An Advanced Practice Provider Initiative for Delirium Management in the ICU

SARAH REBAL, MS, RN, ACNP-BC, CAROLINE SHIRZADI, MS, RN, ACNP-BC, JENNIFER AGATEP, MS, RN, AGACNP, KONSTANTINA MATSOUKAS, MLIS, KAY SEE TAN, PhD, KENNETH SEIER, MS, YESNE ALICI, MD, BEATRIZ KORC-GRODZICKI, MD, PhD, and LOUIS VOIGT, MD

© 2020 Harborside™

Abstract

Delirium is the most common neuropsychiatric challenge in cancer patients, particularly in the critically ill population. Without a screening method and constant vigilance by providers, delirium is often misdiagnosed. The purpose of our pilot study was to determine if an educational program targeting critical care medicine advanced practice providers (APPs) and fellows in an oncologic intensive care unit would increase APP knowledge of delirium and their level of comfort with delirium screening and management. Thirty-one APPs and fellows participated in the program. Scores on knowledge-based delirium assessments increased significantly after the intervention and at the 3-month follow-up ($p < .0001$ and $p < .0225$, respectively). Providers' comfort with delirium screening and management also improved after the intervention ($p = .0020$ and $p < .0001$, respectively) and decreased slightly at the 3-month follow-up ($p = .1764$ and $p = .9840$, respectively). A brief and focused APP-led educational initiative successfully improved knowledge of delirium and comfort with screening and management.

Delirium is an acute disturbance in cognition, attention, and awareness that may fluctuate throughout the course of the day and is often due to an evolving medical condition (American Psychiatric Association, 2013). Delirium occurs in 30% to 80% of patients admitted to the intensive care unit (ICU) and is associated with increased ICU and hospital mortality, ICU and hospital length of stay (LOS), and healthcare costs (Ely et al., 2001; Girard, Pandharipande, & Ely, 2008; Leslie, Marcantonio, Zhang, Leo-Summers, & Inouye, 2008; Mehta et al., 2015; Shehabi et al., 2010). Delirium carries short- and long-term sequelae, such as decreased ability to perform activities of daily living and varying degrees of cognitive impairment (Brummel et al., 2014; Pandharipande et al., 2013; van den Boogaard et al., 2012).

Delirium is the most common neuropsychiatric complication in cancer patients, with an incidence of 18% to 50% in all patients, up to 43% in patients who have had hematopoietic stem cell transplants, and up to 80% in patients with advanced cancer (Beglinger et al., 2006; Sánchez-Hurtado et al., 2017; Traube et al., 2017). Cancer patients have additional risk factors for delirium that include the direct neurocognitive effects of cancer, chemotherapy, immunotherapy, and radiation therapy, the nature and complexity of certain surgical interventions, and side effects of various supportive medications (anticholinergics, antiemetics, opioids, and anxiolytics; Breitbart & Alici, 2012; Choi et al., 2017).

Untrained health-care providers routinely miss the diagnosis of delirium more than two thirds of the time (Sinvani, Kozikowski, Pekmezaris, Akerman, & Wolf-Klein, 2012). Oncologists have been shown to misdiagnose delirium in up to one third of patients (Wada, Wada, Wada, & Onishi, 2010). Diagnosing delirium in cancer patients can be challenging. Cancer patients are prone to mood disorders, anxiety, and cognitive impairment (Edelstein & Alici, 2017). Critically ill and/or mechanically ventilated patients have a limited ability to communicate (Ely et al., 2001).

The Confusion Assessment Method for the ICU (CAM-ICU) is a well-validated tool for delirium screening (Luetz et al., 2010). CAM-ICU has moderate to high sensitivity (81%) and high specificity (98%) when used by experienced ICU nurses (Shi, Warren, Saposnik, & MacDermid, 2013). Gaps in delirium knowledge, transient and brief clinical assessment, and limited application of CAM-ICU as a screening tool may explain the low rate of recognition of delirium by ICU physicians and possibly by advanced practice providers (APPs; Arumugam et al., 2017). Data on delirium management by APPs are lacking. The purpose of this study is to determine if a brief, ICU-based educational program targeting critical care medicine (CCM) APPs and fellows increases knowledge of delirium and improves the level of comfort with screening and managing delirium.

