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Aldrete Discharge Scoring: Appropriate for Post Anesthesia Phase I Discharge?

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CAPSTONE

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Aldrete Discharge Scoring: Appropriate for Post Anesthesia Phase I Discharge?

This Capstone Project has been examined and approved.

Joanne Samuels, PhD, RN, CNL

Date

Abstract

Aldrete Discharge Scoring: Appropriate for Post Anesthesia Phase I Discharge?

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Background: Advances in anesthesia and surgical techniques, along with an increase in managed care, have led to an increase in ambulatory surgeries. The post-anesthesia discharge criteria used for inpatient care may not be appropriate for ambulatory care patients

Aim: This quality improvement project was aimed at examining whether or not the patient length of stay (LOS) in Phase I of post anesthesia care was appropriate. The global aim was to right-size post anesthesia care Phase I length of stay for adult upper extremity surgical patients. The first step was to assess the effectiveness of the PACU discharge criteria. The specific aim was to determine the effectiveness of the Aldrete scoring tool at this facility.

Methods: After study approval from the hospital's clinical inquiry committee, data from existing records of 60 adult upper-extremity surgical patients were used to compare LOS in Phase I of post-anesthesia care in relation to achieving a score of 8-10 on the Aldrete tool. A survey was given to PACU nurses to assess their understanding of discharge criteria.

Results: An education seminar was conducted for PACU nurses as the survey revealed lack of knowledge of the hospital discharge protocol and lack of understanding of the steps and purpose of Aldrete scoring. A comparison of ASPAN approved discharge tools was completed to ascertain if a change in discharge protocol was warranted.

Conclusion: It is anticipated that a new scoring tool will be instituted as the discharge protocol for Phase I PACU. Using a standardized tool provides consistency of care, reduces errors, promotes efficient use of resources, meets Joint Commission requirements, and meets ASPAN recommended standards. Use of the scoring tool should be taught as part of orientation to the unit.

Implications for CNL practice: The CNL will take charge of this policy change process.

Key Words: *Aldrete Discharge Scoring System, Post-anesthesia care, surgical recovery, post-anesthesia discharge tools, patient discharge criteria*

Postoperative care, or the management of a patient after surgery, begins as soon as the procedure ends and continues until the patient has returned to their physiological preoperative state. Complications associated with anesthetics were noted as far back as the mid 19th century when inhalation anesthesia was first used. It was noted that patients should be monitored for the return of consciousness and normalized respirations as this careful observation could reduce the number of deaths, or injuries, that occurred following surgery (Ramsay, 2006).

The recovery of a post surgical patient is divided into three categories: Early recovery, or Phase I; Intermediate recovery, or Phase II; and Late recovery, which may be referred to as Phase III. A patient enters Phase I of recovery immediately following surgery. This portion of recovery takes place in a critical care unit, where the patient will stay until they have sufficiently recovered respiration, level of consciousness, blood pressure and activity. Once sufficiently recovered the surgical patient is moved to Phase II of recovery. This is a step down unit in which the patient is given food and drink, and will be readied to go home. Late recovery, or Phase III, will take place at home for the ambulatory surgical patient, and will conclude when the person has completely recovered from their surgical procedure. This process may take up to six weeks (McGrath & Chung, 2003).

Prior to 1970 when Dr. J.A. Aldrete developed the post-anesthesia recovery score (PAR) there was no recognized tool to determine safe discharge from the post-anesthesia care unit (PACU). Dr. Aldrete saw the need for a surveillance tool that could be used to standardize the care of surgical patients worldwide (MacMartin Klobuchar, 2005). The Aldrete scoring system, as it has come to be known, is a measurement of recovery after anesthesia that includes gauging a patient's consciousness, activity, respiration, and blood pressure. In 1995 Dr. Aldrete revised this score to include SaO₂ scores, as the original tool used a skin color index to assess for oxygen

saturation (Appendix A). A score of 0-2 is given for each of the five categories, for a maximum score of 10. The Aldrete scoring system is the most widely used tool to clinically assess the physical status of patients recovering from anesthesia (Phillips, Street, Kent, Haesler, & Cadeddu, 2013, p. 276).

Advances in anesthesia and surgical techniques, along with the increase in managed care that has become predominant in the United States and around the world, have led to the growth of ambulatory surgeries being performed both in hospitals and in separate surgery centers. Shorter acting anesthetics combined with surgical technological advances, such as laparoscopic procedures, allows for patients to be under the influence of anesthesia for a shorter period of time. Ambulatory surgery is a surgical episode in which the patient is admitted, has a surgical procedure, and goes home on the same day. An increase in the number of people who are being discharged home after surgery has generated concern that the discharge criteria currently being used may not be sufficient to ensure safety and quality of care. It is important that the methods in which we deem a person ready for discharge be readdressed to ensure that the criteria used are safe, effective, and efficient.

The hospital in which this project was completed is a community based disproportionate share, 189-bed hospital in New England. The hospital's policy for care of the recovering post-anesthesia patient includes the use of the Aldrete scoring system as criteria for a safe discharge from Phase I to Phase II of post-anesthesia care. The protocol indicates that a patient assessed with a score of 8 or above on the Aldrete tool is considered sufficiently recovered to move from Phase I to Phase II. The post-anesthesia care unit follows the guidelines of the American Society of Post-Anesthesia Nurses (ASPAN) and the requirements of the Joint Commission as a means of creating policies and following procedures. ASPAN highly recommends the use of a

numerical post-anesthesia Phase I discharge tool (Schick & Windle, 2010, p. 615), while the Joint Commission has as a requirement in their accreditation procedure that each patient's post-anesthesia status be assessed and documented according to established criteria and policy ("Joint Commission," 2013, p. 32).

The question has been raised as to whether the Aldrete scoring system is a safe and efficient tool to use given the number of ambulatory surgeries that are performed within the hospital setting. A number of factors may affect the use of this tool in determining discharge readiness. The Aldrete system does not include an assessment for the pain level or nausea that many patients experience following surgery with anesthesia. Due to the fact that a majority of these patients will be sent home rather than being admitted to the hospital, their pain and nausea must be at acceptable levels. Providers must be confident in their decision that a patient is safe to be discharged home.

This quality improvement project was aimed at examining whether or not the patient length of stay (LOS) in Phase I of post anesthesia care was appropriate. The global aim was to right-size post anesthesia care Phase I length of stay for adult upper extremity surgical patients. The first step in right-sizing PACU Phase I LOS was to assess the effectiveness of the PACU discharge criteria. As the Aldrete scoring system is used as the primary criterion for determining discharge readiness, the specific aim was to determine the effectiveness of the Aldrete scoring tool for this facility. Other ASPAN approved post-anesthesia discharge tools have been examined to consider for testing, as a change in criteria may be warranted (Appendix B).

The goal to right size the length-of-stay in Phase I of post-anesthesia care is being researched as a means of using resources more efficiently and more effectively. PACU Phase I is a critical care unit, which expends a high volume of both physical and monetary resources as

the patient is monitored continuously within this unit. Phase II of post-anesthesia care is a step-down unit in which continuous monitoring is not needed and the nurse to patient ratio is greater. This community hospital is a disproportionate share hospital meaning that it serves a significantly disproportionate number of low-income patients. According to the United States Census Bureau's most recent statistics (2013), 29.2% of this city's inhabitants had a total family income that put them below the federal poverty level. The hospital receives payments from the Centers for Medicare and Medicaid (CMS) to cover the costs that are associated with caring for uninsured patients (Centers for Medicare and Medicaid website, 2015).

