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Introduction of Strong for Surgery Pre-surgical Checklist for Elective Procedures

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Nearly one-third of hospitalized patients experience preventable harm or adverse effects related to the care they received (Liou et al., 2018). Many quality improvement initiatives primarily focus on the care a patient receives upon entering the hospital. Far too often care areas that can be addressed prior to hospitalization are overlooked. The Strong for Surgery (S4S) Pre-Surgical Checklist aims to use these areas to improve patient outcomes. A local general surgery clinic in southern Illinois had a process in place to contact the patient before surgery, however there was no standardization around this patient contact which did not allow for consistent risk assessment. Therefore, a standardized screening process was requested for education and implementation. The purpose of this project was to identify and educate staff regarding a pre-surgical checklist that would be easy to use and would identify patient risk factors which would be intervened upon to ensure the patient has the lowest risk possible before an elective surgery.

Literature Review

An extensive review of the literature was conducted to identify the efficacy of the various components of the S4S pre-surgical checklist. The initiative focuses on eight key modifiable risk factors: nutrition, smoking cessation, glycemic control, medications management, safe and effective pain management, delirium, prehabilitation, and patient directives. The eight modifiable risk factors included in the S4S checklist are associated with poor perioperative outcomes after elective procedures (Liou et al., 2018). When a patient shows risk in multiple sections of the S4S checklist, there is a statistically significant increase in the risk of postoperative complications and mortality (Liou et al., 2018). Through widespread adoption of the S4S checklist, there is a potential for decreased postoperative morbidity and mortality on a national scale. (Liou et al., 2018).

Studies dedicated to the efficacy of each component were reviewed. It is widely recognized that malnutrition increases the overall risk for adverse outcomes including increased morbidity, increase mortality, hospital admission, hospital readmission, and increased length of stay (Agarwal et al, 2013; Gillis, Nguyen, Liberman, & Carli, 2015 ; Tangvik, et al, 2014). According to a study involving 393,794 patients, it was determined that compared to both never and prior smokers, current smokers had a statistically significant ($p < 0.001$) increase in postoperative pneumonia, surgical-site infection, and deaths (Hawn, M. T. et al., 2011). Studies indicate that diabetic and nondiabetic patients face an increased risk of postoperative mortality when experiencing hyperglycemia or hypoglycemia during or after the procedure (Dhatariya et al., 2012; Frisch et al., 2010; Loh-Trivedi et al., 2021). Medication management in the perioperative arena is a delicate situation. Studies indicate that medication management should be conducted on a case-by-case basis involving the patient, the surgeon, and the provider that prescribed the medication (Ang-Lee, Moss, & Yuan, 2001; Hall & Mazer, 2011; Kwon et al., 2012). Safe and effective pain management is a desirable outcome for providers and patients alike. Opioid medications, non-opioid medications, and non-pharmacological therapies combine results in fewer risks of adverse effects (Chou et al., 2016). Research by the American Delirium Society (ADS) indicates that patients hospitalized with delirium face higher mortality rates at one month (14% vs. 5%), six months (22% vs. 11%), and twenty-three months (38% vs. 28%) after discharge (2015). Statistics like these indicate the importance of assessing a patient's preoperative risk for delirium. In an extensive review of the literature, it was determined that prehabilitation practices have not demonstrated efficacy in improving patient outcomes (Cabilan, Hines, & Munday, 2015; Gometz et al., 2018; Strong for Surgery, 2021). The S4S checklist utilizes the resources at PREPAREforyourcare.org to assist in advance care

planning. Tools such as the aforementioned website and other hard copy easy-to-read advance care planning tools showed an increase in advanced planning documentation by 25% to 35% (Sudore et al., 2017).

Project Methods

The purpose of this quality improvement project was to develop an evidence-based computer-based learning (CBL) module to enhance the knowledge of the S4S pre-surgical checklist in preparation for implementation. This project was deemed exempt from the Institutional Review Board at Southern Illinois University Edwardsville. It is a non-experimental, quality improvement project. The process of educating staff began with a brief in person introduction the Strong for Surgery checklist utilizing handouts of the checklist at a staff meeting on March 10th, 2021 led by the principal investigator. This was followed by an online computer-based learning module created by the principal investigator, with input from key stakeholders, that was completed by March 19th. The module encompassed the entirety of the Strong for Surgery checklist. During this online, self-paced education, staff (providers, registered nurses, and medical assistants in the clinic) was asked to complete a mandatory knowledge pre-assessment and post-assessment regarding the content of the module. Assessments included multiple choice, true/false, and select all that apply questions. With education complete, key stakeholders will decide when to implement the checklist. The final date for implementation has not yet been determined.

Evaluation

The CBL module began with a pre-assessment before any formal information about the S4S pre-surgical checklist. Following the assessment, the module reviewed the objectives of S4S, the process that will be followed upon implementation, and each staff member's roles and

responsibilities. The bulk of the CBL demonstrated and discussed the questions utilized the checklist. There was a review of all eight sections including rationale on the significance of each group of risk factors. Links to patient resources to be utilized in patient education were provided in the form of QR codes. The resources are available as hard copies and electronically for patient use.

The outcome measurement was attained by comparing test scores of identical pre-assessment and post-assessment. Upon review, it was determined that there was a total score increase of 35% from pre-assessment to post-assessment. There were varying increases in scores in most topic sections including general knowledge, roles and responsibilities, glycemic control, medication management, safe and effective pain management, patient directives, and prehabilitation. Each of these sections saw increases in overall score. The nutrition, smoking cessation, and delirium sections did not see a statistically significant increase. Overall, there was an increase in knowledge about the S4S pre-surgical checklist and the roles and responsibilities of office staff members for implementation. These results indicated an overall success in increasing knowledge related to the S4S pre-surgical checklist.

Limitations for this project did exist. The sample size was limited with only 20 participants as there was a shortened timeframe for education. Another limitation of this project was stakeholder buy-in. Although there were several surgeons interested in implementing a pre-surgical checklist, administrative personnel were only interested in piloting the program for elective procedures for one surgeon. Administrative stakeholders request to implement the checklist initially for elective procedures for one surgeon, followed by elective procedures for all surgeons, followed by all non-urgent surgeries.

Impact on Practice

The purpose of this project was to provide education on the S4S pre-surgical checklist. In the short term, there is an immediate impact on the primary site of education because this will serve as the initial pilot group for implementation. This educational initiative showed improvement in knowledge and understanding of the checklist as well as how the staff will function as a part of it. This will directly lead to improved workflow and faster, more accurate implementation. The long-term implications of this project are the potential for improved patient outcomes related to a smooth implementation process. The pilot clinic will serve as an example to the other clinics as expansion occurs. If the educational initiative is replicated in multiple clinics, it could result in exceptional preparation of the staff for implementation of the S4S checklist. When this initiative is completed again, it would be beneficial to extend the timeframe allowed for staff to complete the learning module. It would also be beneficial to include more face-to-face touchpoints to allow for more discussion.

Conclusions

Prior to this project, there was not a presurgical screening tool in place to screen patients for their risk factors. Intervention upon pre-existing risk factors has the potential to improve patient outcomes in mortality, infection, recovery time, length of stay, and other areas. The S4S pre-surgical checklist focuses on doing just that. Through the education provided by this project, knowledge about the checklist was increased. Staff members were able to show improvement in preassessment and post-assessment scores overall, and in many specific areas within S4S. The roles and responsibilities of all staff involved were clearly defined and the path for implementation has been paved. In the future, increased length of time to complete the module

and increased number of face-to-face meetings with staff would be beneficial to facilitate a deeper understanding and comprehension of the S4S pre-surgical checklist.