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**Implementation of a Pre-Anesthesia Questionnaire in the Preoperative
Phase of Care**

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Abstract

The preoperative assessment is an integral component in the prevention of perioperative complications and costly procedure cancellations. Efforts to improve the quality and efficiency of the preoperative assessment have included the use of surgical safety checklists in the preoperative and postoperative phases of care. Patient information obtained in the preoperative setting provides the foundational structure for the information relayed down the clinical pathway. Strategies to improve the quality and integrity of the preoperative assessment are needed to ensure the patient's safety and avoid procedure delays.

Purpose: To improve the preoperative assessment by decreasing the occurrence of incomplete or inaccurate information obtained during the preoperative nursing assessment and to enhance communication between nurses and providers.

Method: The patients in an outpatient preadmission testing were given a modified version of the American Association of Nurse Anesthetist's (AANA) Pre-Anesthesia Questionnaire to complete prior to their preoperative assessment. Nurse-completed handoff reports were reviewed for incomplete and incorrect information before and after the questionnaire implementation. Survey data was collected from nurses and anesthesia providers after the project ended.

Results: Review of the handoff reports during the pre-intervention period found 22.3% with at least one category incomplete and 1.8% with incorrect information. The categories of nicotine, alcohol and substance, and inhaler use, had the highest occurrence of incomplete information. Review of the handoff reports during the intervention period found 26.4% with at least one category incomplete and 8.9% with incorrect information.

The categories of nicotine, mobility, and alcohol and substance had the highest occurrence of inaccurate information during the intervention period. Results of the staff survey showed favorable opinions about the use of the questionnaire with all question means above 3.0 except for the item decreased normal assessment time (mean of 2.3).

Conclusion: The project revealed inconsistencies and gaps within the preoperative nursing assessments that would not have been easily detectable without the patient-completed questionnaires. Implementing a tool that uses patient-supplied information may be helpful in identifying elements that are overlooked or documented incorrectly. Ongoing quality improvement initiatives are needed to develop a system for obtaining and relaying information that is dependable, accurate, and transparent.

Keywords: *preadmission testing, preoperative evaluation, preoperative assessment, procedure delays, procedure cancellations*

Implementation of a Pre-anesthesia Questionnaire in the Preoperative Phase of Care

The loss of information in the preoperative assessment leads to costly delays in surgery, overuse of staff and resources, uninformed clinical decisions, and oversights in patient preparation. A 2020 systematic review found that unexpected delays and procedure cancellations contributed to adverse effects experienced by patients and illustrated the need to find measures to prevent them (Caesar et al., 2021). Cancelled procedures negatively impact patients and their health, in addition to placing a tremendous burden on health care providers and surgical facilities. Significant adverse effects, including cardiovascular events, respiratory distress, hemorrhage, and death, can occur when procedures are delayed or unexpectedly cancelled. One of the measures to prevent surgery delays, cancellations, and peri- and post-operative complications, is the preoperative assessment.

The costs of procedure delays and cancellations are significant. The cost of one cancelled operation in the United States can range from \$5,000 to \$8,000 (as cited by Turunen et al., 2018). An unstaffed operating room can cost an average of \$62 per minute (Fitzsimons et al., 2016). Both the patient and the facility can suffer an economic hardship when a procedure is cancelled abruptly due to a change in the patient's health status or an undocumented medical condition.

The purpose of the preoperative assessment is to evaluate the patient for anesthetic and surgical risk, reduce perioperative morbidity or mortality, and to optimize the patient for a safe procedure and outcome (Zambouri, 2007). Primary goals of the preoperative evaluation include perioperative risk determination, optimization of the

patient's medical condition(s), development of a patient-specific perioperative care plan, and providing the patient with information about their anesthesia, surgery, pain, and intraoperative/postoperative plans of care. The preoperative exam is an ideal time to discuss constructive information with the patient regarding their surgical risk, anesthetic expectations, and postoperative recovery (Bronsert et al., 2020).

Preoperative outpatient medical evaluations have been shown to minimize the number of delayed and cancelled procedures. The structure of the preoperative assessment differs from one facility to another. Assessment questions are focused on health conditions that could inhibit the safe administration of anesthesia including, but not limited to, preexisting cardiac disease, respiratory illness, and anticoagulant use. This assessment can be comprehensive or limited, subject to the effectiveness of the preadmission nursing staff and anesthesia providers. Health conditions that pose serious anesthesia risks may be overlooked if patients are not assessed appropriately for cardiovascular and respiratory conditions, allergies, medication and over-the-counter drug regimens, infection risk, and the management of present illnesses.

Surgical safety checklists have been designed to enhance communication between providers as the patient advances from the preoperative phase to the postoperative phase. Complications occur when information is incorrectly relayed or omitted throughout the clinical pathway (Storesund et al., 2019). Checklists provide a standardized structure to organize pertinent information in a format that is transferable with the patient and readily available to reference in each phase of care. Increasing the standardization for this transfer of communication between healthcare providers decreases the chances of human error caused by lost information (de Vries et al., 2011).

Preoperative assessments are conducted in an outpatient clinic at least one day and up to two months prior to the patient's scheduled surgery date. Organizational guidelines for the preoperative evaluation vary from facility to facility and may be modified in relation to the patient's surgical risk. Most facilities require a formal documentation of patient assessments in their electronic medical records (EMR). This information requires computer access and may take several minutes to review. To hasten this process, many surgical facilities endorse the supplemental use of a preoperative form that details patient data that pertains to perioperative implications and outcomes.

The purpose of this project is to improve the preoperative assessment by enhancing communication between providers as one of the methods in preventing adverse outcomes and avoiding procedure delays and cancellations. The Pre-Admission Testing (PAT) department at this facility uses a multi-staff approach in obtaining and relaying patient information. Nursing staff in PAT regularly rotate through distinct roles, each designed to perform a specific function in the patient's preoperative evaluation. These roles include conducting patient assessments via in-person appointments and phone calls, providing handoff reports to anesthesia providers, conducting final patient chart reviews during a "chart breakdown" process, and completing administrative tasks to obtain documents required for the patient's preoperative clearance.

The department provides a Handoff Report to assist the nurse during the patient's assessment. The Handoff Report is a paper document designed for fast documentation of common health conditions that are prelisted in order by system. The Handoff Report can be used later as a source of information for other chart-related functions, including the department's "chart breakdown" process. This Handoff Report remains in the patient's

paper chart until it is removed and discarded during the final review when chart is transferred to the OR.

The PAT nurse assigned to “chart breakdown” reviews the charts of the patients scheduled for surgery to prepare the chart for transfer to the OR. Steps to this review include completing an OR sheet that will serve as the nurse-to-nurse handoff from the PAT nurse to the Pre-op nurse on the day of surgery. This OR sheet is colored pink for easier distinction in the paper chart. The OR sheet displays a focused summary of the patient’s health history, allergies, lab results, and brief details about medication and preoperative orders. Completion of the OR chart is mandatory in this department, as it details pertinent information needed by the Pre-op nurse on the day of surgery.

The “chart breakdown” nurse verifies that the procedure is listed correctly, fills in the relevant health history on the OR sheet, verifies that the surgeon’s and anesthesia provider’s notes are signed in the EMR, lists any preoperative orders that were entered, and confirms that any abnormal lab value was reported. This review process can become time-consuming when the patient’s information is not documented correctly in the patient’s EMR and when there is not a completed Handoff Report to reference. This process is further delayed when the assessments, medication instructions, and preoperative orders are incomplete or incorrect.

According to the charge nurse of the PAT department at the facility where this project will take place, patient charts cannot be transferred to the OR if certain information is missing. The charge nurse conducts daily, weekly, and monthly audits of the pink OR sheet for quality improvement purposes. She cites causes of incomplete charts found during the “breakdown” process as: 1) Incomplete or incorrect medication

reconciliation; 2) Incorrect preoperative medication reconciliation; 3) Improper reporting of abnormal lab results; 4) Incomplete OR form; 5) Missing orders for patient labs, such as a Urine HCG for female patients under the age of 50, Point-Of-Care Glucose for diabetic patients, and Potassium for patients on dialysis.

The goal of the project is to evaluate the impact of a modified version of the American Association of Nurse Anesthesiology's (AANA) Pre-Anesthesia Questionnaire on decreasing the occurrence of incomplete or inaccurate information obtained during the preoperative nursing assessment. The AANA's Pre-Anesthesia questionnaire was modified to fit the needs of this department by including information that is frequently missed or documented incorrectly during the preoperative nurse assessment. In modifying this questionnaire, the topics of 'current medications,' 'prior operations,' 'weight,' and 'height' were omitted to reduce redundancy of charting. Medication reconciliation, as mentioned previously, is a formal process during the preoperative nursing assessment that includes a verbal review with the patient and a printed list of administration instructions prior to the procedure. The patient's weight and height are measured and documented by the certified nurse assistant (CNA); therefore, repeat documentation would not be necessary for the purpose of this project. Health history for liver and kidney function were intentionally omitted due to the complexity of these conditions and the limitation of the yes/no answering format on the questionnaire. The modified Pre-Anesthesia Questionnaire will aid the nurses and anesthesia providers with their preoperative assessment and serve as an added source of information during the chart breakdown process.

