AMERICAN UNVERSITY OF BEIRUT

REENGINEERING THE DISCHARGE PROCESS IN THE CORONARY CARE UNIT

by

GRACE VREJ KURKJIAN

A project
submitted in partial fulfillment of the requirements
for the degree of Master of Science
to the Rafic Hariri School of Nursing
of the Faculty of Medicine
at the American University of Beirut

Beirut, Lebanon
January 2014

AMERICAN UNIVERSITY OF BEIRUT

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By

GRACE VREJ KURKJIAN

Approved by:

Dr. Nuhad Yazbik Dumit
Assistant Professor
Rafic Hariri School of Nursing

First Reader

Dr. Huda Abu-Saad Huijer
Professor & Director
Rafic Hariri School of Nursing

Second Reader

Date of project presentation: January 10, 2014

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ACKNOWLEDGEMENTS

Special thanks to Mrs. Sana Kanaan, the Coronary Care Unit nurse manager and the Coronary Care Unit nursing staff for their support and encouragement throughout the project.

My recognition and gratitude to Dr. Dany Badreddine for his guidance and mentorship throughout this project and to Dr. Ziad Ghazzal and Dr. Hussein Ismail for their support and appreciation.

AN ABSTRACT OF THE PROJECT OF

Grace Vrej Kurkjian for Master of Science
Major: Nursing Administration

Title: Reengineering the Discharge Process in the Coronary Care Unit

Emergency department (ED) boarding is a problem faced by many medical centers around the world. One of the main causes of ED boarding is hospital occupancy, which is determined by the balance between the hospital inpatient admission and discharge rates. One of the most important strategies for optimizing hospital occupancy and therefore reducing ED boarding is early inpatient discharge.

Based on a graduate course group project, it was revealed that the discharge process at the Coronary Care Unit (CCU) at the American University of Beirut Medical Center (AUBMC) is flawed, whereby patients would have to wait for five hours to complete their discharge process. The aim of this project is to map the discharge process in CCU and introduce changes through a re-engineered discharge process which includes a discharge checklist.

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CHAPTER I

INTRODUCTION

The process of discharging a patient from a hospital bed and admitting a new patient to that same bed is called "patient throughput". It is a multidisciplinary process that requires efficient and effective coordination and continuous communication (Tortorella, Ukanowicz, Douglas-Ntagha, Ray, &Triller, 2013). In the absence of effective coordination and communication, the whole process is disrupted, creating setbacks which may lead to increased length of stay, reduced quality of care, and increased hospital costs in terms of lost revenue (Tortorella et al., 2013).

The discharge of patients is a process of its own and requires careful planning and preparation. The earlier and the more efficient the discharge process is, the better the outcomes (Huber & Blanco, 2010). Early discharge planning ensures that the patient's continuing care needs are met even after discharge, thereby reducing post-discharge adverse events, and reducing hospital costs (Holland, Rhudy, Vanderboom, & Bowles, 2012). Furthermore, the Joint Commission International (JCI) (2010) recommends that hospitals and medical centers have a standardized discharge process and a properly documented discharge plan that is shared with the patient and his/her family.

Based on a previous graduate course group project which I was part of, I have evidence to believe that the discharge process in the Coronary Care Unit (CCU) at the American University of Beirut Medical Center (AUBMC) is flawed, causing delayed

transfer of cardiac patients from the emergency department (ED) to the CCU. On this notion, I decided that my final graduate project would build on the previous group project with the goal of improving the discharge process in CCU.

A. Background

The CCU at the AUBMC is a mixture of a closed and open unit with a total of twenty beds; eleven telemetry beds for relatively stable patients and nine monitor beds for critically ill patients. Working in the CCU for almost seven years, I have constantly heard patients complain about the discharge process, how long it takes, and the many flaws that exist in the process flow. This was verified to me through the previous graduate course group project which I was a part of called "Process Mapping Patient Flow in the Emergency Department and the Coronary Care Unit". In this project, my colleagues and I mapped the process of admitting a patient from the ED to the CCU; we were able to identify flaws and recommend solutions. We found that after a patient in the ED is diagnosed to be admitted to CCU, it took almost five and a half hours to get that patient to CCU. Moreover, the project identified that the main time waster in the whole process was the discharge process in CCU; after a patient is decided to be discharged by the attending physician, it took around five hours for that patient to leave the hospital, despite having been cleared for discharge.

While trying to find the standard procedure and discharge policy at AUBMC, I found that the policy regarding the discharge process at CCU is combined with the

admission policy and is called “Adult Critical Care_ Admission and Discharge Criteria of Coronary Care Unit” (See Appendix I). This policy only states the criteria for admission and discharge to CCU; it does not explain nor direct a standardized discharge process to be followed by the multidisciplinary team.

In the notion of building on my previous group project, as an MSN student I joined a taskforce created by the Heart and Vascular Center (HV) at AUBMC to work on the Admission/Discharge Process in CCU. My mentor in this project was the administrator of the HV center and my task was to work on expediting the discharge process.

B. Significance

This project’s significance is threefold: it addresses (1) the efficiency of hospital operations,(2) patients’ concerns, and (3) the working dynamics of nurses.

1. Hospital operations efficiency

According to Ortiga et al. (2012), the lack of a policy for a standardized admission and discharge process presents a major drawback in bed management and resource management. Ortiga and colleagues (2012) stated that “optimal bed management is a strategic aim in any hospital as the provision of an inpatient bed, together with the staff and supplies involved, accounts for much of its most complex and expensive activity.” (p. 1). The researchers maintained that bed management affects the performance of other hospital

departments such as the ED and the operating room, because they rely on bed availability and vice versa.

2. Patient concerns

From a patient's point of view, whether it is the admission process, which relies on bed availability, or the discharge process, efficiency and timeliness are key factors. For patients in the ED needing admission to the hospital, transfer to an inpatient unit has to be done as quickly as possible; efficiency in this process increases patient satisfaction by decreasing waiting time and by providing optimum, specialized care (Ortiga et al., 2012). As for the discharge process, based on my experience as a CCU RN and in agreement with Oritga and his colleagues (2012), I have witnessed how impatient, angry, and frustrated patients and their families become when their discharge process is delayed; this delay in the final stage of the patient's stay in the hospital can affect the patient's evaluation of his entire hospital stay.

3. Nurse work dynamics

Delays in the admission/discharge process highly impact the nurse's work by increasing the nurse-to-patient ratio, thereby increasing work pressure on the nurses and decreasing their job satisfaction. Not only nurses are affected by inefficiencies in the discharge process, but all healthcare team members who are involved in the process. Connelly et al. (2009) conducted a series of focus groups whereby doctors, nurses, social

workers, and therapists shared their experience and discussed the pressure they were submitted to when it came to preparing a patient for discharge. They expressed feelings of frustration and anxiety stemming from the unorganized and inefficient discharge planning of patients, forcing them sometimes to ignore patients' wishes and concerns.

C. Statement of purpose and project scope

The purpose of this MSN final project isto map and improve the process of discharging a patient from CCU at AUBMC. As part of the HV taskforce, I was able to develop an observation-based process map and identify the problem areas in the discharge process, and then propose an improved process with the introduction of a "discharge checklist".

Since the discharge process in CCU was already mapped in the previous graduate course group project, the HV administrator and I used the data from the previous project and added to it by conducting a more detailed observation of the discharge process at CCU for a period of two weeks. After observations were made and data sorted, the process was presented to the taskforce and flaws were identified.

CHAPTER II

REVIEW OF LITERATURE

The literature in this project is presented in themes of consequential events. The first part represents literature on ED boarding and its effects on the hospital and patient care; this is followed by research on the main reason of ED boarding and access block which is hospital occupancy. The third theme of the literature discusses hospital admission and discharge rates as the components of hospital occupancy and how the balance between them can affect it. The fourth and final part of the literature review represents evidence on how discharging patients earlier can significantly improve hospital occupancy, thereby decreasing the incidence of ED boarding and access block.

A. ED boarding and its effects

Discharge planning begins the moment the patient is admitted to the hospital; it is a dynamic process whereby the discharge plan can be subjected to changes depending on the patient's progress during hospitalization. For both the healthcare provider and the patient, the main goal of discharge planning is continuity of care, in order to prevent the development of complications at home and avoid readmission to the hospital (Huber & Blanco, 2010). In addition, the hospital aims for an effective and efficient discharge process to avoid wasting resources and ensure availability of beds (Tortorella et al., 2013).

