

# Impacting Nurse's Knowledge of Delirium and Management of Respiratory Depression through an Interprofessional, Patient-Centered Simulated Case Scenario



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## Abstract

**Introduction:** Cancer patients experience delirium. It is critical to identify delirium early but also to distinguish the hypoactive presentation from respiratory depression. Inappropriate assessment may result in administration of high-risk reversal agents such as naloxone.

**Methods:** To increase learning in nurse residents, simulation-based learning using standardized patients experiencing mixed delirium and respiratory depression augmented traditional didactic methods. The scenario included assessment, intervention, and psychomotor learning in administration of naloxone utilizing practice guidelines.

**Results:** Delirium knowledge scores between traditional learning groups and oncology nurse residents enhanced with stimulation were compared. The Geriatric Institutional Assessment Profile knowledge score of oncology nurse residents who participated in simulation (5.91) was statistically significant ( $p < 0.05$ ) compared to all peer bed size, all peer teaching status, and all hospital groups. Oncology nurse residents scored higher than nurses receiving only the traditional delirium education. The appropriate use of naloxone was increased from 38% to 53% and the appropriate dosing went from 21% to 53%.

**Conclusions:** Knowledge acquisition, as reflected by test score, does not always translate into clinical practice; however, simulation can provide application exercises for improving patient outcomes.

**Keywords:** Delirium, GIAP, Nurse resident, Simulation, Naloxone

## Key Points

- i. It is critical for oncology nurses to identify delirium early and intervene appropriately to reduce and prevent delirium-associated complications.
- ii. Simulation added to tradition teaching methods can enhance knowledge acquisition.
- iii. GIAP survey is a useful tool to assess attitudes, knowledge of guidelines and best practice, and perceived institutional strengths and barriers to best practice for traditional care of older adult.
- iv. Oncology nurse residents participating in simulation learning scored higher on the GIAP than medical and surgical unit nurses on delirium dementia knowledge.
- v. Broadening the scope of simulation learning experiences to nurses, while utilizing patient outcome measures, may provide evidenced-based opportunities.

## Introduction

Delirium is not uncommon in cancer patients during an acute hospitalization or in the terminal stages of cancer [1-3]. Iatrogenic delirium can complicate hospital stays for over 2.6 million older persons by increasing fall risk, restraint use, increased length of stay, and increased post-acute placement and costs [4]. Hypoactive

delirium can be misdiagnosed and may be treated with reversal agents such as naloxone [5]. Added post-acute hospital costs due to an increased need for institutionalization, rehabilitation, and home care estimates are from \$16,303 to \$64,421 per patient [6-8].

Within the last 2 years, 19% to 28% of patients discharged from our center experienced at least one episode of delirium during their hospitalization. It is critical that nurses learn to assess for and identify delirium early and intervene appropriately to reduce and prevent delirium-associated complications [9-12]. Use of naloxone [5,13-15] as a reversal agent is indicated in opioid overdosing. Evaluation of the utilization of naloxone at the center included inappropriate administration and inappropriate dosing [16,17]. In the presence of hypoactive subtype and patient-controlled analgesia, delirium can be overlooked or misdiagnosed as respiratory depression when assessment is incomplete [18]. Initially at the cancer center, it was determined from chart review and occurrence reporting that 77% of the inappropriate naloxone use was for altered mental status possibly a hypoactive presentation of delirium. The purpose of this nurse resident simulation was to enhance knowledge and assessment of delirium in a postoperative standardized patient, to provide a venue to identify and to administer naloxone appropriately according to guidelines.

### Oncology Nurse Residency Program

To facilitate a smooth transition from novice to competent clinician and to promote adoption of oncology as a specialty practice, an Oncology Nurse Residency Program was developed in February 2013. Goals include providing an environment that prepares newly licensed nurses to function safely and accurately. A formal residency program can enhance critical thinking and clinical decision-making skills [19]. Newly licensed nurses complete a classroom orientation prior to moving to the clinical area to begin unit orientation with their preceptors. The length of time in unit orientation is generally completed in 12 to 16 weeks. For the first twelve months of practice, oncology nurse residents participate in programs outside of their unit for one day each month. In addition to time in the classroom and simulation,

the oncology nurse residents meet with their residency group monthly to reflect on collective experiences and challenges. This reflective practice leads to developmental insight and assists in closing the gap between theory and practice.

### Simulation

Research validates that learners are more likely to retain content when it is grounded in clinical experiences such as simulation rather than more traditional learning methods. Simulation is a multi-modal type of experiential learning that creates a safe environment for the learner to practice and enhance critical thinking skills with the goal of improving patient outcomes [20]. Simulation learning has been demonstrated to improve [21] mastery of assessment and standardized patient feedback of scenario [22] A method of simulation can include standardized patients [23] Quality and Safety Education for Nurses (QSEN) [24] identifies key concepts that are included in this simulation such as collaboration, communication, patient centered care, and safety [25]. In the case of naloxone as a reversal agent for the cancer patients, care must be taken to correctly identify opioid toxicity [5,26,27] Nurse residents have an opportunity to calculate dose and administer in a simulated environment non urgent setting [28,29] Naloxone guidelines were developed for administration per hospital policy [30-32].

