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Postoperative Delirium Education

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Problem Description

Patients who are 65 and older comprise the largest surgical population; this group is projected to increase by 53.2% between the years 2001 and 2020. Associated with increase in age is the increase incidence of post-operative complications. One complication that has come to the fore front is post-operative delirium. Postoperative delirium (POD) can drastically increase healthcare costs, length of stay, and overall morbidity and mortality. A great need exists to improve practitioners' knowledge in assessment and prevention of postoperative delirium. The utilization of a clinical practice guide that focuses on assessment and prevention of post-operative delirium along with practitioner education has the potential to improve post-operative outcomes for this population.

Method

After a family member experienced the effects of postoperative delirium this author conducted an exhaustive literature search on the subject, and realized that much could be done to educate perioperative staff members who care for patients at risk for the disorder. The concept of educating staff members about POD by presenting a clinical reference tool and providing a PowerPoint presentation was presented to SIUE staff members and department managers at a midwestern 200 bed hospital. After discussing the potential benefits of the project, it was approved by the Chief of Anesthesia, the Nurse Manager of Admission Testing and Outpatient surgery/PACU, and the Vice President Patient Care Services/CNO. One local Community IRB and a Southern Illinois University Edwardsville IRB were submitted, and were subsequently approved. Using information from the literature review, a clinical reference tool was created to have available for perioperative staff members at the hospital hosting the quality improvement project. The tool describes risk factors, prevention methods, and treatment options for POD and

was divided into pre, intra and post-operative assessment, and interventions. A PowerPoint presentation was created to summarize the information found in the literature review and to inform the perioperative staff members how to properly utilize the tool. The PowerPoint presentation served as the initial implementation step in the quality improvement project. On August 22, 2017, the clinical reference tool was distributed to anesthesia staff and perioperative nursing staff with an accompanying 20-minute PowerPoint presentation to each group. Following the presentation, a survey was administered consisting of 5 questions which evaluated the effectiveness of the presentation, and was scored using a Likert scale.

Literature Review

A literature review was conducted by searching databases SCOPUS utilizing all databases, PubMed and PubMed Central databases, and Google Scholar. Keywords used in the literature search included, “post-operative delirium”, “anesthesia”, “post-operative cognitive dysfunction”, “confusion assessment method ICU”, and “acute effects of surgery.” The literature search resulted in location of improvement projects, meta-analyses, predictive measures, and case studies. The literature searches produced research which included risk factors, prevention methods, screening tools, treatment methods, and proposed pathophysiology of post-operative delirium and post-operative cognitive dysfunction. Since the focus of this project is centered on the acute effects of surgery on delirium, the vast majority of articles containing information on post-operative cognitive dysfunction were discarded.

All clinically relevant findings were collected and summarized in a clinical reference tool (see attached) which was distributed to perioperative staff. Pertinent clinical information was organized into three main headings: preoperative, intraoperative, and postoperative.

The preoperative section consisted of modifiable and non-modifiable risk factors as well

as prevention methods. The most important non-modifiable risk factors were advanced age and pre-existing dementia (Jewel & Jacqueline, 2012). Though there are a myriad of modifiable risk factors, frailty (Ogawa et al., 2015), poorly controlled pain (Frieze & Beutler, 2012), major depression (Kazmierskia et al., 2010), and hypoxia were the most notable. The most pertinent prevention methods involved thorough preoperative examination (Frieze & Beutler, 2012), optimization of the patient's personal function (Frieze & Beutler, 2012), and cognitive orientation.

The intraoperative section was divided into drugs and techniques which *should not* be used and those that *should* be used. Important POD causing drugs that should be avoided include benzodiazepines, psychoactive, and anticholinergic medications (Frieze & Beutler, 2012). Specific drugs such as sufentanil and meperidine should also be avoided. Drugs that should be encouraged include non-opioids such as dexmedetomidine (Best practice statement, 2014), non-steroidal anti-inflammatory (Jewel & Jacqueline, 2012), Tylenol, lidocaine, and ketamine.

The postoperative section contained pharmacologic and non-pharmacologic treatment options. Melatonin supplements have been shown to reduce the incidence of POD (Yoshitaka et al., 2013), and Haloperidol has been shown to be the most effective treatment option with existing POD (Best practice statement, 2014). The most pertinent non-pharmacologic treatment methods include withdrawing aggravating factors, treatment of underlying illness, and cognitive stimulation.