The importance of the discharge process lies in its complexity and in the consequential events that might occur if discharge is delayed. It is a multidisciplinary task which necessitates effective communication and coordination; any hindrance or delays at any point in the process could cause cumulative consequences (Tortorella et al. , 2013). Such a consequence is patient boarding in the ED (Derlet& Richards, 2000).

Levin, Dittus, Aronsky, Weinger, Han, Boord, and France (2008) defined "boarding" as "holding admitted patients in the ED until an inpatient bed becomes available" (p. 1202); they believe that boarding could potentially hinder timely therapy for patients. According to Levin et al.(2008), ED boarding is mainly caused by excess inpatient demand and limited capacity, especially in the cardiology departments. This in turn could lead to thousands of dollars in lost revenue for the hospital (Falvo, Grove, Stachura, &Zirkin, 2007).

Another factor which is affected by ED boarding is patient satisfaction. A study by Pines, Iyer, Disbot, Hollander, Shofer, and Datner (2008) revealed that prolonged waiting times in the ED is associated with decreased patient satisfaction with ED services and a lower satisfaction with the overall hospitalization. The discharge process is a very important step in the hospitalization journey; if not done properly, it could lead to a chain reaction of unwanted consequences starting with limited access to hospital beds, thereby causing ED boarding, which in turn leads to revenue loss, and finally decreased patient satisfaction.

B. ED boarding and hospital occupancy

In order to validate that hospital occupancy is the main reason behind ED boarding, Forster, Stiell, Wells, Lee, and Walraven (2003) performed a 6 year retrospective study, whereby a hospital's inpatient admission database was cross tabulated with the ED patient registration database, in order to identify the time it took for a patient to get from the ED to an inpatient bed. This number was then cross-referenced with the hospital occupancy on each day, which revealed a significant association between hospital occupancy and ED boarding. The researchers found that with a 10% absolute increase in hospital occupancy, patients in the ED waited 5% longer to get to an inpatient bed, and the maximum amount of waiting time was when the hospital occupancy exceeded 90%. This positive relationship between hospital occupancy and ED waiting time makes us conclude that ED boarding can be decreased by decreasing hospital occupancy; this can be done either by increasing bed capacity or by making beds available through discharges. One would agree that the latter of the two is the more practical and more logical approach since increasing bed capacity involves a radical change with major financial liabilities. Forero, McCarthy, and Hillman (2011) share the belief of Forster and colleagues about occupancy and ED crowding; they state their view based on deductive reasoning saying that "when bed occupancy rates are reduced, patient flow improves by allowing patient transfer to the wards, which, in turn, frees up EDs, so that patients from the waiting room or ambulance bay can be seen and processed, reducing ED length of stay, ambulance diversion, and operating room cancellations" (Forero, McCarthy, & Hillman, 2011, p. 4).Moreover, the problems of hospital occupancy and its effect on access block are not isolated in the US, UK, or

Australia; it is an international problem which hospitals around the world suffer from. Ajami and Ketabi (2007) studied and analyzed the discharge process at Kashani Hospital in Esfahan, Iran in 2004; they initiated this study in response to research in Iran which showed that unorganized and uncoordinated discharge processes in medical centers in Tehran had resulted in delays in discharge and patient dissatisfaction. The researchers found that the average time to complete a discharge process was about five hours. According to Ajami and Ketabi (2007), the factors which led to this delay in decreasing order were: attending physicians delaying visiting their patients, interns and residents delaying the completion of the discharge instructions, the absence of a Hospital Information System, and the absence of proper and standardized discharge guidelines for involved personnel to follow.Another nation which is concerned with proper discharge planning is Japan. However the healthcare system there has found ways in which to reduce gaps in the discharge process by introducing the role of a discharge planning nurse (DPN); this nurse is responsible for overseeing the entire discharge process, especially for critically ill patients, in order to secure a holistic, safe, and fast transition from the tertiary care setting to the home setting, thereby reducing errors and improving outcomes. (Tomura, Yamamoto-Mitani, Nagata, Murashima, and Suzuki, 2010).In conclusion, we can say that hospital occupancy and its effect on ED boarding is a worldwide problem; and the most feasible approach to decreasing hospital occupancy is by making beds available through proper discharge planning coordinated by discharge planning nurses or case managers.

C. Hospital occupancy and admission/discharge balance

The process of discharging patients alone does not always ensure bed availability; it is the balance between demand and supply, the effective execution of the processes of admission and discharge that makes hospital beds available. A perfect restatement of this notion is by Ortiga et al. (2012, p. 2):

> "The hospitalization process has three main stages: an admission, an inpatient period and a final stage with the discharge process. An inefficient bed management in any of the three stages of the hospitalization can cause a mismatch between demand and capacity."

Khanna, Boyle, Good, and Lind (2011) investigated the relationship between admissions and discharges and their impact on hospital occupancy; specifically, they studied the peak timing of admissions and discharges and its effect on hospital overcrowding. The authors believe that the optimization of inpatient bed occupancy can be achieved through coordinated bed management programs. When creating these programs, one must consider the peak timings of admissions and discharges; in the majority of hospitals around the world, the peak time for admission is during the morning, however the peak time for patient discharges is in the late afternoon (Khanna et al., 2011). In their research study, Khanna et al. (2011) sought to find evidence that discharging patients earlier during the day would improve hospital occupancy. The authors gathered admissions data and occupancy data from 23 public hospitals in Queensland, Australia over a period of 30 months (913 days) from October 2007 to March 2010 and divided them into hourly intervals; they were then able to measure mean occupancy, peak occupancy and length of

stay (LOS) for each of the hourly intervals with reference to the peak hourly admission and discharge rates. They classified the 913 days into five different categories based on the relationship between the daily peak admission and peak discharge timing curves. The five categories are as such:

- Category 1: discharge peak leads admission peak by more than five hours.
- Category 2: discharge peak leads admission peak by less than or equal to five hours.
- Category 3: discharge peak and admission peak overlap (within a one-hour interval).
- Category 4: admissions peak leads discharge peak by less than or equal to five hours.
- Category 5: admissions peak leads discharge peak by more than five hours.

The researchers found that the bulk of the 913 days fell within Category 5 where admission peaks led discharge peaks (Khanna et al., 2011). They also found that hospital occupancy and peak occupancy were significantly higher in Category 5 than in all other categories ($P<0.0001$), and those numbers decreased when the discharge curve started leading the admission curve (Categories 1,2, & 3); thus showing that overcrowding was significantly higher during the days when the admission curve led the discharge curve (Category 5). Furthermore, the researchers identified a pattern in the curves such that the admission curve led the discharge curve during weekdays, and it was just the opposite during the weekends. The authors concluded by stating that their analysis provides

evidence that discharging patients earlier (when discharge curve leads admission curve) can reduce hospital occupancy and overcrowding (Khanna et al., 2011).

Khanna, Boyle, Good, and Lind (2012a) wanted to explore further and find evidence that early discharge can actually reduce hospital occupancy, and they wanted to study the effect of early discharge on ED LOS and access block. The same data from the previous study was used with the same categorization of days; in addition, data on ED LOS and access block were calculated. When analyzing the effect of the discharge peak timing on occupancy levels, the researchers found that on the days when the admission curve led the discharge curve, the mean occupancy levels and the peak occupancy levels were significantly higher than the levels in the other categories ($P<0.001$); this confirmed their findings in their previous study. As expected, the researchers found that access block and ED LOS were significantly higher on category 4 and 5 days (when admission peaks were leading discharge peaks) in comparison to the other categories ($P<0.001$) (Khanna et al. , 2012a). With these results, the authors concluded that early discharge of patients, whereby the discharge peak leads the admission peak, can significantly improve patient flow in the hospital and reduce ED access block.

D. Early discharge

So far we have found evidence that the main reason behind ED overcrowding and access block is increased hospital occupancy, and in turn early discharge can significantly reduce that.What remains to be asked is how early patients should be discharged.

In their article, Khanna, Boyle, Good, and Lind (2012b) stated that most research about hospital occupancy and its effect on patient outcomes is focused primarily on ED wait times and limited to single-hospital studies; they believe that a "comprehensive analysis of how patient flow parameters and discharge initiatives relate to occupancy across hospitals of various sizes and settings" (Khanna et al., 2012b, p. 511) is missing, and their aim was to fill that gap. So they built further on their research relating ED boarding to hospital occupancy and early discharge to answer the above question. The researchers used observation and simulation techniques to study the impact of shifting discharge times on occupancy levels. In addition to using the same data from the 23 hospitals as in the previous studies, the researchers shed light on the variability of the hospitals stating that they represent small and large scale hospitals in urban and remote areas. They found that at lower occupancy levels, both the ED and inpatient admission rates were respectively similar to the ED and inpatient discharge rates across all hospitals. But as occupancy levels increased, three stages of performance change were noted at occupancy levels 91%, 96%, and 99%; the researchers identified these three stages as "choke points". At each and every chokepoint, meaning that the higher the hospital occupancy levels whether in small or large scale hospitals, the mismatch between the ED and inpatient admission rates and the ED and inpatient discharge rates increased; so the higher the occupancy levels, the higher the admission rates in comparison to the discharge rates.