In January 2013 CMS put forth the Bundled Payments for Care Improvement initiative, which is a new payment model. According to CMS, organizations chosen to participate in this initiative would enter into payment arrangements that include financial and performance accountability of the care they provide. CMS would normally make separate payments to each organization and provider for an episode of care, but under the bundled payment plan a single payment would be made to cover the total experience. This payment system means that the organization will get one payment for each episode, which will be split among the providers. Extended stays in Phase I of post-anesthesia care increase the cost of the episode to the hospital without an additional payment from CMS. Reducing the amount of time in Phase I will decrease expenses and allow for a higher percentage of profit to the organization

The process of right sizing the LOS in Phase I of post-anesthesia care cannot be properly tackled without first determining if the LOS is inappropriate, and if so, what is the cause. This hospital has a policy in place for what is considered to be appropriate criteria for discharge from Phase I PACU to Phase II Surgical Day Care (SDC). A score of 8-10 with the Aldrete scoring system is the protocol that is being used as the main discharge criterion. Existing patient records

were examined for a six-month time frame to determine if patients were being discharged from Phase I to Phase II when they reached the accepted score with the Aldrete tool. The rise in ambulatory surgeries within this hospital has caused questions and concern as to whether or not the Aldrete tool is appropriate for use as a discharge criterion for these patients. The Aldrete system does not consider a patient's post-surgical pain level, or whether or not they are experiencing nausea or vomiting. Ambulatory patients are sent home within hours of their surgical end time and providers must be confident in their ability to determine discharge readiness so as to provide safe and appropriate care.

Methods

This quality improvement project was undertaken in a 189-bed disproportionate share community hospital in New England. The PACU Phase I has 8 beds and the unit is normally staffed by 5 ACLS certified RNs, with 4 of those nurses providing direct patient care and the fifth RN working as the charge nurse. The Surgical Day Care (SDC), or post-anesthesia care Phase II, has 13 beds with 4 RNs providing direct care and a fifth RN acting as the charge nurse. The SDC has the responsibilities of admitting surgical patients as well as providing Phase II care for post-surgical patients.

Following study approval from the hospital's clinical inquiry committee, data was collected to compare LOS in Phase I of post-anesthesia care in relation to achieving a score of 8-10 with the Aldrete scoring system tool. In order to create a baseline for measure, existing patient records were searched to include adult upper extremity surgical patients who received their care between the dates of November 1, 2014 and April 30, 2015. No patient identifying information was used from the existing records. The type of surgical procedure was chosen in order to ensure that comparable procedures were being analyzed.

As previously stated, the Aldrete scoring system is a measurement of recovery after anesthesia that includes gauging a patient's consciousness, activity, respiration, blood pressure, and oxygen saturation level. A score of 0-2 is given for each of the five categories assessed (Phillips, Street, Kent, Haesler, & Cadeddu, 2013, p. 276). A score of 8-10 is considered adequate to discharge a patient from Phase I of post anesthesia care.

The specific aim of this project was to determine the effectiveness of the Aldrete scoring tool at this facility. In order to attain the overall goal of right sizing LOS in Phase I the

effectiveness of the PACU discharge criteria had to be assessed. The baseline measure was attained by collecting data for the amount of time it took each of the studied patients to achieve an Aldrete score of 8-10 following surgery, as well as collecting data on how long each of these patients remained in PACU Phase I. The mean time, range, and standard deviation were computed for each data set. The data suggest that the Aldrete tool is not being used as a criterion for discharge, as the mean time to achieve a score of 8-10 was 8 minutes while the mean time a patient spent in Phase I was 72 minutes (Appendix C). The results of this baseline data led to a change in focus for this improvement project. There was such a large discrepancy between the amount of time that the patient achieved an acceptable Aldrete score and the amount of time that they remained in Phase I that it was determined that more information would be required. Consultation with the CNL in the department led to the initiation of a Plan/Do/Study/Act (PDSA) cycle in which a survey was created to inquire as to what criteria the nurses were using to assess discharge readiness.

Registered nurses who work in the post anesthesia care unit (PACU) were asked to complete a 9 question survey assessing their understanding of the importance of various discharge criteria (Aldrete score, vital signs, pain, nausea/vomiting) (Appendix D). The survey was created using a Likert Scale and was then provided to all nurses working within Phase I of PACU. Eight of the nine questions had a possibility of five responses relating to how often the RNs consider each of the criteria in discharge readiness: Never, Almost Never, Occasionally/Sometimes, Almost Every Time, or Every Time. Each of the options was given a point value from 1-5, with Never receiving 1 point and moving up the scale to Every Time receiving a value of 5. A sixth category was added to account for the use of question mark responses for question number one which referred to how often the Aldrete tool was used in

assessing discharge readiness. The ninth question for this survey was an open ended question in which feedback was requested to help in further study of the surgical services patient flow issue.

Following frequency analysis of each of the survey categories a discussion was held with the surgical services Clinical Nurse Leader (CNL) and it was determined that an education session would be warranted (Appendix E). A second PDSA cycle was then initiated to conduct an education seminar for PACU nurses, as the survey revealed lack of knowledge of the hospital's discharge protocol in general, and lack of understanding of the steps and purpose of Aldrete scoring.

The education PDSA was created as a Power Point and presented to the nurses who work in Phase I of post-anesthesia care. The nurses were presented with the information in small groups of 3-4 over a three-day period as that is what time allowed for. The presentation included information on the hospitals Phase I discharge policy as well as the steps and purpose of using a standardized, numerical discharge tool.

A standardized, numerical post-anesthesia discharge tool is used to clinically assess the physical status of each patient. The criteria used should be objective, measurable, understandable, and applicable to the patient (Schick & Windle, 2010, p. 615). A standardized tool provides consistency, which can also help to reduce errors. These tools help to ensure that a standard of care is met for each patient while helping to promote the efficient use of facility resources. Standardized tools may also be used to help guide practice decisions. Protocols should be reviewed regularly in order to be sure that each is providing an effective response to care. The data collected from the initial chart review suggests that the Aldrete scoring system is neither effective, nor appropriate, for the Phase I discharge of ambulatory patients.

Post-intervention data was collected from July 3rd – July 17th, 2015, again reviewing the time to Aldrete scores of 8-10, and the amount of time spent in Phase I of recovery, for adult upper extremity surgical patients. The results of this collection of data (N=20) indicated a decrease in the amount of time the average patient spent in Phase I of PACU following the education intervention. The data was analyzed again using the mean time, range and standard deviation.

Theoretical Framework

When discussing improvements that need to be made within nursing we often look at nursing theories to guide our practice. Marjorie Splaine Wiggins' Partnership Care Delivery Model is one that can be used to explain the changes in the delivery of care within the surgical setting over the past couple of decades. Older models of care were based on the type of care a nurse could provide for a patient spending days in the hospital. The work of the nurses within the surgical services department has changed to having to provide all of the care for these patients in less than a day. This model speaks to the importance of the provider/nurse/patient relationship and how everyone has to take part in the care and work together to ensure the best outcome for the patient (Wiggins, 2008). Ambulatory surgical patients benefit from this model of care due to the fact that all parties must take part in the decision making process. Knowledge of the procedure, and of the care needed while recovering, are important factors in educating the patient about the experience in order to provide safe and effective care.

