Ambulatory Surgery Report

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DEA 4530: Planning & Managing the Workplace

OVERARCHING ISSUE

In the 1990's, ambulatory surgery represented 60-70% of all surgeries performed in North America (Chung, Ritchie & Su, 1997). More recently, there has been a significant increase in ambulatory surgery procedures due to their "efficiency, low cost, the national nursing shortage, and its popularity among patients." (Chung, 1995) Today, this practice has expanded to incorporate more complex cases, as it no longer "only involves simple, short surgical procedures on healthy patients, but also lengthier procedures on geriatric and debilitated patients." (Chung, 1995)

The success of the ambulatory surgery unit is largely affected by how well the staff can minimize both costs and discharge delays while simultaneously providing patients with a positive 'in and out' surgery procedure. In turn, ambulatory surgery can be viewed as a balancing act—hospitals and health care providers want to achieve cost reductions and minimize delays, while maintaining a high level of service and care.

This challenging "balancing act," is evidenced by various studies that isolate issues associated with the outpatient practice. For example, Fleisher, et al. (2007) found that about one of every 200 patients who have an outpatient procedure are admitted immediately following their surgery due to inadequate pain medication and complications including bleeding and allergic reactions to anesthesia. Nevertheless, few studies evaluate the *process issues* that lead to these poor clinical outcomes. For instance, patient flow delays are evident in ambulatory surgery units, yet identifying the root cause of these delays is rather challenging. A hospitalist notes that "so much of what we do in a hospital is about process" and thus, hospitals must reduce the inefficiencies in the processes needed for clinical care (Berczuk, 2008). This entails eliminating the wasted time and motion evident in processes to increase efficiency, productivity, and patient and employee satisfaction (Berczuk, 2008).

Inadequate communication is a primary issue evident throughout the hospital setting, which is often a significant cause of process failure. According to the Joint Commission, between 1995 and 2004, communication problems were the primary cause of 65 percent of sentinel events (Runy, 2008). In addition, the American College of Physicians reports that communication breakdowns are causative factors in 80 percent of medical malpractice lawsuits (Gnadhi, 2005). Thus, the success of ambulatory surgery units is largely dependent on how efficiently the staff communicates necessary information to other staff members, patients, and visitors. In the absence of efficient communication, significant problems, including wrong-site surgeries and insufficient patient handoffs, are seemingly inevitable.

Despite the palpable importance of communication in ensuring patient safety, it is rarely addressed (Hayes, 2011). This was particularly apparent during our visits to Cayuga Medical Center's (CMC) ambulatory surgery unit, as patients complained about delayed wait times and staff members failed to call a patient to inform him/her of their changed surgery time. As a result, we identified communication as the fundamental issue adversely affecting the ambulatory surgery department.

Communication is a rather broad topic, as it involves both verbal and visual exchanges. Visual communication focuses on presenting information to the users of the space in a clear way. In some instances, including the addition of unscheduled appointments to the patient schedule, ambulatory surgery staff members have minimal time for verbal communication, and they thereby rely on the effective operation of visual systems. This includes the use of patient flow boards and colored tags placed outside of patients' rooms to signify their clinical status.

High quality and efficient hospital care also depend on verbal communication between staff and patients. If the communication within a setting is ineffective, it can lead to delays and medical errors. "Communication is key to a successful Ambulatory Surgery Center"; staff must

react and adjust their practices to any delays or problems, and thereafter communicate the issues that surface to patients, families, and staff (Hayes, 2011). In ambulatory surgery units, problems most frequently arise due to communication and record keeping errors. In *Communication and Documentation Tips for Ambulatory Surgery Centers* (2008), the author explains how physicians must keep track of all patient medical information, document progress notes, and write pre/postoperative reports. Thus, even a slight delay or mistake in the transfer of this information can be detrimental to the patient flow within the unit.

SAME DAY SURGERY UNIT

In the SDS unit at Cayuga Medical Center, the underlying issues are all classified as communication errors, as demonstrated in Figure 1 below. In order for this space to be successfully utilized to provide ambulatory care, the SDS, PACU, and OR units must all operate with a level of fluidity and cohesion to ensure efficient flow of patients both prior to and following surgery. The units rely on constant communication through communication systems (e.g. whiteboards and face-to-face interactions) to directly convey important information. Ultimately, these systems ensure that all patients are accounted for and treated with the highest level of care possible. However, certain aspects within these three units inhibit proper communication, meaning the space is vulnerable to communication errors, such as patient delays or patient flow errors.