The American Association of Nurse Anesthesiology (AANA) Pre-Anesthesia Questionnaire is a supplemental tool that will address specific risk factors associated with perioperative and postoperative complications (AANA, n.d.a). When used in the Pre-Admission Testing setting, the Pre-Anesthesia Questionnaire (AANA, n.d.c) will bridge the gap in incomplete or inaccurate information obtained during the assessment. The Plan-Do-Study-Act (PDSA) model (Institute for Healthcare Improvement [IHI], n.d.) and The Ottawa Model of Research Use (Logan & Graham, 1988) will guide this QI project. The aim of this project is to improve the completeness and accuracy of preoperative assessments in a Pre-Admission Testing setting.

Primary outcome measures of interest include the percentages of Handoff Reports that were found to have complete and accurate information before and during the change-in-practice period and the feedback from the nursing staff and anesthesia providers detailing the impact the questionnaire had on their patient assessments and/or interactions. The project question was formulated to guide the literature review: What is the impact of including a modified Pre-Anesthesia Questionnaire in the completeness and accuracy of preoperative assessments?

Literature Review

A comprehensive and systematic literature search was conducted to identify the current evidence and previously documented research surrounding the implementation of surgical checklists in the preoperative and perioperative setting. A search was performed for English language articles using Summon, CINAHL, Medline, Google Scholar, APA PsychInfo, Cochran Library, and PubMed databases. Initially, key search terms included “preadmission testing” OR “preoperative testing” OR “preoperative evaluation” OR

“preoperative assessment,” which yielded 7,581 results. The literature search was further refined by modifying key search terms to include “checklist,” which yielded 661 results. Refined search settings included peer reviewed journals, research articles, systematic reviews, meta-analyses, mixed-method studies, written in English, from 1/1/2005 to 9/1/2021, were applied. Studies prior to 2005 were excluded. Articles specific to one surgical specialty were excluded. Articles that included males and females younger than 18 years of age were excluded. This resulted in 48 articles. The abstracts of articles were reviewed for relevance, clinical setting, age group, and geographic location resulting in 21 articles for further review. After full text reading to assess relevance and appropriateness, 9 were selected for final inclusion in this literature review (Appendix A).

The AANA recommends a preoperative assessment and evaluation that includes a comprehensive review of a patient’s health, history, preexisting conditions or health issues, use of medication or over-the-counter drugs, and previous anesthesia encounters (AANA, n.d.b). This information is used by the provider to develop a safe and appropriate anesthesia plan for the patient and to order any additional tests needed to medically optimize the patient prior to their procedure. To help patients prepare for this evaluation, the AANA created a Pre-Anesthesia Questionnaire for the patient to complete prior to their preoperative assessment. The 30 ‘yes’ or ‘no’ questions address health concerns that directly impact perioperative and postoperative outcomes, including but not limited to, bleeding risk, respiratory status, lifestyle factors, and cardiac conditions (AANA, n.d.c). While the AANA’s Pre-Anesthesia Questionnaire was designed as an optional tool for patient use, the concept of a structured, preoperative document was

found to be effective in reducing procedure delays and cancellations (Bronsert et al., 2020, Storesund et al., 2020).

A retrospective study reviewed 6,431 reports of cancelled operations at Jordan University Hospital. Data was collected from August 2012 to April 2016 and cancelled operations were categorized into 3 groups: patient no-shows; patient-related reasons; and hospital-related reasons. Cancelled operations that fell under ‘hospital-related reasons’ included subcategories of lack of surgical operating time, incomplete preoperative assessment, shortage of nursing staff, shortage of anesthesia staff, and equipment or supplies shortage. A Pareto analysis identified “incomplete preoperative assessment” as the cause of 265 (21%) of the cancellations (Abeeleh et al., 2017).

de Lorenzo-Pinto et al. (2019) identified “incomplete preoperative study” as the cause of 21.4% of the cancellations examined at a tertiary hospital. The study included 5,415 surgical procedures from July to October 2017. During the period of study, 793 of 5,415 procedures were cancelled. Reasons for the cancellations were classified into eight categories. The category of “inadequate patient preparation” included factors of incomplete or missing preoperative study, inadequate management of chronic medication, or insufficient preoperative fast. While the purpose of the study was to evaluate the rate of procedure cancellations caused by inadequate management of chronic medications, the findings were significant in identifying other reasons for cancellations.

In a nonrandomized clinical trial that included 9,009 surgical procedures, the application of both the World Health Organization Surgical Safety Checklist (WHO SSC) and Surgical Patient Safety System (SURPASS) checklists in the preoperative and postoperative phase was associated with decreased rates of complications and surgical

revisions (Storesund et al., 2020). Of the 9,009 procedures included in the study, 5,117 were in the change-in-practice period from November 2012 to March 2015, or a total of 29 months. Exactly 1,418 of the 9,009 procedures were associated with 1 or more complications. Although specific information on completion of the preoperative checklists was not provided, when adjusted for adherence to the preoperative and postoperative SURPASS checklists, results demonstrated a decrease in in-hospital complications and a reduction of unplanned 30-day readmissions.

The WHO SSC is comprised of three checklists, each designed to be implemented at a specific time in the surgical process; before the induction of anesthesia, before the initial incision, and at the completion of surgery (Storesund et al., 2019). The WHO SSC is limited by its pertinence to the actions performed in the operating room only. The efficacy of the WHO SSC is dependent on the accuracy and completeness of the information provided immediately prior to surgery. However limited, the WHO SSC is a widely used and accepted tool in the prevention and reduction of morbidity and mortality during surgery and has been implemented in all Norwegian hospitals (Haugen et al., 2019, Storesund et al., 2019). The preoperative-specific components covered in the WHO SSC are included in the AANA's PreAnesthesia Questionnaire (AANA, n.d.c).

The SURPASS is a validated checklist that incorporates a process that is applicable throughout every phase of operative care from admission to discharge (Storesund et al., 2019). The SURPASS is comprised of 11 checklists, with five checklists specific to the preoperative phase, three to the intraoperative phase, and three to the postoperative phase. The preoperative segment of the checklist reviews clinical data such as patient comorbidities, current medications, allergies, the use of

anticoagulants and antibiotics, any correspondence from the referring physician, and any other clinical requests for the patient. The design of SURPASS is based on a set of eight risk variables associated with 12 significant adverse surgical outcomes common among nine surgical specialties (Bronsert et al., 2020).

In a multicenter study, the SURPASS checklist was implemented in six teaching and academic hospitals and resulted in a reduction in the postoperative complication rate from 27.3 per 100 patients to 16.7 per 100 patients (de Vries et al., 2011). In addition, the study found that the implementation of the SURPASS checklist resulted in a reduction of in-hospital mortality from 1.5% to 0.8%. While the study did not analyze the preoperative phase of the checklist specifically, it does demonstrate the impact that assessments have on procedural outcomes.

Another study by Bronsert et al. (2020) found that both patients and providers reported the use of the Surgical Risk Preoperative Assessment System, or SURPAS, checklist during the preoperative evaluation was helpful and informative. Providers reported that SURPAS was especially helpful with patients of higher risk for surgical complications. Khaneki et al. (2020) found that SURPAS risk predictions were accurate estimators of morbidity risk compared to observed morbidity and was determined to be a more accurate tool of prediction when compared to the American College of Surgeons Surgical Risk Calculator.

A retrospective review of 294 surgical malpractice claims between 2004 and 2005 found that 29% of the 412 identified contributing factors may have been intercepted by the SURPASS checklist (de Vries et al., 2011). Contributing factors for the surgical malpractice claims were organized into categories that were consistent with published

research on surgical error causation. The categories were then compared to components on the SURPASS checklist. The categories that corresponded with the components of the SURPASS checklist were grouped according to phase of preoperative care: preoperative during outpatient clinic or emergency department; preoperative during hospital admission; preoperative; postoperative during hospital admission; and postoperative during outpatient monitoring. Significant contributing factors found in two-thirds of all claims included “Error in judgement,” “failure of vigilance/memory,” and “failure in communication between care providers” (de Vries et al., 2011, p. 625). Additionally, 29% of the contributing factors specific to the preoperative phase included “failure in communication between care providers”, “no informed consent”, and “insufficient preoperative information” (de Vries et al., 2011, p. 626).