METHODS

The intervention took place in a 498-bed academic tertiary care cancer center in New York, New York. The 20-bed ICU averages 1,100 admissions per year and is managed by two multidisciplinary teams. The teams consist of attending physicians, CCM fellows, anesthesia residents and interns, and APPs. The APPs are comprised of nurse practitioners (NPs) board-certified in family, adult, and acute care, and board-certified physician assistants (PAs). A group of ICU-based APPs created a comprehensive training program targeting NPs, PAs, and CCM fellows working in the ICU.

The evidence-based delirium training program incorporated current literature on delirium and standardized screening tools. The program consisted of a PowerPoint lecture focusing not only on delirium pathophysiology and its devastating impact, but also on proper delirium screening, diagnosis, and management. A brief video demonstrating CAM-ICU administration was provided, and the 1-hour sessions concluded with time for questions and discussion (Jones, 2013). The educational sessions were led by one of three dedicated acute care APP trainers. The sessions took place during normal working hours to accommodate both the day and night shift staff. Up to five participants attended each session, and the APP trainers completed the program in approximately 2 months (Appendix A).

The CCM team developed a 25-question survey to assess the knowledge of the participants at three time points. Prior to our intervention, the survey was administered to psychiatry and geriatric specialists for review. Based on their feedback, the questions were adjusted for comprehension and readability. We did not create the survey using formal development procedures. The survey was comprised of three segments:

- 8 questions that recorded participants' demographic data, professional experience, and familiarity with CAM-ICU and delirium
- 15 questions that captured participants' knowledge of delirium diagnosis and management (Appendix B)
- 2 subjective questions with a numerical (0 to 100) Likert scale to evaluate participants' reported comfort with CAM-ICU administration and delirium management.

The survey was administered to each participant at three different time points: before the training session, immediately after the training session, and 3 months later. The responses from each survey participant were collected on the

Research Electronic Data Capture (REDCap) database (Harris et al., 2008). The study was performed for quality improvement, and a waiver of authorization was obtained from the institutional review board before performing the data analysis. Questions were analyzed to identify the most frequently incorrect and correct responses.

Results are presented as medians with first and third interquartile ranges (IQR), means and standard deviations (SD), absolute numbers, and percentages. To compare results of the assessments, Wilcoxon signed-rank test was used for continuous variables, and McNemar's test was used for binary variables because of the paired nature of the data (Table 1). False discovery rate was used to adjust for multiple testing (Benjamini & Hochberg, 1995). When comparing the data collected at three different time points, the factors of interest were the total number of correct answers out of the 15 knowledge questions and reported comfort level with CAM-ICU administration and delirium management based on the Likert scale (0–100), with a score of 100 being the most comfortable. SAS version 9.4 was used for analysis. All tests were two-sided, and $p < .05$ was considered significant.

RESULTS

Participants

The training program targeted 8 CCM fellows, 20 board-certified NPs, and 3 board-certified PAs. The median years of overall ICU experience was 6 (range: 2.5–10). The median years of ICU experience at our institution was 2.5 (range: 1–8). Of the 31 participants, 21 (68%) felt that their CAM-ICU documentation was accurate prior to our training

program; however, 13 (42%) had never used CAM-ICU in practice and 26 (86%) had never attended an ICU-wide educational program for delirium screening and management. Additionally, there were no formal educational interventions for APPs or CCM fellows in proximity to our educational intervention.

Knowledge Scores

After the initial educational program, mean scores on the 15-item survey improved from a baseline of 11.5 out of 15 (76%) to 12.9 out of 15 (86%; $p < .0001$). Three months following the intervention, scores were consistently higher than pre-test scores (12.2 vs. 11.5, $p = .0225$) and only slightly lower than postintervention scores (12.2 vs. 12.9, $p = .0315$; Table 1). After analyzing each individual question, the question answered incorrectly the most often was related to the use of haloperidol for the management of delirium, with only 32% of participants answering correctly on the pre-test, 39% on the post-test, and 26% on the follow-up test (question 5 in Appendix B). Additionally, one question required the participants to recognize delirium as a serious syndrome with a major impact on patients' morbidity and mortality. Yet, only 61% of our APPs and fellows answered the question correctly on the pre- and post-intervention quizzes (question 1 in Appendix B).

