

Simulation in nursing education

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Part of becoming a working professional always involves applying knowledge and trying out skills in carefully controlled and monitored settings to get feedback on our first attempts at practice. For many years, nurses have practiced taking BP readings on each other, learned to provide certain kinds of physical care on mannequins, and rehearsed giving injections with oranges. With advances in technology, learning labs in nursing schools now include standardized patients (actors), various kinds of life-like models, and full-scale simulators (mannequins that manifest symptoms and respond to treatment decisions and other actions). The use of simulation in nursing education has grown to the point where it's now a common element in the preparation for practice. We review what should you know about simulation and how it's shaping the education of nursing students and graduate nurses coming to your units and settings.

Safe realism

In its most general sense, simulation is the replication of real-world scenarios, allowing trainees to perform skills and learn actively. One common way of talking about simulation relates to fidelity, or how closely a simulation experience reflects or mimics reality. Today, there are many options available for simulation equipment, from low-fidelity anatomical models used by students to practice injections and other skills to high-fidelity mannequins that reproduce physiologic functions and are programmed to react to interventions in real time. Audio-video recording devices enable learners to review their performance, and medical equipment and care furniture enhance the realism and authenticity of simulation. Virtual reality

28 applications offer new possibilities for developing immersive clinical
29 experiences, with many software packages that run on a variety of platforms
30 available.

31 Simulation presents opportunities to reproduce both rare and frequent
32 clinical events in a realistic manner as often as needed. Nurses can hone
33 their abilities and skills--and commit every possible error--without harming
34 real patients. Simulation has long been utilized to train nurses and other
35 providers in cardiopulmonary resuscitation; it's now used in most nursing
36 specialties for a variety of purposes, including health assessment,
37 communication, and collaboration.

38 Many clinicians, educators, and leaders believe that simulation promotes
39 patient safety and raises the quality of patient care when used for both the
40 basic education of nurses and continuing education purposes¹. Not
41 surprisingly, given the challenges many nursing programs are having finding
42 clinical placements, some have begun thinking of simulation as a lifesaver². A
43 few years ago, research appeared suggesting that up to 50% of clinical hours
44 in a prelicensure RN program may be replaced by simulated experiences without
45 negative impacts on learning outcomes³. Clearly, students can build clinical
46 skills and knowledge in settings other than live clinical placements.
47 However, many factors must be kept in mind when deciding how to make the best
48 use of simulation.

49 **The best approach**

50 Simulation isn't always cheaper than traditional clinical placements.
51 Considerable faculty time is needed to develop a simulation and although
52 students don't necessarily require the same intensity of faculty-student
53 contact required for placements in practice settings, it can turn out to be
54 the same. If equipment and technology are used, expenses build quickly. The

55 costs of setting up a simulation environment can swiftly rise and reach
56 hundreds of thousands of dollars.

57 Sparse data are available about what types of simulation equipment build
58 student learning at the most reasonable costs, and studies have sometimes
59 reached contradictory conclusions about methods and approaches. To date,
60 there's no compelling evidence that investing in the highest end of
61 simulation equipment produces better learning outcomes. In fact, there's some
62 evidence that favors cheaper solutions⁴. Similarly, video recording hasn't
63 been shown to produce noticeably better learning⁵⁻⁶. Although it's possible
64 that future studies may produce different results, schools and programs need
65 to choose equipment on the basis of their student learning goals and not
66 assume that greater expenditures will pay off.

67 Above all, simulation is just one of many educational tools. As such, it's
68 important to consider what kind of learning it's expected to produce.
69 Research has shown that students often view simulation favorably, and
70 anecdotal evidence suggests that they prefer simulations that are low-risk
71 learning experiences to those that are high-stakes tests. In general,
72 students feel that it promotes an environment for the improvement of self-
73 confidence, knowledge, and skills⁷⁻⁸. Nonetheless, despite tremendous
74 enthusiasm from students and many faculty members and community leaders, much
75 is still unknown about how learning carries over from simulation to clinical
76 practice. It's also unclear how much simulation is needed to produce learning
77 outcomes and high-level performance in real practice, and how long learning
78 through simulation persists.

79 Many questions about the best way to use simulation are still being
80 addressed. Experts agree that it's essential to provide learners with a safe,
81 trusting, and supportive environment for learning in which they feel at ease
82 to engage fully in the simulation⁹. Simulation must start with a clear

83 definition of learning goals and be designed to directly allow students to
84 meet them.

85 It's notable that whereas much effort must be placed on the simulation's
86 content, providing students with feedback after a stimulation event and
87 giving them time to review and reflect on their performance (also known as
88 debriefing) require as much, if not more, attention. Research suggests that
89 debriefing is essential to simulation-based learning and should be closely
90 tied to the expected outcomes of a particular simulation¹⁰.

91 If you're a manager interested in simulation as a tool for staff
92 development, identifying clear learning goals, creating a safe learning
93 space, and ensuring carefully planned debriefing apply equally to simulations
94 used for orientation, competency assessment, and continuing education. Other
95 tools and strategies, such as problem-based learning, case studies, and
96 concept mapping, may be more appropriate for some purposes.

97 **Taking its place**

98 Simulation can be extremely engaging and "wow" many in the community;
99 however, everyone involved, including the clinical agencies receiving
100 students in the placement phase of their education and at graduation, need to
101 understand how resource-intensive it can be. In the end, simulation is but
102 one approach in the nurse educators' arsenal--its wider use is neither a
103 panacea nor a disaster in the making. You're sure to hear more discussions
104 about simulation as it finds its rightful place in helping students acquire
105 the knowledge and skills needed for nursing practice.

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