PDSA and the Ottawa Model of Research Use is the evidence-based practice (EBP) framework chosen to guide this Quality Improvement (QI) project. The PDSA is an appropriate framework, as it incorporates a 4-cycle blueprint for initiating and measuring a QI intervention on a small scale and carries the flexibility to adjust or modify the change-in-practice in future projects (IHI, n.d.). The Ottawa Model of Research Use is a knowledge translation model that uses a six-step approach to facilitate the application of an intervention (Graham & Logan, 2004). The unification of these two frameworks will provide a solid structure and template for this evidence-based, QI project.

This QI project incorporates current assessment methods with the addition of a supplementary tool to improve the preoperative assessment and enhance communication between providers. This is an important measure in decreasing the number of delayed and

cancelled surgical procedures and improving patient outcomes. The use of the Ottawa Model of Research Use in this project will provide additional insight to the potential benefits of a structured questionnaire in the preoperative phase of care. While this specific change-in-practice does not address all causes of procedural delays and cancellations as identified by the literature, it does provide a method that can be readily assimilated into practice.

Methods

Design

This QI project utilized a preintervention and postintervention design. Data was collected from the nurse-completed Handoff Reports from the charts of patients during the department's "chart breakdown" process in the month prior to the change-in-practice period, March 1, 2022, to March 31, 2022. During the change-in-practice period from April 1, 2022, to April 29, 2022, patients that attended in-person PAT appointments were asked to complete a Pre-Anesthesia Questionnaire prior to their preoperative nursing and anesthesia provider assessment. Data was then collected from the nurse-completed Handoff Reports and completed questionnaires during the department's "chart breakdown" process. PAT nursing staff and anesthesia providers completed an evaluation survey during the first week of May 2022.

Setting

The location of this project was an adult pre-admission testing outpatient clinic in a metropolitan Midwest area. The clinic is part of an academic medical center with approximately 11,500 employees. At the time of the project, the clinic seen approximately 380 patients for in-person preoperative evaluations per month. During the

months of March 2022 and April 2022, there were nine PAT nurses employed: five full-time, two part-time, and two pro re nata (PRN). Two or three advanced practice nurses and two anesthesia providers were present daily.

Sample

The Handoff Reports from the charts of adult patients who attended in-person PAT appointments from March 1, 2022, to April 29, 2022, were included in the project. All patients attending in-person PAT appointments from April 1, 2022, to April 29, 2022, completed a Pre-Anesthesia Questionnaire. PAT nurses and anesthesia providers present from March 1, 2022, to April 29, 2022, were included in the project. The total number of patient charts counted in the 23 days that the department was open in March was 397, or approximately 17 patients per day. The total number of patient charts counted in the 21 days that the department was open in April was 330, or approximately 16 patients per day. The slight decrease in patient count from March to April was due to a change in scheduling for PAT appointments. The department experienced an increase in the number of patient appointments due to a newly implemented 2022 policy that required all patients to be screened by PAT for surgical procedures, regardless of acuity. As a result of this policy, the department scheduled patients further in advance of their surgery dates to accommodate the additional screenings. More patients were seen in PAT during the change-in-practice period, but their surgery dates were outside of the data collection period.

Data Collection/Analysis

From March 1, 2022, to March 31, 2022, Handoff Reports from the charts of patients in the “chart breakdown” process was reviewed in 12 categories using a Chart

Review Sheet (see Appendix B). Charts without a completed Handoff Report were counted but not included in the review. Handoff Reports were reviewed in specific categories for complete, incomplete, and incorrect information. Sections on the Handoff Reports that did not have assessments indicated were marked complete, as the section was assumed to be not applicable to the patient. Sections that were crossed out or had the word “no” listed next to them (negated) were considered complete and not applicable to the patient. Sections with assessments indicated that did not include corresponding information were marked incomplete. Assessments that require corresponding information are detailed in Table 1. Sections with conflicting assessments indicated were marked incorrect.

Table 1. *Assessments that require corresponding information*

Assessment	Required corresponding assessment
History of stroke or TIA	Date of stroke(s) Deficit(s) from stroke or 'no deficit' Date of TIA
Inhaler use	Frequency of albuterol inhaler use
OSA	Device used or prescribed OR Device with noncompliance OR Device with recall OR No device used/prescribed
Oxygen use	Amount (number of liters) Frequency (continuous, at night, etc.)
History of MI	Date of MI
AICD, Pacemaker or loop recorder	Date of last device check
Diabetes	Type
History of blood transfusion	Year Transfusion refusal if applicable
Smoking, smokeless tobacco, or nicotine vapor use current or past use	Quantity per day Frequency Length of time in years Quit date
Alcohol use	If frequency is weekly: Type, amount, frequency If daily: Length of time in weeks, months, or years that patient has been drinking daily
Substance use	Quantity, frequency
Mobility	If less than normal (Able to walk 3-4 blocks without shortness of breath or chest pain), indicate activity level Select any device(s) used

From April 1, 2022, to April 29, 2022, Handoff Reports and completed Pre-Anesthesia Questionnaires from the charts of patients in the “chart breakdown” process was compared and reviewed for complete, incomplete, and incorrect information, as it

appeared in the categories on the chart review sheet. Charts without completed Handoff Reports were counted but not included in the review. Patient-provided responses on the questionnaire were compared with assessments documented on the Handoff Report. Sections on the Handoff Report were considered complete if the assessment was consistent with the patient's responses on the questionnaire. Sections with documented assessments that did not include required corresponding information were considered incomplete. Sections with assessments that were skipped but not crossed out or denied (negated) on the Handoff Report were marked incomplete if the patient reported the assessment on the questionnaire. Sections with assessments that were negated on the Handoff Report but reported by the patient were marked incorrect. Positive assessments reported on the completed questionnaires were counted and recorded in an Excel spreadsheet. Descriptions of incomplete and incorrect information found in the categories were recorded. All data information was collected, reviewed, and stored by the project director.

An Evaluation survey (see Appendix C) was voluntarily completed by the three PAT nurses and three anesthesia providers during the first week of May 2022, following the completion of the change-in-practice period.

Procedure

The modified Pre-Anesthesia Questionnaire tool (Appendix D) was provided to the PAT Testing department on April 1, 2022. The project director explained the purpose of the project, the chart review process, and how to administer the questionnaire to each PAT staff member individually. Each staff member was provided a printed set of instructions. PAT nurses were also supplied a copy of the chart review sheet that would

be used to evaluate assessments on the Handoff Report. The CNA was instructed to give a copy of the questionnaire and a writing utensil to the patient after documenting the patient's vital signs. The patient was given 5 minutes to complete the questionnaire prior to the PAT nurse entering the room. PAT nurses with non-English speaking patients completed the questionnaire using the facility's video interpreter. Patients with visual and motor deficits were read the questionnaire and the questionnaire was completed by the PAT nurse.

A copy of the completed questionnaire was provided to the anesthesia provider to review while the nurse completed the patient's initial assessment. The PAT nurse was instructed to place the completed questionnaire in the patient's paper chart for later review by the project director during the "chart breakdown" process. The anesthesia provider was instructed to discard the completed questionnaire in the department's secure shredder after it was reviewed and no longer needed.

PAT nurses assigned to "chart breakdown" were instructed to remove the completed Handoff Report and staple it to the completed Questionnaire. The Handoff Reports and questionnaires were secured and stored by the charge nurse until the project director was present to review them for data collection.

Approval Processes

The project was received by the participating hospital's healthcare system Institutional Review Board (IRB) and the University of Missouri- St. Louis (UMSL) Institutional Review Board and was found to be a quality improvement project not requiring IRB review (See Appendix E).

Results

A total of 397 charts were reviewed in the “chart breakdown” process from March 1, 2022, to March 31, 2022. Of the 397 charts in the month prior to the change-in-practice period, 376 (92.4%) charts met the inclusion criteria of having a completed Handoff Report. A total of 330 charts were reviewed in the “chart breakdown process” from the change-in-practice period, with 291 (88.2%) meeting the inclusion criteria of having both a completed Handoff Report and a completed Pre-Anesthesia Questionnaire.

During the month prior to the change-in-practice period, 22.3% (n=84) of the Handoff Reports had at least one category found with incomplete information and 1.8% had at least one category found with incorrect information. The category with the highest number of incomplete assessments was the nicotine assessment at 24% (n=22). The second highest category was the alcohol and substance assessment at 18% (n=16). The inhaler use was the third highest category with 15% (n=14). The diabetes assessment was the fourth highest category with incomplete information at 14% (n=13) (Table 2). There were seven charts, or 1.8%, found with incorrect information.