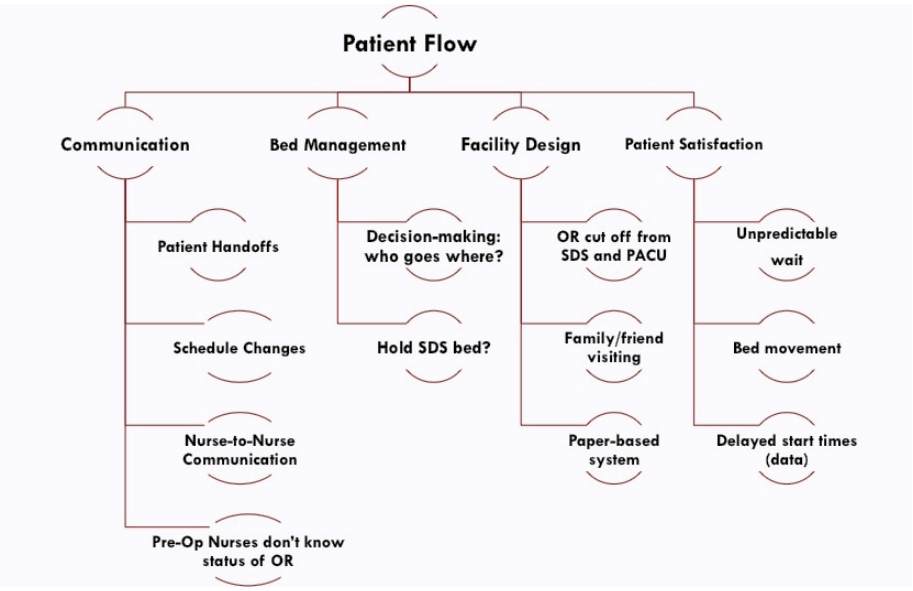


Figure 1. Issues Identified in SDS Unit

For example, at Cayuga Medical Center, a set of double doors separate the SDS unit from the PACU and the OR, forming a physical barrier that hinders visual access and communication between the spaces. In this setting, the different functional units should be able to work closely together so that nurses from any of the three units can transfer into a different unit to lend help when necessary. Also, within the SDS unit, we observed different interactions between the staff, patients, and visitors in order to examine patient flow. Additionally, we looked for interactions between the SDS unit and the OR and PACU. The flow of communication between these three areas is critical for maintaining a smooth transition through the units both prior to and following surgery. As a result, we wanted to focus on and target any communication "glitches" that could adversely affect patient flow, meaning the progression of a patient's status (Cote, 2000).

SPECIFIC ISSUE

After viewing the space several times, we decided to specifically target the whiteboard in the SDS unit, which serves as a visual communication system. The board contains the daily schedule for all patient procedures, meaning it must be kept up to date. Most of the staff refer

back to and work directly from the schedule in order to locate patients and identify whether any cases are behind or ahead of schedule. Consequently, the board must operate in "real time" for the unit to function properly.

Various observations during our initial visits to CMC contributed to our decision to focus on the whiteboard. For instance, when the SDS room is ready, nurses often forget that the patient is in the waiting room and must be brought to the room. This represents a patient flow "bottleneck," as time is clearly wasted. Thus, we learned that the whiteboard fails to serve as a reminder for nurse's aides and RN's to bring the patient into their SDS room when necessary. They are forced to rely on their memory and continually monitor the status of the SDS room to determine when to bring the patient from the waiting room.

Moreover, we witnessed a hostile relative who said she was told that the wait time would be two hours when she actually waited over five hours. The surgeon told her "the hospital is like an airport; some days it is on time and other days it is backed up." This invoked rather than reduced the family member's anxiety and concurrently demonstrated the fact that no one is responsible for monitoring the whiteboard to track patient schedules and keep patients and visitors informed. This ultimately exhibits insufficient role clarity.

Also, we observed two instances in which the nurses threw out a patient sticker before the patient was discharged. In each observation, about three nurses looked through garbage cans and throughout the nurse's station to try to recover the misplaced sticker, causing wasted time and the underutilization of people as they performed this non-value added "waste" activity.

Finally, one nurse was intended to make changes to the whiteboard. Though this standard was intended to ensure accuracy, it was not implemented. Other nurses inevitably moved the stickers and magnets on the board. In addition, stickers were often moved

simultaneously due to convenience, despite the fact that it did not simulate patients' real time movements.

As a result of these observations, we wanted to specifically address how well the design and layout of the board suits the users' (e.g. RNs', nurse's aides', and MDs') needs, whether any errors occur, and how up to date it is in terms of moving the stickers at the time of the patient transfer. Staff from the SDS, OR, and PACU units should all be able to easily read and understand the board so patients are always accounted for and scheduling issues can be immediately addressed. By observing staff utilization of the board, we aimed to identify any problems with the board, and ways in which it can be better used to improve communication in the unit. We specifically looked at how long it takes staff members to locate patients on the board and clinicians' ability to understand the posted daily schedule.

During our observations, we also observed the flow of the "patient stickers" on the board to determine whether the board is updated when a patient is moved from one unit to another (e.g. OR to PACU). If the board is not updated at the time of patient movement, the hospital staff and/or patient visitors may believe a patient is in a different unit, which can lead to a magnitude of problems. For example, we witnessed nurses who did not know where patients were located, who was responsible for the patient, and whether the family was aware of the patient's status. As a result, patient and family anxiety may increase, and non-value added waste, including wasted time from delays and errors, result.

Through our careful observation and data collection, we created a set of recommendations for a more user-friendly design that allows newcomers to easily understand the whiteboard. We also developed additional recommendations for enhancing communication and patient flow.

METHODOLOGY

Each member of the Ambulatory Surgery group visited the SDS unit several times (usually once per week) between Thursday, October 13, and Wednesday, November 30. These visits ranged from 1 to 2.5 hours, the majority of which was spent in the SDS nurse's station. We observed the department in pairs so that nothing was overlooked and to avoid overwhelming the staff with our presence.

