

# Simulation and Faculty Development



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## KEYWORDS

• Faculty • Teaching • Learning • Leading • Innovation

## KEY POINTS

- Practicing surgeons will be increasingly exposed to simulation as learners in their own professional development; they have unique features as learners that have rarely been investigated.
- A faculty development program designed to prepare surgeons to teach using simulation should emphasize the unique role that debriefing plays in this instructional method.
- A team is required for a surgical simulation program to reach its full potential; the surgical faculty member who leads this team must have a full range of leadership competencies.
- Technological innovation allows for the development of a patient-specific simulation; this creates possibility of a role for simulation in the development of new surgical procedures.
- Practicing new procedures with simulation allows the possibility of mitigating the performance curve associated with the adoption of a new surgical procedure so that innovation can occur while patient care, quality, and safety are maintained.

## INTRODUCTION

A traditional interpretation of faculty development might suggest that this topic only interests full-time academic surgeons. However, faculty development has been recently defined as "...all activities health professionals pursue to improve their knowledge,

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skills, and behaviors as teachers and educators, leaders and managers, and researchers and scholars..."<sup>1</sup> Therefore, faculty development is a topic relevant to all surgeons, if only for their own professional development. There has been a tremendous surge of interest in simulation in surgical and medical education with an emphasis on new possibilities created by technological innovations; the focus has often been on the simulator. A more inclusive definition of simulation is that it is the "...the technique of imitating the behavior of some situation or process by means of a suitably analogous situation or apparatus, especially for the purpose of study or personnel training."<sup>2</sup> Therefore, simulation is an instructional method that encompasses much more than the technology of the simulator. One simple yet elegant example of using simulation for faculty development involves training actors to behave as medical students so that faculty can learn microteaching, a type of clinical instruction.<sup>3</sup>

The richness of the possible interaction between surgical faculty and simulation can be illustrated by examining the dynamics of a fictional scenario. An experienced surgeon serves as the Chief of Surgery at her hospital and has a vision of improving patient outcomes by enhancing teamwork in the operating room. She takes an interprofessional team to a course that is designed to equip participants to develop their own programs designed to improve teamwork. The course involves the use of simulation and the curriculum includes information about how to most effectively use simulation in the local educational program. This faculty member is simultaneously functioning as a leader and a learner and aspires to be a teacher and local educational innovator. The utility of simulation for each of these roles will be examined but this case serves as a reminder that these individual roles exist in some combination in faculty members who are interacting with simulation for the purpose of developing themselves or others.

## FACULTY AS LEARNERS

Given the continuous innovation that has occurred in surgery, a surgical faculty member must constantly seek new knowledge and skills to maintain competency.<sup>4</sup> Most personal professional development occurs during formal courses. Simulation has become a common feature of these types of courses. The surgical faculty learner can expect to encounter some variant of this instructional method in this setting.<sup>5</sup> It is difficult to imagine that a surgeon learner would be satisfied with a technical skills professional development course that did not involve a practical or simulated element. This expectation is supported by a substantial quantity of literature showing that simulation is effective for the purpose of teaching procedure skills and that there is transfer of skills to the analogous operative setting.<sup>6-10</sup> Regulators have recognized the value of simulation in teaching technical skills and have recently required training, with the demonstration of proficiency, in a simulated environment before the practitioner is credentialed to perform the actual procedure.<sup>11</sup> Simulation training is also being explored for robotic surgery with the goal of increasing proficiency and reducing the occurrence of adverse events.<sup>12</sup>

A type of learning uniquely relevant to a surgical faculty member is performing a procedure in a simulated environment immediately before the performance of the actual procedure. This is akin to a musician rehearsing a piece immediately before a performance.<sup>13,14</sup> The technique of simulating an event immediately before the actual performance has been used for entire teams with the results that unanticipated problems were identified and individual team member responsibilities were clarified.<sup>15</sup>

In addition to technical skills training, faculty members will increasingly be learners in simulated environments while seeking new team leadership or nontechnical skills.

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