Table 2. *Handoff Report categories with incomplete information*

Category	Pre-intervention period		Intervention period		Difference
	Incomplete information (n=86)		Incomplete information (n=77)		
Nicotine	22	23.9%	47	61%	+37.1%
Alcohol & Substance	16	17.4%	16	20.7%	+3.3%
Inhaler use	14	15.2%	7	9%	-6.2%
Diabetes	13	14.1%	0	0%	-14.1%
Stroke	6	6.5%	4	5.2%	-1.3%
Anesthesia	5	5.4%	3	3.9%	-1.5%
Cardiac	5	5.4%	0	0%	-5.4%
OSA	5	5.4%	1	1.3%	-4.1%
Mobility	3	3.3%	17	22.1%	+18.8%
Blood Transfusion	3	3.3%	6	7.8%	+4.5%
Allergies	0	0%	0	0%	0
Anticoagulation	0	0%	0	0%	0

During the change-in-practice month when the Pre-Anesthesia Questionnaire was compared and reviewed in conjunction with the Handoff Report, 26.4% (n=77) of the Handoff Reports were found to have incomplete information in at least one category. Nearly nine percent (8.9%, n=26) were found to have incorrect information in at least one category. The category with the highest number of incomplete assessments was the nicotine assessment at 61% (n=47). The second highest category for incomplete assessments was the mobility assessment at 22.1% (n=17). The third highest category for incomplete assessments was the alcohol and substance assessment at 20.7% (n=16) (Table 2).

Sections on the Handoff Report that were omitted or skipped in the pre-intervention period were assumed to be normal assessments, not applicable to the patient, and marked complete. Questionnaire responses with patient reported information in one or more of the 12 categories subsequently caused Handoff Reports with omitted or

negated sections to be marked incomplete or incorrect. Sections negated on the Handoff Reports were found to be incorrect when patients reported opposing information in their questionnaire responses. These discrepancies were evident in the nicotine, alcohol and substance, and mobility assessments.

The categories with the highest percentage of incorrect information found on the Handoff Report were alcohol and substance 31% (n=8); activity and nicotine, each 19% (n=5); anesthesia 15% (n=4); diabetes 11.5% (n=3); OSA and blood transfusion, each 7.69% (n=2); stroke and inhaler, each 3.85% (n=1). An increase in the number of Handoff Reports with incorrect information was found from the month prior to the change-in-practice month 1.8% (n=7) to the change-in-practice month 8.9% (n=26). The greatest change occurred in the nicotine category, with an increase from 0% (n=0) to 19% (n=5). The anesthesia category had the second largest increase from 0% (n=0) to 15% (n=4). OSA had the third largest increase from 0% (n=0) to 8% (n=2). Categories that experienced a decrease in the rate of incorrect assessments were inhaler use 14% (n=1) to 4% (n=1), diabetes 14% (n=1) to 12% (n=3), mobility 29% (n=2) to 19% (n=5), and blood transfusion 14% (n=1) to 8% (n=2). The categories of allergies, cardiac conditions, and anticoagulation use were not found to have incorrect information (Table 3).

Table 3

Handoff Report categories with incorrect information

Category	Pre-intervention period		Intervention period		Difference
	incorrect information (n=7)		incorrect information (n=26)		
Nicotine	0	0%	5	19%	+19%
Alcohol & Substance	2	29%	8	31%	+2%
Inhaler use	1	14%	1	4%	-10%
Diabetes	1	14%	3	12%	-2%
Stroke	0	0%	1	4%	+4%
Anesthesia	0	0%	4	15%	+15%
Cardiac	0	0%	0	0%	0
OSA	0	0%	2	8%	+8%
Mobility	2	29%	5	19%	-10%
Blood Transfusion	1	14%	2	8%	-6%
Allergies	0	0%	0	0%	0
Anticoagulation	0	0%	0	0%	0

In the month prior to the change-in-practice month, 5.3% of the charts (n=21) were not included in the analysis due to the absence of a Handoff Report. During the change-in-practice month, 11.8% (n=39) of the charts were not included in the analysis for the same reason. There were also two questions on the questionnaire that asked about having chest pain and having excessive bleeding during a surgery. These questions did not fall under a specific category within the chart review sheet for data analysis. Eleven patients, or 3.8% (n=11), responded ‘yes’ to having chest pain and nine patients, or 3.1% (n=9), responded ‘yes’ to having excessive bleeding during a surgery. It was unclear if either assessment had been acknowledged, addressed, or relayed, as there were no comments regarding chest pain or excessive bleeding on the corresponding Handoff Report.

Several categories were correct and complete in both the month before and the month during the change-in-practice period. The categories for allergies and anticoagulation were correctly documented on all Handoff Reports. The number of incomplete assessments found in the category of cardiac conditions decreased from 5.4% (n=5) to 0% (n=0).

A total of three PAT nurses and three anesthesia providers voluntarily completed a staff evaluation survey. Two PAT nurses declined to complete the survey and indicated in the comment section that they did not view the completed questionnaires during the change-in-practice period. A 4-point Likert scale was used, with scores ranging from 1 to 4 that were assigned to the following responses: 'disagree', 'somewhat disagree', 'somewhat agree', and 'agree.' The mean was calculated for the nurse, provider, and overall responses (Table 4). Both the nurses and providers indicated 'somewhat agree' or 'agree.' for 94% of their responses and 6% percent of the survey answers indicated 'somewhat disagree.' There were not meaningful differences between the nurse responses and provider responses. The highest scored response from both groups was the statement: "The Pre-Anesthesia Questionnaire would improve communication between providers." The lowest scored response was the statement "The Pre-Anesthesia Questionnaire decreased my assessment time."

Table 4

Evaluation survey results

Question	Overall mean (n=6)	Nurse mean (n=3)	Provider mean (n=3)
Helped complete assessment	3.16	3	3.3
More efficient assessment	3	3	3
Identified patient conditions	3.67	3.67	3.67
Focus on most important conditions	3.16	3.67	2.67
Decreased normal assessment time	2.3	2.3	2.3
Improve communication	4	4	4
Appropriate number of questions	3.3	3.3	3.3
Improve patient experience	3	3	3
Covered important aspects	3.3	3.3	3.3
Beneficial to PAT department	3.5	3.3	3.67

Note. For observed means, 1 = Disagree; 2 = Somewhat disagree; 3 = Somewhat agree; 4 = Agree.

Discussion

The Pre-Anesthesia Questionnaire did not result in an overall reduction of incomplete and incorrect charting on the Handoff Report and, unexpectedly, resulted in an overall increase from 22.3% to 26.9%. The rate of incomplete and incorrect categories increased in direct proportion with the increase in the number of assessments reported on the questionnaires during the change-in-practice period. Modest percentage decreases in

some of the categories may have resulted from an improvement in charting practices on certain assessments following the PAT staff's knowledge of the project director's chart reviewing criteria for the project.

The PAT nurse assigned to assessing patients has a substantial role in the preoperative evaluation. In this assignment, the nurse is required to obtain a thorough and accurate health and social history from the patient that includes a review of anesthesia-specific information that may affect the patient during or after surgery. Using deductive reasoning and clinical knowledge, the nurse must address all body systems and obtain additional, focused assessments when applicable. The nurse is expected to document this information appropriately in the patient's EMR and relay the applicable information obtained to the anesthesia provider. The nurse's assessment creates the foundation for the exam, as a thorough and accurate handoff to the anesthesia provider is a critical component in identifying risk factors and areas of concern for the patient.

The Handoff Report is a tool provided by the PAT department to assist the nurse with this process. The Handoff Report is a paper document designed for fast documentation of common health conditions that are prelisted in order by system. While preferable and used routinely by most of the nursing staff in PAT, the Handoff Report is not required. The nurse assigned to assessing patients has the option of charting only in the patient's EMR and providing a verbal report to the anesthesia provider. It is important to consider the number of charts that did not have a completed Handoff Report during both periods of the project. The patient assessments in these instances could potentially have had more incomplete or incorrect information than those included in the review. The

absence of a structured format in relaying information to the anesthesia provider allows for a large margin of discretion and potential error.

The cause of the incomplete and incorrect information found on the Handoff Reports is unclear; however, it is an area of interest that warrants further inquiry. This project did not include a review of the patient EMR records to verify documented assessments, as the project's purpose focused on enhancing communication between nurses and anesthesia providers. While it may be appropriate in some settings for the anesthesia provider to rely solely on the patient's EMR for information, it is not the practice of this department for nurses to omit the handoff report and direct providers to look up the patient's health status in EMR. PAT nurses are required to provide verbal reports to the anesthesia providers based on the patient's assessment, with or without the use of the paper Handoff Report.

Although anesthesia providers perform and conduct an independent preoperative exam, they should be able to rely on the patient information relayed by the nurse. Future PDSA cycles can be improved by creating a tool that is better supported by the PAT staff, and one that is useful in both obtaining information from the patient and relaying that information to the anesthesia provider. It may be beneficial to create a uniform system of documenting and reporting patient information that is required of all staff during the preoperative assessment. Conducting routine audits of the nurses' charting would help identify gaps in the assessments and allow opportunities for mediation before incomplete or incorrect documenting occurs. Additionally, the initiation of a tool that requires patient-responded perceptions about the status of their health may provide insight into the patient's interpretation of frequently asked questions.