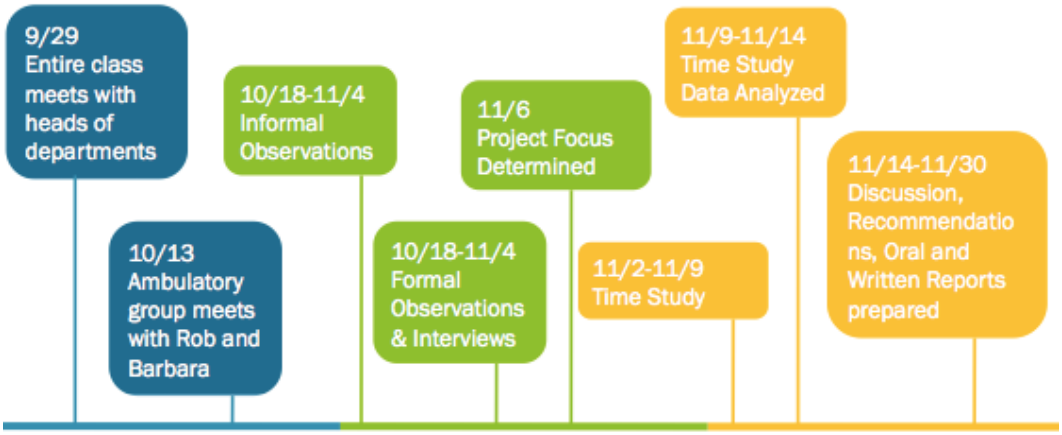


Figure 2. Timeline of SDS Project

During our observations, we asked clinicians questions to familiarize ourselves with the SDS layout and patient flow. For example, we asked what they thought could be done better or more efficiently to improve patient care and what verbal and visual systems they used to communicate. We also interviewed Barbara Walczyk regarding the upcoming expansion of the SDS unit and her perception of communication issues.

Initially, we recorded all of the operational issues we observed. Our goal was to find any inconsistencies in systematic processes, and then focus on a problem that could be accurately observed, measured, and possibly changed. While there were several issues concerning communication, the primary issue that directly contributed to the aforementioned patient flow problems that we initially observed, (e.g. discarded stickers), was the use of the whiteboard. Thus, we isolated the whiteboard as our primary focus.

Once we pinpointed this problem, we decided that the best way to measure the accuracies (or lack thereof) of the board would be to document the patient movements on the board and compare them with actual move times. First, we created a process map in order to determine the basic utilization of the whiteboard. For clarity, patient's stickers were supposed to be moved from the OR to SDS when the patients were moved from the OR to the SDS, and we wanted to measure any discrepancies between the time the patient was moved (as recorded by the OR) and the time of the sticker movement. To do this, we documented sticker movement times using patient numbers and a watch.

Thereafter, we sent the patient numbers to Robert Lawlis, who provided us with specific timing information from the OR. The data he gave us for each patient number are as follows: date, the time the procedure was scheduled for, what time the operating room was ready, the time the patient entered operating room, time of first incision, time of end of surgery, time patient left the operating room, and the name of the procedure. However, since we were comparing patient sticker movement times to OR recorded times, we primarily used the "time the patient entered the OR" and the "time the patient left the OR" for our quantitative study.

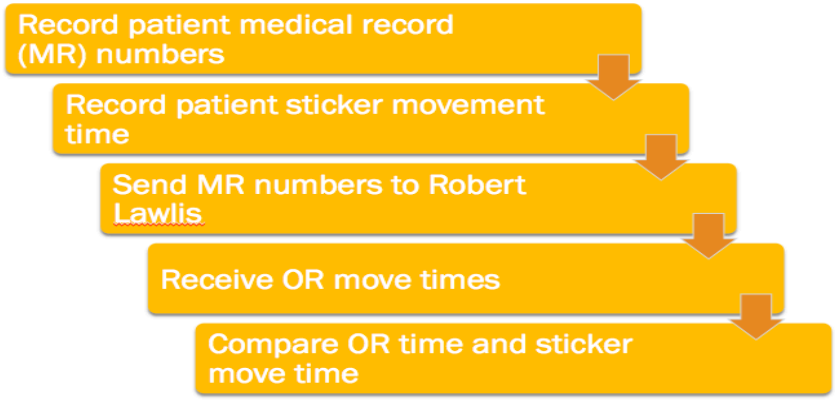


Figure 3. Data collection method

Additionally, once we honed in on the whiteboard process issue, we were able to ask nurses specific questions regarding the operation of the board, such as the meaning of the

sticker colors and what issues they had with the board utilization and organization. We took all of this information into account when making recommendations for how the board could be improved.

DISCOVERIES

Based on discussions with CMC staff, (primarily RNs and nurse's aides), we found that the majority of clinicians deemed that the patient board is difficult to understand initially, yet once they adapt to the color codes and sticker movements, they believe it is user-friendly.