Furthermore, the researchers constructed a simulation using real patient data, and they created five discharge scenarios where patients are discharged up to two hours earlier

and up to two hours later; this enabled them to study the effect of shifting discharge time on patient flow. The five different scenarios are:

- 2 hours earlier
- 1 hour earlier
- Actual discharge time
- 1 hour later
- 2 hours later

For each of the discharge scenarios, hospital occupancy levels were analyzed and compared for all 23 hospitals together, and as groups using Pearson X^2- tests of association ;$P \leq 0.05$ was used for statistical significance. The researchers were able to establish that early discharge can indeed impact hospital patient flow; the improvements in the occupancy levels as a result of the different discharge scenarios were significant ($P<0.001$). "Under the original discharge schedule, analysisof patient flow across 23 hospitals reported an averageoccupancy of 93.7%, and a maximum occupancyof 110.8%. Discharging patients 1 h earlier led toan improved average occupancy of 92.6%, and animproved maximum occupancy of 108.6%. Dischargingpatients 2 h earlier further reduced averageoccupancy to 91.6%, and maximum occupancy to106.1%. Delaying discharge by one, and then 2 h, ledto worsened average occupancy of 94.8% and 95.8%,and maximum occupancy of 113.6% and 115.6%, respectively" (Khanna et al. , p. 512, 2012b). In other words, the earlier patients were discharged from the hospital, the less and better the average occupancy, and vice versa. Moreover, discharging patients two hours earlier caused a significant drop in the percentage of time for which the hospital

occupancy remained above 95%, as compared to discharging patients at regular timings (from 34.7% to 21.5%, P<0.001). Whilst discharging patients two hours later increased the hospital's state of being occupied above 95%, to over 45% of the time.

Khanna et al. (2012b) concluded that: "the results validate the perceived benefits of early discharge strategies, with even 1 h earlier discharge significantly reducing overcrowding ($P < 0.001$).The findings support management initiatives to introduce early discharge strategies" (p. 515). The researchers' recommend that hospitals analyze their operational performance and their system mechanisms in order to identify their chokepoints which impede patient flow, and design capacity management strategies that revolve around effective and efficient discharge strategies which allow earlier discharge peaks. Powell, Khare, Venkatesh, Roo, Adams, and Reinhardt (2012) took a similar approach to study the effect of early discharge on ED boarding. The objective of their study was threefold: (1) a sensitivity analysis on changing the practice of discharge timing and making it earlier, (2) having 75% of inpatients discharged by 12 noon, and (3) having all inpatients discharged between 8:00 am and 4:00 pm. Just as Khanna et al. (2012b) had done, they used a computer modeling analysis to test their objectives. The sensitivity analysis showed that discharging patients four hours earlier on weekdays eliminated ED boarding, and discharging 75% of patients by noon and all inpatients between 8:00 am and 4:00 pm, decreased the total patients ED boarding time from 56.3 hours to 3 hours per day.

As a summary, Khanna et al. (2012a; 2012b) and Powell et al. (2012) have extensively investigated the relationship between access block, ED overcrowding, and discharge timing. From their studies and from the literature review presented above, we

can conclude that discharging patients even an hour earlier from the average discharge time can significantly reduce hospital occupancy rates, thereby decreasing ED overcrowding and the incidence of access block, and consequently improving the delivery of care.

CHAPTER III

MAPPING PATIENT DISCHARGE AT VARIOUS STAGES

As stated previously, this project was built upon a previous graduate course group project which I was a part of; in that project the admission of a patient from the ED to the CCU was process mapped and analyzed. A summary of the group findings and recommendations follow.

A. Graduate course group project phase

The group project in the graduate course identified several time wasters and inefficiencies. In the admission process from the ED, they found that there was no clear-cut policy that indicated who from the ED should secure a bed in CCU, and so several people were repeating that action and thereby wasting time. The group also identified that the main delay for admitting the ED patient to CCU was indeed the delayed discharge process in CCU, coinciding with the data presented in the literature review. The main timewaster in the discharge process was the delay caused by the CCU medical team who refused to finalize discharge orders and instructions until the end of their morning rounds, thereby delaying everything for another two and a half hours. Other timewasters included securing third party guarantor approvals due to lack of coordination, and securing transportation to home secondary to lack of planning.

Following is the process map drawn by the group; it is a detailed illustration of the admission of a patient from the ED to CCU and of the discharge of a patient from CCU. It also includes the processes which the patients go through in the admission office and the billing department. The figure clearly shows that the delayed discharge in CCU is what delays the admission of ED patients to CCU whereby the patient has to wait six hours to get to a CCU bed.

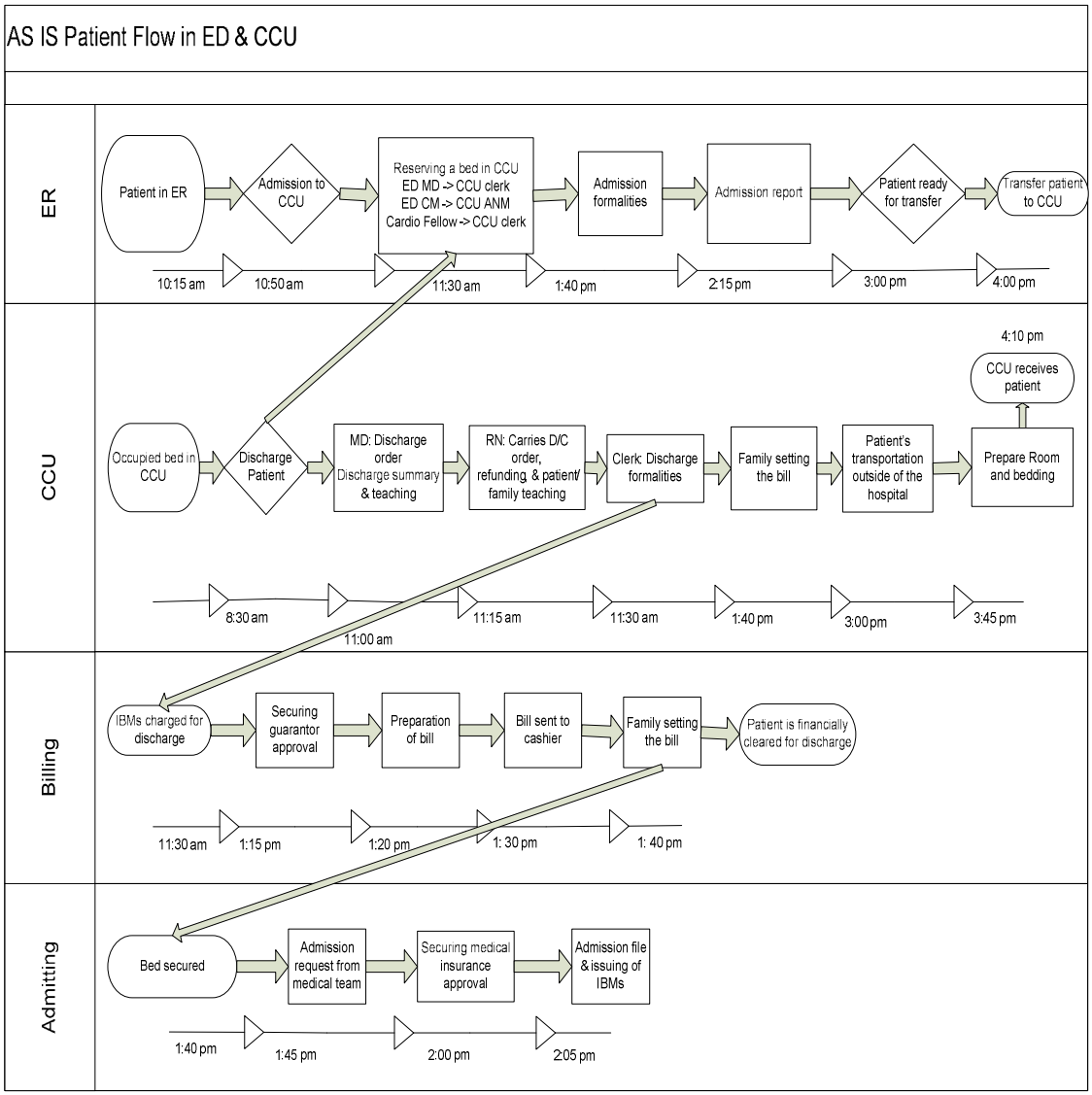

Figure 3.1 AS-IS Patient flow in the ED and CCU- graduate course phase

The group recommended several improvement strategies, such as a standardized communication channel between the ED and CCU, an early discharge planning, a standardized process for securing third-party guarantor approval, and better coordination and planning with the patient and his/her family throughout the discharge process. The following represents the TO-BE process map with the changes that were suggested by the group to improve the process of admitting a patient from the ED to the CCU; the main change that was proposed by the group was the early discharge of patients from CCU whereby discharge preparations such as discharge orders and instructions would be done a day before discharge. The group expected that by doing so, the patient in CCU would be discharged at 10:00 am and therefore the ED patient would arrive to CCU at 12:15 pm, thereby decreasing delay by four hours.