Goals

- ❖ Provide participants with information regarding postoperative delirium to increase awareness.

- ❖ Participants should be able to discuss the impact of cost in relation to postoperative delirium.

Objectives

- ❖ Participants should be able to describe pathology and associated risk factors.
- ❖ Participants should be able to relate assessment results with prevention methods.
- ❖ Provide staff with clinical reference materials specific to preoperative, intraoperative and postoperative areas that contain references for risk factors, prevention methods and treatment methods.

Key Findings

Based on the data collected, and conversations with participants, the PowerPoint presentation was an effective method to inform perioperative staff how to properly use and understand the clinical reference tool. The questionnaires addressed how participants understood costs, morbidity and mortality, patients at risk, prevention methods, and treatment options in relation to POD. Participants scored a mean of 4.36/5, 4.59/5, 4.64/5, 4.64/5, and 4.59/5, respectively. This indicates that participants comprehended the information presented to them, validates the project, and confirms that the objectives that were set forth for the project were completed. In addition to meeting the objectives set forth at the beginning of the project, comments written on the questionnaires and discussions with participants revealed that participants' knowledge about POD was expanded, and perioperative staff members are interested in learning about POD.

This project only covered a very specific type of problem in the perioperative setting. Staff members asked about postoperative cognitive dysfunction, ICU delirium, and delirium in pediatric patients. Though the presentation touched on each of these topics, they were not

covered in a comprehensive way. Future projects could expand on the idea of delirium in a perioperative setting and include the types listed above.

Limitations

Though the goals for the project were met, there were limitations. The most important objective of this project was to spread awareness about POD, and participant turnout for each presentation was lower than expected. Only 22 staff members participated; less than one-third of all perioperative staff members were able to benefit from the presentation and clinical reference tool. Low turnout led to a small sample size for data collected from the questionnaires. Fortunately, this project could be replicated at this hospital, or in other organizations, making the potential to spread awareness very easy.

The initial plan for this project was to create a computer-based learning module which would contain a PowerPoint presentation with a voice-over. The original intent was to upload the PowerPoint onto the hospital's existing online staff education system. This approach was not feasible as the computer system was being changed to merge with another system-wide computer application. Had this method been successful, not only would this have had drastically increased the percentage of participants, it would have ensured that each perioperative staff member would receive the training every year. This would require the modules being maintained and updated from year to year.

The intent was to have the clinical reference tool laminated and placed in locations in the operating rooms as well as the preoperative and postoperative areas for all staff members to quickly reference if they suspected they may have a patient at risk for POD. This was also not feasible, and was denied by operating room management due to space limitations. Rather than

post the tool, the PowerPoint presentation and the clinical reference tool were emailed to all perioperative staff members so they could be referenced if they did not attend the presentation or lost the physical copy that was distributed.

Impact to Practice

The information contained in the tool was a comprehensive summary of all pertinent articles and information from the literature search. By providing participants with the presentation and clinical reference tool, awareness was increased about the growing problem of postoperative delirium. The objective of providing staff with clinical reference materials specific to preoperative, intraoperative and postoperative areas that contain references for risk factors, prevention methods and treatment methods was also accomplished using this method. Regarding the objectives that participants should be able to discuss the impact of cost in relation to postoperative delirium, describe pathology and associated risk factors, and relate assessment results with prevention methods, the survey results show that these goals were met.

Though measuring whether participants will continue to use the clinical reference tool is beyond the scope of this project, the information provided immediately increased awareness of postoperative delirium. Perioperative staff members now have a concise and comprehensive guide to reference any time they suspect they may have a patient at risk for POD.

Conclusion

This project could be replicated cheaply and easily at other facilities. Given that the population at greatest risk for postoperative delirium is on the rise, and that postoperative delirium can drastically increase healthcare costs, length of stay, and overall morbidity and mortality, educating perioperative staff members about the risk factors, prevention methods, and treatment options is appropriate and effective way to curb the problem. This project assisted in

increasing awareness and educating perioperative staff about postoperative delirium, in turn providing a safer environment for surgery. This has the potential to decrease the incidence of postoperative delirium, improve outcomes and decrease healthcare costs. The tool can be easily utilized daily in practice to improve postoperative outcomes in at risk population. In the future, management could allow staff members to review the PowerPoint presentation, and redistribute the clinical reference tool to keep the information fresh in their minds.

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