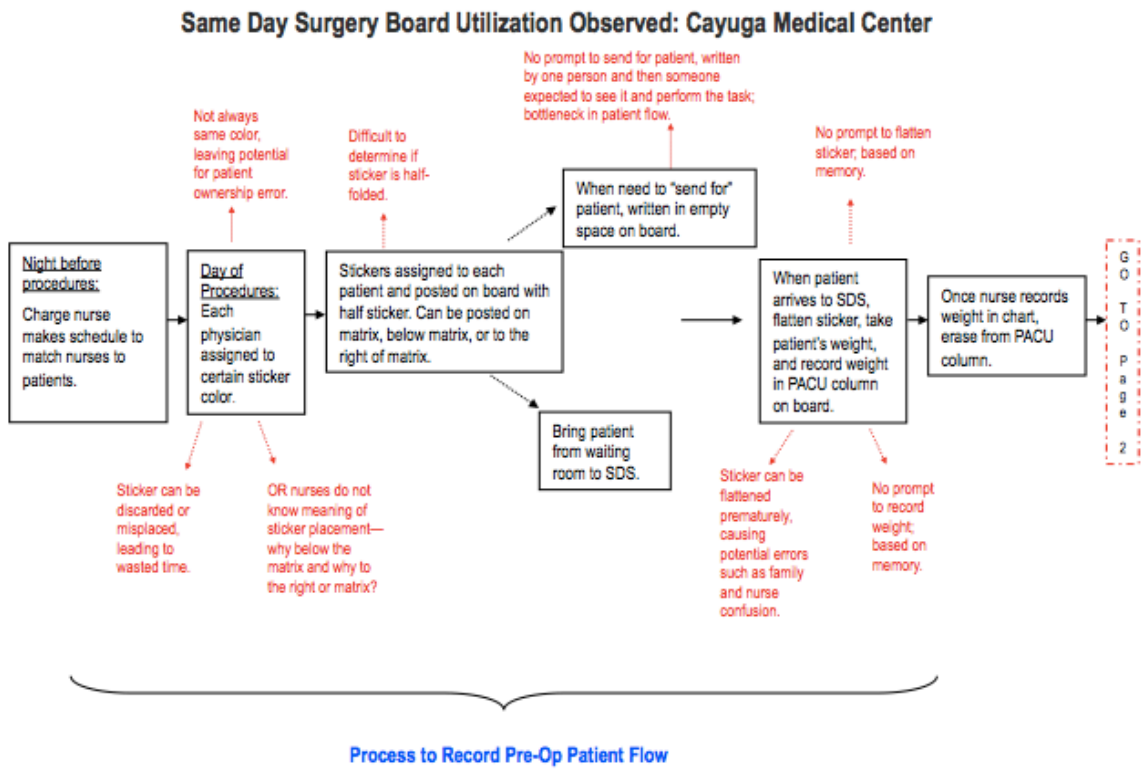
Our observations were particularly insightful, as despite clinicians' high regard for the whiteboard, we noticed various instances in which the complexity of the board caused wasted time and inhibited staff productivity. For example, when the OR was ahead of schedule, a staff member failed to call the incoming patient to inform them of their changed appointment time. As a result, patient flow was delayed and the surgeon was upset. Had the whiteboard included a prompt indicating a significant change in the schedule and the need to call the patient, this issue may have been prevented.

Staff Perceptions of Whiteboard		
POSITION	**COMMENTS**	**SUMMARY**
Charge Nurse	• One nurse is supposed to be in charge of moving stickers; only really happens on Wednesdays (busiest days). • Colored magnets are insignificant; should primarily rely on colored tags outside of rooms.	1. Inconsistent use of board. 2. Unnecessary complexity
RN	• Has worked in the unit since July and still doesn't understand meaning of colored stickers.	1. Difficult to understand
Travel RN	• Has worked in SDS one week, doesn't understand magnet and sticker colors. • Board is comparable to other places she has worked.	1. Difficult to understand 2. Similar to other flow systems

Nurse's Aide	• Not everyone (particularly OR nurses and physicians) understands the board. • Easy for her to use since used to the system. • Initially complex to learn.	1. Difficult to understand 2. Easy once adapt to system

Figure 4. Clinicians comments regarding whiteboard

In addition to our observations and discussions with clinicians, our process map helped isolate the barriers evident in the whiteboard utilization process. For example, we found that the whiteboard system is susceptible to misplaced/discarded stickers, no prompts are evident to move stickers or to get a patient from the waiting room, and the stickers can be moved ahead or behind of the patient's actual movement.



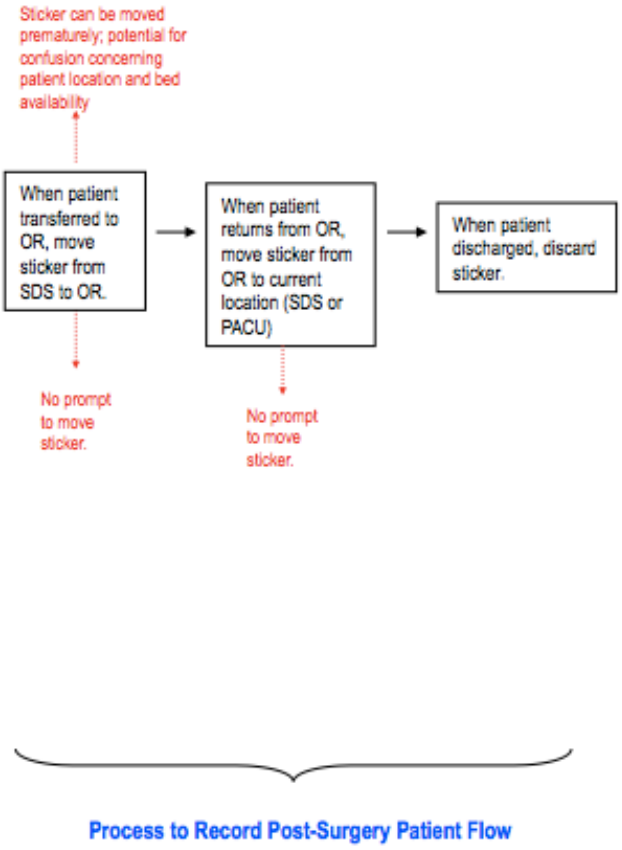


Figure 5. Process map of whiteboard utilization in SDS unit

In addition to conversations with clinicians and creating a process map, our time study helped indicate whether the patient stickers were moved in “real time” to properly monitor patient flow.

Figure 6. Observed sticker movements vs. CMC recorded movements.

