

# Simulation Training, Coaching, and Cue Cards Improve Delirium Care

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A quality improvement study supports the use of multimodal education to enhance clinical practice for care of patients with delirium.

**M**any clinicians continue to think that delirium or acute confusion is inevitable, untreatable, and harmless. However, nothing could be further from the truth.<sup>1</sup> Delirium is a common and costly clinical syndrome that plagues a large percentage of older adults in a variety of settings. Numerous clinical studies conducted over the past 20 years have validated a high incidence of delirium in acute care hospitals.<sup>2-5</sup> Reported rates of delirium among veteran and nonveteran populations vary widely, from 20% to 80%, but even these rates may reflect under-recognition and underreporting.<sup>6</sup>

Veterans with delirium pose a unique challenge to clinicians and health care systems because they often concurrently experience dementia, depression, posttraumatic stress disorder, and delirium. This complex syndrome caused by a myriad of environmental, physiologic, and psychological factors has been associated with profoundly poor clinical outcomes, including increased

institutionalization, hospital length of stay, medication use, restraint use, falls, and mortality.<sup>3,7,8</sup>

Financial costs associated with delirium have been estimated at between \$38 billion and \$152 billion per year.<sup>9</sup> In addition, this syndrome is costly in human resource expenditures, including increased burden on family members and the need for additional care providers, such as “sitters.” Families and clinicians report increased burden and stress in their interactions with these patients.<sup>10-12</sup> Mounting evidence exists that some people with delirium never return to baseline cognitive function after even a single episode of delirium.<sup>1,8</sup> Unfortunately, many clinicians do not recognize the seriousness of acute confusion.

Clinical practices related to routine screening for delirium vary widely. Although the Confusion Assessment Method (CAM) screening tool has high sensitivity and specificity, only 17% of hospitals consistently use this tool in clinical practice.<sup>2,6,13,14</sup> According to a survey by Ely and col-

leagues, physicians reported being aware of delirium but inconsistently applying treatment protocols in clinical practice.<sup>2</sup> Nurses noted similar difficulties in consistently screening patients and using delirium management protocols.<sup>15</sup> Given the high incidence of delirium and its associated morbidity, including long-term cognitive impairment and human and financial costs, there is an urgent need to implement programs that enhance delirium prevention, timely recognition, and effective management to improve patient outcomes and address caregiver burden.

Over the past decade, educational strategies for improving delirium prevention, recognition, and management have included didactic education, consultation, and use of protocols.<sup>2,3,5,16</sup> Bedside mentoring, implementation of protocols, and other interventions have been proposed as well.<sup>16,17</sup> Several program models, including consultation by psychiatrists or psychiatric advanced practice nurses, have been implemented to increase detection and treatment of delirium.<sup>2,3,5,15</sup> These pilot programs have been successful to varying degrees but in general have not shown independent effects beyond intervention or significantly increased recognition and

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management of adverse consequences for most patients. The cause of these outcomes seem to be multifactorial, but the complexity of the syndrome is part of the problem.<sup>18-20</sup>

Other possible barriers to change regarding delirium-related issues in clinical practice are lack of knowledge and skills and individual attitudes.<sup>20-22</sup> Continuing evidence exists that clinicians feel ill-prepared to help delirious patients and frustrated enough to resort to using restraints and medication as first-line treatment.<sup>17</sup> Yanamadala and colleagues reviewed 26 studies that identified strategies for delirium education.<sup>23</sup> Most of the studies reported on didactic teaching methods that included information on resources. Only 1 study with nursing students reported using actors for simulation training. The programs most successful in improving knowledge, skills, attitudes, practice changes, and patient outcomes seemed to be those that used multiple educational methods, including information dissemination, use of guidelines and protocols, and peer and expert feedback.

