Maryland Patient Safety, 2014

Call for Solutions

Organization: The Johns Hopkins Hospital

Solution Title: Early Predictor of Post-ictal Delirium after Outpatient Electro Convulsive Therapy

Program/Project Description, including goals:

• 14 million adults are diagnosed with Major Depressive Disorder (MDD) in the U.S. (Lisanby, S 2011).

• Depression will be the second most common cause of disability world-wide by 2020 (WHO)

• An estimated 100,000 Americans receive Electroconvulsive therapy (ECT) annually (News, CMAJ, 2011)

• ECT aids in stabilization of mood. It is a safe and an effective intervention for mania and catatonia resulting in dramatic improvement. ECT decreases relapse in treatment resistant depressed patients.

• Health care reforms have promoted the delivery of ECT in outpatient settings.

• Patient response to outpatient ECT has been favorable. (Kramer, 1990).

• Many patients prefer to avoid hospitalization and preserve their family, social and work relationships by having outpatient ECT.

Educational goals:

1) Identify difference between right unilateral and bilateral ECT

2) Discuss challenges for PACU RNs concerning patient recovery after ECT and develop assessment criteria for transfer from the PACU to home

3) To identify assessment criteria for transfer from the PACU to home (Phase II recovery) for psychiatric outpatients with major depressive disorder who are receiving Electroconvulsive Therapy (ECT)

Process:

Standard practice is to begin all outpatients with right unilateral (RUL) ECT and if ineffective to switch to Bilateral (BL). ECT is brief and requires two hours of care in the post anesthesia care unit. Disorientation is common but resolves within minutes after treatment. Ten percent of
patients develop an acute confused state during the post-ictal phase of recovery (Kikuchi et al., 2009). The most prominent side effects from ECT are the development of acute confusional state and temporary problems with cognition, often with retrograde amnesia. Patients vary significantly in the extent and severity of post-ictal delirium, as it can last anywhere from twenty minutes to two hours. Outpatient ECT is associated with new challenges for PACU nurses, such as complete recovery from anesthesia, assessing fall risk and transportation which are controlled in an inpatient setting (Dew, R & McCall, V. 2004).

Problem:

The purpose of this study is to compare levels of confusion and agitation in outpatients receiving ultrabrief RUL vs. BL ECT. A total of 66 outpatient ECT treatments (39 RUL and 27 BL) were examined in this retrospective chart audit. The Confusion Assessment Method – ICU (CAM-ICU) was used to assess delirium and agitation. The CAM-ICU Scale was administered 20 minutes after the arrival of patient in the PACU. The results showed that BL treatments produced more delirium than RUL. Since delirium can adversely impact patient safety, length of stay and cost, it is recommended that this assessment be adopted as standard practice for ECT in an outpatient setting.

Solution:

Performing a standardized delirium screening in the PACU assesses the presence of delirium post ECT. Determining the level of delirium enhances the safety of patients in clinical settings by increasing staff awareness.

- All staff are educated regarding the risk factors of poor short term memory, increased fall risk and possible delirium in this population. Education also includes assessment and intervention strategies.
- Development of discharge criteria for outpatients receiving ultra-brief ECT that increase awareness and identification of post-ECT confusion and delirium.
- Standardize handoff communication and education for patients and families to include information from the CAM-ICU and RASS.

Measurable Outcomes:

The CAM-ICU score is a validated tool to measure delirium. The CAM-ICU score will assess the:

- C - Acute change in MS or fluctuation
- A - Attention is impaired
- A - Altered level of consciousness
• **M** – Muddled or disorganized thinking

The Richmond **Agitation-Sedation Scale** (RASS) is a component of the CAM-ICU scale.

- The RASS measures sedation arousal and will categorize a patient as
  - Combative
  - Agitated
  - Restless
  - Clam
  - Drowsy or sedated. (Ely, W. 2010).

The most prominent side effects from ECT are the development of acute confused state and problems with cognition. PACU nurses have utilized CAM-ICU/RASS score, a validated tool to assess delirium and agitation. It was evident that BL treatments produce more delirium than RUL. This provides information for the PACU nurses regarding safety concerns for patients and the length of stay in PACU.

Early identification of delirium provides an opportunity to develop a patient centered specific plan to manage safety risk and prevent the incidence or worsening of delirium.

