

**TITLE** – A blended learning activity to model clinical judgment in practice: A multi-site evaluation

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## **ABSTRACT**

### **Background**

Observing how experienced nurses assess and manage complex situations may assist students in developing clinical judgment.

### **Method**

Evaluation of a combined learning activity including an AV simulation demonstrating expert nurse care of a patient with delirium delivered across three international programs. Participants responded to: five survey questions; two open-ended questions; and provided information about previous experiences with delirium.

### **Results**

Highest rated benefits: watching an expert nurse; and how assessment and care were provided. Qualitative themes: global perspectives; questions that challenged; level of realism; the expert nurse; technical issues; and contribution to learning and practice.

### **Conclusion**

Irrespective of country/program, participants rated the learning activity as beneficial in developing skills for clinical judgment.

## **KEYWORDS**

Diverse students; AV simulation; post-operative delirium; modelling practice; clinical judgment

## Key Points

- Audio-visual simulations within a blended learning activity can be used to trigger students' clinical judgment
- Students value observing expert nurses modelling nuanced practices
- Outcomes open the door for more shared learning activities involving simulation

## Background

Many nursing programs worldwide admit large cohorts of undergraduate students. While efficient for addressing nursing shortages, large cohorts challenge educators to provide learning experiences that assist diverse students to develop their thinking skills. The development of clinical judgment to make safe, quality decisions is perhaps the biggest challenge for educators and nursing programs (Kavanagh & Szveda, 2017). Scalable learning approaches that can accommodate large or smaller student cohorts can be a cost effective solution. Modeling ideal practice featuring an expert nurse demonstrating clinical judgments within a patient case scenario, can be provided in a number of ways and has been shown to have value in some studies (Johnson et al., 2012; Lasater, Johnson, Ravert, & Rink, 2014).

Simulation-based education (SBE) in healthcare has seen substantial growth over the last five decades (Brailsford, Carter, & Jacobson, 2017). The diversity of scenarios now extends beyond acute medical surgical simulations including voice hearing in mental health contexts (Alexander, Sheen, Rinehart, Hay, & Boyd, 2017), rehearsing conversations about organ and tissue donation (Potter et al., 2017), and homelessness and poverty (Reid & Evanson, 2016). There appears to be little focus on scenarios that feature patients experiencing delirium.

A common global challenge is the increasing number of older people who require medical treatment following falls. Several factors can precipitate delirium in this population particularly during the post-operative period. Ruggiero et al (2017), for example, reported a 2-fold increase in mortality in older hospitalized patients who experience delirium following surgery to correct hip fractures. Knowing and understanding the patient is crucial for detecting subtle changes that may herald delirium and subsequent poor outcomes. Opportunities for student nurses to understand such clinical situations and to grasp the reasons behind patients' behaviors are important so timely and appropriate clinical judgments can be made.

One approach to guide students through such complex scenarios is using audio-visual (AV) simulations featuring an expert nurse role-modeling patient care as part of a learning activity. Observing how experienced nurses approach and respond to patient care situations offers students the opportunity to see and understand how to differentiate the salient features of the situation at hand (Johnson et al., 2012; Lasater et al., 2014; Rochester et al., 2012).

A popular pedagogical framework for SBE is Tanner's (2006) Model of Clinical Judgment. According to Tanner, nurses' clinical reasoning is complex and involves *Noticing* and *Interpreting* before taking action (*Responding*). One factor that influences nurses to notice particular patient features is their backgrounds, and Tanner identified that the experiences nurses bring to patient care situations has greater impact on clinical judgment than the objective data of the situation at hand. Given the diversity of students in nursing programs, for example in age range, cultural background, previous life and work experiences

(Kelly, Hopwood, Rooney, & Boud, 2016), it is important to provide learning experiences that acknowledge diversity while enhancing students' practical thinking skills.

Within simulation scenarios, traditionally, students have actively functioned as 'the nurse' with opportunity to develop clinical judgment skills (Lasater, 2007). Yet, regular, active simulation experiences for every student may be difficult when managing large, diverse cohorts (Kelly et al., 2016) or where there are limited simulation facilities. In addition, students report they learn more as active observers, that is, not directly engaged in the role of the nurse (MacLean, Janzen, & Angus, 2019). To date, there have been no studies that have explored the influence of students' backgrounds on what they notice within clinical simulations.