Comfort Level

Participants' reported comfort with CAM-ICU administration increased from a median Likert score of 51 out of 100 prior to our intervention to 72 out of 100 following the intervention ($p < .0001$). Similarly, comfort level with delirium management

Table 1. Results of an Educational Initiative on Delirium Screening and Management in an ICU

		Pre-test (n = 31)	Post-test (n = 31)	3-mo follow-up test (n=31)	*p* value (pre vs. post[a])	*p* value (post vs. follow-up[a])	*p* value (pre vs. follow-up[a])
Total number correct out of 15	Mean (SD)	11.5 (1.88)	12.9 (1.50)	12.2 (1.87)	.0001	.0315	.0225
How comfortable are you with treating your patients for delirium?	Median (IQR)	61.0 (53.0–71.0)	73.0 (58.0–79.0)	76.0 (63.0–84.0)	.0020	.1764	.0020
How comfortable are you with administering CAM-ICU to your patients?	Median (IQR)	51.0 (25.0–60.0)	72.0 (53.0–84.0)	70.0 (50.0–92.0)	< .0001	.9840	< .0001

Note. [a]*p* values provided are adjusted using false discovery rate.

increased from a baseline median score of 61 out of 100 to 73 out of 100 after the initial training session (p = .0020). On the other hand, comfort with administering the CAM-ICU decreased slightly from a median score of 72 after the initial training session to 70 at the 3-month follow-up, while comfort in managing delirium increased from 73 immediately after the training program to 76 at the 3-month follow-up. These changes in the level of comfort with CAM-ICU administration and delirium management from training to follow-up were not statistically significant (p = .9840 and p = .1764, respectively).

DISCUSSION

This study demonstrates the successful implementation of an APP-led program that has improved CCM providers' knowledge of delirium screening and management in a mixed medical-surgical ICU despite a variable level of experience among the participants. Limited prior participant exposure and familiarity with the CAM-ICU screening tool and delirium management did not negatively impact the outcomes of the training program.

Most participants persisted in their incorrect response to question 5 (Appendix B) on the pharmacologic management of agitation associated with delirium throughout the three time point assessments. While the study was not designed to investigate the reasons for correct or incorrect responses, we attribute these consistent errors to (1) gaps in knowledge regarding pharmacologic treatment of delirium, (2) providers' potential inherent bias against the use of haloperidol, (3) poor phrasing of the question, and/or (4) poor explanation by the APP trainers on the correct use of this medication for the treatment of delirium.

The fact that participants persisted in their incorrect response to question 1 (Appendix B) on recognizing delirium as a medical emergency points to (1) the inherent beliefs that delirium is an expected and nonpreventable phenomenon in critical care and/or cancer patients and (2) the limits of singular educational interventions in changing archetypal misconceptions and attitudes anchored in decades of erroneous traditions.

We hypothesize that participants' comfort with the CAM-ICU screening tool and delirium management initially improved after the implementation of our education program for two major reasons: there was a baseline low level of experience in the use of the CAM-ICU screening tool, and the incorporation of a video showing how to adequately perform the CAM-ICU was very powerful. Inversely, the lack of daily use of the CAM-ICU screening tool by APPs and fellows (as it is routinely administered by our ICU nurses) may explain the decrease in comfort in its administration among training participants observed at the 3-month follow-up.

There were several strengths of this study. All participants completed the initial survey, postintervention survey, and 3-month follow-up survey. The educational initiative was standard among all groups and could be easily replicated during normal working hours to accommodate both day and night shifts. The training sessions were brief, engaging, convenient, and cost-effective. The APP-led educational initiative helped create homogeneity among all participants, irrespective of their professional categories. The study offered an important approach with practical implications for other institutions as APPs are incorporated in an increasing number into ICU teams across the United States (Moote et al., 2011).

This pilot study has several limitations. The initiative was limited to a single tertiary cancer center, and the number of participants was rather small. We acknowledge there may be limitations to the internal reliability of our quiz by strict survey development criteria, and although beyond the scope of our study, it will be important to formally develop and validate a survey for future interventions. The pilot training program had not been previously tested and data collection was limited to 3 months.

CONCLUSION

Delirium is a major contributor to ICU, hospital, and postdischarge morbidity and mortality. Delirium is also common in hospitalized cancer patients for a variety of reasons. In the critically ill population of patients with cancer, delirium diagnosis and management are rather challenging. Therefore, delirium must be addressed by all oncologic APPs. An APP-led initiative offers a nontraditional but successful and cost-effective training program on delirium screening and management with a focus on cancer patients for multidisciplinary ICU teams.