Results

The aim of this project was to right size the stay in Phase I of post-anesthesia care, by determining the appropriateness of the Aldrete scoring tool as a means to achieve this objective. The initial question of whether or not the Phase I LOS was appropriate was determined through collection of the baseline data. A review of the data revealed that the mean time for a post-surgical patient to reach a score of at least 8 with the Aldrete scoring system was 8 minutes, while the mean time these same patients spent in Phase I of post-anesthesia care was 72 minutes.

The discharge criterion for movement from Phase I to Phase II at this facility is a score of 8-10 using the Aldrete tool, and the analysis of the baseline data indicated that the nursing staff within PACU was not using the scoring tool for this purpose. The discrepancy between the times to Aldrete 8-10 and the amount of time spent in PACU created questions as to what criteria the nursing staff was using as the Phase I discharge assessment.

. The information gathered from this initial data search indicated that the PACU nursing staff was not using the Aldrete scoring system as a major component of their discharge scoring criteria. A Plan/Do/Study/Act (PDSA) cycle was planned in order to assess the Phase I nurses' understanding of the discharge criteria for a patient to move to Phase II of post-anesthesia care. A 9-question survey using a 5 response Likert scale was created to assess the nurses' understanding of various discharge criteria, including the Aldrete tool (Appendix D). The responses were tabulated using frequency of each of the Likert response categories for each question. (Appendix E) This survey was handed out to nurses from June 24 -26, 2015 to 20 of the 21 nurses who work within Phase I of the PACU (one nurse was on vacation). Fifteen of the twenty surveys were returned for a 75% response rate.

The data from the survey revealed that 8 of the 15 respondents (53%) either almost never, or only occasionally used the Aldrete score to determine discharge readiness. An additional 3 respondents, or 20%, did not know what the Aldrete score was. They had not heard the term and did not realize that it was within the hospital's policy for Phase I discharge criteria. The results of this survey led to the initiation of a second PDSA cycle. An education component was added to the project to help the nurses understand what the Aldrete scoring system is, as well as the importance of using a standardized tool in their patient assessments. They were also shown the information from the hospital policy of Phase I discharge criteria and where to find it.

Educational sessions were conducted in small groups from June 29th – July 3rd, 2015. Phase I post-anesthesia nurses were provided with information regarding the importance of a standardized discharge tool, as well as education on the Aldrete tool itself. Many of the nurses were unaware of the hospital policy regarding Phase I discharge, so information was provided about this policy and where it could be found within the facility.

Standardized tools provide consistency of care and in so doing, help to reduce errors. According to ASPAN recommendations patient assessments of physical status should use criteria that are objective, measurable, understandable, and applicable (Schick & Windle, 2010). Following the hospital protocol allows nurses to work on behalf of anesthesia personnel by ensuring that a standard of care is met for each patient. Standardized criteria also promote efficient use of resources. An extended LOS in the critical-care unit of Phase I depletes resources that could be used for others allowing for more patients to be treated with less resource allocation.

Upon completion of the education sessions, post-intervention data was collected on adult upper extremity surgical cases from July 3rd – July 17th, 2015. The time to Aldrete 8-10,

as well as the amount of time spent in Phase I were once again determined. The mean time to the Aldrete 8-10 score for this post-intervention group was 7 minutes, while the mean time in Phase I was 54 minutes (Appendix C). The range for the pre-intervention group was 2:04 with the range for post-intervention being 1:15. The standard deviations for the pre- and post-interventions were 26 minutes and 18 minutes respectively. A t Test was completed to measure the difference between the groups and to compare it to the difference within the groups. A t Test comparison of the means for each group, with a CI of 0.95 resulted in a p value of 0.0010, which indicates that this result is real and not a matter of chance.

Conclusion

The global aim of this quality improvement project was to right-size post anesthesia care Phase I length of stay for adult upper extremity surgical patients. The specific aim was to determine the effectiveness of the Aldrete scoring tool at this facility. The aim was met upon completion of the quality improvement project. Phase I LOS was decreased, while it was determined that the Aldrete scoring tool was not being used as a basis for discharge from Phase I to Phase II of post anesthesia care. The Aldrete tool does not consider enough assessment factors when being used for the discharge of ambulatory patients. A patient's pain and nausea/vomiting levels should be considered before sending a post-surgical patient home to recover.

Limitations to this study were the limited amount of time and the small sample size post-intervention due to time constraints, as well as the possible occurrence of the Hawthorne Effect. In a study done from 1924 to 1932 at Western Electric Company's Hawthorne Works in Chicago, IL it was noted that there was a change in work behavior simply because the subjects knew they were being watched. The attention that the workers were being shown by members of management may have contributed to the increase in productivity (Shangchao, 2013). The fact that the nurses in PACU knew that I would be looking at the time patients spent in their unit, may have been enough of an incentive to have them consciously move the patients through the PACU more quickly. The resulting reduction in time spent in Phase I of post-anesthesia care could be due to this phenomenon.

It is recommended that the CNL continues to monitor the data for Phase I LOS to ensure that the gains made continue in the future. Nurses new to this unit should be shown where the hospital policy is located and what the policy entails. The policy should be taught as a part of

orientation to the unit. The use of a different standardized discharge assessment tool should be tested to determine if another tool will have a greater effect on a safe and efficient discharge process. Patient pain levels should be included in this tool as that is an important indicator of discharge readiness. Nausea/vomiting may be included in the tool chosen, but nausea can be treated within Phase II of post anesthesia care.

The use of a standardized discharge assessment tool is important as it is a way to clinically assess the physical status of the PACU patient. The criteria used should be objective, measurable, understandable, and applicable to the patient regarding the surgery that they received. Standardized tools provide consistency, which helps to reduce errors. Both ASPAN and the Joint Commission recommend using a standardized tool to lead nurses in appropriate patient discharge.

Fast-tracking is a process in which a patient is scored using a discharge scoring tool while still in the operating room. Those scoring high enough will bypass Phase I of post anesthesia care and move directly to Phase II. The process of fast tracking should be tested within this facility as a means of improving patient flow throughout surgical services. The surgical services CNL would be the person to take on the task of both researching fast-tracking techniques and implementing the process once the staff was educated on its use.

This quality improvement project provided insight to the surgical services department as to the thoughts and processes of the nurses working within Phase I of post anesthesia care. The information garnered can be used to help the department move forward in its quest to improve patient flow through the surgical services department. Education concerning policies and procedures is an important aspect for the continuation of this goal.

