Delirium in the ICU

An improvement project in monitoring and assessment

ICU Evidence Based Practice Council

Delirium is described as a disturbance of consciousness characterized by acute onset and fluctuating course of inattention accompanied by either a change in cognition or a perceptual disturbance, so that a patient’s ability to receive, process, store, and recall information is impaired. Delirium develops over a short period of time (hours to days), is usually reversible, and is a direct consequence of a medical condition, substance intoxication or withdrawal, use of a medication, toxin exposure, or a combination of these factors. Many delirious ICU patients have recently been comatose, indicating a fluctuation of mental status. Comatose patients often, but not always, progress through a period of delirium before recovering to their baseline mental status. **Think: rapid onset, inattention, clouded consciousness (bewildered), fluctuating.**

ICU delirium is a predictor of mortality, extended patient length of stay, increased ventilated days, increased costs to the patient and hospital, long-term cognitive impairment, and possible discharge to long-term care facility.

**Assess**

In March 2012, the intensive care unit (ICU) evidence-based practice (EBP) council identified a need to improve the assessment and documentation of delirium in the ICU patient. The ICU patient was experiencing increased incidences of delirium which extend their hospital stay, longer ventilator days and could have life-long effects. Staff was not consistent in assessing and documenting delirium.

A new delirium protocol and assessment tool was introduced to ICU staff in 2011. A need to improve practice had been identified when many nurses were marking “cannot assess” in the delirium assessment on ventilated patients. Education was needed for staff to understand the definition of delirium, how to assess delirium in the ventilated patient and how to properly complete the documentation. The delirium order set that was approved for use in 2011, had never been used and staff were unaware of its existence.

**Link**

In order to improve patient outcomes, nursing staff had to understand how to properly identify delirium. A standardized assessment tool, Confusion Assessment Method for the ICU (CAM- ICU), was provided in 2011, but staff did not properly utilize the tool. In addition to knowing how to properly utilize the CAM-ICU tool, staff needed to understand how the RASS score should be assessed and incorporated into the CAM-ICU use.

**Evidence: Literature Review**

A literature review was performed on delirium in the critical care environment for vented and unvented patients. Research could include all types of medications that affect delirium, assessment tools, as well as mortality rates and patient outcomes.

**Lisa Larson** presented the following article:

Guenther, U. & Radtke, F.M. (2011) Delirium in the post-anesthesia period. Current Opinion Anesthesiology. (24) p. 670-675.

11-40% of all ICU patients are affected with delirium. Correlated number and length of time with delirium increased mortality rate one year after you have been readjusted. Pre-op patients in an ICU. Geriatric patients. Versed and propofol increased incidence of delirium. Clonidine – sedative affect, decreased post-op pain and emergency agitation.

To aid in recovery of delirium – used Haldol and respiradone. People who have never used melatonin before, it helps promote sleep/wake cycle – add to standard protocol?

Encouraged sedation vacation.

Conclusion: cognitive training – sweet 16 test – 16 points for orientation (time, place, events).

Based on pre-operative screening – base delirium on baseline. Anti-inflammatory drugs to prevent length of delirium.

Simulating night: no light in room, decrease lighting in room, decrease interruptions.

**Kate Peterson** presented the following article:

Figueroa-Ramos, M., Arroyo-Novoa, C.M., Lee, K.A., Padilla, G., & Puntillo, K.A., (2009) Sleep and delirium in ICU patients: a review of mechanisms and manifestations. Intensive Care Medicine (35) p. 781-759.

Review of literature. Not meta-analysis. No good way to assess sleep in ICU patient. Total time for sleep averages 2.1 and 9.0 hours – not continuous. Need REM 2 sleep cycle. ½ at night and ½ in day. Risk factors for sleep deprivation: limited natural light exposure, systemic inflammatory response and mechanical ventilation impair melatonin secretion. Not happening due Consequences: irritable, fatigues, increases sympathetic, parasympathetic, decreases immune response, metabolic. See mixed delirium with medical ICU patients. less than 1% have hyperactive, most hypoactive 43%, surgical trauma 65%. Versed, fentanyl, Ativan, and use of restraints causing delirium. Electrolyte imbalances, diabetes, how long in operating room, over 65, smoking, hypertension and alcoholism.