One significant limitation to evaluating the value and benefit of the patient questionnaire is that it was not consistently reviewed by the nursing staff, as evidenced by the number of participants in the survey responses and conflicting information found on the questionnaires during the project. The statements in the staff evaluation survey were intended to be ranked on a 4-point Likert scale following the integration of the questionnaire into the nurse's or provider's preoperative assessment. The statements in the evaluation survey did not address potential reasons for why the questionnaire was not used. Participation in both the project and the evaluation survey were voluntary for the PAT staff.

Results of the staff's evaluation surveys showed that two out of the five nurses did not look at the completed questionnaires before or during their assessments. All three anesthesia providers reported that they did not receive the completed questionnaire on most, or even half, of their patients. In some cases, the completed questionnaires were placed in the patient's paper chart and not given to the anesthesia provider to view. While most of the survey responses were favorable for the questionnaire, there were more 'somewhat agree' answers (n=29) than 'agree' answers (n=23). This result indicates that although the survey respondents did not disagree with the statements, they did not fully agree with the statements, either.

Conclusion

Improving the preoperative assessment is one method to improve surgical outcomes and decrease the number procedure delays and cancellations. Two important actions in the preoperative evaluation for both nurses and providers are obtaining information and relaying information. The allocation of multiple staff members to

perform one of these actions for the same patient is an overutilization of staffing resources and is not addressing the issue of quality. The practice of assigning nursing staff to complete or correct the information obtained and documented from other nursing assessments may be necessary in preventing procedure delays and cancellations; however, this practice does nothing to change or improve the actual nursing or provider assessment.

Using *The Ottawa Model of Research Use* (1988) as a framework in improving this QI project for future use, it is important to acknowledge that the questionnaire was not fully adopted or implemented by the PAT staff. The distribution of the questionnaire to the patients during the change-in-practice period became a separate task that was disassociated from the preoperative nursing assessment. This deviation from the proposed protocol could be due to a lack of confidence in the perceived benefit of the questionnaire. It may be necessary to invoke strategies to facilitate the translation of knowledge and ensure that the participating staff members understand the potential value of the tool before using it. Securing the support, cooperation, and adherence from the PAT staff will be essential prior to implementing QI projects of this nature.

One recommendation for the next PDSA cycle is to provide education to the staff about the specific assessments that were frequently found to be incorrect and incomplete during this QI project. It is possible that the PAT nurses may not understand the importance of each assessment, the need for additional information for certain assessments, or how variables in the patient's history could potentially affect their perioperative and postoperative outcomes. A second recommendation is to provide an in-service educational program to explain the anesthetic-specific purpose of each assessment

and review the expectations of the nurse's role in the preoperative evaluation. A third recommendation is to have a meeting with PAT nurses and anesthesia providers to encourage collaboration on the development and design of a new Handoff Report that is accepted and supported by all staff members.

Ongoing quality improvement initiatives are necessary in developing a system of obtaining and relaying information that is dependable, accurate, and transparent. Such a system would support the anesthesia provider in medically optimizing the patient for their procedure. Part of this quality improvement practice includes conducting reviews of employee practices on a routine and consistent basis to identify gaps in care and areas in need of intervention. Providing regular and timely feedback to employees about performance, improvement, and role expectations for the preoperative assessment will facilitate future QI efforts. Improving the quality of the preoperative evaluation and the efficiency of the department must be a priority to all staff members in a preadmission testing facility to ensure the patient's safety and minimize the costs of the procedure delays and cancellations.

References

- American Association of Nurse Anesthesiology [AANA] (n.d.a). *Documenting Anesthesia Care: Before Anesthesia*. Retrieved October 29, 2021, from <https://www.aana.com/patients/all-about-anesthesia/before-anesthesia>
- AANA. (n.d.b). *Preanesthesia Assessment and Evaluation Record*. Retrieved September 30, 2021, from [https://www.aana.com/docs/default-source/practice-aana-com-web-documents-\(all\)/professional-practice-manual/documenting-anesthesia-care.pdf?sfvrsn=ac0049b1_8](https://www.aana.com/docs/default-source/practice-aana-com-web-documents-(all)/professional-practice-manual/documenting-anesthesia-care.pdf?sfvrsn=ac0049b1_8)
- AANA. (n.d.c). *Preanesthesia Questionnaire*. Retrieved September 29, 2021, from <https://www.aana.com/patients/pre-anesthesia-questionnaire>
- Abeeleh, M. A., Tareef, T. M., Hani, A. B., Albsoul, N., Samarah, O. Q., ElMohtaseb, M. S., Alshehabat, M., Ismail, Z. B., Alnoubani, O., Obeidat, S. S., & Halawa, S. A. (2017). Reasons for operation cancellations at a teaching hospital: prioritizing areas of improvement. *Annals of Surgical Treatment and Research*, 93(2), 65–69. <https://doi.org/10.4174/astr.2017.93.2.65>
- Bronsert, M. R., Lambert-Kerzner, A., Henderson, W. G., Hammermeister, K. E., Atuanya, C., Aasen, D. M., Singh, A. B., & Meguid, R. A. (2020). The value of the "surgical risk preoperative assessment system" (SURPAS) in preoperative consultation for elective surgery: A pilot study. *Patient Safety in Surgery*, 14(1), 1-31. <https://doi.org/10.1186/s13037-020-00256-4>
- Caesar, U., Karlsson, L., Hamrin Senorski, E., Karlsson, J., & Hansson-Olofsson, E. (2021). Delayed and cancelled orthopaedic surgery; are there solutions to reduce

- the complex set of problems? A systematic literature review. *International Journal of Clinical Practice (Esher)*, 75(9). <https://doi.org/10.1111/ijcp.14092>
- de Lorenzo-Pinto, A., Ortega-Navarro, C., Ribed, A., Giménez-Manzorro, Á., Ibáñez-García, S., de Miguel-Guijarro, Á., Ginel-Feito, M. D., Herranz, A., & Sanjurjo-Sáez, M. (2019). Cancellations of elective surgical procedures due to inadequate management of chronic medications. *Journal of Clinical Pharmacy and Therapeutics*, 44(4), 561-564. <https://doi.org/10.1111/jcpt.12816>
- de Vries, E. N., Eikens-Jansen, M. P., Hamersma, A. M., Smorenburg, S. M., Gouma, D. J., & Boermeester, M. A. (2011). Prevention of Surgical Malpractice Claims by Use of a Surgical Safety Checklist. *Annals of Surgery*, 253(3), 624–628. <https://doi.org/10.1097/SLA.0b013e3182068880>
- Fitzsimons, M. G., Dilley, J. D., Moser, C., & Walker, J. D. (2016). Analysis of 43 intraoperative cardiac surgery case cancellations. *Journal of Cardiothoracic and Vascular Anesthesia*, 30(1), 19-22. <https://doi.org/10.1053/j.jvca.2015.08.007>
- Graham, I.D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *Canadian Journal of Nursing Research*, 36(2), 89-103.
- Haugen, A. S., Wæhle, H. V., Almeland, S. K., Harthug, S., Sevdalis, N., Eide, G. E., Nortvedt, M. W., Smith, I., & Sjøfteland, E. (2019). Causal Analysis of World Health Organization's Surgical Safety Checklist Implementation Quality and Impact on Care Processes and Patient Outcomes: Secondary Analysis From a Large Stepped Wedge Cluster Randomized Controlled Trial in Norway. *Annals of Surgery*, 269(2), 283–290. <https://doi.org/10.1097/SLA.0000000000002584>

Institute for Healthcare Improvement (IHI). (n.d.). *Plan-Do-Study-Act (PDSA)*

Worksheet.

<http://www.ihl.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx>

Khaneki, S., Bronsert, M. R., Henderson, W. G., Yazdanfar, M., Lambert-Kerzner, A., Hammermeister, K. E., & Meguid, R. A. (2020). Comparison of accuracy of prediction of postoperative mortality and morbidity between a new, parsimonious risk calculator (SURPAS) and the ACS Surgical Risk Calculator. *The American Journal of Surgery*, *219*(6), 1065–1072.

<https://doi.org/10.1016/j.amjsurg.2019.07.036>

Logan J. & Graham I.D. (1988). Toward a comprehensive interdisciplinary model of health care research use. *Science Communication*, *20*(2), 227–246

Storesund, A., Haugen, A. S., Flaatten, H., Nortvedt, M. W., Eide, G. E., Boermeester, M. A., Sevdalis, N., Tveiten, Ø., Mahesparan, R., Hjallen, B. M., Fevang, J. M., Størksen, C. H., Thornhill, H. F., Sjøen, G. H., Kolseth, S. M., Haaverstad, R., Sandli, O. K., & Sjøfteland, E. (2020). Clinical efficacy of combined surgical patient safety system and the world health organization's checklists in surgery: A nonrandomized clinical trial. *JAMA Surgery*, *155*(7), 562-570.