Appendix

Appendix A

| Criteria | Point value |
|--|-------------|
| Oxygenation | |
| SpO ₂ > 92% on room air | 2 |
| SpO ₂ > 90% on oxygen | 1 |
| SpO ₂ < 90% on oxygen | 0 |
| Respiration | |
| Breathes deeply and coughs freely | 2 |
| Dyspnoeic, shallow or limited breathing | 1 |
| Apnoea | 0 |
| Circulation | |
| Blood pressure ± 20 mmHg of normal | 2 |
| Blood pressure $\pm 20 - 50$ mmHg of normal | 1 |
| Blood pressure more than ± 50 mmHg of normal | 0 |
| Consciousness | |
| Fully awake | 2 |
| Aousable on calling | 1 |
| Not responsive | 0 |
| Activity | |
| Moves all extremities | 2 |
| Moves two extremities | 1 |
| No movement | 0 |

Appendix B

| | Aldrete | PARSAP | Steward | White | Chung |
|--------------------------|----------------|---------------|----------------|--------------|--------------|
| Oxygenation | X | X | | X | |
| Respiration | X | X | X | X | X |
| Circulation | X | X | | | X |
| Consciousness | X | X | X | X | |
| Activity | X | X | X | X | X |
| Pain | | X | | X | |
| Nausea/ Vomiting | | | | X | X |
| Intake/output | | X | | | X |
| Feeding | | X | | | |
| Ambulation | | X | | | |
| Hemodynamic stability | | | | X | |

Appendix C

| Day | Time into PACU | Initial Aldrete | Time of 2nd Aldrete | Time of 3rd Aldrete | Time of 4th Aldrete | Time of 5th Aldrete | Time of 6th Aldrete | Time out of HALL | Time to Aldrete | Time to Phase I | Procedure |
|-----------|----------------|-----------------|-------------------------|---------------------|-------------------------|---------------------|---------------------|------------------|-----------------|-----------------|--------------------------------|
| Friday | 12:28 | 9 | 21:45 | 30 | | | | 22:31 | 0 | 0:33:00 | repair extensor tendons R hand |
| Friday | 9:15 | 8 | 9:15 | 9 | 8:50 | 9 | | 9:30 | 0 | 1:05:00 | exc. mass finger |
| Thursday | 17:31 | 8 | 17:40 | 9 | 18:00 | 10 | | 18:21 | 0 | 0:50:00 | R finger |
| Friday | 0:00 | Straight to SOC | | | | | | 0:00 | 0 | 0:04:00 | repair extensor tendons L hand |
| Friday | 14:01 | 8 | 14:18 | 9 | 14:35 | 10 | | 15:07 | 10 | 1:15:00 | L off finger |
| Friday | 15:49 | 5 | 17:15 | 10 | | | | 17:51 | 10 | 1:20:00 | repair extensor tendons R hand |
| Friday | 12:44 | 10 | 13:12 | 10 | | | | 13:31 | 0 | 0:14:00 | repair extensor tendons L hand |
| Thursday | 16:01 | 9 | 16:15 | 9 | | | | 17:08 | 0 | 0:39:00 | exc. mass finger |
| Thursday | 0:00 | local | | | | | | 0:00 | 0 | 0:00:00 | exc. mass finger |
| Friday | 10:34 | 10 | 11:14 | 10 | | | | 11:34 | 0 | 0:18:00 | exc. mass finger |
| Friday | 11:00 | 5 | 12:10 | 10 | | | | 12:31 | 10 | 1:11:00 | exc. mass finger |
| Thursday | 11:51 | 10 | 12:05 | 10 | 12:20 | 10 | 12:42 | 13: | 10 | 0:50:00 | finger extensor |
| Friday | 12:40 | 5 | 12:58 | 10 | 13:20 | 10 | | 13:40 | 10 | 0:50:00 | off finger |
| Friday | 17:28 | 10 | 18:10 | 10 | | | | 18:41 | 0 | 1:18:00 | exc. mass finger |
| Wednesday | 8:53 | 9 | 9:50 | 9 | 9:54 | 10 | | 10:11 | 0 | 1:17:00 | exc. mass finger |
| Friday | 8:52 | 4 | 9:15 | 9 | 9:30 | 10 | | 9:44 | 10 | 0:31:00 | exc. mass finger |
| Friday | 15:51 | 7 | 15:56 | 9 | | | | 16:22 | 10 | 0:48:00 | exc. mass finger |
| Friday | 16:04 | 7 | | | | | | 16:46 | 10 | 0:41:00 | exc. mass finger |
| Thursday | 16:01 | 8 | 16:31 | 8 | 17:00 | 8 | | 17:48 | 10 | 0:31:00 | exc. mass finger |
| Monday | 12:11 | 9 | 14:00 | 9 | 14:00 | 10 | | 14:40 | 10 | 0:29:00 | exc. mass finger |
| Friday | 12:17 | 4 | 12:36 | 4 | 13:00 | 10 | | 13:00 | 10 | 0:43:00 | exc. mass finger |
| Thursday | 12:31 | 5 | 13:15 | 10 | 14:00 | 10 | | 14:36 | 10 | 0:45:00 | exc. mass finger |
| Thursday | 13:31 | 10 | 14:17 | 10 | 14:17 | 10 | | 14:37 | 10 | 0:45:00 | exc. mass finger |
| Friday | 8:06 | 7 | 8:25 | 10 | 8:42 | 10 | | 8:49 | 10 | 0:54:00 | exc. mass finger |
| Friday | 16:08 | 5 | 16:13 | 10 | 16:18 | 10 | | 16:48 | 10 | 0:28:00 | exc. mass finger |
| Thursday | 10:36 | 10 | 10:48 | 10 | | | | 11:11 | 10 | 0:54:00 | exc. mass finger |
| Friday | 0:00 | Straight to SOC | | | | | | 0:00 | 0 | 0:00:00 | exc. mass finger |
| Friday | 14:51 | 9 | 15:51 (1 cut, Not real) | 9 | 16:50 | 10 | | 17:30 | 10 | 1:29:00 | exc. mass finger |
| Friday | 12:20 | 10 | 12:31 | 10 | 12:50 | 10 | | 13:10 | 10 | 0:42:00 | exc. mass finger |
| Friday | 15:17 | 10 | 15:17 | 10 | 15:17 | 10 | | 15:50 | 10 | 0:31:00 | exc. mass finger |
| Friday | 9:50 | 9 | 9:58 | 9 | 9:55 | 10 | | 10:00 | 10 | 0:20:00 | exc. mass finger |
| Friday | 14:56 | 10 | 15:11 | 10 | 15:10 | 10 | | 15:50 | 10 | 0:34:00 | exc. mass finger |
| Friday | 16:14 | 8 | 16:36 | 10 | 16:30 | 10 | | 17:00 | 10 | 0:24:00 | exc. mass finger |
| Thursday | 10:11 | 9 | 10:30 | 10 | 11:00 | 10 | | 11:50 | 10 | 0:48:00 | exc. mass finger |
| Friday | 14:47 | 9 | 15:00 | 10 | 15:20 | 10 | | 15:45 | 10 | 0:48:00 | exc. mass finger |
| Friday | 8:24 | 8 | 8:35 | 8 | 8:45 | 10 | | 9:01 | 10 | 0:37:00 | exc. mass finger |
| Thursday | 12:00 | 6 | 12:20 | 9 | 12:45 | 10 | | 13:00 | 10 | 0:45:00 | exc. mass finger |
| Thursday | 15:31 | 8 | 15:38 | 8 | 16:30 | 10 | | 17:00 | 10 | 0:39:00 | exc. mass finger |
| Friday | 15:21 | 8 | 15:33 | 8 | 15:39 | 9 | | 16:00 | 10 | 0:39:00 | exc. mass finger |
| Friday | 17:41 | 8 | 18:00 | 10 | 18:15 | 10 | | 18:30 | 10 | 0:48:00 | exc. mass finger |
| Friday | 11:22 | 9 | 11:39 | 10 | 11:51 (1 cut, Not real) | 10 | | 12:04 | 10 | 0:48:00 | exc. mass finger |
| Friday | 14:40 | 8 | 15:10 | 8 | 16:15 | 10 | | 16:40 | 10 | 0:50:00 | exc. mass finger |
| Friday | 10:14 | 8 | 10:40 | 7 | 11:09 | 10 | | 11:33 | 9 | 0:50:00 | exc. mass finger |
| Thursday | 13:50 | 7 | 14:09 (1 cut, Not real) | 7 | 14:20 | 10 | | 14:42 | 10 | 0:32:00 | exc. mass finger |
| Friday | 12:41 | 12 | 12:41 | 8 | 13:18 | 8 | | 14:03 | 10 | 0:36:00 | exc. mass finger |
| Friday | 8:51 | 6 | 9:05 | 10 | 9:25 | 10 | | 9:54 | 10 | 0:39:00 | exc. mass finger |
| Friday | 13:50 | 10 | 14:10 | 10 | 14:30 | 10 | | 14:50 | 10 | 0:30:00 | exc. mass finger |
| Friday | 17:00 | 10 | 17:14 | 10 | 17:38 | 10 | | 18:21 | 10 | 0:51:00 | exc. mass finger |
| Friday | 9:13 | 4 | 9:30 | 9 | 9:47 | 10 | | 10:00 | 10 | 0:47:00 | exc. mass finger |
| Friday | 10:31 | 10 | 10:51 | 10 | 11:10 (1 cut, Not real) | 10 | | 11:30 | 10 | 0:59:00 | exc. mass finger |
| Friday | 14:18 | 8 | 14:18 | 8 | 14:18 | 10 | | 14:18 | 10 | 0:00:00 | exc. mass finger |
| Friday | 10:51 | 8 | 11:05 | 9 | 11:20 | 9 | | 11:48 | 9 | 0:57:00 | exc. mass finger |
| Friday | 11:07 | 10 | 11:20 | 8 | 11:38 | 10 | | 11:45 | 10 | 0:48:00 | exc. mass finger |
| Monday | 21:09 | 9 | 21:15 | 9 | 21:45 | 9 | | 22:50 | 10 | 0:59:00 | exc. mass finger |
| Monday | 21:08 | 9 | 21:40 | 10 | | | | | 10 | 0:50:00 | exc. mass finger |
| Monday | 21:50 | 7 | 21:57 | 7 | 22:07 | 8 | | 22:27 | 10 | 0:37:00 | exc. mass finger |
| Friday | 15:52 | 8 | 16:16 | 8 | 16:30 | 8 | | 16:50 | 10 | 0:38:00 | exc. mass finger |
| Monday | 12:36 | 8 | 12:56 | 8 | 13:17 | 9 | | 13:40 | 10 | 0:44:00 | exc. mass finger |
| Friday | 14:21 | 8 | 14:21 | 8 | 14:21 | 10 | | 14:21 | 10 | 0:00:00 | exc. mass finger |
| Friday | 13:00 | 8 | 13:14 | 10 | 13:14 | 10 | | 13:33 | 10 | 0:33:00 | exc. mass finger |