**Roni Ferrenberg** presented the following article:

Pisano, M., Murphy, T., Araujo, L.B. & VanNess, P. (2010) Factors associated with persistent delirium after intensive care unit admission in an older patient population, Journal of Critical Care. 25(3) p. 540.e1-540.e7.

The article identified factors associated with persistent delirium in older medical ICU patient populations. 14 bed ICU. Of 309 ICU consecutive admissions, 173 had ICU delirium and over 60 of these were admitted to the ICU, survived the ICU stay and provided ward data. 100 patients had persistent delirium. The median duration of delirium persisted post ICU discharge was 9 days and for those that cleared -3 days.

**Identified outcomes**: adverse outcomes, increased mortality, nursing home placement, longer ICU stays, costlier hospitalization, increased risk of falls, inadvertent removal of lines & catheters, increased risk of pneumonia, pressure ulcers, adverse drug reactions related to treatment for agitation and insomnia. 6 of 28 patients had code status changes and died, 5 (83%) of these patients had persistent delirium.

**Factors**: intubation, days of mechanical ventilation, non-invasive ventilation, hemodialysis, length of ICU stay and pain within 24 hours of ICU discharge. Age over 75, >54mg/day and haloperidol were significantly associated with persistent delirium.

**Conclusion**: use of opioids and haloperidol were associated with persistent delirium.

**Strengths of study:** high participation rates/enrollment ratios of 98%, minimal loss of participants after discharge. Use of previously validated measures to determine delirium. Collected detailed, clinically rich prospective data set for multiple potential risk factors using validated instruments.

**Weakness of study:** cannot prove deaths were due to delirium – not much difference in percentages. Can’t generalize younger populations. Didn’t examine the individual opioids or benzos but instead combined the drugs in each class using dose equivalents. Nod data on events after ICU discharge that may have contributed to prolongation of ICU delirium. Did not factor in other environmental factors/exposures: hours of dark, uninterrupted sleep, if the patient slept.

**Patty Morse** presented the following article:

Rumpke, A.L. & Zimmerman, B.A., (2010). Implementation of a multidisciplinary ventilator-weaning and sedation protocol in a community intensive care unit. Dimensions of Critical Care Nursing. 29:1 p. 40-49.

The article presented ventilator weaning assessments and protocols.

Nurse assessment first: parameters given for HR, BP, RASS.

RSBI, rapid shallow breathing inspiration

If not off sedation appropriately, don’t get respiratory involved – leave vented.

No versed after 3am.

Wean and off vent, but remember patient’s well-being.

**Dan Harmon** reviewed the following article: Devlin, J.W., Bhat, S., Roberts, R.J. & Skrobik, (2011) Current perceptions and practices surrounding the recognition and treatment of delirium in the intensive care unit: a survey of 250 critical care pharmacists from eight states. The Annals of Pharmacotherapy. (45) p. 1217-1228.

The article provided information from 250 surveyed pharmacists. Pharmacists were in agreement that delirium should be treated with antipsycholtics, but no evidence was found to support their use. Pharmacists agreed that determination of delirium was a nursing role. Data presented in the article was over 5 years old. Based on the lack of nursing involvement and the old data, the article will not be used.

