergency medicine and military medics. Several of these programs are now using a diverse range of simulators and task trainers incl. microsimulators, which are PC, based patient simulators. Microsimulators allow the user to diagnose and treat simulated patients or casualties on the PC. Some microsimulators have had debriefing technologies included since the late 1990's. This technology has now been used as the basis for a new self-directed learning concept focused on self-evaluation and development of metacognitive abilities as a learner. The opportunity here is to help learners that are unconsciously performing below standards to acknowledge areas for improvement in order to secure a minimum competence level: After each scenario the learner is asked to assess whether or not the treatment and handling of the case was acceptable. If the learner knows that the performance should be improved to be acceptable, she can go back and play another variant of the scenario (same problem, but developing slightly different). If the learner judges that the performance is fine, the debriefing technology then evaluates the performance and if the learner and computer agree, the learner has 'passed' the case. In both cases, the learner will receive the debriefing immediately after the assessment is made. In the case, where the learner is unconsciously incompetent according to the debriefing, she will have to pass this scenario an additional time (e.g. initially twice).

Statement of objectives

The half-day workshop will give the participants an introduction to as well as hands-on experience on the newest generation of medical microsimulators available. The workshop will include discussions about why and how microsimulation works based on the best available evidence and research from both medical and non-medical domains as well as a discussion about the limitations of microsimulators in order to give the participants the best possible background for deciding on the use of microsimulators. This will particularly focus on how it can be used as a useful adjunct to both clinical teaching as well as pre-clinical teaching. The Circle of Learning will be used as a tool to explain the relationship between different kinds of learning tools in general and simulators in particular.

Statement of benefits that will come from participation

By the end of the workshop, the participant will:

1. Know the difference between micro- and macrosimulators as well as between patient simulators and part-task simulators.
2. Know the most important aspects of the theory and science upon which simulation is based.
3. Understand the process of integrating microsimulation into a curriculum.
4. Understand the three major different ways to use microsimulation and combinations thereof: accreditation, continuing education and as an adjunct to existing courses or curricula.

Intended audience
Educators, facilitators, curriculum designers, course administrators, hospital administrators, e-learning developers, patient safety officers/researchers, educational researchers.

Prerequisite skills required:
None.

Number of attendees that can be accommodated
Limited to 2 attendees per PC present in the room at hand.

Leader: Dr. Ulrik Juul Christensen has been involved in the use and development of medical simulators for 10 years and has experience with both full-scale simulators and microsimulators (PC simulators). Primary interests are instructional design, human computer interface and educational science. Dr. Christensen is now the global director of learning products at Laerdal Medical AS being responsible for the development of a range of learning products incl. MicroSim, HeartCode and Learn First Aid Fast (for lay people).

When the program committee probed for more information about Dr. Christensen he provided this and we thought it so interesting that we include it below:

Previous experience: I started out in 1993 as a part of the Sophus project at Herlev University Hospital, University of Copenhagen (the nowadays Danish Institute for Medical Simulation). This was a research project on human errors and team performance and apart from running full-day courses for more than 1500 people (both training and research subjects); I ended up responsible for the group that made our prototype simulators. This project called SIMA received EU funding, but never got commercialized. In 1998, we started making small part-task microsimulators to supplement the full-scale simulators and eventually we formed a small group of experts from the Sophus project called Sophus Medical with the intent to patent microsimulators. During this phase we collaborated with the European Resuscitation Council, the Australian Resuscitation Council, Resuscitation Council of Southern Africa, Danish Red Cross, German Red Cross, British Red Cross, Orange Cross (The Netherlands), and the International Federation of Red Cross and Red Crescent in Geneva making both resuscitation microsimulators and first aid microsimulators. In 2002 we entered into an alliance with Laerdal to disseminate the simulators and in 2003 we decide to let Laerdal acquire Sophus Medical realizing that microsimulation needed a stronger commercial platform to get to real use and have been employed by Laerdal since then to secure the knowledge transfer and interface with the group in Copenhagen. I have personally been focusing the past 10+ years on user-centered design with particular emphasis on the user interfaces and the instructional design. I am currently finishing my Master of Medical Education at Univ. of Dundee in addition to being responsible for the 55-60 people working in the development team for learning products.