**Patient Admission Through Better Connection Between Hospitals**

## Introduction

The goal of every healthcare facility is to provide quality care services to its patients. Quality care is achieved when the hospital has the required inputs necessary to carry out its functions. Through the world, research has shown that hospitalization increases the quality of pain care and the general service delivery. However, hospitalization faces one major challenge, which is, lack of enough bed space to accommodate all the patients (Hiltrop *et al., 2014*). Lack of enough beds in hospitals has been shown to bring longer boarding time before hospital admission that in turn leads to high rate of admission to ICU and high mortality rate. Nonetheless, some hospitals resort to outlaying patients in another ward or even transferring patients to other facilities in the situation where all the wards are saturated (Hill, 2005). However, the transfer of patients to another hospital requires the existence of a good relationship between the two healthcare facilities. Prince George’s Hospital is one such hospital that is struggling with the high number of patients but has not created a good rapport with other hospitals. This project aims at creating a good relationship between Prince George's hospital and other hospitals to help in the securing of extra beds in other hospitals whenever the need arises.

**Background Information**

 One challenge that most health facilities have to deal with is how to reduce the wait time (Ontario, 2007). In most occasions, physicians receive the greatest share of blame for the long wait time that the patients have to undergo (Masango-Makgobela*,* 2010). However, it is not always the physicians who are responsible for the longer wait time that the patients have to delay before they receive treatment (Alaeddini, 2011). In essence, health practitioners contribute to less than ten percent of the time wasted when patients have to wait in line (Huynh, 2006). Intrinsically, the main cause of delays in hospitals is the lack of enough facilities to meet the need for all patients (Patrick & Puterman, 2008). For example, in the emergency department, lack of enough stretchers could be a major cause of delay in service delivery. In the ICU sector, lack of enough beds is a major player when it comes to waiting time and patient satisfaction (Patrick & Puterman, 2008; Schwartz & Evans, 2004).

Prince George's Hospital is a community-based hospital in Maryland. The facility has a bed capacity of five hundred patients and fifty beds for the ICU section. Due to the good name that the facility has earned in the provision of healthcare, the hospital has received an influx of patients to the point that sometimes it lacks enough space to accommodate them. In some days, the hospital records up to about seventy-five intensive cases that require admission to the ICU. In such circumstances, the hospital needs to liaise with the other facilities. Hence, it is important to look into the initiation phase and to describe the transformation process that the hospital follows to admit patients into the ICU.

## Problem Statement

Whenever a patient who requires intensive care is brought into the hospital or an admitted patient gets critically ill, the first step that the hospital takes is to check for a vacancy in its critical unit section. If there is space, the patient is given a direct admission. However, if the beds are not available, the management of the hospital seeks to find if there is a vacancy in the next hospital. If a vacancy is found in the neighboring hospital, the patient is transferred; but when the neighboring hospital also has limited bed spaces, the search goes to another hospital. The longer the search continues, the longer the wait time (Bahrani & University of Ottawa, 2013; Hall, 2013). The process mapping for the current situation is as shown below.

Number of patients who need admission to the ICU

50 or less

More than 50

The first 50 patients

Excess after the first 50

Check available bed in another hospital

If no beds are available

**Figure SEQ Figure \\* ARABIC 1: process map**

If beds are available

This, therefore, raises the need to have an improved system in which the search for spaces from other hospitals can be made easier, which is what this project aims at.

## Purpose of the Project and Objectives

The goal of this project management is to create one system that will link Prince George's hospital to the neighboring hospitals. This will, in turn, enable the hospital to inquire about available spaces from other hospitals and transfer patients as soon as possible to avoid wasting time in the process. The hospital will also need to have a centralized database that will collect and analyze information regarding bed occupancies. The project will determine if the improved relationship between Prince George’s hospital and the neighboring hospitals will help to reduce stay time for patients and by extension, improve the quality of care services. Therefore, the project's objectives can be described as follows.