**Muzette Atencio** presented the following article: Alexander, D. (2009). Delirium in the intensive care unit: medications as risk factors. Critical Care Nurse. 49:1. A registered pharmacist replied to the question: What medications commonly used in the ICU would predispose the patients to delirium? Are there any drug interactions that we should be paying attention? The response was that medications alone may account for 12-39% of all cases of delirium. The risk factors for ICU were divided into 2 basic categories: predisposing factors (host factors) and precipitating factors. Predisposing factors were those presented when the patient is admitted – making them difficult to alter (age, history of HTN, smoking or alcoholism). Precipitating factors occur during the ICU stay – these factors are secondary used ICU medications that are considered precipitating risk factors for delirium and considered modifiable. Information on medications that could cause and treat delirium was not consistent in the research. All articles were consistent in their findings that delirium is a significant problem in the ICU and causes poor/adverse patient outcomes: increased mortality, nursing home placement, longer ICU stays, costlier hospitalization, increased risk of falls, inadvertent removal of lines & catheters, increased risk of pneumonia, pressure ulcers, and adverse drug reactions related to treatment. Articles were in agreement that patients can have life-long affects from delirium and further research is needed.

**Design**:

Committee members were provided education from Lorna Prang, RN, MS, CNS, from Littleton Hospital, Denver, Colorado, and Dr. Russell Lee, medical director of the ICU.

Following is the proposed implementation process for staff delirium assessment/outcome improvement:

1. Copies of CAM-ICU assessment tool were provided
2. Video was shown to staff at the June 2012 staff meeting on how to properly assess delirium in the ICU patient, both vented and non-vented.
3. Unit newsletter provided information on delirium and interventions to decrease delirium
   1. Night shift
      1. Perform baths on ventilated patients before midnight or after 4am.
      2. Promote and encourage sleep cycles with decreased interruptions to patients during hours of midnight to 4am.
      3. Simulate night-time environment – lighting off or low, quite environment, minimal interruptions, group care with ancillary staff
   2. Day shift
      1. Encourage wakefulness during the day.
      2. Shades up in room, lights on in room
      3. Out of bed for meals if appropriate
      4. Ambulate/up to chair 3 times per day (one should be evening shift)
4. Charge nurses were asked to remind staff during huddles to do delirium assessment every shift.
5. RASS training was coordinated and provided by the ICU Education Committee at the August 2012 staff meeting.

Outcomes agreed upon by the ICU EBP council were:

1. Decrease the number of delirium assessments that are marked “cannot assess”.
2. Improve assessment of delirium in the ICU patient by teaching how to properly utilize the CAM-ICU tool.
3. Improve RASS assessment and how the RASS score is used to assess delirium
4. Improve awareness of delirium protocol.

**Evaluate and maintain:**

EBP has gathered information that supports the use of the CAM-ICU tool and begun the process of improving the assessment of delirium in the ICU. EBP will provide their findings to Unit Practice Council to continue delirium education as outlined above.

Following are recommendations for continued evaluation:

1. Set up station at annual skills review
   1. Volunteer for story board
   2. Volunteer for education at skill review (if needed).
2. Add CAM-ICU tool to Critical Care Resource Book at each work station
3. Set up monitoring and evaluation plan
   1. Ask information technology (IT) to set up a “delirium report” so we can monitor if staff are marking “unable to assess”.
   2. Ask for data pre-committee formation for comparing with prior data.

References:

Devlin, J., Bhat, S., Roberts, R., & Skrobik, Y. (2011). Current perceptions and praactices surrounding the recognition and treatment of delirium in the intensive care unit: A survey of 250 critical care pharmacists from eight states. *The Annals of Pharmacotherapy, 45,* 1217-1228.

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Guenther, U., & Radtke, F. (2011). Delirium in the postanaesthesia period. *Current Opinion in Anesthesiology, 24,* 670-675.

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Rumpke, A., & Zimmerman, B. (2010). Implementation of a multidisciplinary ventilator-weaning and sedation protocol in a community intensive care unit. *Dimension of Critical Care Nursing, 29*(1), 40-48.

Shehabi, Y. (2011). The search for the holy grail: Diagnosing delirium in the intensive care unit. *Critical Care and Resuscitation, 13*(4), 214-215.