### **Study Aim**

The aim of this sub-study was to evaluate participants' learning experiences of an AV simulation featuring an expert nurse caring for an elderly patient experiencing delirium. In addition, we share insights about using a pre-recorded scenario portraying role modeling, as part of the learning activity. Findings about how students' diverse backgrounds influenced their clinical judgment, part of the larger study, have been reported elsewhere (Authors, 2019).

The specific research questions for this sub-study included:

- How does a learning activity with an embedded AV simulation scenario of an expert nurse role model impact student learning?
- How well does the learning activity support level of student engagement and quality of learning?

### **Methods**

One pre-recorded AV simulation was used across three international programs and featured an expert nurse role modeling care for an older female adult (a human patient simulator) experiencing post-operative delirium, with an embedded actor as the patient's granddaughter. The scenario commenced with nurses giving patient handoff at the bedside.

### **Sample and Setting**

Pre-licensure students from three large, urban, English-speaking nursing programs, one each in Australia, New Zealand (NZ), and the United States (US) were invited to participate in the study. All participants were enrolled in courses where they were first introduced to perioperative care.

### **Ethics**

Each site received institutional review board (IRB) approval; all students in designated courses were offered participation in the learning activity. Participants could withdraw from the study without penalty at any time before completion of the survey. As Survey Monkey® automatically assigned unique identifiers, once the survey was submitted, participants' responses were anonymized so removing them became impossible.

### **The Learning Activity**

The learning activity began with a written patient report about a simulated older adult

patient who was recovering from surgery following a hip fracture. An AV simulated patient scenario about this patient, produced in the US and funded for another study (Johnson et al., 2012; Lasater et al., 2014), was reviewed by study site coordinators in all three countries for language and procedural appropriateness prior to using the learning activity. The use of one AV simulation allowed for evaluation of a large number of participants and controlled for one of the learning variables. After watching the scenario, participants completed a survey that asked questions about the case (Authors, 2019) as well as evaluating the learning experience. They then watched the same video again but with narration.

## **Data Collection**

For this part of the study, participants evaluated the learning activity, rating five survey questions, added free text responses to two further questions, and provided information about prior knowledge and experience regarding delirium. Specific details of survey development and testing have been reported as well as responses to questions about the case study in Authors (2019). Participant evaluation data were collected via a Survey Monkey® link for 18-months to accommodate differing course schedules and to maximize participant numbers. Participation in the survey was voluntary.

## **Data Management and Analysis**

Quantitative analyses were implemented using R (R Core Team, 2018). Descriptive statistics were used to summarize responses to questions about previous experience with delirium and for questions about the learning activity. Significance was set at  $p = .05$  for all statistical tests.

Responses to the two open-ended questions about the learning activity were analyzed using content analysis by research team pairs from the same country. This was thought the best approach to interpret unique, country-specific expressions or wording into codes. Two of the research team members (MK and MC) then undertook independent thematic analysis of the data, reaching agreement on major themes via an iterative process (Silverman, 2011).

## **Results**

The full sample (N=532) comprised an overall response rate of 78.5%; site numbers were: Australia (n=217); NZ (n=166); and US (n=149). The combined participant cohort reported previous exposure to delirium, mostly gained through classroom or textbook learning (67.6%) and less so via practical experience (38.2%). Of note, 136 (26.9%) of the combined cohort had neither clinical nor classroom/textbook experience of delirium. See Table 1 for other differences.

## **Quantitative Evaluation**

Responses to survey questions (Table 2) revealed participants' reactions to and evaluation of the learning activity incorporating the AV simulation. Mean responses to all questions were above 3, ranging from 3.03 (SD= 0.76) to 3.44 (SD=0.66) on a scale from 1 (strongly disagree) to 4 (strongly agree). Aspects that rated highest were: watching the expert nurse was helpful (question 5; M=3.44; SD=0.66) and that the health assessment and care portrayed in the video were easy to understand (question 3; M=3.28; SD=0.63). Rating somewhat lower was the ease of understanding the case study questions (question 6;

M=3.03; SD=0.76) with 111 (21.8%) participants rating this question as disagree/strongly disagree (D/SD). Regarding how 'the learning activity contributed to understanding about delirium' (question 4), 83.6% of participants agreed/strongly agreed (A/SA) with only 16.4% rating this point as D/SD (Table 2).