**GRAPHS**

**Bar charts**

- **CAM-ICU**
  
  - 20 minutes after recovery in PACU, 18 patients who received right unilateral ECT had negative CAM-ICU score, but there were only two negative for Bilateral ECT. This is statistically significant.

- **RASS**
  
  - Patients who had bilateral ECT had RASS scores of 3 and 4, which is dangerous. Patients are very agitated to the point of being violent. When you combine a score of 3 and 4 in patients who had bilateral ECT it translates to an agitation score of 63%, which is greater compared to Right unilateral ECT. Patients who received Right unilateral ECT did not have a RASS score of 4, so they did not become violent or agitated. Only 10% of Right unilateral patients had RASS score 3.
  
  - A RASS score of 2 or 1 is manageable and is not a safety concern in PACU.
  
  - Negative RASS score indicates sedation. This is important in outpatients receiving ECT. Patients have to be cleared completely prior to discharge from same day.
• Potential consequence of research finding: RASS score 3 or 4 is usually treated with medication (Versed, Haldol) IM and have to stay one hour or longer in order to follow the sedation protocol.

Sustainability:

CAM-ICU and RASS scores are utilized for hand off communication. Any additional medications which were administered (e.g. barbiturates) are also reported at this time. Bilateral ECT treatments resulted in increased confusion and delirium. This provides information for the PACU nurses regarding safety concerns for patients (fall risk) and the length of stay in PACU.

Role of Collaboration and Leadership: The ECT suite nurse manager, ECT Nursing coordinator, critical care trained ECT PACU nurses and ECT attending collaborated to establish and implement the standardized practice for the hand off communication.

Innovation:

There is no current literature on the PACU management of ECT induced delirium. CAM-ICU and RASS scores, along with information on electrode placement have helped identify potential delirium and negative outcomes. This practice also serves as an indicator of recovery time, aids in fall prevention, and determines the transportation method. Effective communication among the members of ECT team helps in the identification of delirium and the development of an appropriate treatment plan.

Related Tools and Resources:


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Early Predictors of Potential Post-ictal Delirium After Electro Convulsive Therapy (ECT)

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Practice Question

**Purpose:** Comparison of the levels of confusion and agitation among psychiatric outpatients with major depressive disorder (MDD) receiving ultra-brief right unilateral (RUL) vs. bilateral (BL) electroconvulsive therapy (ECT).

**Clinical Question:** Will outpatients diagnosed with MDD who receive RUL ultra-brief ECT have lower scores on the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and Richmond Agitation-Sedation Scale (RASS) compared to patients receiving BL ECT?

**PICO statement:**
- **Problem:** Patients become delirious after ECT which increases length of stay and hospital cost.
- **Patient/population:** Psychiatry out-patients (age: 20-70 years) receiving series of ECT treatments at Johns Hopkins Hospital
- **Intervention:** RUL ultra-brief ECT
- **Comparison:** BL ECT
- **Outcomes:** Decreased confusion in the RUL ECT group as measured by the CAM-ICU Decreased agitation in the RUL ECT group as measured by the RASS Decreased length of stay in the ECT PACU for the RUL ECT group

Evidence

**Practice:** Standard practice is begin all outpatients with MDD on a course of RUL ultra-brief ECT. This type of ECT is highly effective with marked reduction in the cognitive side effect profile (Sackeim et al., 2008). However, for those who do not have an effective treatment response, the next step is to proceed to BL ECT (Loo, C., W. et al. 2011). Delirium is a significant predictor for mortality (Siddiqi, House, & Holmes, 2006). It is also associated with a decrease in IADL’s, functional decline, cognitive decline, and institutionalization (Fong, Tulebaev & Inouye, 2009). The most effective interventions are focused on early identification and prevention of post-ictal delirium (Kikuchi et al., 2009).

**Policy**

All staff are educated regarding the risk factors of poor short term memory, increased fall risk and possible delirium in this population as well as assessment and intervention strategies.

Development of discharge criteria for outpatients receiving ultra-brief ECT that increase awareness and identification of post-ECT confusion and delirium.

Standardize handoff communication and education for patients and families to include information from the CAM-ICU and RASS.

Translation

**Bibliography**


