Preoperative Screening and the Influence on Cancellations and Transfers: An Ambulatory Surgical Facility Collaboration

INTRODUCTION

A nurse-driven preoperative screening and assessment is a separate clinical evaluation for patients undergoing same-day surgery. This evaluation of the patient’s history and physical, diagnostic tests, and psychosocial information is used to identify the patient’s medical, physical, and psychosocial needs and risks for developing complications or requiring cancellation of same-day surgery. Federal, state, and certification regulations for ambulatory surgical facilities (ASFs) do not require nurse-driven preoperative screening and assessment, which can lead to variations in who (i.e., clinical versus nonclinical staff) performs the screening, the scope of information ascertained, and the timing of preoperative screening and assessment. Improving nurse-driven preoperative screening and assessment processes has the potential to increase patient safety and efficiency by identifying appropriate surgical candidates, increasing compliance with preoperative instructions, maximizing revenues, and avoiding surgery delays, cancellations, and transfers. Cancellations and transfers represent opportunities to address patient safety concerns (e.g., patients not meeting screening criteria). The ASF transfer rate to an acute care hospital is a patient safety measure that the Centers for Medicare and Medicaid Services will use for public reporting and payment determination for 2014.

From January 2012 through June 2013, the Pennsylvania Patient Safety Authority conducted an 18-month collaborative improvement project with 11 ASFs in the northeast region of Pennsylvania. All 11 ASFs were actively engaged throughout the collaboration; there was no facility attrition during this 18-month time period. The collaboration focused on improving the preoperative screening and assessment process to reduce cancellations and avoid medical problems requiring transfer to a hospital. The project focused on day-of-surgery (DOS) cancellations for two reasons: (1) preoperative screening on the DOS is the last opportunity to catch medical conditions that would place patients at risk for a complication, and (2) rearranging schedules due to last-minute cancellations creates opportunities for mix-ups with patient names, procedures, or medications.

The goal of this collaboration was to reduce patient DOS cancellations by 30% and transfers to acute care hospitals by 25% through the implementation of a standardized checklist, evaluation of patient-related preoperative oral and written medical instructions and forms (e.g., preoperative instructions, history forms) using health literacy principles, and institution of a second preoperative phone call to patients. The primary intervention, implementation of a standardized checklist, evaluated clinical and nonclinical aspects of care for every scheduled patient to identify preexisting comorbidities, psychosocial issues (e.g., financial constraints), and screening criteria (e.g., medical clearance not obtained) that place patients at risk for surgical delays due to cancellations or at risk for medical complications leading to transfers.

The ASF collaboration had three phases: (1) planning, (2) preintervention, and (3) postintervention.

METHODS

Planning Phase

The planning phase, January 6, 2012, through June 30, 2012, focused on standardizing definitions for cancellations and transfers, including defining cancellation time periods (e.g., DOS, 24 hours prior to surgery); mapping preoperative screening and assessment processes, including patient scheduling and registration; identifying cancellation and transfer outcome data; and developing event investigation forms to gather detailed information on cancellations and transfers. A focus group of three participating ASFs helped to develop the cancellation and transfer event investigation forms.
Preintervention Phase

Facilities implemented the cancellation and transfer event investigation forms in the preintervention phase, July 1, 2012, through November 30, 2012. Both forms contained questions about the scheduled procedure, the type of and reason for a cancellation or transfer, and contributing factors. The cancellation event form included questions addressing the primary person who cancelled the procedure and time of cancellation (i.e., prior to admission, after admission, or after anesthesia). The transfer event form included questions concerning the time of transfer (i.e., preoperative or postoperative), patient characteristics (i.e., patient’s age, physical status according to the American Society of Anesthesiologists’ classification system, and body mass index), and the presence of certain preexisting medical conditions (e.g., cardiovascular disease, neurologic disease, peripheral vascular disease).

The event forms were streamlined two months after implementation by standardizing the list of procedural choices, consolidating the contributing factors, and adding two data fields: (1) event date (i.e., date the cancellation or transfer occurred) and (2) time preoperative screening occurred (e.g., 24 hours prior to surgery, 48 hours prior to surgery). The ASFs received quarterly reports containing deidentified cancellation and transfer rates with benchmarking data, an aggregated list of cancellation event types and occurrence percentages, and an aggregated summary of deidentified transfer event information.