## Qualitative Evaluation

Two open-ended questions provided opportunity for participants to describe the level of engagement and quality of learning from the learning activity. Five-hundred and twelve participants (96.2%) offered comments about the case study questions and 194 (36.5%) provided additional comments or recommendations about the level of engagement and quality of the learning activity. Analysis yielded six themes: global differences; questions that challenged; level of realism; the expert nurse; technical issues; and contribution to learning and practice. Illustrative quotes are noted as country and participant number, for example (AU P1, US P2, NZ P3).

### Global differences

Due to accents and the pace of speech in the AV simulation, many NZ and Australian participants found it difficult to comprehend the dialogue or the terminology used in the US-produced AV simulation. For example, while it is common to refer to a Foley catheter in the US, an 'indwelling' or 'urinary catheter' is a more common term in both Australia and NZ, and clinical abbreviations for some blood tests are different, e.g., CBC vs FBC. Similarly, Australian and NZ participants requested that medications be identified by their country-specific names. To illustrate: "... *some abbreviations I was not familiar with, talked to [sic] fast and not clearly at times*" (NZ P8).

A small number, from all countries, requested subtitles because the actors were hard to understand. "*Some jargon I couldn't understand but when I [was] searching by dictionary, it was easy to understand*" (AU P181); and "*The medical terminology was not that easy to understand, and in this case, we students ourselves have to work on it*" (AU P83).

### Questions that challenged

Several participants commented that the case study questions were either vague or difficult to answer. Participants with minimal exposure to surgical nursing, either personally or in their learning, found it difficult to respond. A NZ participant commented: "*I felt it was out of my scope due to lack of my surgical nursing*" (NZ P56). For others, the challenge was in choosing one, or the most important, aspect of the case patient: "*Answers were required to be brief, when there was more to say*" (NZ P84); "*There were many problems and it was hard to prioritize*" (US P19).

Some participants didn't know how to answer a second case study question: "How was this different than you expected?" because they did not know what to expect. "*One of the questions asked what you were expecting. This implies I was actually expecting something*" (NZ P130); and "*I have no idea what was unexpected-- do you mean the delirium was unexpected, or that I saw a complication that was unexpected?*" (US P45). Some ambiguity might be due to participants' time in program, that is, a lack of exposure to similar patient situations or being more concrete in thinking processes.

## **The level of realism**

Several from each country, commented on the lack of authenticity in the video because a manikin was used: *“Did not like the dummy human, took time for me to imagine it being real, a bit unsettling”* (NZ P7). Specifically, participants would have preferred to view a human patient’s signs and symptoms: *“Unable to see face, colour, symmetry and pupils. Couldn’t tell whether the patient had a decreased LOC at one point due to the fact it was a manikin”* (NZ P163). Such lack of realism of current simulation manikins appears to be an important factor in participant engagement with the scenario. The importance of the realism within the learning activity and making connections with clinical practice was reiterated by one particular participant: *“A real actor for the patient would make the scenario a lot more realistic and easier to relate to clinical practice”* (NZ P134).

## **The expert nurse**

The majority of participants commented about the expert nurse who role modeled practice. US participants were particularly forthcoming: *“I really liked to see how an expert nurse talked to patients, prioritized her actions, spoke with other nurses, and how her thoughts progressed”* (US P15). The US participants, the majority of whom were undertaking a career change, appreciated seeing and hearing the nuanced practices of the expert nurse: *“Any opportunity we have as students to hear the language that experienced nurses use with patients and their families is appreciated and greatly enhances our learning experience* (US P56). And from one who had previous experience as a nursing assistant, the importance of the ways nurses relate to patients and their family was a key learning point: *“As someone who has taken care of post-op patients with delirium (as a nursing assistant, not as a nursing student), I thought that the behavior of the patient was realistic, as was the response of the family member to the situation. I thought that the questions the granddaughter asked were a helpful reminder of terms that we may think we are putting into “lay terms” but that we might not be successful at”* (US P101).