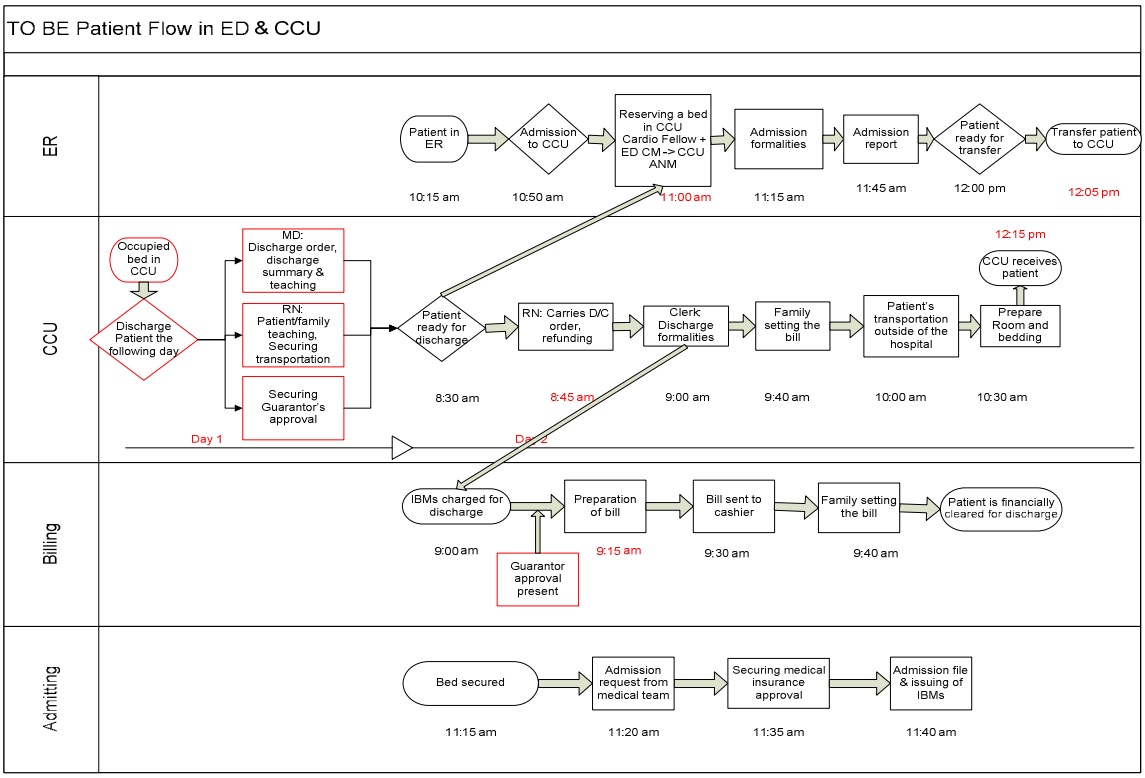

Figure 3.2 TO-BE patient flow in ED and CCU- graduate course phase

B. HV taskforce phase

Based on the above data, and in close coordination with my mentor, I conducted further observations with a focus on the discharge process in CCU and added observations to the current AS-IS and the TO-BE processes as such:

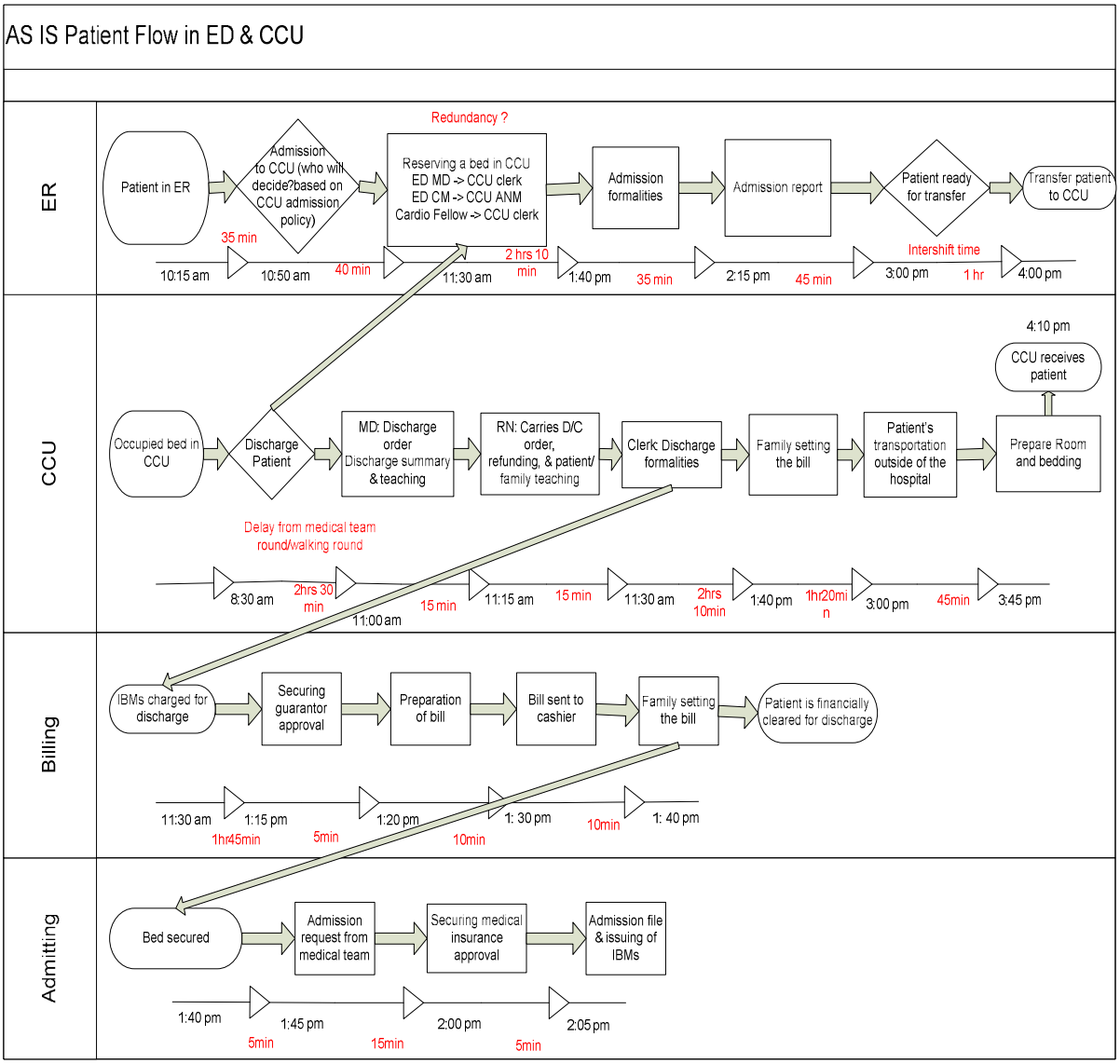

Figure 3.3 AS-IS Patient flow in ED and CCU- HV taskforce phase

The only change introduced to the "AS-IS" process map was the addition of the time it took from one step to the other for clarification purposes. After adding those timings, one could see that the longest time from one step to the next is two hours and 30 minutes; this was the time it took for the CCU medical team to initiate the discharge process until after their morning rounds (highlighted in red on the process map), despite getting approval for discharge from the attending physician.

