Simulation, ACGME, and The Hyperbaric Fellowship

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INTRODUCTION

The ACGME (Accreditation Council for Graduate Medical Education) Fellowship in Undersea and Hyperbaric Medicine is a 12 month program associated with ACGME accredited programs in emergency medicine, preventive medicine or anesthesiology.

The required curriculum is an intensive course of study that is evaluated for its ability to satisfy the core ACGME competencies of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice.

Instructional and assessment methods typically involve a variety of didactic formats, conferences, standardized patients, and role playing but have not utilized high fidelity simulation adapted for use in the hyperbaric chamber.

ACGME INSTRUCTIONAL METHODS*

- Clinical teaching
- Clinical experiences
- Performance feedback
- Departmental conferences, lectures
- Institutional conferences, lectures
- Computer modules
- Standardized patients
- Simulators
- Anatomic, animal models
- Role play
- Games
- Modeling

ACGME COMPETENCIES

The ACGME Outcomes project provides an introduction to competency based resident education, practical implementation of the competencies, developing an assessment system for the competencies, and developing a competency based curriculum.1 The core competencies are as follows:

- Patient Care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health
- Medical Knowledge about established and evolving biomedical, clinical and cognate sciences and the application of this knowledge to patient care
- Practice-based learning and improvement that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence and improvements in patient care
- Interpersonal and communication skills that result in effective information exchange and collaboration with patient, their families and other health professionals
- Professionalism, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population
- Systems-based practice, as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is or optimal value

ACGME ASSESSMENT METHODS*

- Clinical performance
- Focused observation and evaluation
- Structured case discussions
- Stimulated chart recall
- Standardized patient
- OSCE
- Simulators
- Project portfolio
- Narrative portfolio
- Anatomic, animal models
- Role-play
- Oral exam
- In-training exam
- In-house written exam
- Multiple-choice exam
- Practice billing/audit
- Case review
- Chart review
- Outcome review
- 360 assessment

METHODS

The Duke Hyperbaric Center is a large multipurpose facility consisting of seven hypobaric/hyperbaric chambers. A Laerdal high fidelity SimMan (Wapping Falls, NY) simulator was placed on a stretcher in a 3.20 M by 4.42 M multipurpose chamber. The control computer cables were routed through the single medical lock to the outside. An Apple PowerBook G4 laptop computer affixed with an iSlight camera (Cupertino, CA) and NASA software WinMock v.2.6.4 (Software, London, UK) was utilized to capture audio and video of the training scenarios both inside and outside the chamber. Tasks are described Hobbs et al, this meeting. Hyperbaric medicine interns, residents and staff were presented with a patient scenario then asked to evaluate and treat the ”patient”. Audio and visual recordings of both the inside personnel as well as the chamber operator were obtained throughout the exercise for post exercise debrief and feedback.

DISCUSSION

High fidelity simulation training has been used extensively as a training modality in order to improve safety in both the aerospace industry and for anesthesia but has not been described before for use in hyperbaric fellowship training. The tasks associated with patient care in a hyperbaric environment translate well to simulation training.2

Scenarios involve briefing, simulation and debriefing sessions and provide trainees a multidisciplinary experience that satisfies the majority of the ACGME requirements for teaching and implementation of the core competencies. High technology simulation exercises can be adapted to include hyperbaric technicians, nurses, and MDs as a method of education, task training and evaluation.

REFERENCES

2. Hobbs GW, Taekman JM, Stolp BW. Feasibility of Simulation Training for Hyperbaric Team Skills. This meeting.