Postintervention Phase

In December 2012, the postintervention phase began with implementation of the standardized preoperative screening checklist, which is available on the Authority’s website at http://patientsafetyauthority.org/EducationalTools/PatientSafetyTools/asf/Pages/home.aspx. The checklist was developed using evidence-based guidelines, medical literature, and other patient-related forms (e.g., history). The health literacy materials used in the conference call were adapted from the Hospital and Healthsystem Association of Pennsylvania Hospital Engagement Network health literacy webinar series.

Monthly reports were instituted to provide timely feedback on the implementation of preoperative screening and assessment processes and trends in cancellations or transfers. The monthly reports contained the individual facility’s cancellation and transfer rates (with benchmarking data), individual facility cancellation event types, the time when the preoperative screening and assessment was completed for each DOS cancellation, a month-by-month aggregated table of deidentified transfer data, and the time when the preoperative screening and assessment was completed for each transfer.

Monthly coaching calls were held throughout the project to provide support and data updates and to promote collaborative learning among the facilities. One in-person meeting was held during each phase of the collaboration, and a capstone meeting was held at the end of the project, for a total of four in-person meetings.

A z-test rate ratio comparison test was used to determine statistical changes in cancellation and transfer rates between the preintervention and postintervention phases.

RESULTS

Cancellations

A DOS cancellation was defined as a cancellation of a scheduled procedure or surgery that occurred after 12:01 a.m. on the DOS for any reason. DOS cancellations occurred prior to admission, after admission, and after anesthesia. Cancellations that occurred after admission and after anesthesia were due to medical conditions and represented opportunities to prevent patient harm.
The ASFs achieved a 9.7%* reduction in their DOS cancellation rate, from 29.6 DOS cancellations per 1,000 completed procedures preintervention to 26.8 DOS cancellations per 1,000 completed procedures postintervention. This difference was statistically significant (p value = 0.023). Certain types of DOS cancellation rates had greater reductions in the postintervention phase compared with the preintervention phase: transportation-related DOS cancellations were reduced 28.5%, protocol-related DOS cancellations (e.g., patient screening criteria not met, history and physical missing or incomplete, equipment unavailable or not working) were reduced 22.4%, and no-show DOS cancellations were reduced 17.9%.

An analysis of preoperative screening implementation for DOS cancellations occurring in the postintervention time period showed that 28.4% (n = 234 of 824) of patients with a DOS cancellation had no preoperative screening and that 43.2% (n = 101 of 234) of these patients without a preoperative screening were patients the ASFs were not able to contact prior to the DOS. A closer examination of patients without a preoperative screening identified a greater percentage of no-show cancellations. In DOS cancellations in which an ASF was unable to contact a patient to perform a preoperative screening assessment, 49.5% (n = 50 of 101) were no-shows. In DOS cancellations in which a preoperative screening assessment was performed, 30.1% (n = 40 of 133) were no-shows. Yet in DOS cancellations in which a preoperative screening assessment was performed, whether 24 hours prior to surgery, 48 hours prior to surgery, or greater than 48 hours prior to surgery, only 10% to 15% of these cancellations were no-shows. A comparison of no-show DOS cancellation rates for patients with versus without a preoperative screening assessment was statistically significant (p value < 0.001).

**Transfers**

A transfer was defined as an ASF admission requiring an unexpected hospital transfer or admission directly following discharge from the ASF. Transfer rates decreased 14.7%,* from 1.21 transfers per 1,000 admissions preintervention to 1.03 transfers per 1,000 admissions postintervention. This 14.7%* reduction was not statistically significant. A comparison of the ASF collaboration transfer rates and the Ambulatory Surgical Center Quality Collaboration national transfer rates from third quarter 2012 through second quarter 2013 revealed that the Pennsylvania ASFs in the collaboration had lower transfer rates for three of the four quarters measured (see the Figure).