Movement	Whiteboard Sticker Movement	CMC Recorded Movement	Difference
OR to PACU	3:32	3:38	6 Mins. Early
OR to PACU	4:07	3:37	30 Mins. Late
SDS to OR	4:03	5:10	67 Mins. Early
SDS to OR	10:46	11:43	57 Mins. Early
OR to PACU	10:46	9:30	76 Mins. Late
OR to SDS	11:02	9:38	84 Mins. Early
SDS to OR	2:21	12:56	85 Mins. Late
OR to SDS	2:46	3:17	31 Mins. Early
SDS to OR	1:03	1:30	27 Mins. Early
OR to PACU	5:39	4:15	84 Mins. Late
OR to PACU	6:38	5:43	55 Mins. Late
OR to SDS	4:17	5:00	43 Mins. Early
SDS to OR	1:32	12:59	33 Mins. Late

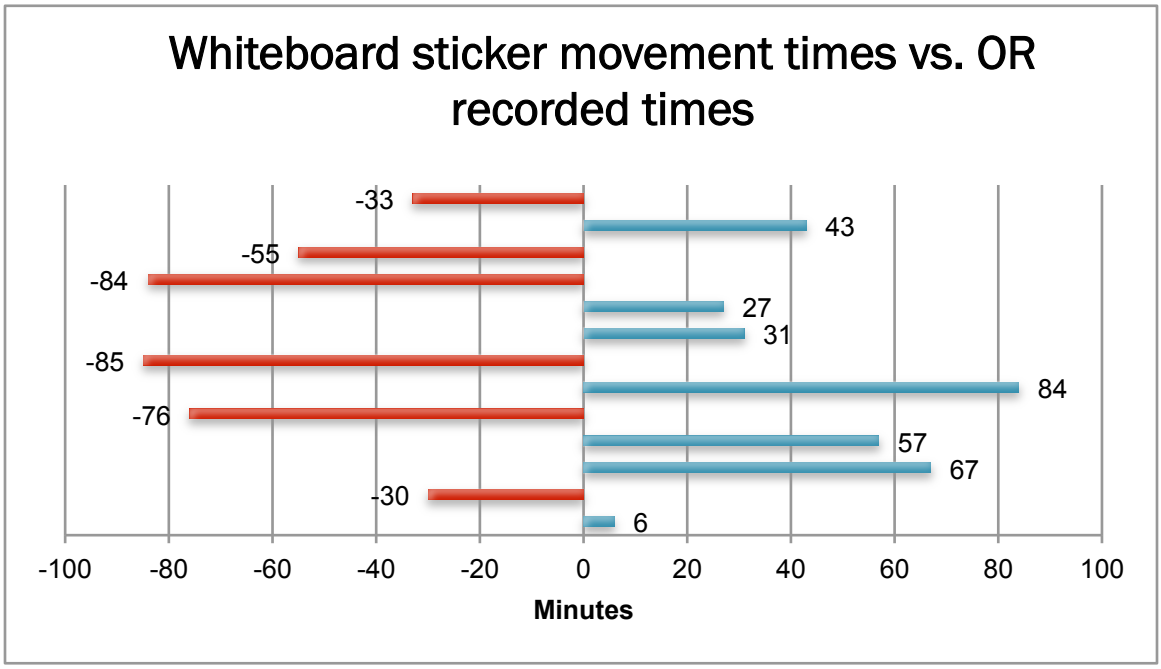


Figure 7. Number of mins. patient sticker was moved before or after OR recorded time

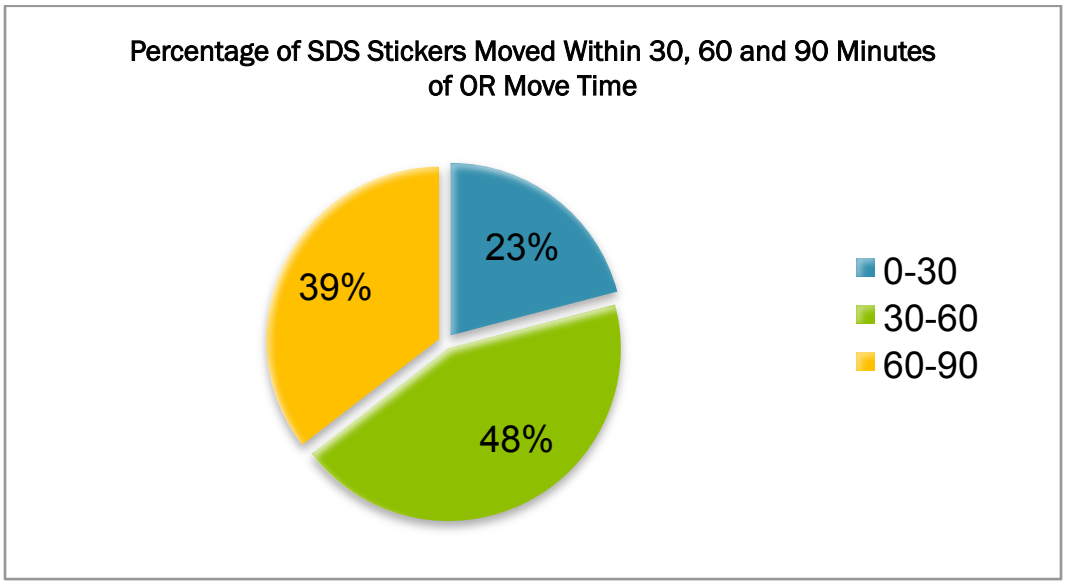


Figure 8. Patient sticker movement

As evidenced in Figures 6, 7, and 8 above, the sticker times are consistently moved much earlier or later than the patient is actually transferred. This indicates that they are *not* moved in "real time," meaning errors such as confusion about where patients are located and the inability to monitor schedule changes are inevitable.