This finding is consistent with the report that didactic learning alone, though improving competency, is less likely to change behavior or improve outcomes.<sup>24</sup> A constellation of didactic education, mentoring, use of protocols to target high-risk patients, and a therapeutic environment has helped to reduce delirium incidence.<sup>4,25,26</sup> Rudolph and colleagues found an association between multimodal education (risk assessment, sensory improvement, sleep promotion) and shorter hospital stays and less use of restraints.<sup>27</sup> In clinical practice, however, implementation of evidence-based non-pharmacologic interventions, such as enhanced communication, mo-

bility, nutrition, and meaningful activities, continues to lag despite education.<sup>28,29</sup>

## MULTIMODAL EDUCATION

To address these gaps in knowledge and skills, a multidisciplinary delirium resource team at the Louis Stokes Cleveland VAMC in Ohio developed a multimodal educational program incorporating simulation. The team of physicians, nurses, care coordinators, and social workers met regularly and developed interventions, educational materials, cue cards (eFigure 1, available at [www.fedprac.com](http://www.fedprac.com)), sense-enhancing aids (hearing amplifiers, puzzles, books, music CDs, prism glasses), clinical protocols, and delirium resources, such as CARES (Confusion Assessment Resource Enhancement Supplies) activity carts.

The CARES carts are small, rolling wooden carts stocked with various resources that focus on comfort and entertainment. The carts hold guided imagery CDs and Playaways (small audio players that come with ear buds for individual use and pre-loaded with a specific guided imagery session). The carts also hold books, books on tape, magazines, portable CD players, music CDs, games, exercise bands, healthful snacks, DVDs, and a portable DVD player.

Bedside mentoring continued throughout this quality improvement (QI) project, and a CARES teaching tool kit was developed. This kit, which continues to be used, includes videos and webinars for professionals and family caregivers; delirium pocket cue cards for physicians, nurses, aides, and sitters; a list of patient diversion supplies; and a family brochure. Delirium resource team members continue to provide the health care team with education and support. Given the emphasis

on clinicians and patient outcomes in intensive care units (ICUs), the teaching tool kit is a valuable guide for assessing and treating patients with delirium during rounds and consultations.

## SIMULATION

Using a simulation center and standardized patients (SPs), teams of interdisciplinary care providers practiced communication techniques and recommended treatment strategies with the help of a delirium coach. Sessions were videotaped. This intervention, which used simulation training, was supported by VA grant T-21, to reduce institutionalization and promote patient-centered care.

In a clinical context, simulation involves activities that mimic the reality of the clinical environment, including physical symptoms, communication patterns, and critical decision making. Trained SPs have the unique advantage of providing interactive practice and immediate feedback in a safe, controlled setting.<sup>30</sup>

Standardized patient programs provide learners with real-life interactions for the development and practice of interpersonal communication and clinical skills. In a laboratory setting, SP programs use role-play scenarios that allow learners to practice complex assessment and communication skills. Standardized patients are effective in teaching clinical, interviewing, and communication skills to learners from a variety of disciplines, including medicine, nursing, dental, and law.<sup>31</sup> Standardized patients also provide a safe, supportive environment conducive to learning and standardized assessment.

Standardized patients can serve as practice models and participate in sophisticated assessment and

**Simulation Exercise**

Mr. Samuel is an 86-year-old veteran who underwent total hip arthroplasty about 48 hours ago. He is on patient-controlled analgesia for postoperative pain and has started eating. He had an unwitnessed episode of aspiration. He is now hyperactive and trying to get out of bed—his legs are over the side. His voice is clear, but he is speaking loudly and nonsensically and is agitated. A sitter at his bedside is watching TV, which is loud, and the alarm on the intravenous pump is sounding. Mr. Samuel’s daughters arrive, witness his unusual behavior, and become concerned. Outside the room, the primary nurse is receiving a report from the night nurse.<sup>32</sup>