For the ASFs participating in the collaboration, preoperative transfer rates declined 44.7%, from 0.47 transfers per 1,000 admissions preintervention to 0.26 transfers per 1,000 admissions postintervention. This decrease in preoperative transfer rates was not statistically significant. Preoperative transfers comprised patients with medical conditions not likely to be identified during a preoperative telephone screening and assessment (e.g., cardiac arrhythmias, hypertension). Postoperative transfer rates increased by 3.9%,* from 0.75 transfers

---

* Due to rounding of rates to one decimal place for reporting purposes, the percentage change in rates appears differently than expected.
Table. Ambulatory Surgical Facility (ASF) Preoperative Screening and Assessment Challenges and Lessons Learned from Participating ASFs

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>LESSONS LEARNED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staffing and Time Constraints</strong></td>
<td>Performing preoperative phone calls one to two days prior to the day of surgery (DOS) (when staff are available) showed dramatic improvements as a result of staff clarifying arrival and procedure times with patients and patients asking questions to clarify preoperative instructions. The number of patients who were unable to be contacted on previous calls was reduced. Identifying cancellations more than two days prior to the DOS allowed some ASFs to fill openings in their surgery schedule. Calling patients preoperatively on off-hours (Saturdays) increased patient contact and reduced cancellations. One ASF found that patients are more likely to be home on weekends.</td>
</tr>
<tr>
<td>Limited time to review and approve alignment of the existing checklist with the standardized set of checklist questions</td>
<td></td>
</tr>
<tr>
<td>Limited staff and staff time to make second preoperative phone calls to patients</td>
<td></td>
</tr>
<tr>
<td>Alignment of staff and patient working hours, reducing staff’s ability to contact or reach patients</td>
<td></td>
</tr>
<tr>
<td><strong>Communication Issues</strong></td>
<td>Initiating the checklist improved office staff interactions with patients. The checklist was used to educate staff about the importance of getting more information from the patient. For example, if a patient states they had an angioplasty, the checklist prompts office staff to find out the date when the procedure was done. Educating staff to improve screening skills resulted in improvements in communication between clerical staff and clinical staff. Educating schedulers improved information conveyed to patients and improved the scheduler’s sense of team participation and team functioning. Completing preoperative phone calls by a nurse resulted in a decrease in no-show cancellations. Opening up lines of communications between the ASF and referring physician offices improved communication between offices and provided opportunities to obtain additional phone numbers when the ASF was unable to contact patients. Calling patients two weeks prior to the day of surgery when the chart was incomplete due to missing allergy information, missing a history, or questionable history resulted in significant increases in completed charts. Obtaining additional phone numbers from the patient and family or friends, including cell phone numbers, can increase the ASF’s ability to contact the patient for the preoperative screening and assessment. Sending letters to patients when an ASF is unable to reach the patient by phone has the potential to improve patient communication and reduce DOS no-show cancellations.</td>
</tr>
<tr>
<td>Difficulty keeping open lines of communication with surgeons’ offices</td>
<td></td>
</tr>
<tr>
<td>Limited information about a patient’s health status when collected by clerical staff compared with nursing staff</td>
<td></td>
</tr>
<tr>
<td>Insufficient or inaccurate contact information, resulting in staff’s inability to contact patients</td>
<td></td>
</tr>
</tbody>
</table>

Evaluation of time of preoperative screening for patient transfers occurring in the postintervention phase revealed that 100% (n = 8 of 8) of patients transferred preoperatively received a preoperative screening and assessment, whereas 70.8% (n = 17 of 24) of patients transferred postoperatively received a preoperative screening and assessment. An examination of 12 patients transferred postoperatively with potential contributing factors revealed that 75% (n = 9) had a preoperative screening and assessment and that 25% (n = 3) had no preoperative screening and assessment. The potential contributing factors for these 12 patients were reported as follows:

- Patient ill on day of surgery (n = 5)*
- New (i.e., previously undiagnosed) medical issues (n = 2)

* One patient was not screened preoperatively.
Table. Ambulatory Surgical Facility (ASF) Preoperative Screening and Assessment Challenges and Lessons Learned from Participating ASFs (cont’d)