Appendix D

PACU DISCHARGE SURVEY

1. I rely on the Aldrete score to assess patient readiness for PACU discharge

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

2. Patient pain levels cause a delay in discharge from PACU

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

3. Patient nausea/vomiting causes a delay in discharge from PACU

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

4. Return of vital signs to pre-procedure levels is necessary for discharge from PACU

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

5. Return of body movement to pre-procedure levels is necessary for discharge from PACU

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

6. Return of level of consciousness to pre-procedure levels is necessary for discharge from
PACU

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

7. Completing documentation is a barrier to PACU discharge

Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

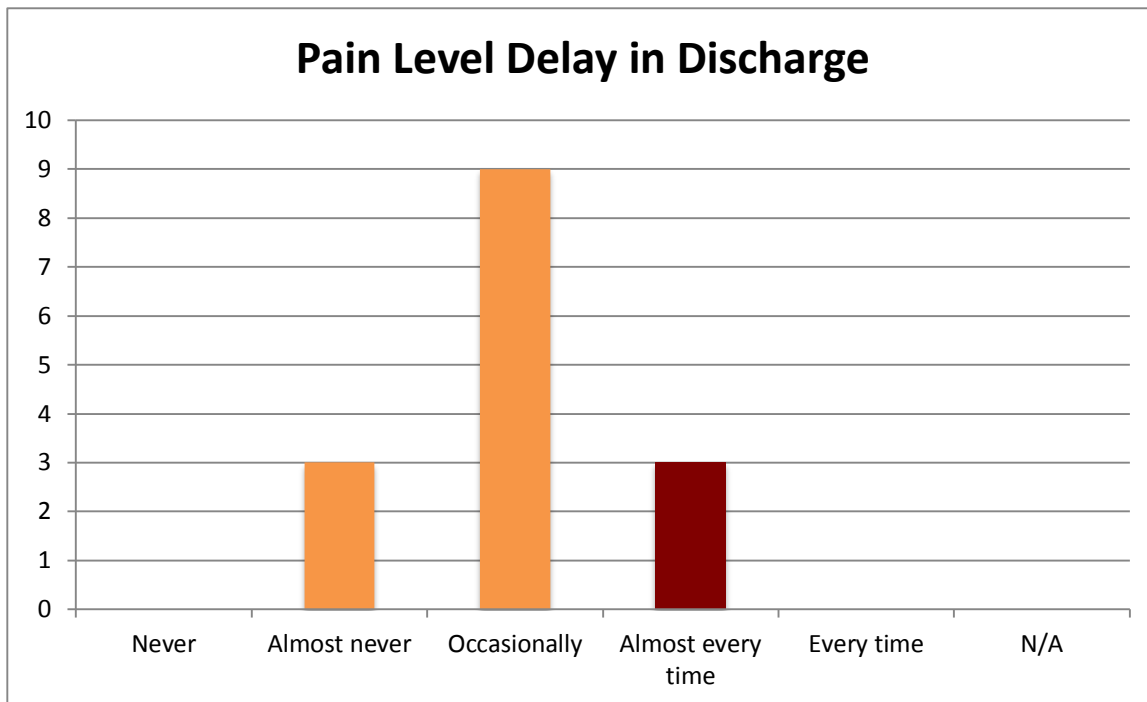
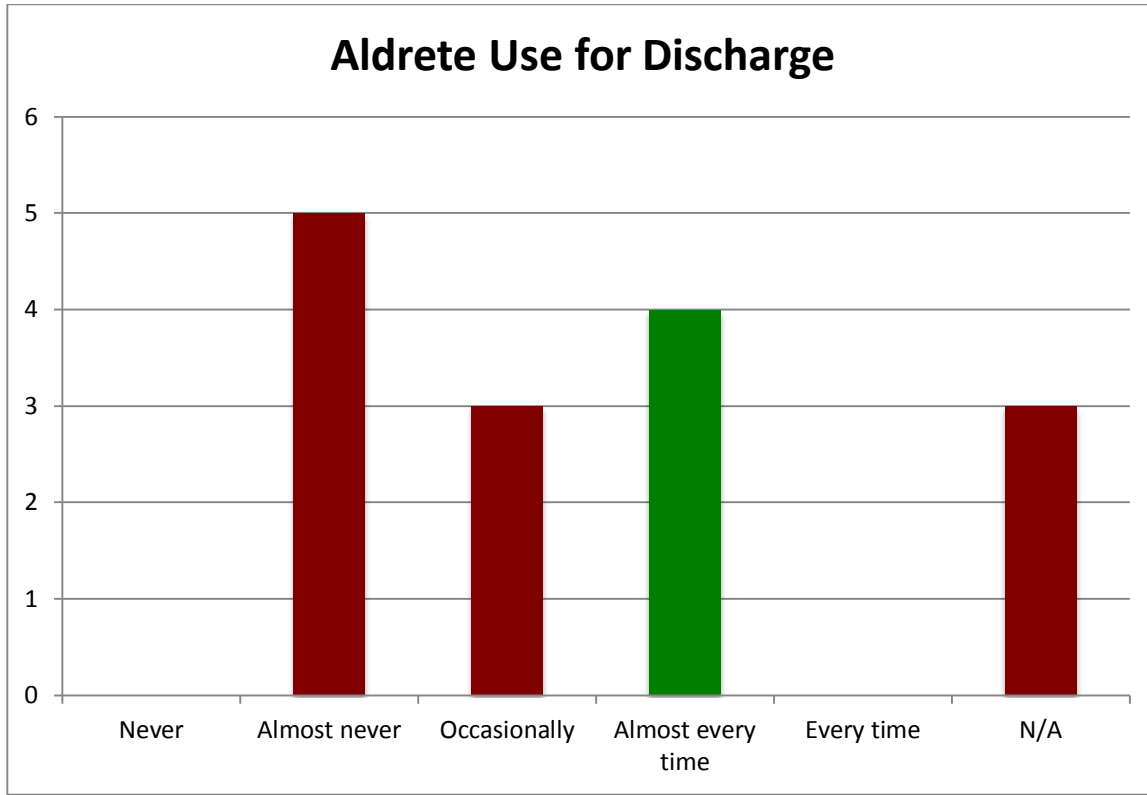
8. Number of patients in SDC at one time is a barrier to discharge from PACU