<https://doi.org/10.1001/jamasurg.2020.0989>

Storesund, A., Haugen, A. S., Wæhle, H. V., Mahesparan, R., Boermeester, M. A., Nortvedt, M. W., & Sjøfteland, E. (2019). Validation of a Norwegian version of SURgical PATient Safety System (SURPASS) in combination with the World Health Organizations' Surgical Safety Checklist (WHO SSC). *BMJ Open Quality*, *8*(1), e000488. <https://doi.org/10.1136/bmjopen-2018-000488>

- Turunen, E., Miettinen, M., Setälä, L., & Vehviläinen-Julkunen, K. (2018). The impact of a structured preoperative protocol on day of surgery cancellations. *Journal of Clinical Nursing, 27*(1-2), 288-305. <https://doi.org/10.1111/jocn.13896>
- Zambouri, A. (2007). Preoperative evaluation and preparation for anesthesia and surgery. *Hippokratia, 11*(1),

Appendix A Evidence Table

Citation	Background	Subjects	Methods	Results
<p>Abeeleh, M. A., Tareef, T. M., Hani, A. B., Albsoul, N., Samarah, O. Q., El Mohtaseb, M. S., Alshehabat, M., Ismail, Z. B., Alnoubani, O., Obeidat, S. S., & Halawa, S. A. (2017). Reasons for operation cancellations at a teaching hospital: Prioritizing areas of improvement. <i>Annals of Surgical Treatment and Research</i>, 93(2), 65-69. https://doi.org/10.4174/astr.2017.93.2.65</p>	<p>Purpose:</p> <p>To report rates of and reasons for operation cancellation, and to prioritize areas of improvement</p> <p>Background:</p> <p>Operation cancellations puts a huge burden on health care providers and negatively affects patients and their families.</p>	<p>Subjects:</p> <p>69,066 patient cases included in study Facility: Jordan University Hospital-14 operating rooms</p>	<p>Methods:</p> <p>Retrospective data were extracted from the monthly reports of cancelled listed operations. Data on 14 theatres were collected by the office of quality assurance at Jordan University Hospital from August 2012 to April 2016. Rates and reasons for operation cancellation were investigated. A Pareto chart was constructed to identify the reasons of highest priority.</p> <p>Statistical analyses were performed using IBM SPSS Statistics ver 19.0 and Pareto analysis was performed using the Pareto tool on the American Society for Quality Website.</p>	<p>Results:</p> <p>6,431 cases (9.31%) were cancelled out of 69,066 listed cases. 62.5% of cancellations were due to patient no-shows</p> <p>Pareto analysis of reasons for cancellations:</p> <ul style="list-style-type: none"> 30% Lack of surgical theatre time 21% Incomplete preoperative assessment 19% Upper respiratory tract infection 13% High blood pressure <p>Further studies are needed to identify the potential avoidable root causes and to recommend interventions accordingly. Future studies should also look at the outcome of implementation of these policies and strategies on the rate of operation cancellation, quality of care, and resource utilization.</p>
<p>American Association of Nurse Anesthesiology [AANA] (n.d.). <i>Documenting Anesthesia Care:</i></p>	<p>Purpose:</p> <p>AANA recommends a preanesthesia evaluation of the patient that</p>	<p>Recommendations pertain to patients scheduled for surgery with anesthesia.</p>	<p>N/A</p>	<p>The AANA Standards for Nurse Anesthesia Practice require formal documentation of pertinent anesthesia-related information in the patient's medical record in an accurate and complete manner.</p>

Citation	Background	Subjects	Methods	Results
<p><i>Before Anesthesia.</i> Retrieved October 29, 2021, from https://www.aana.com/patients/all-about-anesthesia/before-anesthesia</p>	<p>provides an overview of the patient's general health, allergies, medication history, preexisting conditions, and anesthesia history.</p> <p>Additional information may be requested to optimize the patient's health and develop the anesthesia plan of care.</p>			<p>Policy and standard operating procedures developed the interprofessional team are helpful to standardize information fields, taxonomy, and responsibility for documentation specific elements of care.</p>
<p>Bronsert, M. R., Lambert-Kerzner, A., Henderson, W. G., Hammermeister, K. E., Atuanya, C., Aasen, D. M., Singh, A. B., & Meguid, R. A. (2020). The value of the "surgical risk preoperative assessment system" (SURPAS) in preoperative consultation for elective surgery:</p>	<p>Background:</p> <p>The rates of perioperative mortality and morbidity following surgery remain of great concern. Providing accurate per-surgical risk assessment to patients is essential to support an informed decision regarding surgery.</p> <p>Aim:</p>	<p>Subjects:</p> <p>197 patients were provided their SURPAS postoperative risk estimates in 9 surgeon's clinics.</p> <p>Intervention group: 170 No intervention: 27</p> <p>Mean age: 54.8 54.8% female</p> <p>Provider group: 7 surgeons</p>	<p>Methods:</p> <p>Convergent mixed-methods study assessed SURPAS's trial implementation, concurrently collecting quantitative and qualitative data, separately analyzing it, and integrating the results.</p> <p>Patients and providers were surveyed and interviewed on their opinion of how SURPAS impacted the preoperative encounter. Relationships between patient risk and patient and provider assessment of SURPAS were examined.</p>	<p>Results:</p> <p>98.8% of patients in intervention group reported they understood their surgical risks very or quite well after exposure to SURPAS</p> <p>92.7% of patients in intervention group reported SURPAS was very helpful or helpful</p> <p>Providers reported that SURPAS changed their interaction with the patient 44.7% of the time and this change was beneficial 94.3% of the time.</p> <p>As patient risk increased, providers reported that SURPAS was increasingly helpful (p < 0.0001).</p>

Citation	Background	Subjects	Methods	Results
<p>A pilot study. <i>Patient Safety in Surgery</i>, 14(1), 1-31. https://doi.org/10.1186/s13037-020-00256-4</p>	<p>Study aims to assess patient and provider perceptions of SURPAS as a risk assessment tool during a trial implementation</p>	<p>2 nurse practitioners 55.6% female</p> <p>Recruitment for the trial implementation included surgical providers from the University of Colorado School of Medicine Department of Surgery and patients seen in their outpatient surgical clinics at the University of Colorado Hospital.</p>		<p>Recommendations: Patients and providers reported the use of SURPAS helpful and informative during the preoperative risk assessment of patients, thus improving the surgical decision-making process. Patients thought that SURPAS was helpful regardless of their risk level, whereas providers thought that SURPAS was more helpful in higher risk patients.</p>
<p>de Lorenzo-Pinto, A., Ortega-Navarro, C., Ribed, A., Giménez-Manzorro, Á., Ibáñez-García, S., de Miguel-Guijarro, Á., Ginel-Feito, M. D., Herranz, A., & Sanjurjo-Sáez, M. (2019). Cancellations of elective surgical procedures due to inadequate</p>	<p>Background: It is of paramount importance not to treat cancellations as an inherent situation of the hospital, but to analyze their causes and implement corrective actions to minimize them.</p> <p>Purpose:</p>	<p>Participants: During the study period, 5,415 surgical procedures were programmed, and 793 (14.6%) were cancelled.</p>	<p>Methods: Analytic, observational, retrospective study. All elective surgical procedures from July to October 2017 were included.</p> <p>The main variable was the percentage of surgeries cancelled due to inadequate management of chronic medications. Reasons for cancellations were classified into eight categories: Intercurrent disease Patient rejects the intervention</p>	<p>Results: Cancellations due to inadequate patient preparation accounted for 5.3% (42 cases): 19 were related to incorrect medication management (45.2%), 9 because of an incomplete preoperative study or non-performance (21.4%) and 4 due to insufficient fasting (9.5%). In the other cases, it was not possible to confirm the reason after reviewing the clinical record. Of the total number of surgeries cancelled due to inadequate patient preparation, 27 were reassignments (64.3%) and 15 suspensions (35.7%).</p> <p>Recommendations:</p>