Mr. Samuel (Role)	Nurse	Moderator	Moderator Prompts
<ul style="list-style-type: none"> <li>• Stella, is that you?</li> <li>• Why am I here?</li> <li>• Are you here to take me home?</li> <li>• What are these things on my wrists?</li> </ul>	<ul style="list-style-type: none"> <li>• Introduce yourself to Mr. Samuel and ask how he is feeling</li> <li>• Ask him to identify her</li> </ul>	<ul style="list-style-type: none"> <li>• Introduce self</li> <li>• “How are you feeling?”</li> <li>• 2 patient identifiers</li> </ul>	<ul style="list-style-type: none"> <li>• Reorient</li> </ul>
<ul style="list-style-type: none"> <li>• How should I feel?</li> <li>• I’m not in my own home!</li> <li>• What are these things on my wrists?</li> <li>• Why can’t I get out of here?</li> <li>• I can only move 1 leg, see?</li> <li>• Stella, why aren’t you helping me?</li> </ul>	<ul style="list-style-type: none"> <li>• “Are you having any pain?”</li> <li>• Explain who she is and ask Mr. Samuel to state her name again</li> <li>• Reassure him he is safe, in the hospital, and being cared for</li> <li>• Alternate removing the wrist restraints and attempt assessment</li> <li>• “How can I help you be more comfortable?”</li> </ul>	<ul style="list-style-type: none"> <li>• Introduce self again</li> <li>• 2 patient identifiers</li> <li>• Reorient again</li> <li>• Reassure</li> <li>• Physical assessment</li> <li>• Presence of pain</li> <li>• Strongly encourage fluids</li> <li>• Toileting</li> <li>• Check leg pain for swelling, redness</li> <li>• Wear glasses?</li> <li>• Wearing hearing aids?</li> </ul>	<ul style="list-style-type: none"> <li>• Assess environment</li> </ul>
<ul style="list-style-type: none"> <li>• Stella, you are my daughter—you know who I am!</li> <li>• Why aren’t you helping me?</li> <li>• I can’t move here. Look, I can only get 1 leg out of bed!</li> </ul>	<ul style="list-style-type: none"> <li>• While Mr. Samuel is asking questions, turn off the TV and reset the IV alarm</li> <li>• Cover the IV pump</li> <li>• Reposition the patient</li> <li>• Get him out of bed</li> <li>• Reorient quietly and calmly</li> <li>• “I am here to help you”</li> <li>• Ask him to practice using the call light</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing environment</li> <li>• Reposition patient</li> </ul>	<ul style="list-style-type: none"> <li>• Deescalate</li> </ul>

feedback of learners’ abilities and services. Interacting with SPs gives learners a chance to practice clinical and interpersonal skills with an emphasis on communication before meeting actual patients. After interacting with an SP, a learner receives feedback from a preceptor and/or the learner’s peers. The SP also may be asked to provide brief feedback—a component of the SP training process. Allowing time for feedback is an integral part of student learning.

For this QI project, the delirium team used the Mt. Sinai Skills and

Simulation Center at Case Western Reserve University School of Medicine. The facility focuses on creative, innovative continuing learning for health care providers at all levels and is certified by the American College of Surgeons as a level 1 Comprehensive Accredited Education Institute.

After a literature review and several brainstorming sessions, the delirium team tailored case studies to veterans to simulate the intervention and train SPs for the delirium program. During training, SPs reviewed scenarios, engaged in practice sessions, and answered questions.

Several SPs were familiar with the behavior of delirious patients from personal experience.

The goals of the program were to increase knowledge of delirium signs and symptoms as a medical condition that requires immediate attention; increase competency in administering CAM and in documenting its results; increase interdisciplinary communication; and increase knowledge using nonpharmacologic interventions for sensory enhancement and agitation. Enhanced interdisciplinary communication was accomplished during the simulation by assigning

