Simulation Fellowship Programs in Graduate Medical Education

In 2005, the number of simulation fellowship programs in graduate medical education (GME) worldwide was in the single digits. Today, we know of 113 such programs, and additional fellowship programs are created annually.1 Simulation fellowships are typically offered to residency-trained physicians as a one- or two-year advanced training program. The purpose of this AM Last Page is to provide information about the existing simulation fellowship programs, focusing on location, core content, and program characteristics.

Number of fellowships

- United States (55)
- United Kingdom (28)
- Australia (18)
- Canada (11)
- Asia (1)

Top clinical specialties participating in simulation fellowship programs

- Emergency medicine
- Surgery
- Anesthesia

Top methods of funding for simulation fellowships

- Clinical service
- Government support
- Philanthropy
- Operations

Typical timeline for U.S. and Canadian fellows2,3

1. Most programs accept one fellow per year.
2. The majority of fellows can conduct effective debriefings and run high-fidelity simulators in six months or less.
3. The majority of simulation fellows spend 11 to 20 hours per week on clinical responsibilities and 21 to 30 hours per week on simulation fellowship responsibilities.

Fellowship responsibilities and core content

The core content of simulation fellowship programs varies; however, most programs provide foundational knowledge and skills focused on the use of simulation as it relates to educational theory, research, and clinical practice within the health professions. The core content for many programs can be categorized into six domains as described below.

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<th>Domain</th>
<th>Content</th>
<th>Example</th>
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| Simulation curriculum development | • Curricular approaches  
• Needs assessment  
• Course goals and objectives  
• Curriculum evaluation | • Kern’s curriculum conceptual framework, scenario development  
• Survey development  
• Training in SMART goals and objectives  
• Kirkpatrick Model |
| Simulation operations       | • Simulator and task trainer use  
• Setup of training environments  
• Simulation staff and faculty development  
• Budget, billing, and inventory management  
• Course scheduling | • High-fidelity simulators and task trainers  
• Surgical simulation (fire in operating room) and in situ simulation  
• Debriefing course, use of high-fidelity simulators  
• Annual budget management and tracking  
• Use of management software |
| Research                    | • Assessment methods  
• Validity and reliability  
• Performance tests  
• Psychometrics | • Standardized patient assessments and multiple-choice questions  
• Evaluation of the validity and reliability of high-quality publications  
• Objective structured clinical exams (OSCEs)  
• Cronbach alpha and interrater reliability |
| Debriefing                  | • Strategies for working with diverse audiences  
• Video-assisted learning  
• Small- and large-group facilitation  
• Strategies for training challenging participants | • GAS model, advocacy and inquiry, Plus-Delta, 4E  
• Learning best strategies and audiences  
• Debriefing an interprofessional group of students  
• Emotionally charged participants |
| Educational theory          | • Experiential learning theory (Kolb)  
• Deliberate practice  
• Mastery learning  
• Crisis resource management  
• Adult learning theory (Knowles) | • In situ simulation for the identification of latent safety threats  
• Life support training with faculty setting up the elements of deliberate practice  
• Central line training course with groups of interns and faculty members  
• Malignant hyperthermia case  
• Setting up a flipped classroom |
| Administration              | • Leadership models  
• Creative and strategic management  
• Grant writing  
• Business plan development | • Strengths-based leadership and warrior leadership  
• Obtaining expired supplies to keep budget balanced  
• Young investigator NIH grant training  
• Basic pre forma training exercises with institute MBA program |

References and online resources:
1. For a list of simulation fellowships, please see Supplemental Digital Appendix 1 (http://links.lww.com/ACADMED/A455).

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