In the "TO-BE" process, we also added the time lapsed from one step to the other which was significantly decreased:

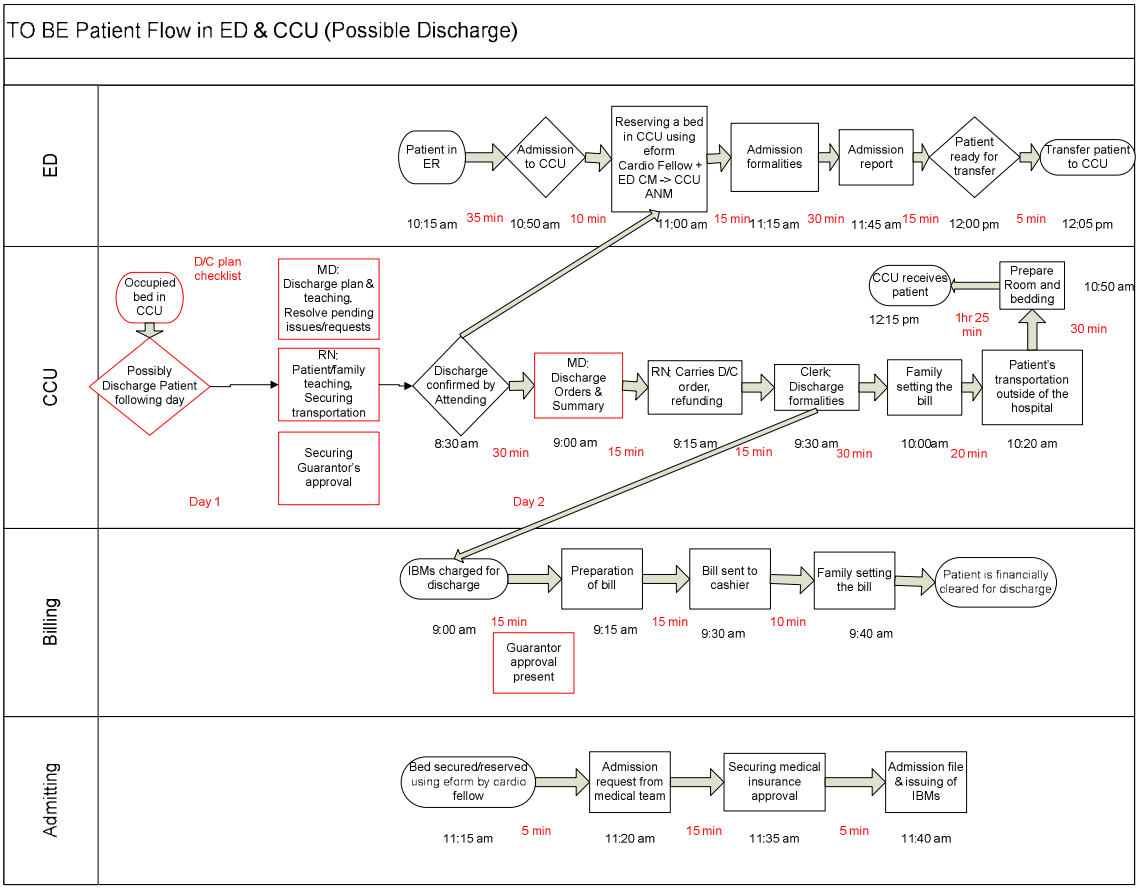

Figure 3.4 TO-BE patient flow in ED and CCU- 4 HV taskforce phase

These process maps were presented to the HV taskforce with suggestions to improve both the admission and the discharge processes. But since this project is about the CCU discharge process and its improvement, only the discharge related issues will be presented here:

- Attending physicians informing patients of their discharge in the morning but failure of the CCU medical team (Fellow/Residents/Interns) to write discharge orders and instruct patients on their prescriptions until after their morning rounds.
- Delays in discharges due to several issues stemming from lack of proper planning and coordination among the healthcare team members, such as:
    - Unavailability of transportation for the patient on day of discharge
    - Presence of a urinary indwelling catheter on the patient on day of discharge, thereby delaying discharge for at least four hours. (especially for male patients) while waiting for the patient to urinate.
    - Absence of third party payer approval due to lack of coordination with the patient's family on the day of admission.
    - Unavailable lab test results or radiology imaging results upon which decision of discharge depends, due to medical team forgetfulness to request them a day before.

Issues related to communication were mentioned separately because the taskforce considered that the bulk of the problem stemmed from the lack of coordination and

communication among healthcare team members, between the ED and CCU, and between all caregivers and patients and their families as a whole.

CHAPTER IV

REENGINEERING THE DISCHARGE PROCESS

Based on the process maps presented in the previous chapter, there was a need to re-work the discharge process. This chapter is divided into four parts; the first part presents the literature and the theoretical basis of the newly proposed discharge process. The second part presents how the discharge process was refined and standardized. The third part includes the work done with different departments in order to achieve a faster and more efficient discharge process, and the last part introduces the creation of a discharge checklist. All throughout the four parts, evidence and research findings are mentioned based on which our interventions were introduced.

A. Standardizing the discharge process: literature based

Huber and Blanco (2010) maintainedthat a proper discharge process is key to ensure continuity of care, especially for patients being discharged from an acute-care setting. Patients being discharged must be given the proper information and the needed resources to maintain their health at home, and to prevent any adverse events. The researchers checked the data in the Pennsylvania Patient Safety Authority Reporting System (PA-PSRS) about the discharge errors made in the statewide healthcare facilities in Pennsylvania. The PA-PSRS is a confidential internet reporting system where medical errors are reported by all healthcare facilities in Pennsylvania. The researchers found

reports where patients left the hospital without receiving discharge instructions, or receiving incomplete instructions, and in some cases receiving the discharge instructions of another patient. Faults were found in medical reconciliation as well, whereby patients either received no medical prescription, or another patient's prescription. Many patients were reported to have left before their lab test results were available, which might have affected the decision on them being discharged. These errors indicate an improper discharge process with lack of coordination, planning, and communication.

Based on extensive research about safe hospital discharge, Greenwald, Denham, and Jack (2007) re-engineered the discharge process and recommended 11 essential components that should be part of any discharge process so as to ensure safety and continuity of care. These components are tabulated in their article review called "The Hospital Discharge: A Review of a High Risk Care Transition With Highlights of a Reengineered Discharge Process" (Greenwald et al., 2007, p. 102); the main themes of the 11 components are: patient education, follow-up care and post-discharge services, involvement of patient in plan of care, medication reconciliation, ensuring proper understanding of discharge care by the patient, and proper documentation.

Huber and Blanco (2010) gave similar recommendations as those of Greenwald and colleagues and added that the responsibilities should be divided between a nurse responsible for discharge and a nurse case manager; they also recommended having a discharge checklist at hand.

B. Improving patient flow with a standardized discharge process

While Huber and Blanco and Greenwald and colleagues highlighted the importance of having a proper and standardized discharge process, Ortiga and colleagues (2012) related it to proper patient flow and throughput. In their research article titled "Standardizing admission and discharge processes to improve patient flow: A cross sectional study", Ortiga and colleagues (2012) contended that in order to ensure optimal bed assignment and proper discharge planning, the discharge process must begin upon admission, and all planned discharges must be known 24 hours in advance. This is true especially for those cases where the estimated length of stay is predictable. Moreover, the researchers noted that both the admission and discharge processes involve multidisciplinary care and that they should be centrally managed to avoid bottlenecks in other departments. This is why extensive coordination and continuous communication among the different departments and disciplines are key components to ensure safe and timely discharge. Ortiga et al. (2012) based their study in Barcelona, Spain in a 900-bed university affiliated hospital that was part of the National Health System. They grouped an interdisciplinary team of healthcare workers, administrators, and patients with their families to examine the patient flow and introduce improvements. The interventions that were introduced to standardize the discharge process were as such:

- Enhancement of multidisciplinary team work
- Setting a planned date for discharge on the day of admission
- Planning discharges 24 hour in advance for those with an expected length of stay of more than 72 hours
- Nurse-led discharge

- Planning discharge needs such as discharge summary, prescriptions, home care etc.

These interventions were introduced between April and December 2008; the researchers compared relevant data between pre-intervention phase from January through December 2007 and post-intervention phase from January through December 2009. The researchers found a significant increase in planned discharges ($P<0.05$), and a significant decrease in the number of patients waiting for an inpatient bed in the ED ($P<0.01$).

C. Refining patient flow through interdepartmental collaboration

A patient's hospital experience does not only depend on the unit s/he is staying in but on the function and transitional processes of other departments such as the pharmacy, laboratory, radiology, etc. Cesta (2013) discussed the issue of turnaround times for blood work withdrawal and processing, and radiology imaging for patients for discharge. The author maintained that these two processes can cause delays in discharge if the results are not available early on during the day.