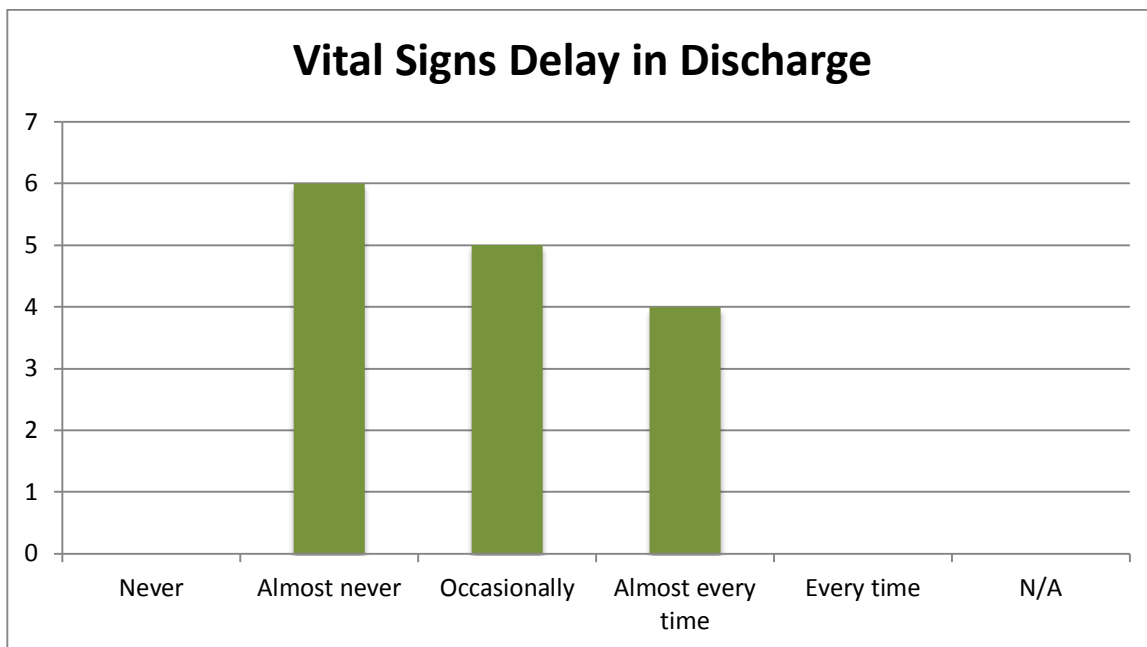
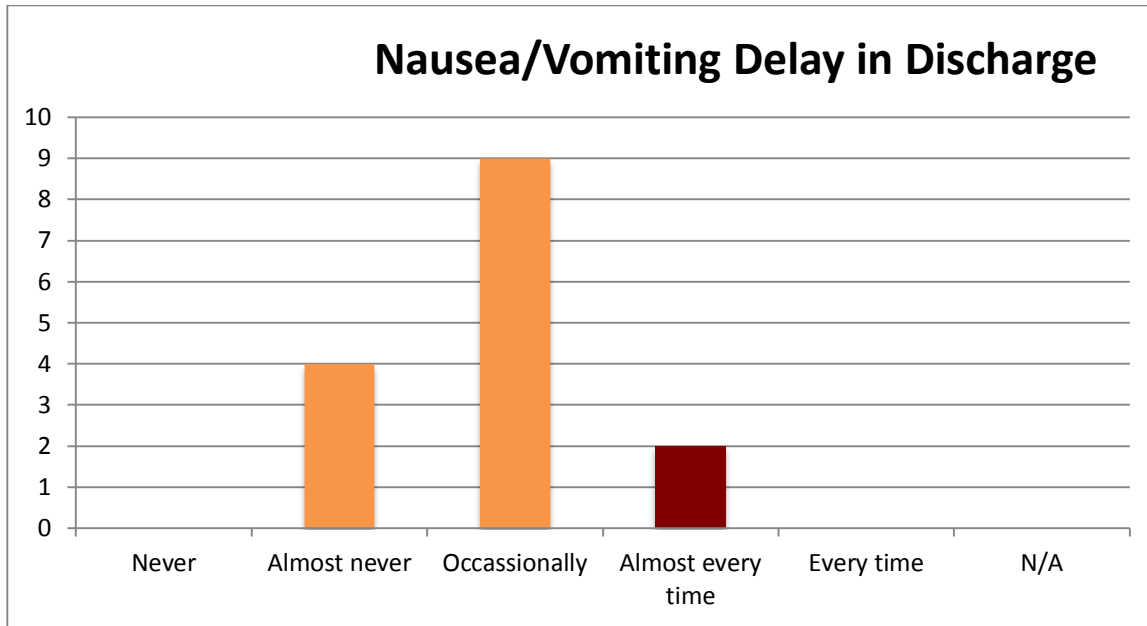
Never ___ Almost Never ___ Occasionally/Sometimes ___ Almost every time ___ Every time

