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Identifying Barriers to Delirium Screening and Prevention in the Pediatric ICU: Evaluation of PICU Staff Knowledge[1]

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Delirium in the pediatric intensive care unit (PICU) setting is often unrecognized and undertreated. The importance of screening and identification of ICU delirium has been identified in both adult and pediatric literature. Delirium increases ICU morbidity, length of mechanical ventilation and length of stay. The objective of this study was to determine the current knowledge level about delirium and its risk factors among pediatric critical care nurses through a short questionnaire. We hypothesized that before a targeted educational intervention, PICU care providers do not have an adequate knowledge base for accurate screening and diagnosis of delirium in critically ill children. A 17 question online survey was given to all nurses in a tertiary 36-bed PICU to assess current knowledge about delirium in children. The response rate was 73% (105/143). When asked to identify the correct way to diagnose pediatric delirium, 11.4% of nurses surveyed (12/105) incorrectly believed that Glasgow Coma Score is the appropriate screening tool. A large proportion of respondents (40/105) believed that benzodiazepines are helpful in treatment of delirium. The results of the survey identified specific knowledge gaps about risk factors and treatment of pediatric delirium in the critically ill child. There is a critical need for education about pediatric delirium and its risk factors among PICU staff prior to unit-wide implementation of a delirium screening and prevention program, specifically with regards to screening methods and pharmacologic risk factors. These results are likely generalizable to all physicians, nurses and staff who care for critically ill children.
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Background and Objectives

DELIRIUM IN THE pediatric intensive care unit (PICU) setting is often unrecognized and undertreated. As defined in the Diagnostic and Statistical Manual of Mental Disorders: Fifth Edition (DSM-5) delirium is a disturbance and change in attention and awareness from baseline, developed over a short time, with a fluctuating course. The change from baseline includes a disturbance in cognition, which is not better explained by another neurocognitive disorder (American Psychiatric Association, American Psychiatric Association, & DSM-5 Task Force, 2013). In adults, intensive care unit (ICU) delirium is associated with increased hospital length of stay, morbidity and mortality (Brummel et al., 2014; Ely et al., 2001; Ely et al., 2004; Girard et al., 2010). Due to heterogeneity in ages, development and diagnoses, delirium screening in critically ill children can be challenging. Despite validated tools for screening delirium in this population, few pediatric ICUs (PICUs) internationally perform screening (Kudchadkar, Yaster, & Punjabi, 2014).

Pediatric delirium has been more recently highlighted in literature, with the development and evolution of pediatric

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screening tools (Smith et al., 2011; Traube et al., 2014). Pediatric studies have shown that delirium is present in at least 30% of critically ill children and adolescents (Silver et al., 2012; Smith et al., 2011). There is limited data on pediatric patient outcome measures after delirium, but a few retrospective studies describe longer length of stay and similarities to an adult delirium course (Turkel & Tavare, 2003). However, many PICUs internationally are still not screening for delirium. In a recent survey study characterizing international PICU practices, 71% of respondents reported that their unit does not perform routine delirium screening, and only 2% reported that delirium screening is performed on every child at least once per shift (Kudchadkar et al., 2014).

Knowledge of etiology and risk factors for delirium in adults is growing. One study by Ouimet in 2007 showed that hypertension, alcoholism, severity of illness score (APACHE II), and use of sedatives and analgesics to induce coma were independently associated with the incidence of delirium (Ouimet, Kavanagh, Gottfried, & Skrobik, 2007). Another study by Aldemir in 2001 indicated that respiratory disease, infection, fever, anemia, hypotension and metabolic derangements were associated with incidence of delirium (Aldemir, Ozen, Kara, Sir, & Bac, 2001). While there are less documented investigations into risk factors for pediatric delirium, it could be assumed that similar risk factors might be indicated in delirium for the pediatric critically ill patient.

In order to tailor an educational intervention to facilitate consistent and reliable screening, it is important to determine current knowledge gaps and barriers to delirium screening and prevention. Our goal was to implement twice-daily delirium screening with the Pediatric Confusion Assessment Method-ICU (pCAM-ICU) in our large, tertiary-care PICU. The overall objective of this study was to determine current knowledge regarding delirium and its risk factors among PICU nurses prior to beginning targeted education. In adult literature, similar surveys have been done to evaluate knowledge and opinions about delirium screening (Hare, Wynaden, McGowan, Landsborough, & Speed, 2008). We hypothesized that prior to a targeted educational intervention, PICU nursing staff do not have an adequate knowledge base for accurate screening and diagnosis of delirium in critically ill children.

Methods

A 17-item questionnaire was administered to all nurses in a 36-bed tertiary care PICU to assess current staff knowledge about pediatric delirium. The survey was sent to all PICU nursing staff, and responding to the survey was voluntary. Survey questions were formulated by experts in pediatric delirium based on available evidence surrounding risk factors, screening methods, treatments, and diagnostic criteria for adult and pediatric delirium.

After the survey was piloted for feedback to PICU nursing leadership, the questionnaire was administered online to all PICU nurses before targeted education and implementation of the pCAM-ICU tool. All participants were informed that individual responses would remain anonymous and confidential, and participation in the survey was considered consent to be involved in the study. The institutional review board approved the questionnaire and study. Data were summarized as the proportion answering correctly for each of the items.

Results

Of the 143 nurses who received the survey link, 105 completed the survey (73.4%). The percentage of nurses who answered each question correctly ranged from 35% to 100%. Only one nurse scored 100%. The answers to each item are summarized in Table 1. Several concepts reviewed in the survey revealed a strong knowledge base. Out of 105 respondents, over 95% recognized that poor nutrition and dehydration increases the risk of delirium. Additionally, almost all nurses (103/105; 98%) confirmed that delirium does not always manifest as a hyperactive, confused state. All respondents correctly identified that altered sleep/wake cycles may be a symptom of delirium, and 91% recognized that delirium is characterized by fluctuations in orientation and disorientation.

In contrast, there were specific concepts that identified significant knowledge gaps and areas for education. Eleven percent of nurses (12/105) believed the Glascow Coma Scale (GCS) is an appropriate method for delirium screening. Furthermore, 38% surveyed (40/105) answered that benzodiazepines are beneficial in the treatment of delirium. When questioned about the presence of a urinary catheter as a risk factor, thirteen percent (14/104) incorrectly answered that the presence of a catheter can reduce the risk of delirium. Forty-three percent incorrectly responded (45/104) that delirium usually lasts several hours. Sixty-three percent believe that gender has no effect on the development of delirium. Finally, the majority of respondents (62%) believed that children generally do not remember being delirious.

Discussion

The results of this survey demonstrate specific areas where there is a deficiency in knowledge about risk factors and treatment of pediatric delirium among PICU nursing staff. In a recent international survey of pediatric intensivists by our group, less than 2% of pediatric intensivists report consistent delirium screening in their PICU. When asked what forms of delirium screening tools were most commonly used, many listed pain and withdrawal assessment tools such as the Finnegan, Withdrawal Assessment Tool-1 (WAT-1), and Sophia Observation withdrawal Symptoms (SOS) scale assessments (Kudchadkar et al., 2014). Therefore, targeted multidisciplinary educational interventions are critical to successfully implement delirium prevention and treatment programs in the PICU.

This survey highlighted several particularly concerning areas where PICU nursing staff knowledge was deficient about delirium. Lorazepam has been identified as an independent risk factor for delirium (Flagg, Cox, McDowell,

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