

# Gaining Ground: Using Simulation to Improve New Graduate Nurse Performance in Emergency Situations



American Organization  
for Nursing Leadership



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Megan Seston Matson received AONL's 2023 Pamela Austin Thompson Early Careerist Award. She led the project detailed in this paper, which improved new graduate nurse comfort with using a rapid response system.

In the post-COVID environment, 2 pressing problems persist: nursing turnover and high patient acuity. These problems together can create a dangerous situation: high numbers of inexperienced staff, and patients that are sicker than ever. Inadequate nursing knowledge and experience is a barrier to recognizing patient deterioration.<sup>1,2</sup> Educational interventions can improve the knowledge level of nursing staff and increase detection of clinical deterioration, especially critical because nursing staff spend the most time directly with patients.<sup>3-5</sup> Further, high-fidelity simulation gives nurses an opportunity to practice skills and improve practice in a safe but believable setting.<sup>6-9</sup> Nurse leaders and educators can utilize simulation to give novice nurses the experience to recognize clinical deterioration and the knowledge and comfort to act.

## IDENTIFYING THE PROBLEM

At Brigham & Women's Hospital (BWH), a large academic medical center, the adult rapid response system (RRS) was inconsistently used across the organization. There were multiple contributors to this problem, but 1 key factor was a lack of knowledge and experience related to rapid response activation and structure, particularly for nurses new to the organization. The RRS was identified because although the criteria for code blue activation are generally clear even to novice nurses, the criteria for rapid response activation can be more nebulous, with space allowed for nursing judgment.

In 2020 and 2021, the hospital also experienced increased staff turnover secondary to the COVID-19 pandemic. This turnover led to dramatically increased hiring of new graduate nurses who lacked

experience in recognizing patient deterioration, the knowledge of what to do in an emergency situation, and the confidence to act. An early cohort of the nurse residency program rated their comfort in emergency situations at 1.71 out of 4 on a Likert scale, indicating an average between "completely uncomfortable" and "somewhat uncomfortable."

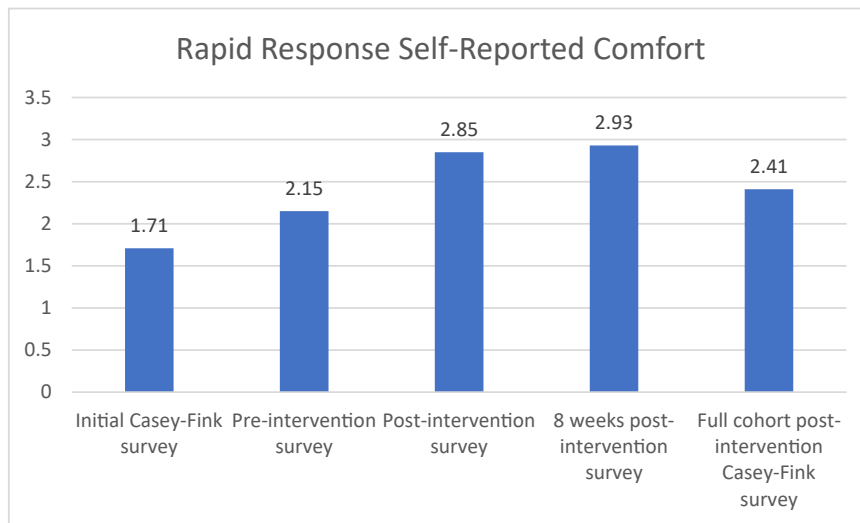
Prior to this project, no formal education was provided to new BWH nurses about the RRS. Rapid response was included on the orientation checklist; preceptors were expected to review the emergency response system as part of bedside orientation. However, given the inconsistent utilization of the RRS across the institution, this expected review by preceptors could be incomplete, inaccurate, or altogether absent from a new nurse's orientation. Formal training was needed for new graduate nurses on the appropriate activation of the RRS.

## EDUCATIONAL INTERVENTION

An educational intervention was used to improve the new graduate nurses' knowledge and comfort in emergency situations. This education included simulation sessions during the BWH nurse residency program. The first aim of the project was to improve the nurse residents' comfort level in emergency situations. The second aim was to improve the new graduate nurses' knowledge of RRS activation criteria and their response to activation.