DISCUSSION

Our aforementioned observations and time study helped us learn ample information concerning what is contributing to and impeding efficient patient flow within the SDS unit. First, identifying the issues associated with the whiteboard indicated that nurses do in fact accommodate to their setting and take the necessary measures to make it work. However, due to their ability to accommodate to the complexity of the whiteboard, they may not acknowledge or address the wasted time and productivity the board causes. This is evidenced by nurses' claims that the board is "fine once you learn how to use it." With this adaptation to, and routine use of the whiteboard, they may adopt a complacent "we've-always-done-it-this-way" attitude, potentially causing resistance to change (Berczuk, 2008).

As a result, we contend that in order to implement a more efficient, user-friendly whiteboard, the clinicians who frequently use the board must understand *why* the change is necessary. Thereafter, nurses, nurse's aides, and physicians must be involved in the revision of the board. Chabover et al. (2009) found that when staff members felt they were not part of the planning and implementation of a new resource, they did not take ownership of it or regard it as a useful tool. Therefore, with their inclusion in the decision-making process, clinicians within the ambulatory surgery department are more likely to accept the change rather than feeling as though they are forced to comply with the alterations and thus viewing them as a burden.

In addition, our findings directly relate to Chaboyer, et al,'s (2009) analysis of the impact of whiteboard utilization on patient flow. For example, we noted that the whiteboard facilitates the sharing of information without the need for face-to-face interactions. Also, it assists in "resource planning," such as bed availability and synchronized communication. However, as we discovered, whiteboards can also impede access to information and inhibit workflow (Chabover, et al., 2009).

By looking at the use of whiteboards in three inpatient wards in a university-affiliated teaching hospital, the authors found that whiteboards have the potential to improve patient flow, but a planned approach to their use is essential (Chabover, et al., 2009). We agree with this conclusion, as visual systems are clearly necessary for monitoring patient flow, but the board must be *properly used* in order to reduce waste, patient anxiety, and clinician confusion. Though the authors do not specify what "proper use" refers to, we believe that in the SDS unit, this entails hardwiring the use of the board, such as who moves the stickers, when they are moved, and who monitors the schedule to bring patients in and out of the units as efficiently as possible. Our recommendations for achieving this "proper use" of the board is further explored within our "recommendations" section.

LIMITATIONS

A significant limitation to our whiteboard analysis is the scarcity of "evidence-based design" and "evidence-based practices" regarding whiteboard utilization. Rather than addressing the use of whiteboards for patient flow, many studies examine the efficacy of using whiteboards within the patient's room to deliver patient-centered care. These boards are typically placed next to the patient's bed and contain basic information including the nurse's and attending's name, the patient's goal for the day, their anticipated discharge date, and family members' contact information (Sehgal, et al., 2010). The use of whiteboards in patient rooms has been found to improve teamwork, communication, and patient care (Sehgal, et al., 2010). However, few studies look at the use of whiteboards for patient flow purposes.

In addition to examining whiteboards at the bedside, studies primarily address the use of *electronic* patient flow systems. For example, Chahal, et al. compared whiteboards to electronic systems, and found that the electronic board provides real-time information about patient status and improves the responsiveness of the users. Nevertheless, the authors do not look at how the manual whiteboard could better simulate the electronic board.

Moreover, tools for enhancing communication seem to focus on *verbal* rather than *visual* communication. For instance, the American Association of Critical-Care Nurses outlines how to standardize verbal patient handoffs with tools such as "SBAR," which identifies the steps clinicians must take during a patient handoff. This includes a verbal explanation of the situation, the patient's background, and the physician's assessment and recommendations (AACN). However, clinical guidelines for visual communication are not evident.

The University Health Network in Toronto, Canada has published evidence-based visual communication methods for patients' use. For instance, when teaching a patient about his/her disease or condition, physicians are advised to draw a *simple* picture that highlights the area of

focus, such as the stomach (Wiens et al., 2008). Nonetheless, the health network does not address visual patient flow tools that are used by nurses, nurse's aides, and physicians. As a result of this apparent lack of guidelines and studies concerning the use of whiteboards for tracking patient flow, we primarily used our observations and conversations with clinicians to devise our recommendations.

Further, we were limited by the time frame of our analysis. Since our study was about five weeks, we did not collect a significant amount of patient move times for our quantitative study. Consequently, we had a small sample size of 13 movements. Similarly, we had to examine and isolate the issues we identified in the SDS unit in a short period of time, meaning we could not conduct a thorough analysis of each issue prior to delving into our study focus. We also had a steep learning curve going into the SDS unit concerning its purpose, how patient flow is monitored, and each clinician's role, forcing us to take time away from conducting our analysis in order to first understand the basics of the unit.

Ideally, we would conduct formal interviews with clinicians to gain their perspective of the efficacy of the whiteboard. However, due to time constraints and clinicians' busy schedules, we merely had informal discussions with RNs and nurse's aides. As a result, we could not compare clinicians' responses as efficiently as we could have if we asked each clinician a standard set of questions. Finally, we would also like to conduct a patient and family satisfaction survey to gather their perceptions of patient flow within the SDS, OR, and PACU units, including their wait times and communication with clinicians. With the survey results, we could grasp a patient-centered outlook on the key communication issues that they believe are adversely affecting patient flow, and determine what process changes could ameliorate those issues. Of course, time constraints forced us to specifically focus on the whiteboard rather than broaden our analysis to include formal interviews and surveys.

RECOMMENDATIONS

In addition to involving clinicians in the problem solving process as previously mentioned, we have devised various recommendations for creating a more user-friendly and up to date whiteboard. In addition to discussing how the whiteboard could be better designed, it is important to recognize that the process of managing the whiteboard needs to be improved.