Citation	Background	Subjects	Methods	Results
<p>management of chronic medications. <i>Journal of Clinical Pharmacy and Therapeutics</i>, 44(4), 561-564. https://doi.org/10.1111/jcpt.12816</p>	<p>To calculate the rate of cancellation of elective surgical procedures owing to inadequate management of chronic medications and to analyse the underlying causes.</p>		<p>Patient did not show up for surgery</p> <p>Inadequate patient preparation, which includes preoperative study (incomplete or not performed), inadequate management of chronic medication, insufficient preoperative fast.</p> <p>Disease that has improved or resolved</p> <p>Lack of resources, which includes technology problems, lack of time, lack of material, health care professionals not available, medical equipment not available, lack of beds in resuscitation or critical care areas</p> <p>Emergency/life-threatening case prioritized</p> <p>Problems related to the anesthetic</p> <p>All statistical analyses were performed using PASW Statistics for Windows (version 18). Qualitative variables were expressed as a frequency distribution, and continuous variables were expressed as mean \pm standard deviation. Numerical</p>	<p>In conclusion, cancellations of elective surgical procedures due to inadequate management of chronic medications are not the most frequent cause but one of the easiest to avoid.</p>

Citation	Background	Subjects	Methods	Results
			variables with a non-normal distribution are expressed as median (interquartile range).	
<p>de Vries, E. N., Eikens-Jansen, M. P., Hamersma, A. M., Smorenburg, S. M., Gouma, D. J., & Boermeester, M. A. (2011). Prevention of Surgical Malpractice Claims by Use of a Surgical Safety Checklist. <i>Annals of Surgery</i>, 253(3), 624–628. https://doi.org/10.1097/SLA.0b013e3182068880</p>	<p>Background:</p> <p>Malpractice claims are an important source of information on adverse events.</p> <p>Purpose:</p> <p>To assess what proportion of surgical malpractice claims might be prevented by the use of a surgical safety checklist.</p>	<p>Subjects:</p> <p>294 malpractice claims between January 1, 2004, and December 31, 2005 included.</p> <p>Inclusion criteria:</p> <p>Claim filed involved the care for a surgical patient (anesthesiology, surgical residents, nursing staff)</p> <p>Claim was closed</p> <p>Claim had been accepted or settled</p> <p>Patient had undergone surgery</p>	<p>Methods:</p> <p>Retrospective claim record review was performed using MediFisk.</p> <p>Each incident was classified in 1 of 10 types. A comparison was made of contributing factors and items on the SURPASS checklist. When a contributing factor corresponded with an item on the SURPASS checklist, a comparison was made on the basis that the item may have been preventable if the checklist was utilized.</p>	<p>Results:</p> <p>Of a total of 412 contributing factors, 29% corresponded to an item on the SURPASS checklist and might have been intercepted by using the checklist.</p> <p>When looking only at the contributing factors during hospital admission, 36% corresponded to an item on the SURPASS checklist.</p> <p>In the preoperative stage, as high as 69% of contributing factors corresponded with an item on the SURPASS checklist.</p>

Citation	Background	Subjects	Methods	Results
<p>Haugen, A. S., Wæhle, H. V., Almeland, S. K., Harthug, S., Sevdalis, N., Eide, G. E., Nortvedt, M. W., Smith, I., & Sjøfteland, E. (2019). Causal Analysis of World Health Organization's Surgical Safety Checklist Implementation Quality and Impact on Care Processes and Patient Outcomes: Secondary Analysis From a Large Stepped Wedge Cluster Randomized Controlled Trial in Norway. <i>Annals of Surgery</i>, 269(2), 283–290. https://doi.org/10.1097/SLA.0000000000002584</p>	<p>Background:</p> <p>The World Health Organization's Surgical Safety Checklist (WHO SSC) was associated with a significant reduction in morbidity and length of inpatient hospital stays.</p> <p>Purpose:</p> <p>Primary outcomes:</p> <p>In-hospital complications and care process metrics</p> <p>Secondary outcomes:</p> <p>Quality of SSC implementation</p>	<p>Subjects:</p> <p>3,702 procedures included 1,398 control 2,307 intervention</p> <p>There were no differences between patients in age, sex, or comorbidity from control to intervention.</p>	<p>Methods:</p> <p>Stepped wedge cluster RCT</p> <p>Followed extended CONSORT statement for nonpharmacological randomized trials.</p> <p>Patient outcome, patient, and procedure characteristics for the control and intervention stages, and fidelity of checklist implementation (full vs. none) were analyzed using Pearson's exact χ^2 test for categorical data, independent samples t test for continuous data, or nonparametric test (Mann-Whitney U test) as appropriate.</p>	<p>Results:</p> <p>The WHO SSC improved processes and outcomes of care when high-quality implementation occurred.</p> <p>Improvements included:</p> <p>Increased use of forced air warming blankets</p> <p>Decreased need for antibiotic administration post incision</p> <p>Increased antibiotic administration pre-incision</p> <p>Decrease in surgical infections</p> <p>Decreased blood transfusion costs</p>

Citation	Background	Subjects	Methods	Results
<p>Haugen, A. S., Wæhle, H. V., Almeland, S. K., Harthug, S., Sevdalis, N., Eide, G. E., Nortvedt, M. W., Smith, I., & Sjøfteland, E. (2019). Causal Analysis of World Health Organization's Surgical Safety Checklist Implementation Quality and Impact on Care Processes and Patient Outcomes: Secondary Analysis From a Large Stepped Wedge Cluster Randomized Controlled Trial in Norway. <i>Annals of Surgery</i>, 269(2), 283–290. https://doi.org/10.1097/SLA.0000000000002584</p>	<p>Background: The World Health Organization's Surgical Safety Checklist (WHO SSC) was associated with a significant reduction in morbidity and length of inpatient hospital stays.</p> <p>Purpose: Primary outcomes: In-hospital complications and care process metrics</p> <p>Secondary outcomes: Quality of SSC implementation</p>	<p>Subjects: 3,702 procedures included 1,398 control 2,307 intervention</p> <p>There were no differences between patients in age, sex, or comorbidity from control to intervention.</p>	<p>Methods: Stepped wedge cluster RCT Followed extended CONSORT statement for nonpharmacological randomized trials. Patient outcome, patient, and procedure characteristics for the control and intervention stages, and fidelity of checklist implementation (full vs. none) were analyzed using Pearson's exact χ^2 test for categorical data, independent samples t test for continuous data, or nonparametric test (Mann-Whitney U test) as appropriate.</p>	<p>Results: The WHO SSC improved processes and outcomes of care when high-quality implementation occurred. Improvements included: Increased use of forced air warming blankets Decreased need for antibiotic administration post-incision Increased antibiotic administration pre-incision Decrease in surgical infections Decreased blood transfusion costs</p>

Citation	Background	Subjects	Methods	Results
<p>Khaneki, S., Bronsert, M. R., Henderson, W. G., Yazdanfar, M., Lambert-Kerzner, A., Hammermeister, K. E., & Meguid, R. A. (2020). Comparison of accuracy of prediction of postoperative mortality and morbidity between a new, parsimonious risk calculator (SURPAS) and the ACS Surgical Risk Calculator. <i>The American Journal of Surgery</i>, 219(6), 1065–1072. https://doi.org/10.1016/j.amjsurg.2019.07.036</p>	<p>Purpose:</p> <p>To compare the accuracy of the SURPAS tool to the accuracy of the American College of Surgeons Surgical Risk Calculator (ACS-SRC).</p> <p>Outcome Measures:</p> <p>Predicted risk of postoperative mortality and morbidity was calculated using both SURPAS and ACS-SRC.</p> <p>Primary outcome variables were overall morbidity. 30-day mortality was considered a secondary outcome.</p>	<p>Subjects:</p> <p>1,006 randomly selected 2007-2016 ACS National Surgical Quality Improvement Program (NSQIP) patients with known outcomes were included.</p>	<p>Methods:</p> <p>C-indexes, Hosmer-Lemeshow graphs, and Brier scores were compared between SURPAS and ACS-SRC.</p> <p>Means, medians, and interquartile ranges were calculated for ACS-SRC and SURPAS risk estimates. Histograms were used to plot the risk differences and Bland-Altman plots.</p>	<p>Results:</p> <p>ACS-SRC risk estimates for overall mortality and morbidity underestimated risk compared to observed postoperative overall morbidity, particularly for the highest risk patients.</p> <p>SURPAS accurately estimates morbidity risk compared to observed morbidity. SURPAS predictions were more accurate than ACS-SRC's for overall morbidity.</p>
<p>Storesund, A., Haugen, A. S., Flaatten, H., Nortvedt, M. W., Eide, G. E.,</p>	<p>Purpose:</p> <p>To investigate the association of combined use of</p>	<p>Subjects:</p> <p>9,009 procedures were included;</p>	<p>Methods:</p> <p>Stepped-wedge cluster nonrandomized clinical trial</p>	<p>Results:</p> <p>The combined use of the WHO SSC and SURPASS checklists was associated with reduced complications and reoperations.</p>