The long-term impact of this educational program remains to be determined with future studies. ●

Disclosure

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing.

Arumugam, S., El-Menyar, A., Al-Hassani, A., Strandvik, G., Asim, M., Mekkodithal, A.,...Al-Thani, H. (2017). Delirium in the intensive care unit. *Journal of Emergencies, Trauma, and Shock, 10*(1), 37–46. https://doi.org/10.4103/0974-2700.199520

Beglinger, L. F., Duff, K., Van Der Heiden, S., Parrott, K., Langbehn, D., & Gingrich, R. (2006). Incidence of delirium and associated mortality in hematopoietic stem cell transplantation patients. *Biology of Blood and Marrow Transplantation, 12*(9), 928–935. https://doi.org/10.1016/j.bbmt.2006.05.009

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society. Series B (Methodological), 57*(1), 289–300.

Breitbart, W., & Alici, Y. (2012). Evidence-based treatment of delirium in patients with cancer. *Journal of Clinical Oncology, 30*(11), 1206–1214. https://doi.org/10.1200/JCO.2011.39.8784

Brummel, N. E., Jackson, J. C., Pandharipande, P. P., Thompson, J. L., Shintani, A. K., Dittus, R.,...Girard, T. D. (2014). Delirium in the ICU and subsequent long-term disability among survivors of mechanical ventilation. *Critical Care Medicine, 42*(2), 369–377. https://doi.org/10.1097/CCM.0b013e3182a645bd

Choi, N. Y., Kim, E. H, Baek, C. H., Sohn, I., Yeon, S., & Chung, M. K. (2017). Development of a nomogram for predicting the probability of postoperative delirium in patients undergoing free flap reconstruction for head and neck cancer. *European Journal of Surgical Oncology, 43*(4), 683–688. https://doi.org/10.1016/j.ejso.2016.09.018

Edelstein, A., & Alici, Y. (2017). Diagnosing and managing delirium in cancer patients. *Oncology, 31*(9), 686–692.

Ely, E. W. (2002). Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet. Retrieved from https://www.icudelirium.org/medical-professionals/delirium/monitoring-delirium-in-the-icu

Ely, E. W., Gautam, S., Margolin, R., Francis, J., May, L., Speroff, T.,...Inouye, S. (2001). The impact of delirium in the intensive care unit of hospital length of stay. *Intensive Care Medicine, 27*(12), 1892–1900. https://doi.org/10.1007/s00134-001-1132-2

Girard, T. D., Pandharipande, P. P., & Ely, E. W. (2008). Delirium in the intensive care unit. *Critical Care (London, England), 12*(suppl 3), S3. https://doi.org/10.1186/cc6149

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde J. G. (2008). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics, 42*(2), 377–

381. https://doi.org/10.1016/j.jbi.2008.08.010

Jones, D. (2013). CAM-ICU demo [video file]. Retrieved from https://www.youtube.com/watch?v=yEwBzKTbJEk

Leslie, D. L., Marcantonio, E. R., Zhang, Y., Leo-Summers, L., & Inouye, S. K. (2008). One-year health care costs associated with delirium in the elderly population. *Archives of Internal Medicine, 168*(1), 27–32. https://doi.org/10.1001/archinternmed.2007.4

Luetz, A., Heymann, A., Radtke, F., Chenitir, C., Neuhaus, U., Nachtigall, I.,...Spies, C. (2010). Different assessment tools for intensive care unit delirium: Which score to use? *Critical Care Medicine, 38*(2), 409–418. https://doi.org/10.1097/CCM.0b013e3181cabb42

Mehta, S., Cook, D., Devlin, J. W., Skrobik, Y., Meade, M., Fergusson, D.,...Burry, L. (2015). Prevalence, risk factors, and outcomes of delirium in mechanically ventilated patients. *Critical Care Medicine, 43*(3), 557–566. https://doi.org/10.1097/CCM.0000000000000727

Moote, M., Krsek, C., Kleinpell, R., & Todd, B. (2011). Physician assistant and nurse practitioner utilization in academic medical centers. *American Journal of Medical Quality, 26*(6), 452–460. https://doi.org/10.1177/1062860611402984