First, there is a lack of role clarity in terms of who is responsible for, when and how the board should be updated. Two problems inherently arise from the current situation in which the Charge Nurse is technically the only person responsible for making changes to the whiteboard. This informal policy is not adhered to due to the impractical notion that every pre-operation nurse will report to the Charge Nurse when each patient is moved simply so the CN can move the sticker. The second problem is that due to this infeasibility, multiple nurses make changes to the whiteboard possibly for the patient they are responsible for, but also if they happen to receive a call from the OR or PACU nurse for a different patient.

This lack of consistency creates confusion about where the patient actually is and how close to "real-time" the information on the whiteboard reflects. An organized and interconnected team provides quality care through clear communication. Nurses will be able to demonstrate their accurate knowledge of patient status with established role clarity. Moreover, patient family members will be more at ease and rest assured knowing that their loved one is in the hands of professionals who care as much about the patient as they do.

Secondly, a protocol for orientation of the patient board should be implemented. Currently, the way the whiteboard operates is simply explained to any newcomers. It is assumed that as time passes, experience and familiarity of procedures will eliminate any remaining confusion about the board, which is not necessarily true. For example, an RN that has been there since July still does not fully comprehend the meaning and purpose of the colored magnets. This lack of understanding presents the opportunity for each nurse to

interpret and operate the board at their individual discretion, rather than corresponding with an established overarching decorum. An orientation process for new personnel, including doctors and nurses who work in other departments but occasionally assist the SDS unit nurses, should be implemented to acquaint them to each aspect of the board and its significance.

It is important to keep in mind that no matter what type of patient board or recording method is present, whether the board is handwritten or computerized, the information provided ultimately relies on human responsibility rather than being completely automatic. Creating this standardized process applies to either the whiteboard or an electronic patient board that might be acquired in the future. Accordingly, the orientation will improve consistency and at least ensure all employees are on the same page.

Given these premises, we would like to make two physical recommendations. One will be the ideal alternative and the other will be a pragmatic solution to the current whiteboard situation. Providing a digital version of the whiteboard would naturally improve several of the constraints of the current patient flow board. However, we recognize that an electronic system may not be financially feasible immediately; hence we propose a pragmatic solution.

In an ideal situation, the SDS unit would highly benefit from an electronic patient flow system that eliminates inefficiencies in stickers and other colored markers. Currently, time is wasted when nurses consult with each other about which stickers should be moved and to which section of the board. Nurses have also complained about differing sticker methods, (e.g. partially folding the sticker means patient is not in SDS yet), which causes confusion about actual patient status. Multiple nurses searching for lost stickers, which were unintentionally discarded into the wastebasket directly under the board, is another example of unproductive time spent due to the whiteboard. Additionally, an electronic system would allow the SDS patient information to be synced with the OR and PACU. In doing so, the computerized update would eliminate the need for a phone call from the other departments to relay a patient move.

The Emergency Department (ED) has had an electronic board since 2007. Among other data, it includes the room number, priority number, patient information (initials, age, and gender), department, attending physician, and total time in the room. Every computer in the ED has access to the “CMC Public Tracker” as well as a couple of floaters from the ICU who assist a couple days a week. Not displayed on the public monitor but indicated on the nurses’ station computers is more detailed patient information and notes that nurses can add and update as needed. If the SDS were to adopt a similar system, the computers that are presently underutilized and mainly provide Lab status would be used to a fuller capacity. Furthermore, the screen can display waiting room status for patients, which would decrease patient anxiety and frustration for both patient and doctors.

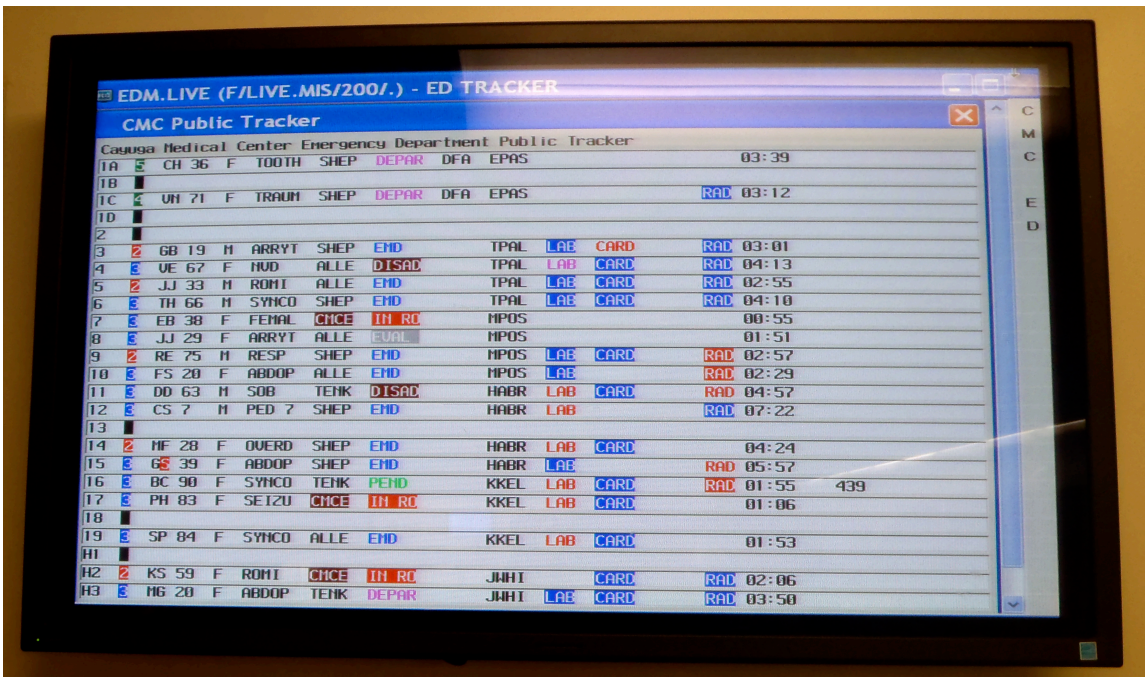


Figure 9. ED Electronic Patient Flow Visual System

The intermediate solution to the manual whiteboard system is renovating it to a user-friendlier version. Since whiteboards are relatively inexpensive and require little maintenance, it is a decent tool to monitor patient flow. The issue lies in that the updates are not concurrent with the actual patient moves. Thus, we recommend enlarging the existing matrix for a clearer