* + Improve the connection between Prince George’s hospital and other hospitals.
	+ To have a centralized database that will collect and analyze information regarding bed occupancies.
	+ Reduce the wait time for patients being admitted to the ICU.

## Stakeholders

If successfully implemented, the project will be beneficial to various stakeholders in different capacities. The number one stakeholder that will benefit from the project are the patients. Most patients are not comfortable waiting in queues for a long time. A study by Michael *et al*. (2013) revealed that there is a relationship between patient satisfaction and the time taken awaiting for medical service. Another study by Ansell *et al.* (2017)found that there is an adverse consequence of prolonged patient waiting. Besides, according to a study by Ryu and Lee (2017), longer wait time has psychological effects on patients and is the primary cause of ‘no show-up' among patients. Therefore, reducing the wait time will enhance patient’s trust and comfortability and thus, improve their experience and satisfaction (Kelly & Middlesex University, 2010). This change may also increase the number of patients served per day by the retail facility.

Another group of stakeholders that will be involved in the development of this project is the team leaders of the nursing shifts in charge. They will be tasked with the duty of updating the bed data in the electronic system. They will also be responsible for checking the status of the patients to mark them as fit for transfer, planned for discharge, or potential for discharge. The nurse supervisor will oversee the operation of the in-shift nurses and ensure that the entire project operation is running smoothly. Whereas the nurse supervisor will update the bed data on a daily basis, the hospital coordinators will give updates on a weekly basis. The other stakeholders in this project will be the hospital administrators, bed management committee and the government.

## Assumption and Constraints

The assumption in this project is that all the hospital administrators will be willing to participate in the project. Although the project will be managed by the Prince George's hospital, the project team assumes that the other hospitals will remain cooperative to form the bed management committees that will update the bed status from their respective hospitals. Another assumption is that the patients in the other hospitals do not always exceed the bed capacity. As such, the project assumes that there will be no time that all the hospitals will experience excess patients requiring admission to the ICU at the same time.

 Some of the health facilities that the project managers intend to include in their project system are privately owned, therefore, difficulties may arise with regards to having them all to agree to the plan. It will be hard to have them in giving updates on bed occupancy every thirty minutes because they have a set program in which they operate. Intrinsically, the main constraint in this project is the challenge of having all the hospitals work under one system managed from Prince George's hospitals as some may want to have their own system. Apart from the challenge of having the hospitals operating under one system, there is also the constrain of time. The project has set deadlines which means that the task must be completed within the set dates as indicated in the gantt chart below.

**Figure 2: Gantt diagram**

# **Planning Phase**

The gantt chart above presents the logical sequence of how the tasks will be performed. It shows how the tasks are linked to one another and how they will be followed until the completion of the project. Based on the chart, the first step will be to inform the other hospitals of the intention by Prince George's hospital to create a multi-organizational system that monitors and records the bed occupancy to allow the sharing of beds by the nearby hospitals. The step will involve the representatives of Prince George's hospital paying a visit to the hospitals and discussing with them the vision.

After informing the partners of the plan which the project managers hope that will be accepted, the project management team then plans to start gathering the necessary equipment for the system set up. The third step will be setting up the system. The system in this context will be the program to be used, the people involved in running the program, the input and output. The program will be designed by a group of programmers from the hospital's IT department together with other external programmers. It will enable in-charges from all the member facilities to post the status of bed occupancy of their hospitals to be viewed by other members. After the completion of the design, the IT department of the hospital will be required to continue running and maintaining the system. The nursing fraternity will also be required to give their full cooperation as they are the ones who will be monitoring the status of the beds and giving update reports. Apart from the nurses on duty, the nurse supervisors will play their role of training the team where necessary and ensuring that the project runs smoothly. The other people that will be involved in the management of the project are hospital administrators and hospital coordinators. The inputs in this project consist of any condition or event that will contribute to the success of the bed sharing system. They include the computers, patients, nurses, and cooperation of the health facilities. On the other hand, the output will be the free sharing of beds between institutions as a result of the excellent association between the health facilities.

