

# Use of High-Fidelity Simulation to Increase Knowledge and Skills in Caring for Patients Receiving Blood Products

Tonya Breymier, PhD, RN, CNE, COI<sup>a,\*</sup>,  
Tonya Rutherford-Hemming, EdD, RN, ANP-BC, CHSE<sup>b</sup>

## KEYWORDS

- High-fidelity simulation • Staff nurse development • Staff nurse competency
- Competency blood transfusions

## KEY POINTS

- Simulation has evolved and has utility with staff development and staff nurse competency for blood transfusion management processes.
- Blood transfusion knowledge, skills, and practice can be simulated in a safe, learning environment.
- Simulation provides an environment to practice critical thinking and clinical judgment with blood transfusion management processes.
- Blood transfusion reactions do not occur frequently but high-fidelity simulation (HFS) provides practice and preparation for such situations.

## INTRODUCTION

High-fidelity simulation (HFS) has emerged as a teaching technology with potential to increase knowledge and skills in caring for patients receiving blood products. This article describes the current state of the science related to the use of simulation in this critical life-saving skill. The history of simulation is discussed, along with a critique of the literature related to the use of simulation education for blood transfusion management competency in addition to a blood transfusion simulation example.

## BACKGROUND

### *History of Simulation*

Simulation is “a technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning,

---

<sup>a</sup> School of Nursing and Health Sciences, Indiana University East, 2325 Chester Boulevard, Richmond, IN 47374, USA; <sup>b</sup> School of Nursing, University of North Carolina-Greensboro, 408 Moore Building, P.O. Box 26170, Greensboro, NC 27402, USA

\* Corresponding author.

E-mail address: [tbreymie@iue.edu](mailto:tbreymie@iue.edu)

evaluation, testing, or to gain understanding of systems or human actions.”<sup>1</sup> The history of simulation stretches back for centuries. The earliest use of simulation can be traced to the military, aviation, and nuclear power industries.<sup>2</sup> The military has used simulation the longest, dating back to the eighteenth century.<sup>3</sup> Aviation pioneered the modern use of simulation in the 1930s.<sup>4</sup> Simulation has been used because training or testing in these areas in the real world would be too dangerous or costly to undertake.

It was not until the second half of the twentieth century that medicine began using simulation.<sup>2</sup> Anesthesiology was the first area of medicine to embark on the use of clinical simulation.<sup>5</sup> Working with anesthetists, Laerdal developed the Resusci-Anne, a basic simulator that is still used today. The Resusci-Anne was a low-cost, effective part-task trainer that increased the effectiveness of resuscitation training.<sup>2</sup>

of Resusci-Anne came another form of simulation in medicine. The inception of the standardized patient was introduced by Barrows and Abrahamson<sup>6</sup> in 1963. According to Barrows,<sup>7</sup> the term standardized patient is, “the umbrella term for both a simulated patient (a well person trained to simulate a patient’s illness in a standardized way) and an actual patient (who is trained to present his or her own illness in a standardized way).” Barrows saw the standardized patient as being able to provide students with additional training outside a textbook by putting them face to face with patients who could provide the physical, psychological, and emotional aspects of clinical practice.

Following the direction and development of Resusci-Anne, Sim One was developed in the late 1960s by Abrahamson and Denson.<sup>3,8</sup> Sim One was a manikin much like Resusci-Anne but more complex and sophisticated, having computer programs that elicited physiologic responses (breathing, heartbeat, pulses, blood pressure, blinking, and oxygen consumption).

Gordon<sup>9</sup> developed Harvey in the 1970s. This partial body simulator mimicked cardiac conditions and has been widely used since its invention. Then, in the late 1980s, Gaba and colleagues<sup>10</sup> resurrected the idea of HFS and developed models for use in the area of anesthesiology. This was the beginning of today’s modern moderate to high-fidelity simulator that is commonly used for learning and training in the medical arena.

The influx of computer-based simulation emerged in the 1980s.<sup>3,11</sup> Computer-based simulations offered real-life scenarios that required appropriate user responses. Then, early in the twenty-first century, computer-based simulations progressed to virtual simulations.<sup>3</sup> In virtual simulations students can create self-figures, or avatars, to replicate a virtual life online and role play patient interaction scenarios. See [Table 1](#) for a summary of the history of simulation.

**Table 1**  
History of simulation

Year	Source
1930s	Aviation
1960	Task trainers
1963	Standardized patients
1970s	Partial body simulators
1980s	HFSs & computer-based simulations
2000s	Virtual simulations

Download English Version:

<https://daneshyari.com/en/article/5636472>

Download Persian Version:

<https://daneshyari.com/article/5636472>

[Daneshyari.com](https://daneshyari.com)