Pandharipande, P. P., Girard, T. D., Jackson, J. C., Morandi, A., Thompson, J. L., Pun, B. T.,...Pun, B. T. (2013). Cognitive impairment after critical illness. *New England Journal of Medicine, 369*(14), 1306–1316. https://doi.org/10.1056/NEJMoa1301372

Sánchez-Hurtado, L. A., Hernández-Sánchez, N., Del Moral-Armengol, M., Guevara-García, H., García-Guillén, F. J., Herrera-Gómez, Á., & Ñamendys-Silva, S. A. (2017). Incidence of delirium in critically ill cancer patients. *Pain Research and Management, 2018*, Article ID 4193275. https://doi.org/10.1155/2018/4193275

Shehabi, Y., Riker, R., Bokesch, P., Wisemandle, W., Shintani, A., Ely, W., & SEDCOM Study Group. (2010). Delirium duration and mortality in lightly sedated, mechanically ventilated intensive care patients. *Critical Care Medicine, 38*(12), 2311–2318. https://doi.org/10.1097/CCM.0b013e3181f85759

Shi, Q., Warren, L., Saposnik, G., & MacDermid, J. C. (2013). Confusion assessment method: A systematic review and meta-analysis of diagnostic accuracy. *Neuropsychiatric Disease and Treatment, 9*, 1359–1370. https://doi.org/10.2147/NDT.S49520

Sinvani, L., Kozikowski, A., Pekmezaris, R., Akerman, M., & Wolf-Klein, G. (2012). Delirium: A survey of healthcare professionals' knowledge, beliefs and practices. *Journal of the American Geriatric Society, 64*(12), e297–e303. https://doi.org/10.1111/jgs.14544

Traube, C., Ariagno, S., Thau, F., Rosenberg, L., Mauer, E., Gerber, L. M.,...Silver, G. (2017). Delirium in hospitalized children with cancer: Incidence and associated risk factors. *Journal of Pediatrics, 191,* 212–217. https://doi.org/10.1016/j.jpeds.2017.08.038

van den Boogaard M., Schoonhoven L., Evers A. W., van der Hoeven, J. G., van Achterberg, T., & Pikkers, P. (2012). Delirium in critically ill patients: Impact on long-term health-related quality of life and cognitive functioning. *Critical Care Medicine, 40*(1), 112–118. https://doi.org/10.1097/CCM.0b013e31822e9fc9

Wada, T., Wada, M., Wada, M., & Onishi, H. (2010). Characteristics, interventions and outcomes of misdiagnosed delirium in cancer patients. *Palliative and Supportive Care, 8*(2), 125–131. https://doi.org/10.1017/S1478951509990861

Appendix A. Intensive Care Unit Delirium Curriculum Outline

1. Pre-test
2. PowerPoint presentation
   a. Background and pathophysiology
   b. Risk factors
   c. Incidence, impact, and cost
   d. Screening/diagnosis
   e. CAM-ICU
   f. Video
   g. Documentation
   h. Sedation and delirium
   i. Management and prevention
3. Discussion/questions
4. Post-test
5. Debriefing

Appendix B. Confusion Assessment Method for the ICU (CAM-ICU) Survey Questions

1. Which of the following statements is TRUE for delirium?
   a. New onset of delirium should be considered a medical emergency
   b. Mini-Mental Status Examination (MMSE) is the most sensitive tool used to identify patients with delirium
   c. Confusion Assessment Method (CAM) is a dementia screening tool
   d. Delirium is most prevalent in ambulatory settings
   e. The patient's symptoms of delirium, once treated, should resolve immediately

2. Which of the following medications is MOST LIKELY to cause delirium among older adults?
   a. Hydrochlorothiazide
   b. Simvastatin
   c. Diphenhydramine
   d. Omeprazole
   e. Metoprolol

3. Which of the following statements is TRUE regarding delirium?
   a. The treatment of delirium is independent of the cause
   b. Laboratory tests are not really helpful in the evaluation of a patient with delirium
   c. The development of delirium can be prevented with nonpharmacological measures
   d. Soft-hand restraints are a first line of management
   e. The development of delirium is independent of the premorbid cognitive status of the patient