The use of simulation promotes communication among participants, development of a heightened skill set, and the opportunity for making decisions based in the moment [33,34]. Promotion of critical thinking occurs in this type of environment, as nurses must be able to put theory into practice [35]. Delirium education is enhanced with implementation of assessment and intervention techniques [36]. Utilization of a scripted unfolding case discussion of delirium with debriefing facilitated learning [37] (Table 1).

**Table 1:** Quality & Safety Education in Nursing (QSEN) Nursing Competencies.

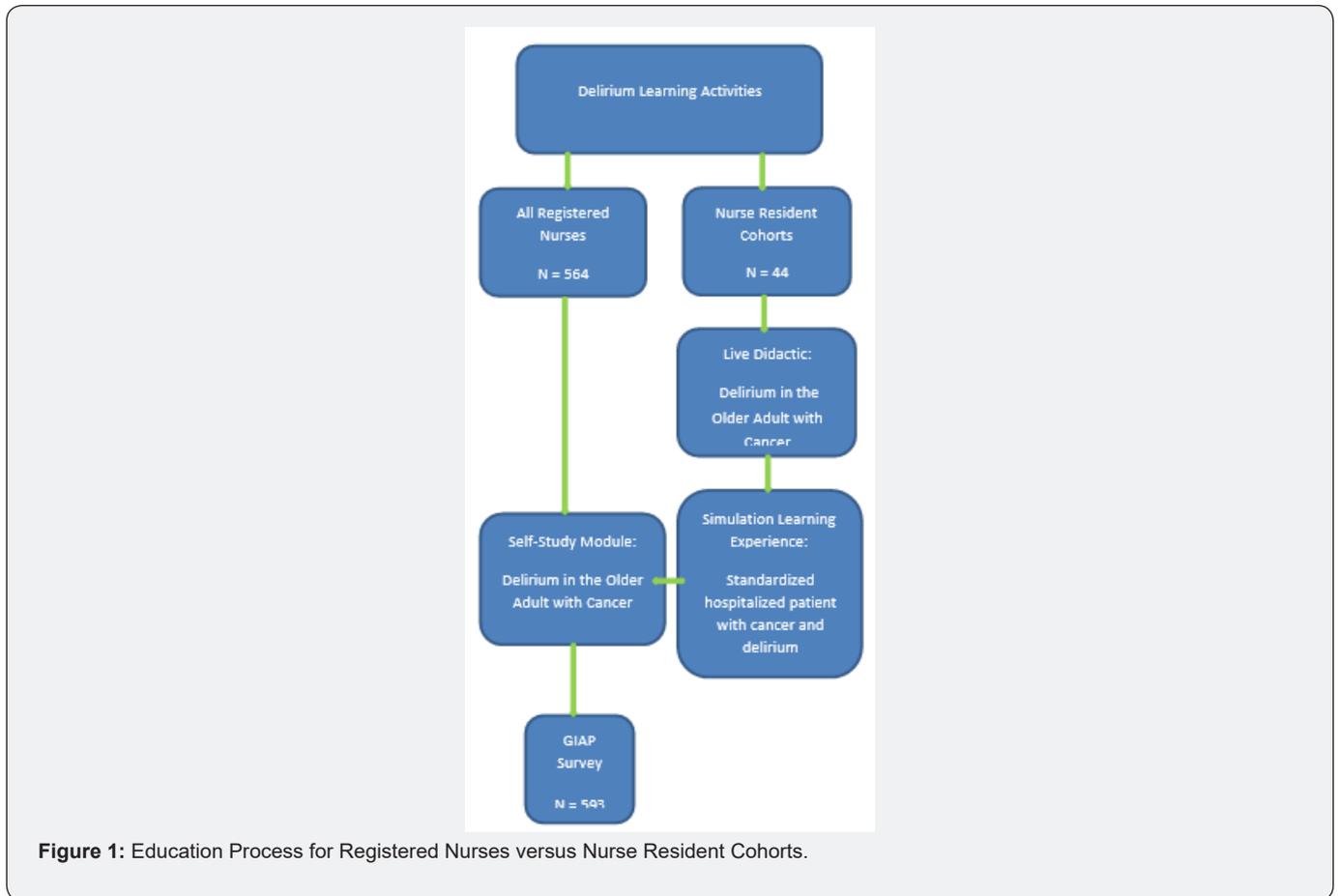
QSEN Competencies (25)	Knowledge	Skills	Abilities
Communication <sub>1</sub>	Utilizes SBAR	Notifies MD of condition (uses SBAR when communicating with interprofessional team)	Introduces team Provides handoff
Collaboration <sub>2</sub>		Calls for assistance / consult's clinical leaders	Collaborates w/RT
Patient Centered Care <sub>3</sub>	Applies Duffy's Caring theory to practice	Engages and educates family	Uses calm reassuring approach to patient
Safety <sub>4</sub>		Washes hands	Identifies patient (NAME, DOB, Medical record)
		Implements safety measures (fall)	
		Safety: lowers bed height, offers bathroom to patient, someone stays with patient	