Citation	Background	Subjects	Methods	Results
Boermeester, M. A., Sevdalis, N., Tveiten, Ø., Mahesparan, R., Hjallen, B. M., Fevang, J. M., Størksen, C. H., Thornhill, H. F., Sjøen, G. H., Kolseth, S. M., Haaverstad, R., Sandli, O. K., & Søfteland, E. (2020). Clinical efficacy of combined surgical patient safety system and the world health organization's checklists in surgery: A nonrandomized clinical trial. <i>JAMA Surgery</i> , 155(7), 562-570. https://doi.org/10.1001/jamasurg.2020.0989	<p>preoperative and postoperative checklists (SURPASS and WHO SSC) in perioperative care with morbidity, mortality, and length of hospital stay</p> <p>Outcome Measures:</p> <p>Primary outcomes were in-hospital complications, emergency reoperations, unplanned 30-day readmissions, and 30-day mortality. Secondary outcome was length of hospital stay</p>	<p>5,601 women and 3,408 men. Mean age: 51.7</p> <p>5,117 received intervention: 2,913 women (56.9%)</p> <p>3,892 control group 2,688 women (69.1%)</p>	<p>Individualized preoperative and postoperative SURPASS checklists were added to the intraoperative WHO SSC and implemented in 3 surgical departments (neurosurgery, orthopedics, and gynecology) in a Norwegian tertiary hospital. Data were collected from November 1, 2012 to March 31, 2015 without any restrictions to patient age. Data were analyzed from September 25, 2018, to March 29, 2019.</p>	<p>Odds ratio: 0.70 95% CI, 0.50-0.98, P= .04</p> <p>Adherence to the postoperative SURPASS checklists was associated with decreased readmissions. Odds ratio: 0.32 95% CI, 0.16-0.64, P= .001</p> <p>No changes were observed in mortality of LOS.</p> <p>Recommendations:</p> <p>Adding preoperative and postoperative SURPASS to the WHO SSC was associated with a reduction in the rate of complications, reoperations, and readmissions.</p>
Turunen, E., Miettinen, M., Setälä, L., & Vehviläinen-	<p>Purpose:</p> <p>To evaluate the impact of</p>	<p>Participants:</p> <p>Data were collected from patient cases in</p>	<p>Methods:</p> <p>Observational study with two study phases: before and after</p>	<p>Results:</p> <p>Cancellation rates varied between 1.6% -9.7% (in the first phase) and between 1.5%-7.7% (in</p>

Citation	Background	Subjects	Methods	Results
<p>Julkunen, K. (2018). The impact of a structured preoperative protocol on day of surgery cancellations. <i>Journal of Clinical Nursing</i>, 27(1-2), 288-305. https://doi.org/10.1111/jocn.13896</p>	<p>implementing an evidence-based, structured preoperative protocol on day of surgery cancellations in 13 operative specialties</p> <p>Background:</p> <p>Surgery cancellations cause unnecessary harm for patients and organizations as many cancellations could be prevented. Cancellations are a commonly used indicator when evaluating the success of preoperative care.</p>	<p>13 operative specialties; gastrointestinal surgery; pediatrics; hand surgery; cardiac and thoracic surgery; urology; vascular surgery; neurosurgery; gynecology; ophthalmology; ear, nose and throat; dental surgery; orthopedics and plastic surgery.</p> <p>All elective surgical patients were suggested to submit to the same preoperative protocol in all 13 operative specialties.</p> <p>Location: University hospital in Finland</p>	<p>The cancellation data were collected from the hospital register from September 1, 2013 to May 31, 2014 and September 2015 to May 2016.</p> <p>The compliance rate of the preoperative protocol was evaluated in group session during spring 2016 using the participation of preoperative healthcare professionals. The data were analyzed statistically.</p> <p>Data analyses were conducted using SPSS version 22.0 software. For the analysis of change in cancellation rates, Student's t test was recommended. Cancellations were compared between two time periods and the data collection periods were timed to same monthly periods from September to May. Results of the group compliance evaluations were transformed to percentages (0-100) for the convenience of reporting.</p>	<p>the second phase). A remarkable decrease was found in patients who failed to attend their scheduled procedures. The mean of compliance to the preoperative protocol across all specialties was 82.3%. A correlation between the rate of cancellation and the rate of compliance with the preoperative protocol was found.</p> <p>Conclusion:</p> <p>A preoperative protocol promotes the scheduled arrival of surgical patients to the hospital and therefore decreases cancellation rates. An evidence-based preoperative care protocol should be introduced for all healthcare professionals working in preoperative care to ensure smooth, safe, and high-quality care for surgical patients</p>

Appendix B**Chart Review Sheet**

	COMPLETE	INCOMPLETE	INCORRECT
Allergies			
Anesthesia complications			
Diabetes			
History of stroke or TIA			
Inhaler use			
Obstructive Sleep Apnea			
Activity/mobility			
History of blood transfusion			
Cardiac condition(s)			
Anticoagulation use			
Nicotine (current or history)			
Alcohol and/or substance use			

Appendix C

Staff Evaluation Survey

EVALUATION SURVEY

Please indicate your role (CIRCLE): NURSE ANESTHESIA PROVIDER

FILL IN CIRCLE	Disagree	Somewhat Disagree	Somewhat Agree	Agree
The Pre-Anesthesia questionnaire helped me complete the assessment.				
The Pre-Anesthesia questionnaire made my assessment more efficient.				
The Pre-Anesthesia questionnaire helped me identify patient conditions faster than I normally would have.				
The Pre-Anesthesia questionnaire helped me focus my assessment on the most important patient conditions.				
The Pre-Anesthesia questionnaire decreased my normal assessment time.				
The Pre-Anesthesia questionnaire would improve communication between providers and nurses.				
The number of questions on the Pre-Anesthesia questionnaire is appropriate for a preoperative assessment.				
The Pre-Anesthesia questionnaire improved the patient experience for the patient.				
The Pre-Anesthesia questionnaire covered the important aspects of the preoperative assessment.				
The Pre-Anesthesia questionnaire would be beneficial to the PAT department.				

Additional comments:

Appendix D

Pre-Anesthesia Questionnaire

PRE-ANESTHESIA QUESTIONNAIRE

AGE _____

ALLERGIES

YES NO

- Have you ever had a bad experience with anesthesia?
- Have you ever had nausea and/or vomiting after anesthesia?
- Have you ever been diagnosed with a heart problem or dysrhythmia (A-fib, heart block)?
- Have you ever had a blood transfusion? If yes, what year(s)? _____
- Have you ever had a stroke? When? _____
- Do you have diabetes?
- Do you take insulin?
- Have you had any chest pain?
- Do you use an inhaler? How often? (circle) DAILY WEEKLY 1-2X MONTH SEASONALLY
- Do you have obstructive sleep apnea (OSA)? (Circle devices) BIPAP CIPAP OXYGEN
- Do you use a device for mobility? What device? (circle) WHEELCHAIR WALKER CANE
- Can you walk up one flight of stairs?
- Have you ever had a blood clot anywhere in your body?
- Have you ever had excessive bleeding with injuries or surgeries?
- Do you take blood thinners? (Warfarin, Plavix, Eliquis, aspirin, Lovenox shots)
- Do you take ibuprofen, Motrin, Advil, Aleve, Naproxen, Celebrex, Meloxicam?
- Have you taken steroids in the last six months? (Prednisone, Hydrocortisone)
- Do you have removable dental appliances? (dentures, partials, braces, oral piercings)
- Do you wear contact lenses?
- Do you, or any of your family, have sickle cell? (trait or disease)
- Have you ever had Covid-19? When? _____
- Have you received your Covid-19 vaccination? (Circle) Pfizer Moderna Janssen Booster
- Do you take medication (prescription or over-the-counter) for heartburn or GERD?
- Do you smoke cigarettes or nicotine vapor? (circle) DAILY WEEKLY OCCASIONALLY
- Do you use alcohol? (circle) DAILY WEEKLY SOCIALLY RARELY

As adapted from the American Association of Nurse Anesthesiology [AANA] Pre-Anesthesia Questionnaire (AANA, n.d.).

Appendix E



February 21, 2022

Dear Katherine A. Jones (UMSL-Student),

The IRB reviewed your QI Questionnaire to project #2088162-QI entitled "Implementation of a Pre-Anesthesia Questionnaire in the Preoperative Phase of Care" and made the following determination:

QI Determination: The project has been determined to be a quality improvement activity not requiring IRB review.

If you have any questions regarding this determination, please feel free to contact our office at 314-516-5972 or email irb@umsl.edu.

Approval to Conduct QI Activity: It is your responsibility to ensure approval from an authorized person in the organization/location/area you plan to conduct your QI activity.

Note Regarding Publications: It is appropriate to disseminate and replicate QI/program evaluation successes, including sharing the information external to an organization. This may include presentations and publications. The mere intent to publish the findings does not require IRB review as long as the publication does not refer to the activity as research.

Thank you,
UMSL Institutional Review Board