



Michigan Society
for Medical Research

BioFocus

A Newsletter Exploring Science & Biomedical Research Issues For School Educators

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Our Mission

The Michigan Society for Medical Research (MISMR) is a nonprofit educational organization that supports biomedical research and testing and the judicious use of animals in research, education and testing in the interests of human and animal welfare. Established in 1981, MISMR is made up of the state's leading research universities, teaching hospitals, pharmaceutical companies, voluntary health organizations and hundreds of scientists, educators and students who understand and support the importance of animal research and testing in advancing health care and treatment.

MISMR Educational Projects & Activities

Annual Essay Contest

Every year MISMR sponsors an essay contest open to all Michigan high school students. Students from well over 500 schools in the state have annually participated in the contest to address the benefits of biomedical research. Prizes are awarded.

Speakers Bureau

MISMR volunteers visit K-12 schools and civic community groups throughout Michigan each year to educate the public about biomedical research and to dispel commonly held myths.

The Animal Research Minute

A daily radio editorial broadcast to more than 3,500 stations nationwide, The Animal Research Minute discusses the humane and responsible use of animals in research that are leading to human and animal health improvements. **CLICK**>www.FBResearch.org



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Airway Simulation Training Necessary, Not Sufficient

By Basim A. Dubaybo, MD, FCCP



Intubation in a mannequin.

There is a strong argument for the use of simulators in medical education and training. Simulators have the potential to improve patient safety by allowing educators to artificially duplicate conditions likely to be encountered by inexperienced trainees during clinical practice. Furthermore, the simulator can vary the clinical conditions and expose trainees to graduated levels of difficulty in the performance of complex clinical procedures. Simulators can be as simple as computer software that presents clinical scenarios and as complex as high fidelity mannequins that resemble human anatomy and complex clinical situations. Some mannequins not only simulate normal anatomy but are programmed to present complex operative conditions including the development of life-threatening complications.



Computer software can simulate clinical scenarios.

Is simulation training sufficient in enhancing teaching of airway management?

Should simulators replace live training in modern academic human and veterinary medicine? Specifically, should simulators replace animal models and live subjects when professionals train in airway intubation? To answer these questions, one must examine the value of simulators in enhancing teaching, facilitating learning, and assuring proficiency. Let us address each of these aspects separately.

This question presupposes the presence of well-defined educational objectives that can be taught in a systematic and standardized fashion. Schaffer (2004) reviewed a large number of airway simulators, their capabilities, the manner in which they can be used, and to what extent they can fulfill the educational objectives of airway management curricula. He found significant variability in what educational objectives can be delivered by different simulators. Some simulators were more effective than others in delivering didactic material, while others were more successful in delivering technical detail.

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Airway Simulation Training... *Continued from page 1*

Schaffer concluded that “Manikins are useful for only rudimentary, basic training. They are static and do not provide accurate clinical feedback for teaching and practicing skills” (p. 29). The author proposed that “To take full advantage of simulators as educational tools, curricula should be designed around a set of educational objectives... (and)...should be coupled whenever feasible with a structured clinical experience in airway management” (p. 36).

Simulators, therefore, are extremely useful but not sufficient to ensure delivery of effective teaching of airway management.

Is simulation training sufficient to ensure adequate learning?



Standardized Patients (as shown above) play the role of real patients. They are trained to present the medical history, simulate the physical symptoms, and portray the emotions of an actual case.

Deutsch et al (2009) reported the outcome of a multi-modality training program in airway management in four major teaching institutions in Delaware and Pennsylvania. The educational program, designed to train residents in airway management, included lectures, an animal laboratory, high-fidelity mannequins, virtual bronchoscopy simulation, and standardized patients. All trainees involved in the training responded to a questionnaire, described their experiences, and scored the educational value of the various training modalities. Residents perceived the animal laboratory, mannequin, and didactics as equally important in learning cognitive knowledge and skills in airway management. The animal laboratory was perceived as the best resource for learning psychomotor knowledge and skills. The animal laboratory experience received the highest scores for manual feel realism and adequate overall realism. In every category of knowledge acquisition, the animal laboratory received high scores although other modalities such as lectures and simulators scored well in some but not all categories.

**Simulators, therefore, are extremely useful but not sufficient to ensure successful learning of adequate airway techniques.
Animal laboratories appear to provide a superior learning experience.**

Is simulation training sufficient to ensure proficiency in airway management?

The Department of Veterans Affairs (VA) examined this issue in the last few years and came out with a prohibition on the use of simulation training as a method to assure physician competence in airway management at VA hospitals. Reprivileging of physicians in the VA system in intubation now requires demonstration of competence in the performance of the procedure in live subjects. In explaining this mandate, Stalhandske, Bishop, and Bagian (2010) indicated that although the use of mannequins may be adequate to train professionals in airway management, “demonstrating skills in human subjects is critical, not only for high success rates for intubation, but also for developing and being able to appropriately implement an alternative plan for failed intubations” (p. 9). The authors added that simulation training “required 10 hours of mannequin training, at which point the success rate was still only 88 percent” (p. 9).

The use of simulators alone to assure proficiency is not supported by the literature and is prohibited in one of the nation's largest health care systems.



WE WANT TO HEAR FROM YOU!

We want to include your stories, comments or questions relating to animals in your classroom in upcoming editions of *BioFocus*. Please e-mail stories to: mismr@umich.edu

Fast Facts...

American Holidays & Biomedical Research:

Valentine's Day

- Estimated amount Americans spent on Valentine's Day in 2009: \$14.7 billion.
- That could fund the National Heart, Lung, and Blood Institute for more than 4 years!

Sources: National Retail Federation, 2009; NHLBI FY09

St. Patrick's Day

- Americans spend an estimated \$3.76 billion on St. Patrick's Day each year.
- That could fund the Agency for Healthcare Research & Quality for more than 11 years!

Sources: National Retail Federation, 2007; AHRQ FY08

Halloween

- Americans spend an estimated \$4.95 billion on candy, costumes and decorations each year for Halloween.
- That would fund the National Institute of Dental and Cranio-facial Research for more than 12 years!

Sources: National Retail Federation, 2006; NIDCR FY08

Christmas

- Americans spent \$8.5 billion decorating for Christmas in 2005.
- That sum could fund 8 years of diabetes research at the NIH!

Sources: Unity Marketing, 2006; NIH Disease Funding Table FY08



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Simulation technology is growing fast and provides important avenues for training and quality improvement. This article is not intended to discredit simulation technology. On the contrary, this article values the role of simulation as an adjunctive training modality, which would complement other modalities, including didactics, animal laboratories, virtual bronchoscopy, and standardized patients. The use of multiple modalities to train practitioners in airway management is essential to ensure operator proficiency and patient safety.

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