Evidenced Based Practice <sub>5</sub>	Analyzes clinical data to determine potential etiology of delirium	Asks questions related to mental status	Utilizes Confusion Assessment Method
	Uses appropriate criteria for administration	Administers naloxone (pt. identifiers)	Recognizes change in condition
Discontinues PCA			
Information Technology <sub>6</sub>	Performs assessment <sub>5</sub>	Obtains vital signs including end tidal carbon dioxide (ETCO <sub>2</sub> )	Refers to standards and policies <sub>5</sub>
			Review's labs/ blood glucose

**Geriatric Institutional Assessment Profile**

The Geriatric Institutional Assessment Profile (GIAP) is a self-completed survey for health care team members [38]. It consists of 133 items and requires approximately 15 minutes to complete. This survey assesses attitudes regarding care of the older adult; knowledge of guidelines for care of the older adult; knowledge of best practice for common geriatric issues (i.e., pressure injuries/ulcers, medications, sleep, pain, restraints, falls, functional decline, incontinence, dementia, delirium, nutrition, and hydration); and

perceived institutional strengths and barriers to best practice for care of older adults [39,40]. Nurses and patient care technicians completed the GIAP as a baseline assessment (response rate 43.3%) requirement for our center in achieving Nurses Improving Care for Healthsystem Elders (NICHE) [41] designation. The NICHE program imbeds evidenced-based practice models in a system targeting geriatric syndromes such as delirium [42,43]. The GIAP was subsequently repeated two years later (response rate 79.1%). These results assisted in targeting priorities for education in our NICHE program [38].



**Figure 1:** Education Process for Registered Nurses versus Nurse Resident Cohorts.

Knowledge domain was only administered to RN participants. RNs were instructed to identify their primary patient care area when completing the GIAP with the exception of the oncology nurse residents who were directed to classify an independent cohort. This provided a separate knowledge comparison with those cohorts who experienced the delirium simulated learning activity. Knowledge of best practices related to mentation includes both delirium and dementia. In the initial GIAP, mean knowledge scores on delirium/dementia ( $n = 237, 5.1$ ) for registered nurses (RNs) were significantly lower than the mean scores of a benchmarked hospital of similar size and teaching status ( $n = 4,785, 5.36$ ). A self-study module on delirium in the older cancer patient was subsequently created by the geriatric clinical specialist for all nurses as part of mandatory yearly education. Traditional learning methods such as self-study modules provide content in an asynchronous fashion requiring the learner to review content and complete a post-test to validate learning. Although this is a self-directed strategy it is less effective when not accompanied by another teaching strategy. It has been reported that eighty percent of content in this format is forgotten one day later and eighty percent of remainder fades in one month [44]. The purpose of this project was to compare knowledge scores on delirium in traditional learning groups and scores in a sample enhanced by delirium clinical stimulation. Support and approval were provided by nursing leadership and the department's Nursing Research & Innovation Council (Figure 1).

**Methods**

**Setting:** The project took place at an NCI-designated and Magnet-designated comprehensive cancer center located in the southeastern United States providing inpatient and outpatient care adult oncology care. There are 204 designated inpatient beds with an annual daily census of 160 and 5800 patient days. Twenty-seven ambulatory units provide 250,000 clinic visits yearly. There are approximately 9,500 surgical procedures annually. Forty percent of total discharges are over the age of 65. The project agency achieved NICHE designation in 2014, NICHE exemplar status in 2017.

**Sample:** This organization piloted the delirium simulation case study in addition to the didactic lecture on a cohort of newly licensed registered nurses as a part of the nurse residency curriculum. This dyad of learning activities was included in the next two cohorts of oncology nurse residents. All three cohorts ( $n = 44$ ) self-identified in their combined cohorts instead of their home nursing unit during the GIAP reassessment. This allowed for the direct comparison of knowledge acquisition and learning activities in the nurse resident participating in the delirium simulation.

**Design**

Prior to the simulation the nurse residents participated in passive and active learning strategies. The cost-effective teaching method of lecture aids students in understanding foundational concepts and main ideas [45]. The topic of the first lecture is delirium in older adult oncology patients and includes content on causes, subtypes, screening tools, and pharmacological interventions. The topic of the second lecture is respiratory failure. Nurse residents learn how to interpret arterial blood gases (ABGs) and engage in problem solving through the active learning strategy of case studies. Next, didactic lecture is delivered on opioid toxicities and includes content on end-tidal carbon dioxide (CO<sub>2</sub>) monitoring, Naloxone administration, safety, and side effects.

Finally, the nurse residents synthesize the knowledge previously obtained through concept mapping. One group is given the concept of delirium and asked to map the pathophysiology, subtypes, sign and symptoms, and treatments. The other two groups are given the concepts of hypercapnic respiratory failure and hypoxic respiratory failure and asked to map the pathophysiology, compensation, signs and symptoms, and treatments. The multimodal content is delivered and facilitated by clinical experts including the Critical Care Clinical Specialist, Geriatric Nurse Practitioner/NICHE Coordinator, and Patient Education Specialist in preparation for the simulation. Standardized Patient Simulation: Post-op delirium and respiratory depression outline displayed in Table 2.