## **Technical issues**

A very small number of participants reported technical issues, namely with unreliable, interrupted internet streaming of the video or clarity of the audio. To illustrate: *“The video stopped a couple of times because of the internet connection or because of the website”* (US P69). And another participant: *“The video was hard to listen to...because the speakers were echoing but otherwise it was okay”* (AU P163). This may be difficult to control in all circumstances, but using the highest quality digital format and audio option may reduce this distraction.

## **Contribution to learning and practice**

Predominant opinion about the learning activity was that it contributed to participant learning in positive ways about complex patients *“Was an excellent video to watch and assisted my learning in terms of clinical skills and assessment of the patient”* (NZ P108). *“This survey highlights knowledge in handling patients who suffer from post op confusion or delirium. Students should be given every opportunity to surveys [sic] like this”* (NZ P165).

Specific comments about teamwork (nurses giving patient handoff) also featured: *“It was great to watch a team in action, working together to try and figure out what was going on with the patient”* (US P136). It appeared that others wanted further challenges or more discussion, as summed up by the following: *“A role play doesn’t answer the “why?” questions I have as a student”* (AU P69) and *“Post surgical delirium is an interesting topic which is very important that every nurses [sic] should know. It would be helpful if it will be discussed in depth in class because it’s confusing”* (AU P39). And in relation to practice, *“I would have appreciated the nurse demonstrating the use of the delirium assessment tools in this scenario”* (US P56).

## Discussion

The clinical focus of post-operative delirium is pertinent given the global aging population and the likelihood of students caring for such patients in a range of clinical practice settings (Marcantonio, 2017). Overall, the learning activity that featured an experienced nurse role modeling ideal practice in assessing and managing a patient with post-operative delirium was valued by participants, at all three sites. Timing of the AV simulation across the three sites was deliberately early in curricula and prior to theory about post-operative patient care, to capture the impact of the AV simulation on participants’ noticing and interpreting skills. The case study survey questions, that prompted them to think about what they *Noticed* in the nurse’s actions, for most were deemed easy to understand and to answer, however others countered this point. Perhaps the language associated with clinical judgment or the complexity and unanticipated behaviors of the post-operative elderly patient depicted in the AV simulation were challenging for participants to understand or prioritize at this point in their program.

Despite upfront efforts of the researchers at all three sites to proactively minimize ambiguity of the learning activity and AV simulation, there appeared to be some confusion in participants’ understanding of the expert nurse’s language (vocabulary) and practices (medication and lab test options). These aspects may have had a negative influence on participant engagement and the quality of learning. One explanation could be that the researchers were more familiar with the subtle differences in language and practices across global contexts and despite their review, did not anticipate these to be issues. Further, participants’ level of knowledge and limited experience is a reminder that faculty need to assure a common understanding amongst students about vocabulary as it contributes to the professional discourse. Even within a single program in a country, different clinically related terms can be used in clinical practice that may be confusing for students. Ensuring a common understanding of terms is warranted particularly for multi-site international projects.

Three particular areas arose that require some modifications of the AV simulation to further enhance student engagement and the quality of learning. For participants with English as an additional language, or where accents are not easily understood, subtitles within the AV simulation could clarify what the nurse and others are saying. For those who have only read about but not cared for patients with delirium, slowing down the action within the AV simulation by adding pause points with trigger questions to facilitate discussion or reflection, addresses contemporary expectations of learning within the digital age (Massey et al., 2017). Shorter AV simulations were also recommended by participants, so decisions about how key points are represented in a shorter format should be considered when creating future learning materials. Thirdly, limitations of mainstream simulation manikins in replicating human facial expressions limit the critical ‘patient’ cues important in assessing cognition. Use of simulated patients (SPs) or actors would likely enhance the authenticity of



AV simulations (MacLean, Geddes, Kelly, & Della, 2019), allowing close ups of the nurse, capturing concern, or the patient, capturing signs of confusion or agitation, as the scenario unfolds.