The Casey-Fink Graduate Nurse Experience survey was used to assess the new graduate nurse comfort in emergency response and code situations. Specifically, 1 question from the Casey-Fink survey (i.e., "How comfortable are you acting in an emergency situation?") was used to assess comfort level at 3 time

	Mean	SD
Pre-survey (n=20)	2.15	0.59
Post-survey (n=20)	2.85	0.75
8-week post-survey (n=15)	2.93	0.26
P value (Pre- to 8-week post-survey)	<0.05	



**Figure 1.** Rapid Response Self-Reported Comfort (4-Point Likert scale)

points: prior to the intervention, immediately after the intervention, and 8 weeks following the intervention. Comfort was measured on a 4-point Likert scale, where 1 is “completely uncomfortable,” and 4 is “completely comfortable.” Nurse residents’ knowledge was assessed using 7 questions, developed by institutional experts and edited based on stakeholders’ feedback. This also was assessed at 3 points in time: before the educational intervention, immediately after the intervention, and 8 weeks following the educational intervention.

The nurse residents participated in an 80-minute educational intervention consisting of 4 separate stations focused on management of patient deterioration and emergency situations. The first station was a 20-minute didactic lecture using a slide presentation detailing the institutional rapid response policy. The second station was a high-fidelity simulation with structured debriefing to follow. The third station was prompted skill demonstration and included the review of an institutional code cart and medication review. The fourth and final station was a skills session with the defibrillator.

**RESULTS**

Of the cohort of 46 new graduate nurses, 20 (43%) participated in the rapid response education intervention. All 20 (100%) participants completed the pre-survey and post-survey, whereas only 15 of 20 (75%)

completed the 8-week post-intervention survey. The results from the pre-, post-, and 8-week post-surveys were compared in aggregate. Because all survey responses were anonymous, they were analyzed without being matched and compared at the individual level. Of note, the new graduate nurses had an average of 6.5 months of nursing experience at the time of the educational intervention. Thirteen of the 20 new graduate nurses had activated a rapid response prior to this intervention, and 19 had assisted a colleague in a rapid response.

As **Figure 1** shows, the new graduate nurses reported a statistically significant increase in comfort from pre-intervention to post-intervention, and another increase at the 8-week follow-up survey ( $F = -17.792$ ;  $p < 0.05$ ). The average comfort level of 2.93 at 8 weeks post-intervention indicates that the nurse residents identified themselves as “somewhat comfortable” in emergency situations.

Comfort scores in the test group also were compared to data from the Casey-Fink survey, which was administered to the entire cohort. At that date, the mean comfort score from the full cohort was 2.41 (SD 0.69), lower than the average of 2.93 in the intervention group.

Overall knowledge was calculated as a score using the number of correct answers out of a total of 23 points. Mean overall knowledge scores and standard

	RRS knowledge (scored out of 23)	
	Mean	SD
Pre-survey (n=20)	17.70	2.02
Post-survey (n=20)	18.50	3.71
8-week post- survey (n=15)	19.67	1.29
P value (Pre- to 8-week post- survey)	<0.05	

**Figure 2.** Rapid Response Overall Knowledge Test Scores

deviations are described in Figure 2. The difference between mean scores pre- and immediately post-intervention was not significant, but there was a statistically significant difference ( $F = 8.453$ ;  $p < 0.05$ ) in overall knowledge level when comparing scores prior to and at 8-week follow-up after the intervention.

Additionally, comments on the immediate post-survey indicated that nurse residents found the education valuable. They requested more time at each station, more simulations, and more time to debrief the simulations. They requested that the content be presented earlier in the nurse residency program, during their clinical orientation. They also suggested incorporating practice documenting emergencies in the electronic medical record (EMR). This request has led to the development of a fifth station, in which nurse residents are able to access the EMR training environment to practice documenting a rapid response in real time. With these improvements, the rapid response simulation curriculum has been fully incorporated into the nurse residency program.

Simulation has the power to create a safe, realistic environment for new graduate nurses to practice skills and scenarios that they may not encounter in a time-limited nursing orientation. By using simulation, this educational intervention improved the new graduate nurses' comfort and knowledge in emergency situations. In a high-acuity nursing environment, this

education is vital to preparing new graduate nurses to detect clinical deterioration and keep patients safe.

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1541-4612/2023/\$ See front matter  
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<https://doi.org/10.1016/j.mnl.2023.08.001>