**Table 2:** Standardized Patient Simulation: Post-op delirium and respiratory depression.

SCENARIO OVERVIEW	
Mr. Z is an 82-year-old patient admitted to your unit for prostate surgery. He is on a Morphine Patient controlled analgesia for pain Post-op Day 1 for a prostatectomy. His wife has been at his bedside since surgery. Mr. Z's mental awareness and orientation begin to change as does his condition.	
Estimated Scenario Time: 20 min.	Debriefing Time: 15 min.
LEARNING OBJECTIVES	
The goal of this simulated experience is to develop and apply problem-solving, critical thinking and current evidence to the care of a patient experiencing hyper/hypo delirium and respiratory depression. The nurse will:	
<ul style="list-style-type: none"> <li>•Perform a focused patient assessment to determine the presence of delirium and respiratory depression.</li> <li>•Implement appropriate nursing interventions for a patient experiencing delirium</li> <li>•Evaluate the effectiveness of the multi-disciplinary plan for a patient experiencing delirium</li> </ul>	

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EDUCATIONAL RATIONALE				
<p>Nurses should possess the following competencies prior to participation in the simulation:</p> <ul style="list-style-type: none"> <li>• Knowledge of the etiologies of, risk factors for, and signs and symptoms delirium/respiratory failure</li> <li>• Application of the nursing process for the patient experiencing delirium and respiratory failure.</li> <li>• Physical assessment skills of patient experiencing delirium and respiratory failure.</li> </ul> <p>Nursing Competencies Include:  <b>Patient and Family Centered Care:</b> Will provide compassionate, effective care to patient/family.  <b>Teamwork Collaboration:</b> Will actively engage colleagues in effective, therapeutic clinical decision making in the care of a patient and his/her family.  <b>Communication:</b> Will apply effective interaction with a patient, family, and clinical colleagues  <b>Nursing Knowledge:</b> Will use the nursing process to identify, assess, diagnose, and intervene.  <b>Evidence-Based Practice:</b> Will utilize current evidence/clinical experience to decide to modify practice</p>				
PARTICIPANTS		PRE-BRIEFING POINTS		
<input checked="" type="checkbox"/> Primary Nurse: <input checked="" type="checkbox"/> Clinical Leader: <input checked="" type="checkbox"/> Staff Nurse: <input type="checkbox"/> Care-giver(s):	<input checked="" type="checkbox"/> Provider: Facilitator <input checked="" type="checkbox"/> Respiratory Therapy: <input type="checkbox"/> Pharmacy: Facilitator <input type="checkbox"/> Chaplain: <input checked="" type="checkbox"/> Other(s): Simulated Patient	<ul style="list-style-type: none"> <li>• Participants cannot ask questions of facilitators. Use resources you would in a real situation (other Staff RN – assigned by facilitator, MD or Pharmacy – will be played by facilitator)</li> <li>• Simulated Patient Actors will be playing the role of the patient and caregiver. Talk to and assess the actor as though they were an actual patient.</li> <li>• Use the computers as you would in a real situation (charting, policy look-up, etc.)</li> </ul>		
HANDOFF GIVEN TO NURSE				
<p>Mr. Z is an 82-year-old patient admitted for prostate surgery. He is a retired accountant, lives with his wife. He drives a car, plays golf, and regularly participates in activities at the senior center. His Type II diabetes is well controlled on metformin. Mr. Z reports that he has decreased his fluid intake so he can avoid waking several times during the night to urinate. He also has a history of hypertension, moderate hearing loss (but has hearing aids bilaterally), and previous surgery for inguinal hernia repair. He wears bifocal glasses for distance and reading. He is alert, oriented, and expresses a good understanding of his surgery. He is, very anxious about hearing the results of his surgery. He was given Lorazepam 1mg at 2330. His surgeon is supposed to be up today to give him some results. His preoperative laboratory values were within normal limits except for a low hematocrit and a blood urea nitrogen/creatinine (BUN/Cr) ratio slightly elevated. His medications include metformin 500mg BID for his diabetes and HCTZ 25mg daily for hypertension. He is a moderate fall risk: he knows to call for assistance. Labs drawn this am, should be back by now. Last night he got forgetful at times, asking where he was.</p>				
CLINICAL SIGNS IMMEDIATELY VISIBLE				
<p>Forgetful, a little confused. Labs back, sodium is low, BP low- should hold BP meds. Fall score should be increased and needs fall bracelet and socks, educate caregiver.</p>				
MEDICAL HISTORY				
<p><b>Patient Name:</b> Mr. Z  <b>DOB:</b> 9/10/1930    <b>MR#:</b> 667555    <b>ALLERGIES:</b> Sulfa  <b>PMH:</b> Type II diabetes, history of hypertension, moderate hearing loss (hearing aids bilaterally), and previous surgery for inguinal hernia repair  <b>Medications:</b></p> <ul style="list-style-type: none"> <li>▪ D5.45 NS w/20mEq KCL @125/hr</li> <li>▪ Haloperidol 2 mg/ml IV prn</li> <li>▪ Lorazepam 1 mg PO (prn)</li> <li>▪ Morphine PCA 150/ 1mg q6 minutes demand only (Naloxone 0.04 administer prn)</li> </ul> <p>Benadryl 25 mg PO prn itching</p>				
<p><b>Labs:</b>  <b>Pre-Op:</b>            White blood cell (WBC) 4.5            Hemoglobin (Hgb) 10.6 Hematocrit (Hct) 32%            Blood Urea Nitrogen (BUN) 35 Sodium (Na<sup>+</sup>) 135 K<sup>+</sup> 4. Mg 1.9            Creatinine 1.3    Blood Sugar: 115</p>				<p><b>Post-OP:</b>            WBC 4.2            Hgb 9.4    HCT 27%            BUN 35    Na<sup>+</sup> 127 K<sup>+</sup> 4.2    Magnesium (Mg) 1.8            Creatinine 1.5    Blood Sugar: 110</p>
TIME	Monitor/Settings	Patient/Simulator Actions	Interventions	Cue/prompt
0-5 min.	<b>Initial State</b> Temp(T): 99.2 Resp rate (R): 16 Blood pressure (BP): 102/64 Pulse (P): 98 Oxygen saturation (SPO <sub>2</sub> ): 93%	<b>Vocal:</b> "what time is my golf game again today?"  Repeats needing to go play golf.	Assessment: labs, vital signs (VS), pain score Fall score increased  Hold BP meds	<u>Cue:</u> Patient is more forgetful / confused