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>LESSONS LEARNED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Educational Issues</strong></td>
<td><strong>LESSONS LEARNED</strong></td>
</tr>
<tr>
<td>Lacking patient compliance with preoperative instructions (e.g., failing to maintain nothing by mouth [NPO] status, no driver present on the DOS)</td>
<td>Speaking slowly so patients can comprehend what is said and using plain nonmedical language helped improve patient comprehension.</td>
</tr>
<tr>
<td>Changing anesthesiologist group during the collaboration, requiring additional education of physicians</td>
<td>Limiting the amount of information provided to patients aided patient’s understanding of the information; too much information at one time can cause information overload, limiting retention.</td>
</tr>
<tr>
<td></td>
<td>Using the teach-back technique confirms the patient’s understanding of preoperative instructions.</td>
</tr>
<tr>
<td></td>
<td>Lowering the literacy level of the preoperative instructions helped improve patient understanding of the preoperative instructions. For example, telling patients not to drink or eat anything rather than using the word “fast” resulted in improved patient understanding of preoperative instructions.</td>
</tr>
<tr>
<td></td>
<td>Creating an open environment by phrasing questions in ways that engage patients encouraged patients to ask questions and receive clarifications about their upcoming procedure. For example, asking patients “what questions do you have?” conveys to patients that staff expect and encourage questions.</td>
</tr>
<tr>
<td></td>
<td>Using simplified explanations to describe to patients the safety reasons for NPO status when receiving anesthesia helped improve understanding. For example, providing a list of clear liquids (e.g., black coffee, water, apple juice) for patients who are allowed to have drinks can reduce ambiguity.</td>
</tr>
<tr>
<td></td>
<td>Making sure patients understood the importance of having a driver to take them home and that the procedure would be cancelled if they did not have a driver helped improve compliance.</td>
</tr>
<tr>
<td></td>
<td>Getting feedback from patients about following the preoperative instructions assisted facilities with problem solving when patients were not properly prepped for procedures.</td>
</tr>
<tr>
<td></td>
<td>Changing the color of the preoperative instructions sheet made the information prominent among the other patient forms.</td>
</tr>
<tr>
<td></td>
<td>Switching anesthesiologist groups provided an opportunity for the new group of anesthesiologists to incorporate the preoperative checklist into their patient screening and assessments.</td>
</tr>
<tr>
<td><strong>Checklist Implementation Issues</strong></td>
<td><strong>LESSONS LEARNED</strong></td>
</tr>
<tr>
<td>Lacking an existing preoperative screening checklist</td>
<td>Adding psychosocial questions to the checklist was beneficial in identifying nonclinical issues, such as no ride home or financial difficulties in paying for the surgery or procedure.</td>
</tr>
<tr>
<td>Adding new questions to an existing preoperative checklist</td>
<td>Completing the checklist resulted in more completed patient charts on the DOS.</td>
</tr>
<tr>
<td>Lacking clinical staff compliance with the checklist</td>
<td>Collecting information and forms two weeks prior to surgery aided in tracking missing forms; staff tacked notes on the chart identifying the missing forms. A significant increase in completed charts and completed history and physicals was realized.</td>
</tr>
<tr>
<td>Difficulty incorporating the checklist into office staff workflow processes to improve preoperative screening</td>
<td>* One patient was not screened preoperatively.</td>
</tr>
<tr>
<td></td>
<td>* One patient was not screened preoperatively.</td>
</tr>
<tr>
<td></td>
<td>Patient required additional time to monitor (n = 1)</td>
</tr>
<tr>
<td></td>
<td>Questionable home care (n = 1)</td>
</tr>
<tr>
<td></td>
<td>DISCUSSION</td>
</tr>
<tr>
<td></td>
<td>Omitting a nurse-driven preoperative screening and assessment was associated with a high percentage of no-show DOS cancellations. The implementation of a nurse-driven preoperative screening and assessment was associated with reductions in clinical (e.g., protocol-related issues) and nonclinical (e.g., transportation-related issues) DOS cancellations. Several ASFs</td>
</tr>
</tbody>
</table>
implemented health literacy principles (e.g., changes in their patient-staff interactions and written forms) that improved patient understanding of ASF expectations. As changes were put into place, expected reductions in areas such as compliance with preoperative instructions were not realized within the postintervention phase.

Implementation of the second preoperative phone call was achieved intermittently at several ASFs. One ASF reported experiencing a decrease in DOS cancellations when staffing permitted a second preoperative telephone call. The results of this collaboration show that DOS cancellations increased as the time of the preoperative screening was greater from the DOS. Instituting a second preoperative telephone call for patients has the potential to decrease DOS cancellations when the initial preoperative screening and assessment is performed more than 48 hours prior to the DOS.

The monthly conference calls provided opportunities for the ASFs to share their experiences with each other. During the intervention time period, the monthly conference calls provided a setting for the ASFs to discuss and share the challenges they faced completing the preoperative screening and assessment and different successful actions they identified and implemented to address these challenges. Four themes arose with the challenges: staffing and time constraints, communication issues, education issues, and checklist implementation issues. The Table identifies the challenges facing the ASFs and how the ASFs addressed these challenges.