Cesta (2013) explained that the reason for delays in the blood work is due to batching blood specimens from unit to unit, and sending them altogether at once to the lab, thereby delaying the arrival of blood tubes to the lab and overwhelming the lab as well. That's why the author suggested that blood work for patients to be discharged be labeled with a red bar so that they may be processed first. Taking the author's recommendations into consideration, the AUBMC HV taskforce discussed the issue with the laboratory

department and it was decided that the night duty nurses would prepare a sheet of paper containing patient labels of all patients for possible discharge and hand them to the phlebotomist. In turn, the phlebotomist would withdraw blood on these patients first and then hand them to the floor clerk, who would transport them to the laboratory for blood processing, thereby expediting the access to lab test results on patients for discharge.

Cesta (2013) also discussed the turnaround time for radiology tests which affect patient flow. He stated that so often, the time it takes from the physician's order till the time the test is actually performed can cause serious delays that can compromise the quality of care and delay other processes such as discharging a patient. The AUBMC HV taskforce cooperated with the radiology department, and it was decided that when physicians placed the order for a certain imaging result on the electronic system, they would add that the patient was for possible discharge in the remarks section. That way, the radiology department would process these tests before others for early results.

In addition to the changes introduced in the turnaround time of other departments, the taskforce felt that it was important to standardize the structure of day for the medical team in CCU in such a way that discharges are done earlier in the day. The changes that were introduced are as such:

- Have the CCU medical team prepare discharge orders and instructions a day before discharge, and request pending studies (labs/radiology) for the following day.

- Have the medical team start the morning round at 7 am and be done by 9 am, to attend to the needs of the patients to be discharged from 9am to 10:30 am.
- Plan the CCU attending physician educational round at 10:30 am so that patient care flow is not interrupted.
- Have the afternoon round done at 4 pm during which the team would communicate with the attending physicians about potential discharges for the next day and start the preparations.
- Have the discharge process guided by a discharge checklist to be created by the taskforce.

D. Creation of a discharge checklist

Soong et al. (2013) asserted that the discharge process should start on the day of admission, and that to ensure a safe transition from hospital to home, the discharge process should be standardized and coordinated by a multidisciplinary team. In addition, Soong and colleagues (2013) stated that the use of a discharge checklist to govern the discharge process from its start to the very end can improve outcomes and ensure safe transition; just as standardized treatment protocols can improve quality of care. So the researchers performed extensive literature review and consulted with a panel of experts to come up with a discharge checklist "which provides specific recommendations on methods and processes to effect a safe discharge in addition to an expected timeline of when to complete each step" (Soong et al. , 2013, p. 447). The researchers came up with a checklist which focused on seven domains: "(1) indication for hospitalization, (2) primary care, (3)

medication safety, (4) follow-up plans, (5) home-care referral, (6) communication with outpatient providers, and (7) patient education" (Soong et al., 2013, p. 446). Each step had a specified timeline and subcomponents. Soong et al. (2013) concluded by saying that their "discharge checklist is an expanded tool that provides explicit guidance for each day of hospitalization and can be adapted for any hospital admission to aid interdisciplinary efforts towards a successful discharge" (p. 448).

In creating a discharge checklist for this project, the discharge checklist created by Soong and colleagues (2013), the 11 components of the re-engineered discharge process by Greenwald and colleagues (2007), and the input of Ortiga et al. (2012) were used as reference. In addition, Huber and Blanco (2010) provided in their article, a link to a discharge checklist created by the Pennsylvania Patient Safety Authority in 2008 (See appendix II); the data provided in this checklist were very helpful in creating the layout for our checklist.

Just as Soong and colleagues had done, the discharge checklist was organized according to certain timelines: (1) the day of admission, (2) one day prior to discharge, and (3) the day of discharge. In addition, since it was a multidisciplinary sheet, tasks were divided among the different disciplines for each and every timeline, but it was decided that the nurse in charge would initiate the discharge checklist. Patient education was included at every stage of the discharge process starting from the day of admission because all the referenced researchers on this topic [Greenwald et al., (2007), Huber & Blanco, (2010), Ortiga et al., (2012), and Soong et al.,(2013)] stressed the importance of educating patients and their families about their situation, diagnosis, medications, follow-up care, and

available resources for home care, in order to ensure a proper and safe discharge. In addition, educating the patients and their families enhances caregiver-patient communication, builds rapport, and ensures that the patient is involved in the plan of care [Greenwald et al., (2007); Soong et al., 2013)].

1. ***Day of admission***

For the day of admission, it was decided to include the "estimated date of discharge" because Ortiga et al. (2012) and Soong et al. (2013) stressed that knowing how long the patient would stay in the hospital from day one would allow the healthcare team to coordinate and orchestrate the patient's plan of care, educational plan, and discharge process during that time. Therefore the taskforce decided to pilot the checklist on admissions for angioplasty or for pacemaker insertion since these admissions have a predictable length of stay.

Patient/family education was included in this stage through the assessment of the patient/family educational needs. The nurse initiating the discharge process would assess gaps in the patient's/family's knowledge of his/her disease, mode of treatment, and coping abilities, and devise an educational plan by documenting in the patient teaching record as per policy. All nurses taking care of the patient throughout his/her stay would educate the patient according to that plan, reassess, and evaluate.

Lastly, the last task for the day of admission would be to assess the patient's mode of payment and inform the patient/family of the needed documents and process of attaining guarantor approval.

2. *Day before discharge*

For the day before discharge, responsibilities were divided between the nurse and the intern/resident in charge of the patient as follows:

- The nurse would be responsible for making sure that the patient/family is informed about the process of discharge on the following day and to make sure that all issues with the third-party payer were resolved. The nurse would also have to make sure that the patient is scheduled for a follow-up appointment with the attending physician and to make arrangements for medical equipment at home if applicable. In addition, the nurse would have to ask the patient/family about the mode of transportation for the following day, and if needed to coordinate with ambulance services. Most importantly, the nurse would have to revise the educational plan of the patient which was initiated upon admission and assess the patient's/family's knowledge based on the plan.
- The MD would be responsible to prepare the discharge orders and discharge instructions for the following day. S/he would also have to request lab test and imaging studies needed for the following day. Lastly, the MD would have to make sure that the patient's urinary indwelling catheter is removed if

applicable, and to inspect incision sites (catheterization/pacemaker insertion sites) for hematoma formation or for signs of infection.

3. ***Day of discharge***

Finally, on the day of dischargethe medical team would need to get the attending physician's approval for discharge, finalize the discharge instructions, and educate the patient/family on every item on the discharge summary.The nurse's responsibility is to reinforce the patient's/family's knowledge of the discharge instructions and emphasize on treatment modalities. The discharge checklist is found in appendix III.

CHAPTER V

METHOD AND ANALYSIS

The HV taskforce finalized and approved the proposed discharge process and discharge checklist, and it was decided that piloting on patients coming for angioplasty and pacemaker insertion would be done for three months, after which based on the results, the taskforce would decide whether to apply on all patients or not.

The proposed discharge process and checklist were sent to the CCU nurse manager for feedback and review. The CCU nurse manager approved, and the announcement for launching the new discharge process was sent through a mass email to the hospital administration including the nursing administration, the division of cardiology, the chief residents of internal medicine, the radiology and laboratory departments, and the CCU nursing team. Before launching, theHV administrator and I oriented the CCU medical team and nursing team to the new discharge process through a 30-minute presentation; this orientation was done on a monthly basis every time the CCU medical team shifted. In addition, a separate email was sent to the CCU nurses by me further explaining the process with details so that they would have something to refer to in case they got confused. The initial verbal feedback from both medical and nursing teams was positive. On September 17th, 2012, the project got underway.

The CCU floor clerks were instructed to add the discharge checklist to the charts of patients being admitted for angioplasty or for pacemaker insertion. Both the nurses and the floor clerks were instructed to record the time the concerned patients physically left the

unit because the observed outcome for the project was “discharge time”. After the patient left, the floor clerks had to keep the discharge checklists in a designated folder found in a locked drawer in CCU. On a weekly basis, Dr. Badreddine and myself gathered the discharge checklists from the floor clerk and recorded the discharge times on an excel sheet with the corresponding patient case numbers. Then on a monthly basis, the mean discharge time was calculated on the excel sheet and this was repeated monthly until December 17th, 2012.