4. Nonpharmacologic interventions for delirium include ALL the following EXCEPT?
   a. A bedside companion
   b. Visits by friends and caregivers
   c. Ambulation inside or outside of ICU room
   d. Glasses and hearing aids for patients who are impaired
   e. Applications of wrists restraints

5. Which of the following statements is FALSE regarding pharmacologic management of delirium?
   a. Current evidence is supportive of short-term use of antipsychotics
   b. Haloperidol 5–10 mg IV q2–4h is the recommended starting dose
   c. There is no evidence to support the use of psychostimulants or cholinesterase inhibitors
   d. Adverse effects from antipsychotics include: extrapyramidal signs, QT prolongation on EKG, and orthostasis
   e. Antipsychotics have been shown to reduce duration of delirium and severity of symptoms

6. The following interventions aid in the prevention of delirium in patients that are CAM-ICU negative EXCEPT:
   a. Restricting caregivers' visits
   b. Encouraging early mobility or ambulation
   c. Shades up and lights on during the day
   d. Daily medication review
   e. Limiting time watching television

7. Causes of and/or risk factors for delirium include all the following EXCEPT:
   a. Severe sepsis
   b. Hyponatremia
   c. Emergent surgical procedures
   d. Certain medications
   e. Gender

Appendix B. CAM-ICU Survey Questions (cont.)

8. ICU patients should be screened by CAM-ICU for delirium during the following encounters EXCEPT:
   a. Upon ICU admission
   b. At ICU discharge
   c. Every morning
   d. Every evening
   e. Whenever there is an acute change in mental state

9. The term "Unable To Assess" refers to patients with RASS scores of
   a. +3 to +4
   b. +1 to +2
   c. 0 to –1
   d. –2 to –3
   e. –4 to –5

10. Which patient is LIKELY to be labeled "Unable to Assess" when performing CAM-ICU for delirium screening?
    a. A 32-year-old man with RASS score of 0 who is communicating his needs to the nursing staff by writing on a pad
    b. A 24-year-old man s/p nasotracheal intubation 2 days ago for high risk airway in setting of head and neck cancer, on high dose propofol, RASS –5
    c. A 72-year-old woman with dementia and prior ischemic strokes intubated 5 days ago for streptococcal pneumonia who is now able to follow simple commands and tolerating weaning trials
    d. A 65-year-old man requiring invasive mechanical ventilation via a tracheostomy tube after extensive surgical resection of a cancer of the right mandible and of the cervical lymph nodes, who is now developing confusion, diaphoresis, tachycardia, and tremulousness
    e. A 72-year-old woman with leukemia, intubated 4 hours ago in the ICU for massive hemoptysis, who is now waking up and able to use her own electronic tablet to communicate with her daughter and ICU staff

11. What do you do if the Registered Nurse tells you that the result of the patient CAM-ICU is "Unable to Assess?"
    a. Increase sedation
    b. Decrease sedation
    c. Add an antipsychotic
    d. Do nothing
    e. Reassess in 3 hours

12. Which FEATURES do you need in order to be CAM-ICU positive? (Ely, 2002)
    a. All four features
    b. Features 1 and 2
    c. Features 1, 2, and 3 or 4
    d. Features 2 and 4
    e. Features 2 and 3

13. For a patient with a CAM-ICU positive result, which medication infusion is MOST appropriate?
    a. Midazolam
    b. Fentanyl
    c. Dexmedetomidine
    d. Nicardipine
    e. Lorazepam

14. For a patient with CAM-ICU positive results, which statement summarizes hypoactive delirium?
    a. A patient pulling at their central venous catheter and Foley catheter
    b. A combative patient
    c. A quiet and pleasantly confused patient who is able to follow commands intermittently
    d. A patient who is alert, awake and oriented × 3 and appropriately interacting with staff and visitors
    e. An agitated patient who is screaming the names of his deceased parents

15. Which of the following medications is APPROVED by the FDA for the treatment of delirium?
    a. Haloperidol
    b. Dexmedetomidine
    c. Olanzapine
    d. Quetiapine
    e. None of the above

Note. EKG = electrocardiogram. RASS = Richmond Agitation-Sedation Scale; CAM-ICU = Confusion Assessment Method for the ICU. Answers: 1. a, 2. c, 3. c, 4. e, 5. b, 6. a, 7. e, 8. b, 9. e, 10. b, 11. b, 12. c, 13. c, 14. c, 15. e.