5-10 min.	T: 99.2 R: 16 BP: 101/62 P: 104 SPO <sub>2</sub> : 91% End-tidal carbon dioxide (ETCO <sub>2</sub> ) normal	Cannot demonstrate incentive spirometry (IS), keeps blowing into it.  Tries to get out of bed in an agitated state without assistance. Wife: "What's going on? Why is he so forgetful? Why is he so agitated"	Looking at meds, labs, talking to caregiver about baseline, check PCA settings Fall teaching / teach back with patient and wife., Morse Scale. Provider called- must give Situation Background Assessment Recommendations (SBAR) to MD.	Respiratory Therapy arrives to do IS teaching. O <sub>2</sub> applied. Respiratory therapy (RT) reports to nurse not able to follow directions. Distracts nurse away from patient bedside.
10-15 min.	T: 99.2 R: 16 BP: 90/62 P: 110 SPO <sub>2</sub> : 93% ETCO <sub>2</sub> Normal	Patient is left alone in the room, falls back asleep, room is quiet. Cannot be aroused. VS stable, breathing.	Call Provider and provide SBAR.  Provider orders for either Haloperidol or Naloxone 0.04. If rapid response team (RRT) is called	Everyone has left the room. Nurse returns to check VS, cannot arouse patient.
15-20 min.	T: 99.2 R: 8 BP: 90/50 P: 84 SPO <sub>2</sub> : 93% ETCO <sub>2</sub> (goes up)	Completely unarousable. Wife at bedside.	Provider orders arterial blood gas (ABG) and new set of VS. Respiratory Acidosis Administers Naloxone	Transfer as appropriate providing handoff

An inter-professional simulated case study utilizing standardized patients was developed. This case study involves a primary nurse, a provider, a respiratory therapist, and a standardized patient, played by a patient advisor. These are patient volunteers trained in patient-and-family centered care

with the goal of compassionate care [46]. The delirium simulation enhanced learning scenario was introduced after the geriatric clinical specialist provided a didactic presentation to the oncology nurse residents [47].

**Results**

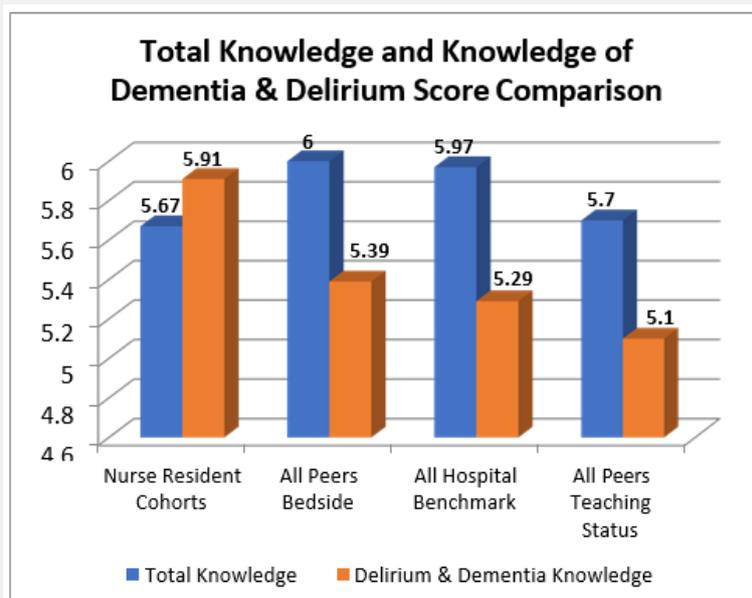


Figure 2: Total GIAP Knowledge Scores.