Mr. Samuel (Role)	Nurse	Moderator	Moderator Prompts
<ul style="list-style-type: none"> <li>• Okay, okay, my name is Mr. Samuel Steinberg, and I'm 87 years old.</li> <li>• Now will you help me?</li> </ul>	<ul style="list-style-type: none"> <li>• Ask again about pain and comfort</li> <li>• "Yes, I will help you"</li> </ul>	<ul style="list-style-type: none"> <li>• Move slow and cautiously</li> </ul>	<ul style="list-style-type: none"> <li>• Provide safety and comfort</li> </ul>
<ul style="list-style-type: none"> <li>• No, I'm not in pain, and I don't need to go to the bathroom.</li> <li>• What I need is to get out of here!</li> </ul>	<ul style="list-style-type: none"> <li>• "Let's sit in the chair after we go to the bathroom, and then I will call the doctor"</li> </ul>		
<ul style="list-style-type: none"> <li>• I really need to go home now.</li> <li>• I need to take care of my dog and watch my stories.</li> </ul>	<ul style="list-style-type: none"> <li>• "Where is your home?"</li> <li>• "Tell me about your dog. How is your dog?"</li> <li>• "I understand your daughter is taking care of your dog"</li> <li>• "What kind of dog is it?"</li> </ul>	<ul style="list-style-type: none"> <li>• CARES (Confusion Assessment Resource Enhancement Supplies) activity cart items</li> </ul>	<ul style="list-style-type: none"> <li>• Provide individualized care</li> </ul>
	<ul style="list-style-type: none"> <li>• Report to doctor; include delirium assessment (confusion assessment method)</li> <li>• Any new medications causing this?</li> <li>• Pulse oxygen, lung sounds, sleep pattern, patient-controlled anesthesia pain, current medications, fluid intake</li> <li>• Vital signs (low-grade fever, increased respiratory rate); is patient stable?</li> <li>• Laboratory tests?</li> <li>• Postoperative state? Highlight lung sounds; oxygen saturation changed with mental status</li> </ul>	<ul style="list-style-type: none"> <li>• You did a good job assessing</li> <li>• How do you further assess signs of confusion?</li> <li>• Look through chart</li> <li>• Check medications</li> <li>• Oxygen saturation, lung sounds</li> <li>• Check pain</li> <li>• Last pain medication</li> <li>• Bowel movement</li> <li>• Fluid intake</li> <li>• Consider new medications</li> <li>• The doctor is on the phone</li> <li>• Would you like to give a report?</li> </ul>	

individuals from different disciplines to work in teams. To maximize the use of resources and limit participants' time away from the clinical area, the administration planned and supported a daylong program that included didactic education, videos, group work sessions, and the simulation sessions with resource team members as coaches.

**METHODS**

All participants attended an hour-long introductory didactic lecture together. Then, they were randomly assigned to 1 of 4 remain-

ing 45-minute training sessions. Each participant attended a session that combined a video and a case study; a session of role-playing with group discussion; and 2 simulation scenario sessions. Concurrent training sessions were needed to facilitate having all 100 attendees participate within 6 hours. Attendees were multidisciplinary providers from various non-ICU medical/surgical units and outpatient geriatric clinics. They rotated among sessions to accommodate all participants.

For the simulation scenarios, 8 simulation rooms were used over 2 peri-

ods—for 16 simulation sessions total. Participants were randomly assigned to multidisciplinary groups that worked in teams to assess and recommend care and treatments for SPs who were stimulating delirium. During the simulation, delirium coaches used cue cards and verbal hints to direct teams (Simulation Exercise). After the session, participants received verbal and written feedback from the delirium coaches and the SPs, using a standardized checklist. The simulation center with its multiple lecture halls and simulation laboratories facilitated meeting these challenging requirements.

**Table. Selected Knowledge Responses Before and After Simulation Training<sup>a</sup>**

Responses	Before Training n (% correct)	After Training n (% correct)	% Difference	P Value
1. Hallmark signs and symptoms of delirium include all of the following disorganized thinking, transient memory loss, day/night reversal, inattention, gradual onset, altered and fluctuating locus of control.	24 (80.0)	28 (93.3)	13.3	.046
2. Delirium is a medical emergency. True or false?	20 (66.7)	27 (90.0)	23.3	.020
3. Identify appropriate intervention for person with delirium:				
a. Keep awake during day with activities;	17 (56.7)	28 (93.3)	36.6	< .001
b. Minimize noise at night and discourage napping during day; and	20 (66.7)	29 (96.7)	30	.003
c. Use distraction techniques	23 (76.7)	29 (96.7)	20	.034
4. Total score, mean correct, %	84.1	91.5	7.4	< .001

<sup>a</sup>n = 30 (4 did not complete both pretest and posttest).

**OUTCOMES**

The impact of this multimodal intervention was measured in a variety of ways—with preintervention and postintervention knowledge tests, post-simulation surveys, program surveys, and patient chart reviews. Simulation sessions had 100 attendees, including mentors (interdisciplinary resource team), champions, and nursing staff from various hospital units. Champions represented multiple disciplines and had varying levels of experience. Most of the participants were nurses (62%), followed by social workers (12%), nursing assistants (12%), psychologists (6%), and others (11%). Participants’ years of experience were < 1 year (6%), 1 to 5 years (21%), 6 to 10 years (21%), and > 10 years (52%).