Tanner (2006) acknowledged that students need help recognizing the “practical manifestations of textbook signs and symptoms, seeing and recognizing qualitative changes in particular patient conditions, and learning qualitative distinctions among a range of possible manifestations, common meanings, and experiences” (p. 209). Coyne, Frommolt, Rands, Kain, and Mitchell (2018) added that, when combined and aligned with theoretical knowledge, AV simulations enhanced students’ knowledge of patient assessment and context of the situation. Maximizing learning from learning activities featuring AV simulations could be achieved in several ways: as part of a blended teaching model rather than a stand-alone resource; as preparation for a simulation of similar context; or as preparation before, or debrief after clinical experiences.

Given the unpredictable nature of clinical experiences, students may not get opportunities to care for older patients who experience delirium following surgery, yet be expected to recognize and respond to the situation as newly registered nurses (Frögéli, Rudman, & Gustavsson, 2019). Learning activities including AV simulations, such as the one featured in this study, are an effective way to mimic real life situations that students may not always encounter during their course clinical practica. Using simulation to replicate so called low-volume and high-risk clinical events is well-recognized as an effective strategy to improve patient safety (Langston et al., 2017; Spence & Chatfield, 2018). Equally beneficial, particularly for students, is showing how an experienced nurse may assess, anticipate, and respond to patients experiencing delirium that is more regularly encountered in clinical settings (Marcantonio, 2017).

In the current format, the AV simulation embedded in a learning activity would meet students’ learning needs to a point. However, a pre- and post-debriefing or additional opportunities to discuss ways of managing complex older patients experiencing post-operative delirium may address the ‘why’ questions participants have raised in this research. Evidence suggests that reflection and heightened awareness about practice triggered through debriefing sessions intensify learning in SBE (Cheng et al., 2016; Palaganas, Fey, & Simon, 2016). Further, modifications as described above, would enable the AV simulation activity to be scalable for large student cohorts, a growing trend in education.

## **Limitations**

Although the sample size was substantial, the study was conducted in only three English-speaking programs worldwide. Similar studies at non-urban institutions and more institutions from each country would be helpful to expand the findings of this study.

## **Conclusion**

This international multi-site study evaluated participants’ opinions about a learning activity with a common AV simulation relating to a patient experiencing delirium. The use of one a uniform learning activity across multiple sites resulted in benefits as well as some unanticipated challenges but proved to be a cost effective resource that could be scalable with large student cohorts. An experienced nurse role modeling how to assess and interact with a post-operative elderly patient experiencing delirium was particularly valued by participants. The level of engagement and quality of learning from an AV simulation

embedded within an online activity have been outlined, setting the stage for sharing learning activities and international research.

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**Table 1. Students' previous experience with delirium.**

	Overall N (%)	Australia N (%)	New Zealand N (%)	United States N (%)	p-values <sup>A</sup>
Classroom/Textbook Experience	346 (67.6%)	165 (80.1%)	51 (31.5%)	130 (90.3%)	<0.001
No Experience	166 (32.4%)	41 (19.9%)	111 (68.5%)	14 (9.7%)	
Practical Experience	195 (38.2%)	99 (48.3%)	41 (25.5%)	55 (38.2%)	<0.001
No Experience	315 (61.8%)	106 (51.7%)	120 (74.5%)	89 (61.8%)	

<sup>A</sup> P-values calculated using Chi-square test of proportions.

**Table 2. Responses (range 1-4) to 5 survey questions about the learning activity.**

	N	Mean	SD	Agree/Strongly Agree N (%)
3. The health assessment and care in the video recorded case study were easy to understand.	510	3.28	0.63	468 (91.8%)
4. This learning activity enhanced my understanding of delirium.	511	3.07	0.69	427 (83.6%)
5. Watching an expert nurse role model was helpful to my nursing practice.	512	3.44	0.66	477 (93.2%)
6. The case study questions were easy to understand and answer.	510	3.03	0.76	399 (78.2%)
7. This learning activity will assist with my subsequent assessment and management of a patient experiencing delirium.	509	3.23	0.66	457 (89.8%)