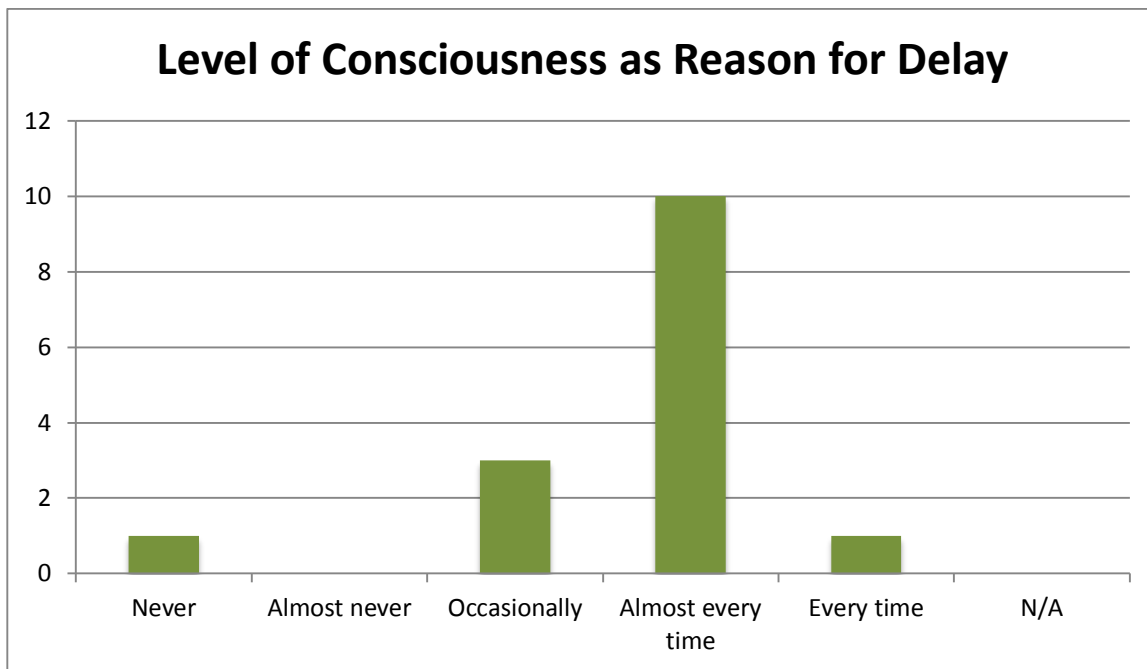
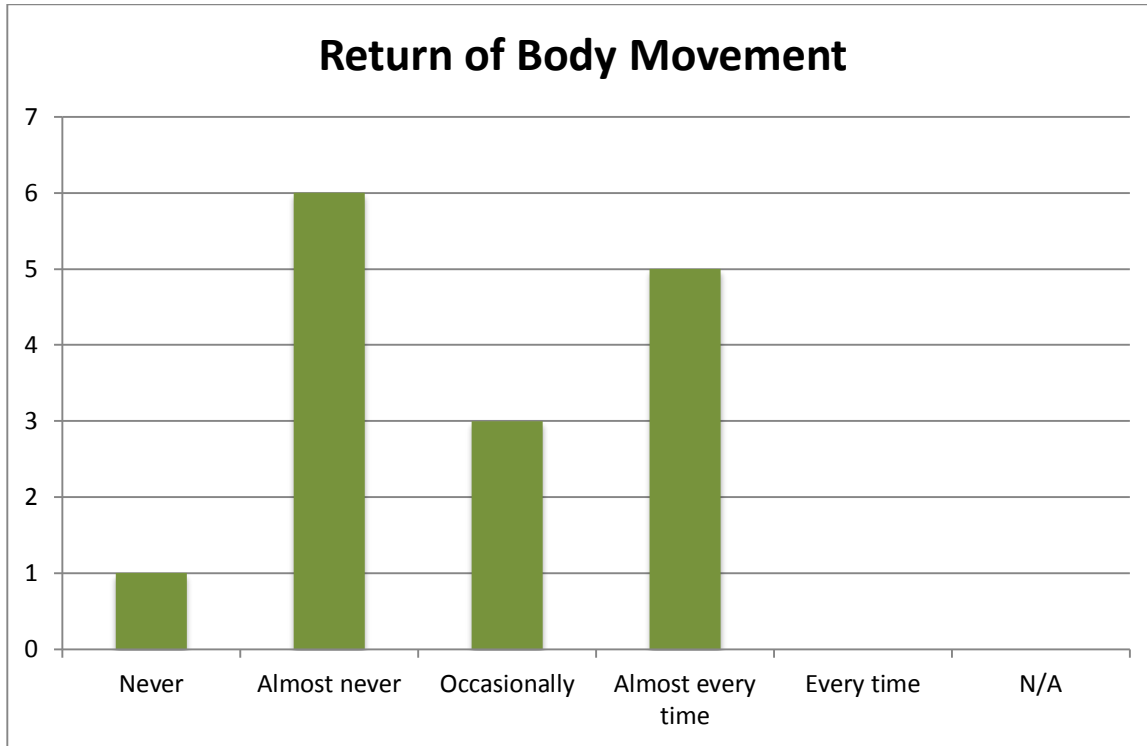
9. Are there any other reasons that a patient would be held in PACU rather than discharged?