Mean knowledge survey score was 84% before training and 92% after training. Recognition of delirium as a medical emergency requiring immediate follow-up was increased (*P* = .02), as was knowledge about delirium management, as in increasing daytime activities

(*P* < .001) and using distraction techniques (*P* = .03) (Table).

More than 94% of participants said the simulation training fulfilled their education needs. More than 80% reported using the information from the delirium workshop in their practice. In reviewing the techniques presented during the workshop, participants reported that they would approach situations differently from before the workshop by using more nonpharmacologic interventions (40%), enhanced communication (24%), and more in-depth assessment for medical causes of delirium (19%). Thirteen percent said they would not change their approach.

Thirty-five percent of respondents had positive feelings after the simulation exercise, 40% had cared for patients in similar situations, and 35% knew delirium care should start with assessment for medical causes.

The team reviewed patient charts for documentation of confusion assessment (signs and symptoms of confusion), including the standardized CAM method and nonphar-

macologic interventions. Random monthly audits, 1 month before training and 5 months after, indicated an increase in confusion assessment and documentation. For veterans with delirium, nonpharmacologic interventions increased from 9% at baseline to 53% at the 5-month audit. Hospital length of stay, however, trended toward a slight increase in number of days. These findings are consistent with those reported by Rudolph and colleagues, who also piloted multimodal education and sensory enhancement.<sup>27</sup>

**DISCUSSION**

Delirium assessment and management are complex skills that require well-coordinated interdisciplinary care and significant administrative support. Clinicians are becoming increasingly aware of the mounting evidence that patients with delirium feel immediate and often long-term negative effects. Strategies that support clinicians and enhance clinical care must include multimodal education and support.

In this QI project, participants supported use of simulation education, bedside coaching, and pocket cue cards to enhance delirium caregiving knowledge and skills. The majority of participants indicated that, though the simulation sessions were challenging, they also were realistic and helpful. Standardized patients provided feedback and often advised teams of needed improvement, such as spending more time in helping patients feel safe and comfortable. Coaches noted that many team members collaborated with one another but often neglected to use the pocket cue cards, family brochures, and other resources in the room. The reason is not clear. Perhaps the novelty of the resources and potential participant anxiety during the simulation were contributing factors. In future sessions, coaches must address making use of available resources.

Chart reviews indicated that nonpharmacologic management of delirium increased to 53% from < 10%. The increased use of resources in caring for patients with delirium was confirmed by the need to restock the CARES activity carts with patient diversion supplies. Given the success of this first program, another ICU education and simulation program was initiated. Findings from this QI project support using multimodal education that incorporates simulation training, bedside coaching, and pocket cue cards to enhance clinical practices for care of patients with delirium.<sup>33</sup>

Methods facilitated team collaboration, patient family communication, and synthesis of much information over a relatively short period. Didactic education alone may be insufficient to adequately enhance clinical care for delirium. The impact of a multimodal strategy—

including a delirium resource consultation team that provided bedside mentoring, encouraged use of pocket cue cards, and supported evidence-based nonpharmacologic interventions—cannot be underestimated. In addition, simulation education also provided a unique opportunity for the health care teams to “practice” assessment, communication, and collaboration skills in a supportive setting with real-time feedback. These resources are being disseminated throughout the Louis Stokes Cleveland VAMC. Plans to disseminate this information to a broader national audience are under way.

Although not all facilities can access the simulation laboratory, many may be able to implement use of videos, case studies, and role-playing to enhance didactic education, to improve outcomes for patients with delirium. Enhanced clinical management of complex syndromes such as delirium may be influenced most by a combination of education, practice, and mentoring methods. Use of simulation as an adjunct teaching method is a promising strategy that may enhance care of patients with delirium. This QI project demonstrated positive educational and clinical trends in a VA setting. More studies, including randomized clinical trials, are needed in a variety of settings to further test these strategies. ●

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#### Disclaimer

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