and more legible board. The OR and PACU columns on the right indicating the patient has been admitted to the floor should be eliminated from the board because it is no longer pertinent to the SDS. A long line of magnets, never moved during observation, on the lower right hand corner is also contributing to the complexity and clutter. Colored circle magnets indicating the room status (e.g. clean room) should be removed because it is redundant to the colored flags located at the opening of each SDS bay. These changes are exhibited in Figure 10 below.

DATE	CHARGE NURSE					
NURSE	BAY	SDS	Vitals/ Notes	OR	PACU	IN WAITING
	1					
	2					
	3					
	4					
	5					
	6					
	7					SHIFTS SDS / PACU
	8					
	9					
	10					
	11					
	12					
	13					
	14					

Figure 10. Whiteboard revised

CONCLUSION

Enhancing patient flow in the SDS unit by improving the whiteboard visual communication system is a rather convoluted issue. For instance, during our various observation periods, we noticed times in which the board was not updated in a timely manner, which can lead to a magnitude of problems regarding the efficient and effective flow of patients. Also, the complexity of the issue is evidenced by our finding that clinicians do not regard the

whiteboard as a problem that needs to be addressed, and our realization that there is no “right” or “perfect” solution to improving the board’s flaws.

Nevertheless, our observations, time study, and conversations with clinicians have undoubtedly demonstrated that revisions to the whiteboard and to the patient flow process are vital. Our recommendations, including the creation of a less complex whiteboard and clinician orientation sessions aim to decrease the non-value added waste we observed in order to increase patient and family satisfaction, reduce patient and family stress and anxiety, and ultimately, improve patient outcomes. If Cayuga Medical Center truly wants to deliver patient- and family-centered care “one person at a time” within the ambulatory surgery department, our analysis has demonstrated that addressing the SDS whiteboard is essential.

WORKS CITED

Berczuk, Carol. (2008). The Lean Hospital. The Hospitalist. Retrieved from http://www.the-hospitalist.org/details/article/186537/The_Lean_Hospital.html

Chaboyer, Wendy. (2009). Whiteboards: one tool to improve patient flow. Medical Journal of Australia,190(11), 137-140. Retrieved from http://www.mja.com.au/public/issues/190_11_010609/cha11182_fm.pdf

Chahal, Kirandeep, et al. Understanding the Impact of White Board on A&E Department Operations Using Hybrid Simulation. Multidisciplinary Assessment of Technology Centre for Healthcare.Retrieved from http://www.systemdynamics.org/conferences/2009/proceed/papers/P1244.pdf

Chung, F., Ritchie, E., & Su, J. (1997). Postoperative pain in ambulatory surgery. Anesthesia & Analgesia, 85(4), 808-816. Retrieved from http://www.anesthesia-analgesia.org/content/85/4/808.full.pdf+html

Chung, F. (1995). Recovery pattern and home-readiness after ambulatory surgery. Anesthesia & Analgesia, 80(5), 896-202. Retrieved from http://www.anesthesia-analgesia.org/content/80/5/896.full.pdf+html

Communication and documentation tips for ambulatory surgery centers. Surgistrategies: Solutions for Outpatient Healthcare, (2008). Retrieved from http://www.surgistrategies.com/articles/2008/01/communication-and-documentation-tips-for-ambulato.aspx

Cote, Murray J.(2000).Understanding patient flow. Decision Line. Retrieved from http://www.decisionsciences.org/decisionline/Vol31/31_2/31_2pom.pdf

Fleisher, Lee A. et. al., (2007). A Novel Index of Elevated Risk of Inpatient Hospital Admission Immediately Following Outpatient Surgery. Archives of Surgery. Retrieved from www.archsurg.com

Gandhi, Tejal K. (2005). Fumbled Handoffs: One Dropped Ball After Another. Annals of Internal Medicine, (142) 5, Retrieved from http://www.annals.org/content/142/5/352.full.pdf+html

Hayes, H. (2011, October 27). Communication skills key in ambulatory surgery centers [Web log message]. Retrieved from http://www.karlbayer.com/blog/?p=11394

Runy, Lee Ann. (2008). Patient Handoffs. Hospitals and Health Networks. Retrieved from http://www.hhnmag.com/hhnmag_app/jsp/articledisplay.jsp?dcrpath

SBAR Handoff Communication Tool. American Association of Clinical-Care Nurses. Retrieved from http://www.aacn.org/WD/HWE/Docs/SBARCard.pdf

Sehgal, Niraj L., et al., (2010). Patient Whiteboards as a Communication Tool in the Hospital Setting: A Survey of Practices and Recommendations. Journal of Hospital Medicine.(5)4, Retrieved from http://hospitalmedicine.ucsf.edu/downloads/patient_whiteboards_as_a _communication_tool_in_the_hospital_setting_jhm.pdf

Wienes, Jenna, et al., (2008). The Anatomy of Effective Visual Communication. University Health Network. Retrieved from http://www.hcea-info.org/handouts08/docs/poster1.pdf