A total of 593 team members completed the survey benchmarked against 53,291 respondents in all hospitals completing the GIAP. This sample represented a 79.1% response rate. Females comprise 79.2% of those surveyed (Table 3). Direct care team members included 54.3% nurses and 10.79% nursing assistants with an approximate 15 years in the profession and 6.85 years at the study institution. The demographics of the study center respondents were similar to all hospital staff surveyed with the exception of those identified as Hispanic and those who

declined to answer. As part of a system quality and safety initiative related to medication safety, the appropriate use of naloxone was increased from 38% to 53% and the appropriate dosing went from 21% to 53%. The GIAP dementia and delirium knowledge score of the oncology nurse residents who participated in simulation (5.91) was statistically significantly higher ( $p < 0.05$ ) that the all-peer bed size, all peer teaching status, and all hospital comparison groups (Figure 2).

**Table 3:** Demographics.

Characteristic	Cancer Center (n=593)	Benchmark (n=53,291)
Mean Age	41.3	40.2
Mean Years at Institution	6.85	9.14
Mean Years in Profession	14.98	13.98
Female (%)	79.26%	78.46%
Direct Care Nurse	54.30%	55.12%
Nursing Assistant	10.79%	12.82%
Administrator	5.23%	4.74%
APRN	1.35%	0.95%
Educator	1.52%	2.33%
Other Clinicians	25.47%	24.37%
Black/African American	6.75%	6.81%
Hispanic/Latino	12.48%	4.42%
Caucasian	50.76%	59.13%
Asian	5.06%	9.06%
Other	3.04%	1.64%
Declined to Respond	21.92%	18.93%

## Discussion

The primary purpose of this project was to enhance nurse residents' knowledge and assessment of delirium in a postoperative standardized patient via simulation. Nurse residents within one year of graduation from nursing school may be anticipated to score higher on all knowledge compared to experienced nurses removed from standardized tests. Our findings partially support this. Oncology nurse residents participating in simulation learning scored higher on the GIAP than medical and surgical unit nurses on delirium dementia knowledge. There was not a significant difference in mean total knowledge of medical surgical nurses within the study agency. Evaluating the impact of the intervention resulting in the higher score is demonstrated in the lower overall total knowledge score of the oncology nurse residents in relation to the comparison groups. This leads the educator to believe that the simulation-based learning model improved the delirium scores exclusively and not simply overall intelligence or more recent nursing school graduation [48].

A secondary purpose of this project was to provide a venue for oncology nurse residents to identify a need for and to administer naloxone appropriately according to guidelines. Providing an opportunity to assess indications for, prepare/dilute, calculate dosage, dilute, and administer naloxone in a simulated environment prepares a newly graduated nurse to act safely and confidently in what is often an emergent patient situation [49,50]. In addition to the psychomotor confidence in administration of a high-risk medication, the changing presentation of the patient with delirium in simulation will hopefully translate into self-assurance in recognition and response to clinical deterioration in the unit setting [51,52]. This project is not without limitations. It was performed at one cancer center making it not generalizable to other settings or specialties. Three consecutive cohorts of oncology nurse residents were included and compared to a baseline of GIAP scores of all inpatient oncology nurses including the oncology nurse residents. The GIAP has not been readministered at this time to determine sustainability.

Simulation affords an opportunity to learn and make mistakes without direct patient contact [53]. Using live or computer-based simulated patients presents opportunities for education beyond the traditional classroom setting to augment preceptorship experiences [54]. Using live standardized patients is affordable and can easily be incorporated into hospital and ambulatory care settings for centers without low- or high-fidelity manikins. Conducting needs assessment from nurse residents and preceptors and examining safety occurrences can direct nurse educators in the design of meaningful simulated scenarios with the ultimate goal of improving patient safety.

## Conclusion

Knowledge acquisition as reflected by a test score does not always translate into clinical practice. Simulation learning experiences utilize resources of time and labor both for the facilitators and the nursing service. The patient and caregiver outcomes of iatrogenic delirium including falls, restraint use, increased post-acute placement, and increased length of stay can be an impactful metric. Broadening the scope of simulation learning experiences to all direct care team members, while utilizing patient outcome measures, may provide evidenced-based opportunities.