All the checklists were gathered, sorted, and those that did not indicate the “discharge time” were removed .The mean discharge time for all three months, from September 17th, 2012 till December 17th, 2012, was calculated and the time was **11:52 am**(See Table 1). This mean discharge time was compared to one before the implementation of the new discharge process.The medical IT department provided the discharge times of all patients discharged from CCU during the period of June 17th - September 16th 2012 in addition to the corresponding discharge dates. The mean discharge time for all patients discharged from CCU between June 17th, 2012 and September 16th, 2012 was **1:55 pm**. The difference between the pre- and post- implementation phase discharge times is minus **two hours and three minutes** (See Table 2). The taskforce reconvened and decided that the results of the pilot project were very promising and that the proposed discharge process and checklist would be applied on all patients being admitted to CCU as of January 2013.

Time period: September 17-December 17,2012		%
Total # of CCU discharges	378	100

Total # of Angioplasty/Pacemaker Discharges	99	26
Total # of Documented "Time Patient Left "Discharges for Angioplasty/Pacemaker patients	89	90
Total # of NON-Documented "Time Patient Left "Discharges for Angioplasty/Pacemaker patients	10	10

Table 5.1 Number of Discharges during piloting phase

	# of cases	Mean "Time Patient Left"
Pre-implementation of the checklist: "June 17-September 16,2012"	343	13:55
Post-implementation of the checklist : " September17-December 17,2012"	378 out of which 89 documented angioplasty/ pacemaker	11:52

Table 5.2 Comparison of pre- and post- implementation mean discharge times

CHAPTER VI

PROJECT CONSTRAINTS AND LIMITATIONS

During the implementation phase of this project, the main constraint which we had to deal with was non-compliance; be it from attending physicians, CCU medical team, and CCU nurses to some extent. During random chart audits, I found that there were angioplasty patients and pacemaker patients who did not have the checklist initiated upon admission; when I asked the nurses for a reason, I got replies such as:"I wasn't on duty when the patient was admitted" or "I forgot", and some complained that they had too many forms to fill and were not able to remember to fill a newly introduced form and that many did not know what to do exactly. Very often the checklist was filled upon admission, but the discharge instructions and orders were not written a day before the discharge; I investigated this issue with the medical staff, and most of the time the answer was that the attending physician was uncooperative and disregarded the discharge process. Other times the medical team made other excuses such as forgetfulness and not knowing the proper way to use the forms despite having all details explained to them during an orientation session. Further investigation with the attending physicians was done, many of them responded by saying that they had no knowledge of the implementation of such a process, despite several emails sent to them. The pattern among all end-users was that the process wasn't communicated to them effectively making the whole process unclear. Another issue discovered during gathering the weekly data was that some discharge checklists were filled, but the discharge time was not recorded; these checklists were deleted from the data. Several limitations of the project were noted:

- Study done only on angioplasty and pacemaker insertion patients, which limits the generalizability of the results.
- Comparison of results done to discharge times of **all** patients discharged from CCU during the three months prior to the project; results would have been more valid if comparisons were made to discharge times of only angioplasty/pacemaker insertion patients.

CHAPTER VIII

RECOMMENDATIONS

Future recommendations which stem from this project is to pilot the discharge process and checklist on all patients admitted to CCU and study and analyze the results from six months to a year; and if the results were to be significant, then the process could be adopted as part of AUBMC's discharge policies and procedures for the hospital as a whole. However, with regard to the non-compliance and communication constraints which the H&V taskforce faced in this project, implementation should be done in a more organized and comprehensive fashion whereby nurse-physician collaboration and coordination are enhanced.

When introducing practice changes, collaboration and team work are of ultimate importance; this is especially true in critical care units. Boyle and Kochinda (2004) conducted a study using a pretest-posttest repeated measures design to test whether enhancing nurse-physician collaboration in an ICU setting was feasible and to test its effects on ICU outcomes. The outcomes that were targeted were perceived technical quality of care, perceived ability to meet family needs, work group cohesion, job stress, job satisfaction, and intent to stay in the job. The intervention group completed a six module training workshop (23.5 hours long in total); the modules were: leadership, core communication skills, guiding conflict resolution, helping others adapt to change, teams, and trust. The workshop followed adult learning and behavioral modeling techniques such as multiple learning activities, group practice and problem solving, reinforcement of skills, on-the-job applications, and finally assessment and feedback after the workshop (Boyle &Kochinda, 2004).

The authors found that the intervention's group perceived technical quality of care, ability to meet family needs, and work group cohesion all increased but it wasn't a significant increase (P=.13), yet what did increase significantly was the intervention participants' perceived leadership characteristics, their satisfaction with their leadership skills, and their overall satisfaction with their communication skills (P<.05). The authors conclude that by improving nurses' and physicians' communication and leadership skills, the nurse-physician collaboration and communication can be enhanced which is associated with decreased patient mortality, shorter patient length of stay, enhanced professional relationships, and increased staff satisfaction (Boyle &Kochinda, 2004). We can relate the findings of this study to the project setting at AUBMC by devising a similar workshop targeting the communication and leadership skills of nurses and physicians, so as to enhance collaborative communication among them, thereby improving the implementation of practice changes and quality of care.

Another strategy to coordinate and orchestrate proper discharge planning and execution is the introduction of the role of a case manager, especially for patients with special needs such as CCU patients (Huber & Blanco, 2010). The role of a case manager is to maximize resource utilization and promote quality of care, while producing cost-effective outcomes. Case management requires well-coordinated interdisciplinary efforts, which are dependent upon effective communication and cooperation across the health care continuum (Case management Society of America [CMSA], 2010). Having said that, one can conclude that among all healthcare professionals, case managers are the ones best equipped to improve the discharge process by reducing fragmentation in care and coordinating the activities of different disciplines through effective communication and cooperation. Cesta (2013) believes that "case managers are the leaders in patient flow

management" (p. 65). Coordinating and facilitating patient care are key functions of case managers whereby they identify barriers to patient flow and correct them as they happen (Cesta, 2013).

Furthermore, it would be advisable to go further with the study and observe the effect of the expedited discharge on the overall hospital occupancy, ED length of stay, ED overcrowding, and the incidence of access block.

APPENDIX I

CCU ADMISSION/DISCHARGE POLICY

Adult Critical Care_ Admission and Discharge Criteria of Coronary Care Unit_0810.doc

Title:	**Admission and Discharge Criteria of Coronary Care Unit**	Index Number:	**CR-ACC-002** (Categ.-Func.-Sr.No.)	
Scope of application:	**Multidisciplinary team members of CCU**	Original: **July 01**	Last Review: **Aug 2010**	Next Review: **Aug 2013**

1. ***Policy***

1.1. The CCU director and nurse manager or their designees are responsible for assuring appropriate patient triage through enforcement of patient admission and discharge criteria.

1.2. The triage will consider the needs of the patient and facilities/resources at the institution.

2. ***Purpose***

2.1. To provide guidelines for admission, discharge, and triage of adult patients to the CCU.

2.2. To present guidelines for patient admission to monitor versus telemetry rooms.

2.3. To provide criteria for monitoring appropriate admissions, transfers, and discharges of patients to and from CCU.

3. Procedures

The following is an inclusive but not restrictive list of criteria.

3.1. ADNISSION CRITERIA:
Patients may be admitted to CCU with the following conditions:

3.1.1. Patients with Acute Coronary Syndromes:

a. Patients with Myocardial Infarction with ST segment elevation or new LBBB on ECG:
- **High risk** patients (with chest pain at rest, evidence of injury on ECG, elevated cardiac enzymes and troponin) will be admitted to a monitor room.

b. Patients with no ST segment elevation:
- **Low risk** patients (with chest pain resolved, no ST segment depression, and no elevation in cardiac enzymes or troponin) may be admitted to a telemetry room.
- **Intermediate risk** patients (chest pain and ST segment depression stabilized) may be admitted to a telemetry room.
- **High risk** patients (with persistent angina at rest, ST segment depression, elevated cardiac enzymes or troponin) will be admitted to a monitor room.

3.1.2. Patients with Congestive Heart Failure:

a. Patients who require titration of intravenous vasoactive drugs, such as inotropes and vasodilators may be admitted to a monitor room.
b. Patients who require invasive hemodynamic monitoring of pulmonary artery pressures will be admitted to a monitor room.
c. Patients not requiring positive inotropic support may be admitted to a telemetry room.

3.1.3. Patients with dysrhythmias:
a. Patients with complex dysrhythmias, including tachy/ bradyarrythmias and blocks, associated with hemodynamic instability will be admitted to a monitor room.
b. Patients with hemodynamically stable dysrhythmias may be admitted to a telemetry room.