The reduction achieved in patient transfers was less than the goal. Having low numbers of transfers across the ASFs and starting with a transfer rate lower than the national average made it difficult to reach a 25% reduction. Three ASFs had two or fewer transfers throughout the collaboration; specifically, two ASFs had no transfers and one ASF had two transfers. Separating transfers by time of occurrence (i.e., preoperative and postoperative) and identifying the reasons for these transfers added a dimension to ASF transfers. Preoperative transfers identified new unanticipated medical conditions (e.g., cardiac arrhythmias, hypertensive conditions) that prevented patients from undergoing surgery or a procedure. While preoperative screening and assessment processes might not identify these types of problems prior to admission, they represent safe patient care. Postoperative transfers arose from problems encountered during the surgery or procedure and represented additional care needed beyond the scope of the ASF. In some cases (e.g., patient ill on the DOS), staff have an opportunity during the preoperative screening and assessment to educate patients on the importance of notifying staff as soon as possible about new medical information that could place them at risk for a surgical complication and transfer to a hospital.

LIMITATIONS
Missing data from DOS cancellation event forms in the preintervention period prevented testing differences in the specific types of DOS cancellations between the preintervention and postintervention periods. Very small numbers in work-related and language-barrier-related DOS cancellations (i.e., five or fewer events during each time period) limited inferences about reductions in these types of cancellations. In addition, small numbers of transfer events, coupled with an initial low patient transfer rate at the beginning of the collaboration, limited opportunities to achieve higher reductions and statistically significant results at the end of the collaboration.

Time constraints were one of the greatest challenges during this collaboration. Busy operating room schedules, staffing constraints, and administrative duties, combined with the data demands, made it difficult for the ASFs to implement the three interventions. ASFs were asked to implement changes to their checklist (or in one case, establish a checklist); evaluate, modify, and implement changes to existing patient forms and educational approaches; and institute a second preoperative patient phone call. Each intervention had different requirements of the ASF: leadership review and approval, staff education, updating existing patient forms, and in some cases, changes to administrative policies and procedures. Changing written patient forms required review and approval from administrative leaders that often exceeded the collaboration time frame. In situations in which approval processes exceeded the intervention time, temporary forms or pilot forms were developed by the individual ASFs to be used only during the collaboration.

The time dedicated to each phase was determined as the objectives for each phase were reached and was agreed upon by the Authority staff and ASF participants. The seven-month postintervention phase placed constraints on establishing new practice patterns.

CONCLUSION
A nurse-driven preoperative screening and assessment requires a multifaceted approach consisting of preoperative screening and assessment based on a standardized preoperative checklist; coordination of staff scheduling to provide time to screen patients preoperatively and provide a second preoperative phone call to patients; ongoing communication and education for staff and patients; and patient and staff feedback to improve processes and revise patient forms (e.g., preoperative instructions). This collaboration has shown reductions in DOS cancellations, particularly those related to transportation, protocol, and no-shows; after standardizing the preoperative screening and assessment
Selecting appropriate patients for same-day surgery through the implementation of a nurse-driven preoperative screening and assessment can improve patient safety by identifying patients suited for outpatient surgery or procedures; reducing disruptions or delays in the surgery schedule, including disruptions in surgical staffing; and increasing patient accountability (e.g., in arranging for reliable transportation home).

NOTES


THE PENNSYLVANIA PATIENT SAFETY AUTHORITY AND ITS CONTRACTORS

The Pennsylvania Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error (Mcare) Act. Consistent with Act 13, ECRI Institute, as contractor for the Authority, is issuing this publication to advise medical facilities of immediate changes that can be instituted to reduce Serious Events and Incidents. For more information about the Pennsylvania Patient Safety Authority, see the Authority’s website at http://www.patientsafetyauthority.org.

ECRI Institute, a nonprofit organization, dedicates itself to bringing the discipline of applied scientific research in healthcare to uncover the best approaches to improving patient care. As pioneers in this science for more than 40 years, ECRI Institute marries experience and independence with the objectivity of evidence-based research. More than 5,000 healthcare organizations worldwide rely on ECRI Institute’s expertise in patient safety improvement, risk and quality management, and healthcare processes, devices, procedures and drug technology.

The Institute for Safe Medication Practices (ISMP) is an independent, nonprofit organization dedicated solely to medication error prevention and safe medication use. ISMP provides recommendations for the safe use of medications to the healthcare community including healthcare professionals, government agencies, accrediting organizations, and consumers. ISMP’s efforts are built on a nonpunitive approach and systems-based solutions.