## References

- Breitbart W, Alici Y (2008) Agitation and delirium at the end of life: "We couldn't manage him". *Jama* 300(24): 2898-2910.
- LaFever S, Bory A, Nelson J (2015) Delirium in patients with cancer: what nurses need to know to improve care. *Clinical journal of oncology nursing* 19(5): 585-590.
- Lawlor PG, Bush SH (2015) Delirium in patients with cancer: assessment, impact, mechanisms and management. *Nature reviews Clinical oncology* 12(2): 77-92.
- Reston JT, Schoelles KM (2013) In-facility delirium prevention programs as a patient safety strategy: a systematic review. *Annals of internal medicine* 158(5 Pt 2): 375-380.
- Howlett C, Gonzalez R, Yerram P, Faley B (2016) Use of naloxone for reversal of life-threatening opioid toxicity in cancer-related pain. *Journal of oncology pharmacy practice: official publication of the International Society of Oncology Pharmacy Practitioners* 22(1): 114-120.
- Witlox J, Eurelings LS, de Jonghe JF, Kalisvaart KJ, Eikelenboom P, et al., (2010) Delirium in elderly patients and the risk of postdischarge mortality, institutionalization, and dementia: a meta-analysis. *Jama* 304(4): 443-451.
- Leslie DL, Marcantonio ER, Zhang Y, Leo-Summers L, Inouye SK (2008) One-year health care costs associated with delirium in the elderly population. *Archives of internal medicine*. 168(1): 27-32.
- Leslie DL, Inouye SK (2011) The importance of delirium: economic and societal costs. *Journal of the American Geriatrics Society* 59 Suppl 2(Suppl 2): S241-3.
- de la Cruz M, Fan J, Yennu S, Tanco K, Shin S, et al., (2015) The frequency of missed delirium in patients referred to palliative care in a comprehensive cancer center. *Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer* 23(8): 2427-33.
- Rice KL, Bennett M, Gomez M, Theall KP, Knight M, et al., (2011) Nurses' recognition of delirium in the hospitalized older adult. *Clinical nurse specialist* 25(6): 299-311.
- Steis MR, Fick DM (2008) Are nurses recognizing delirium? A systematic review. *Journal of gerontological nursing* 34(9): 40-48.
- Edelstein A, Alici Y (2017) Diagnosing and Managing Delirium in Cancer Patients. *Oncology (Williston Park, NY)* 31(9): 686-692.
- Connors NJ, Nelson LS (2016) The Evolution of Recommended Naloxone Dosing for Opioid Overdose by Medical Specialty. *Journal of medical toxicology: official journal of the American College of Medical Toxicology* 12(3): 276-281.
- Dahan A, Aarts L, Smith TW (2010) Incidence, Reversal, and Prevention of Opioid-induced Respiratory Depression. *Anesthesiology* 112(1): 226-238.
- Gordon DB, Pellino TA (2005) Incidence and characteristics of naloxone use in postoperative pain management: a critical examination of naloxone uses as a potential quality measure. *Pain management nursing: official journal of the American Society of Pain Management Nurses* 6(1): 30-36.
- Neil K, Marciel A, Kosar L, Dumont Z, Ruda L, et al., (2013) Retrospective analysis of opioid medication incidents requiring administration of naloxone. *Can J Hosp Pharm* 66(5): 280-288.
- Palfrey J, Mandel M, Caulkin R (2020) Inappropriate use of naloxone in a hospital setting compromising patient safety: a quality improvement project. *Future Healthc J* 7(Suppl 1): s62.
- Fong TG, Tulebaev SR, Inouye SK (2009) Delirium in elderly adults: diagnosis, prevention and treatment. *Nature reviews Neurology* 5(4): 210-220.
- Scoville R LK (2014) *Comparing Lean and Quality Improvement*. Cambridge, Massachusetts: Institute for Healthcare Improvement.
- Bliss M, Aitken LM (2018) Does simulation enhance nurses' ability to assess deteriorating patients? *Nurse education in practice* 28: 20-26.
- Kirkman MA, Sevdalis N, Arora S, Baker P, Vincent C, et al., (2015) The outcomes of recent patient safety education interventions for trainee physicians and medical students: a systematic review. *BMJ Open* 5(5): e007705.
- Safety AfHQa (2018) *Health Care Simulation to Advance Safety*. Rockville, MD.: Agency for Healthcare Quality and Safety.
- Dickter DN, Stielstra S, Lineberry M (2015) Interrater Reliability of Standardized Actors Versus Nonactors in a Simulation Based Assessment of Interprofessional Collaboration. *Simulation in healthcare: journal of the Society for Simulation in Healthcare* 10(4): 249-255.
- Cronenwett L, Sherwood G, Barnsteiner J, Disch J, et al., (2007) Quality and Safety Education for Nurses. *Nursing outlook* 55(3): 122-131.
- Jarzemsky P, McCarthy J, Ellis N (2010) Incorporating quality and safety education for nurses' competencies in simulation scenario design. *Nurse educator* 35(2): 90-92.
- Smith LH (2007) Opioid safety: is your patient at risk for respiratory depression? *Clinical journal of oncology nursing* 11(2): 293-296.
- Services CfMaM (2014) Requirements for hospital medication administration, particularly intravenous (IV) medications and post-operative care of patients receiving IV opioids. Baltimore, MD: CMS.