3.1.4. Patients in cardiogenic shock will be admitted to a monitor room

3.1.5. Patients with Acute Pulmonary Edema:
a. Patients with O2 desaturation and hemodynamic instability will be admitted to a monitor room.
b. Patients with resolved pulmonary edema who are receiving low dose intravenous vasoactive agents may be admitted to a telemetry room.

3.1.6. Patients post cardiac arrest who are on mechanical ventilator and hemodynamically unstable will be admitted to a monitor room.

3.1.7. Patients who require temporary transvenous or epicardial pacing will be admitted to a monitor room.

3.1.8. Patients for permanent pacemaker insertion:
a. Patients who become pacemaker dependant following insertion will be admitted to a monitor room for at least the first 24 hours.
b. Patients with elective permanent pacemaker insertion without dependency may be admitted to a telemetry room.

3.1.9. Cardiac patients with electrolyte imbalance of serum potassium (<2.0mEq/L or >7.0 mEq/L) will be admitted to a monitor room.

3.1.10. Patients with syncope of probable cardiac etiology:
a. Patients with hemodynamic instability will be admitted to a monitor room.
b. Patients who are hemodynamically stable will be admitted to a telemetry room.

3.1.11. Patients coming for and/or undergoing invasive procedures (Percutaneous Coronary Intervention, electrophysiology testing, AICD implantation, radiofrequency ablation, alcohol ablation):
a. Patients with hemodynamic instability or complex dysrhythmias will be admitted to a monitor room.
b. Patients with uncomplicated procedures may be admitted to a telemetry room.

3.1.12. Patients post surgical procedures (CABG, valve replacement, etc):
a. Patients with hemodynamic instability, requiring administration of vasoactive drugs, requiring temporary epicardial pacing, and/or with complex dysrhythmias will be admitted to a monitor room.

b. Patients with uncomplicated course may be admitted to a telemetry room.

3.1.13. Patients with dissecting Thoracic Aneurysm, Cardiac Tamponade or Pericardial Constriction with hemodynamic instability will be admitted to a monitor room.

3.2. *DISCHARGE CRITERIA:*

Patients with the following conditions may be discharged home or transferred to another unit:

3.2.1. Patients with no evidence of on-going ischemia.

3.2.2. Patients whose acute coronary syndrome has been stabilized and intravenous nitroglycerine and/or inotropic support are no longer required for at least 24 hours.

3.2.3. Patients who have been ruled out for Acute Coronary Syndrome.

3.2.4. Patients awaiting surgical procedures (CABG, valve replacement) who are hemodynamically stable and don't need vasoactive drug support.

3.2.5. Patients with resolved Congestive Heart Failure and stable on oral therapy.

3.2.6. Patients whose dysrhythmia has been treated or controlled.

3.2.7. Patients whose acute pulmonary edema has been resolved.

3.2.8. Patients who no longer need temporary transvenous or epicardial pacing.

3.2.9. Patients post permanent pacemaker insertion following satisfactory pacemaker check and no signs of wound infection or other complications.

3.2.10. Patients whose electrolyte imbalance has been treated or controlled.

3.2.11. Patients whose syncope has been investigated and controlled.

3.2.12. Patients with uncomplicated invasive cardiac procedures who no longer need monitoring.

3.2.13. Patients with terminal and irreversible illness facing imminent death (too sick to benefit from CCU care)
   a. Severe irreversible brain damage
   b. Patients in persistent vegetative state

4. *Signatures*

Prepared by	Name	Signature	Date
CCU Nurse Manager	Ms. Sana Kenaan	Sana Kanaan Nurse Manager	Aug 13, 2010
Advanced Practice Nurse	Ms. Hera Tashjian		
Reviewed and Concurred by	**Name**	**Signature**	**Date**
Advanced Practice Nurse	Ms. Hera Tashjian	Hera Tashjian Clinical Nurse Specialist	Aug 12, 2010
Approved by	**Name**	**Signature**	**Date**
Assistant Hospital Director For Patient Care Services	Ms. Gladys Moura		20 AUG 2010
Approved by	**Name**	**Signature**	**Date**
Chairman of Department (Or Head of Division)	Dr Samir Alam		16/8

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6. Modifications

No modifications were made to the previous edition of this policy.

APPENDIX II

PENNSYLVANIA PATIENT SAFETY AUTHORITY DISCHARGE CHECKLIST

Suggested Elements for a Discharge Checklist

Patient Name: _____ Physician Name: _____

Admission Date: _____ Discharge Date: _____

Primary Diagnosis: _____ Secondary Diagnoses: _____

Procedure(s): _____

_____ ***Interpreter needed for patient with language/culture barrier***

Please check when task is completed.

Patient Education

- ____ Educate patient and/or family members about diagnoses, disease, and procedure(s).
- ____ Educate patient and/or family members about follow-up care for procedure(s), if indicated.
- ____ Provide patients with procedure and/or disease-specific educational materials.
- ____ Reconcile discharge medication list.
- ____ Educate patient and/or family members about the prescribed medications including medication administration, drug action, and side effects.
- ____ Provide written material for prescribed medications with all information noted above.

Services to Provide

- ____ Review pending test results and instruct patient about whom to call for results.
- ____ Schedule follow-up appointments with physicians and/or specialists as indicated.
- ____ Provide referrals for services ordered by physician (i.e., physical therapy, occupational therapy).

Lifestyle Modifications

- ____ Provide written discharge instructions that include the following:
  - ____ Activity level
  - ____ Diet

In Case of an Emergency

- ____ Educate patient about signs and symptoms that may develop, and when to call the physician or seek emergency medical care by calling 911.

Miscellaneous

- ____ Perform a physical assessment to ensure that intravenous lines and other access ports are removed.
- ____ Give prescriptions to the patient.
- ____ Ask the patient and/or family members if they have any questions or concerns related to the patient's care.
- ____ To assess understanding of the discharge instructions, ask the patient and/or family members to give a brief (30 seconds) summary of discharge instructions.

Discharge Nurse Name: _____

Signature: _____ Date: _____

This form is provided as a sample only and is not meant to be used as is.

For more information, visit http://www.psa.state.pa.us.

This information has been adapted from:
Care at discharge—a critical juncture for transition to posthospital care.
Pa Pat Saf Advis 2008 Jun;5(2):39-43.

Patient Label

APPENDIX III

ANGIOPLASTY/PACEMAKER DISCHARGE PLAN CHECKLIST

Patient name: _____ **Case Number:_____**
Date of admission: _____

RN name & signature initiating discharge plan: _____

Upon Admission:	☑ **when done**	**Initials**
- Assess patient/family educational needs.	☐	**RN:**
- Estimate date of discharge (coordinate with medical team): _____	☐	**RN:**
- Initiate third party payer/guarantor approval process; please indicate mode of payment:	☐	**FC:**

☐NSSF ☐Self payer

☐ Insurance ☐ Other (ex. Ministry, Army, etc.)

Day Before Discharge:				**Initials**
- **Medical team responsibilities:**				
Are discharge orders and prescription written for the following day?	**Yes**	**No**	**N/A**	**MD:**
Are lab studies requested for following day?	**Yes**	**No**	**N/A**	**MD:**
Are radiology/imaging studies requested for the following day?	**Yes**	**No**	**N/A**	**MD:**
Is urine catheter removed?	**Yes**	**No**	**N/A**	**MD:**
Have all access sites been inspected? (cardiac catheterization or pacemaker site)	**Yes**	**No**	**N/A**	**MD:**
- **Discharge process/instructions:**				
Has the patient/family been educated about the discharge process?	**Yes**	**No**	**N/A**	**RN:**
Are there any pending issues regarding third party payer approval?	**Yes**	**No**	**N/A**	**FC:**
Is a follow-up appointment scheduled for the patient?	**Yes**	**No**	**N/A**	**RN:**
Does the patient need medical equipment at home?	**Yes**	**No**	**N/A**	**RN:**
- **Mode of Transportation**				
Assess and arrange for transportation on day of discharge, please indicate method: ☐				**RN:**

☐ Personal ☐ Ambulance (Red cross, PTS)

Day of Discharge:RN Initials and signature: _____ Time Left:_____

- Is the discharge approved by the primary physician?	**Yes**	**No**	**N/A**	**RN:**
- Has the patient/family been educated and given all discharge instructions?	**Yes**	**No**	**N/A**	**RN: MD:**
- Has the written discharge prescription been explained to the patient and signed?	**Yes**	**No**	**N/A**	**MD:**

MD Name	MD Initials	RN Name	RN Initials

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