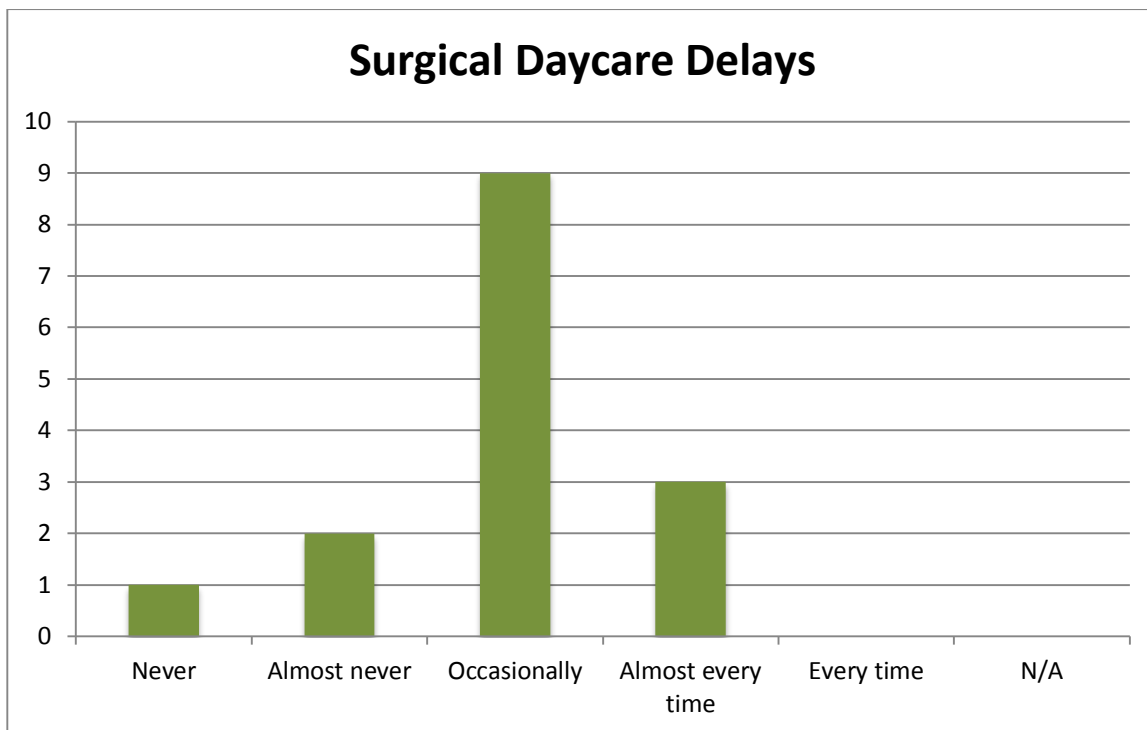
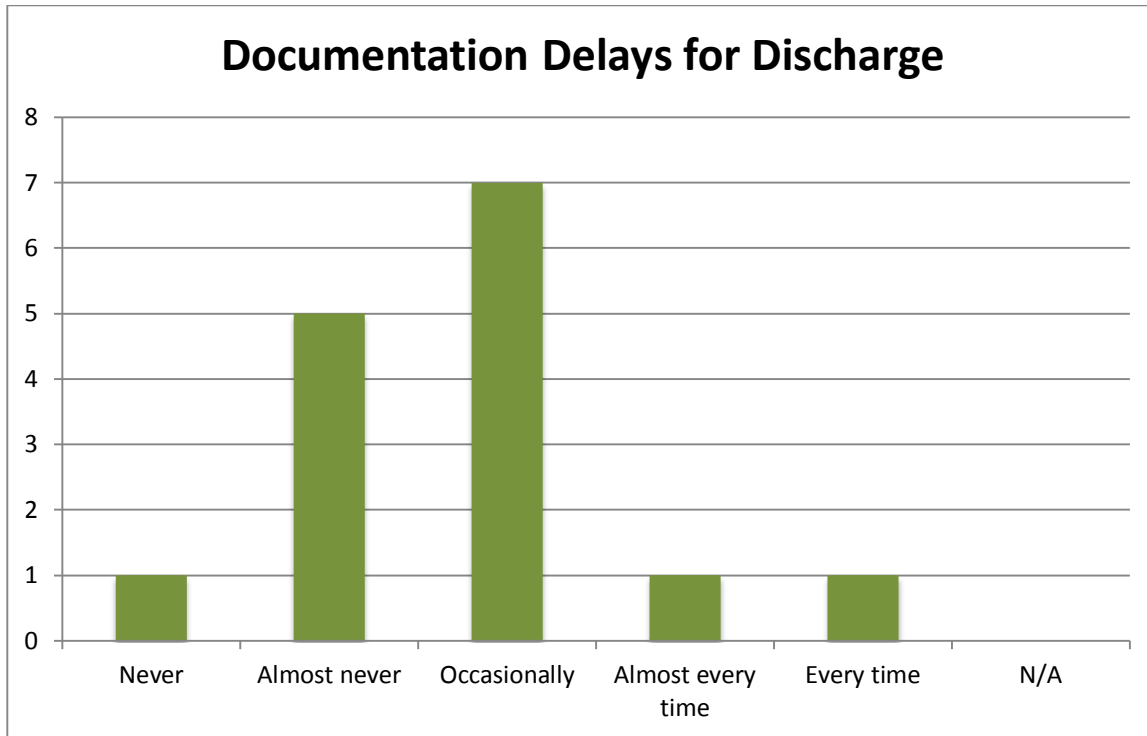
Please list

Appendix E









References

- Aldrete, J. A. (1995). The post-anesthesia recovery score revisited. *Journal of Clinical Anesthesia*, 7, 89-91. Retrieved from http://ac.els-cdn.com/095281809400001K/1-s2.0-095281809400001K-main.pdf?_tid=4b032d3e-e2b9-11e4-8641-00000aab0f27&acdnat=1429024798_9348b644c878c69f36e68b394c5f4341
- Centers for Medicare and Medicaid website. (2015). <http://www.cms.gov/site-search/search-results.html?q=reimbursement>
- Chung, F. (1995). Discharge criteria - A new trend. *Canadian Journal of Anaesthesia*, 42, 1056-1058. <http://dx.doi.org/10.1007/BF03011083>
- Joint Commission international accreditation standards for hospitals. (2013). In *Joint Commission accreditation participation requirements: Anesthesia and surgical care*. Retrieved from <http://www.jointcommissioninternational.org/assets/3/7/Hospital-5E-Standards-Only-Mar2014.pdf>
- Kapur, P. A. (2001). Postanesthesia care unit challenges. Retrieved from <https://uthsc.edu/pulmonary/documents/Kapur2001.pdf>
- McGrath, B., & Chung, F. (2003). Postoperative recovery and discharge. *Anesthesiology Clinics of America*, 21, 367-386. [http://dx.doi.org/10.1016/S0889-8537\(02\)00080-9](http://dx.doi.org/10.1016/S0889-8537(02)00080-9)
- Phillips, N. M., Street, M., Kent, B., Haesler, E., & Cadeddu, M. (2013). Post-anaesthetic discharge scoring criteria: key findings from a systematic review. *International Journal of Evidence-Based Healthcare*, 11, 275-284. <http://dx.doi.org/10.1111/1744-1609.12044>
- Ramsay, M. A. (2006). John Snow, MD: anaesthetist to the Queen of England and pioneer epidemiologist. *Proceedings (Baylor University. Medical Center)*, 19(1), 24-28. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1325279/>

- Schick, L., & Windle, P. E. (2010). *PeriAnesthesia Nursing Core Curriculum* (2nd ed.). St. Louis, MO: Saunders Elsevier.
- Shangchao, L. (2013). Practical implications of Hawthorne studies. Retrieved from <http://naes.org.cn/english/article/18325>
- Steward, D. J. (1975, January 1). A Simplified scoring system for the post-operative recovery room. *Canadian Anaesthetists' Society Journal*, 22(1), 111-113. Retrieved from http://www.researchgate.net/publication/22045332_A_simplified_scoring_system_for_the_post-operative_recovery_room
- U.S. Census Bureau Lawrence, MA quick facts. (2013). Retrieved July 17, 2015, from <http://quickfacts.census.gov/qfd/states/25/2534550.html>
- White, P. F., & Song, D. (1999). New criteria for fast-tracking after outpatient anesthesia: A comparison with the modified Aldrete's scoring system. *Anesthesia & Analgesia*, 88, 1069-1072. Retrieved from http://www.antitb.org.hk/pdf_files/DrLow/guidelines/ModifiedAldreteScore_PaulWhite_1069.full.pdf
- Wiggins, M. S. (2008). The partnership care delivery model: an examination of the core concept and the need for a new model of care. *Journal of Nursing Management*, 16, 629-638. <http://dx.doi.org/10.1111/j.1365-2834.2008.00900.x>