28. Torrie J, Cumin D, Sheridan J, Merry AF (2016) Fake and expired medications in simulation-based education: an underappreciated risk to patient safety. *BMJ quality & safety* 25(12): 917-920.
29. Raemer D, Hannenberg A, Mullen A (2018) Simulation Safety First: An Imperative. *Simulation in healthcare: journal of the Society for Simulation in Healthcare* 13(6): 373-375.
30. Jungquist CR, Pasero C, Tripoli NM, Gorodetsky R, Metersky M, et al., (2014) Instituting best practice for monitoring for opioid-induced advancing sedation in hospitalized patients. *Worldviews on evidence-based nursing* 11(6): 350-360.
31. Jungquist CR, Smith K, Nicely KL, Polomano RC (2017) Monitoring Hospitalized Adult Patients for Opioid-Induced Sedation and Respiratory Depression. *The American journal of nursing* 117(3 Suppl 1): S27-s35.
32. Meisel M, Meisel S (2007) Best-practice protocols: reducing harm from high-alert medications. *Nursing management* 38(7): 31-39.
33. Ford DG, Seybert AL, Smithburger PL, Kobulinsky LR, Samosky JT, et al., (2010) Impact of simulation-based learning on medication error rates in critically ill patients. *Intensive care medicine* 36(9): 1526-1531.
34. Crowe S, Ewart L, Derman S (2018) The impact of simulation-based education on nursing confidence, knowledge and patient outcomes on general medicine units. *Nurse education in practice* 29: 70-75.
35. Kuhrik NS, Kuhrik M, Rimkus CF, Tecu NJ, Woodhouse JA (2008) Using human simulation in the oncology clinical practice setting. *Journal of continuing education in nursing* 39(8): 345-355.
36. Grealish L, Todd JA, Krug M, Teodorczuk A (2019) Education for delirium prevention: Knowing, meaning and doing. *Nurse education in practice* 40: 102622.
37. Page JB, Kowlowitz V, Alden KR (2010) Development of a scripted unfolding case study focusing on delirium in older adults. *Journal of continuing education in nursing* 41(5): 225-230.
38. Tavares JP, da Silva AL (2013) Use of the Geriatric Institutional Assessment Profile: an integrative review. *Research in gerontological nursing* 6(3): 209-220.
39. Boltz M, Capezuti E, Kim H, Fairchild S, Secic M (2009) Test--retest reliability of the Geriatric Institutional Assessment Profile. *Clinical nursing research* 18(3): 242-252.
40. Boltz M, Capezuti E, Kim H, Fairchild S, Secic M (2010) Factor structure of the geriatric institutional assessment profile's professional issues scales. *Research in gerontological nursing* 3(2): 126-134.
41. Boltz M, Harrington C, Kluger M (2005) Nurses Improving Care for Health System Elders (NICHE). *The American journal of nursing* 105(5): 101-112.
42. Mezey M, Kobayashi M, Grossman S, Firpo A, Fulmer T, et al., (2004) Nurses Improving Care to Health System Elders (NICHE): implementation of best practice models. *The Journal of nursing administration* 34(10): 451-457.
43. Fulmer T, Mezey M, Bottrell M, Abraham I, Sazant J, et al., (2002) Nurses Improving Care for Healthsystem Elders (NICHE): using outcomes and benchmarks for evidenced-based practice. *Geriatric nursing (New York, NY)* 23(3): 121-127.
44. Bradshaw ML AJ (2011) *Innovative teaching strategies in nursing and health professions* 5<sup>th</sup> ed. Boston, MA: Jones& Bartlett.
45. Bastable SB (2019) *Nurse as education: Principles of teaching and learning for nursing practice*. 5th ed. Sudbury, MA: Jones & Bartlett.
46. Cohen BS, Boni R (2018) Holistic Nursing Simulation: A Concept Analysis. *Journal of holistic nursing: official journal of the American Holistic Nurses' Association* 36(1): 68-78.
47. Davis KD, Nye C (2017) Care of the Older Adult with Postoperative Delirium: An Interprofessional Simulation for Undergraduate Nursing Students. *Nursing education perspectives* 38(2): 103-115.
48. Buykx P, Cooper S, Kinsman L, Endacott R, Scholes J, et al., (2012) Patient deterioration simulation experiences: impact on teaching and learning. *Collegian (Royal College of Nursing, Australia)* 19(3): 125-129.
49. Stirling K, Smith G, Hogg G (2012) The benefits of a ward simulation exercise as a learning experience. *British journal of nursing (Mark Allen Publishing)* 21(2): 116-118.
50. Ashley J, Stamp K (2014) Learning to think like a nurse: the development of clinical judgment in nursing students. *The Journal of nursing education* 53(9): 519-525.
51. Hogg G, Miller D (2016) The effects of an enhanced simulation programme on medical students' confidence responding to clinical deterioration. *BMC medical education* 16(1): 8.
52. Wayne DB, Didwania A, Feinglass J, Fudala MJ, Barsuk JH, et al., (2008) Simulation-based education improves quality of care during cardiac arrest team responses at an academic teaching hospital: a case-control study. *Chest* 133(1): 56-61.
53. Aebbersold M, Titler MG (2014) A simulation model for improving learner and health outcomes. *The Nursing clinics of North America* 49(3): 431-439.
54. Aebbersold M (2018) Simulation-based learning: No longer a novelty in undergraduate education. *Online Journal of Issues in Nursing* 23(2).



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