## Project Cost

The bulk of the budget will go into the system setup including the subcontraction of the external programmers and the pieces of equipment needed to have the job done. The table below shows the breakdown of major costs of the project.

**Table 1: project cost**

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| --- | --- |
| **Cost category** | **Cost ($)** |
| Direct labor | $120 |
| Indirect labor  | $30 |
| Total labor costs | $150 |
| Hardware acquisition  | $800 |
| Software acquisition | $950 |
| Total equipment acquisition costs  | $1750 |
| Consulting | $100 |
| Subcontractor  | $450 |
| Travel and living | $125 |
| Financial  | $54 |
| Total other costs  | $729 |
| Contingency costs  | $40 |
| Total project costs  | $2,669 |

## Risk Management Plan

 The risk, the likelihood that it will occur and the possible outcome will be outlined. More imperative, the first risk is the possibility that the project takes longer than expected. The probability of the project taking longer than scheduled is high since the project is the first of its kind and involves heterogeneous players who may not be easy to streamline to work as a team. Given that the task of the project is linked and dependent on one another, the successful completion of one step leads to the success in the next step. The outcome of this risk is that the project may delay significantly.

 The second risk is the risk of failure by the governing bodies to meet their responsibilities. This risk arises from the side of the administrators. If the administrators of the various facilities fail to meet their ends of the bargain, especially in relation to matters of finance, the project runs the risk of failure. Apart from the finances, there is the legal issue that may fail to be sorted. It is, therefore, the responsibility of the hospital administrators to address the matters of legal concern. Failure to meet the legal requirements may result in the risk of having to settle legal matters in the courts, which amounts to further wastage of time and resources. However, the probability of occurrence of these risks is very low given that there will be a signing of a memorandum of understanding between the administrators as a sign of commitment to the task. In the case where such a risk happens, the possible outcome would be the delay of the project or even failure, depending on the magnitude of its effect.

The third risk relates to the competency of the staff. There is the possibility that the staff may not be competent enough to handle the new program. Also, the staff may not understand what to do in a given set of circumstances. The probability of the occurrence of such a risk is, however, low as there will be nurse supervisors and project coordinators to give directions in every step. Besides, there will also be a thorough training and orientation for the selected staff to ensure that they are conversant with what they are required to do. Nevertheless, in the case that the risk happens, it may lead to a failure of the project implementation process as the desired results may not be achieved.

# **Execution phase**

Based on the risks mentioned above, the next discussion suggests the possible improvement that is necessary to help in avoiding the risks. The first risk has the highest probability of occurrence and is, thus, given the most attention. To reduce the chance of the project taking longer than expected, the tasks will be distributed to the stakeholders in such a way that no one is overburdened. People will be assigned tasks that they are able to perform with ease and in areas of their specialty. Besides, the nurse supervisors and project coordinators will play the supervisory role to ensure that all goes as planned. If in any case, they detect an area that requires reinforcement, they will be required to communicate the suggestion to the relevant authorities in time so that the necessary action can be taken without delays.

The second risk which would be as a result of the failure of the administrators to meet the financial and the legal requirements will be mitigated by ensuring that all the necessary legal frameworks are in place before the project begins. The project management committee will form a subcommittee to deal with the legal and financial matters. This way, the burden will be shifted from the hospital administrators to the subcommittee. The subcommittee will ensure that the finances are available in advance before the next phase of the project begins. The third risk will be mitigated by selecting more staff to be trained to have more alternatives for a given task. Moreover, the issue of staff incompetency will be improved by changing work practice to adopt to the one that best suits the situation and staff. The staff incompetency will also be improved by offering training and orientation.

As a way of ensuring that the project is a success and that the improvements made are significant, the project team will use quality improvement tools to analyze the process. Among the available tools available for use to ensure the quality of the project are histogram, stem and leaf diagram, Pareto chart, a cause-and-effect diagram such as fishbone, scatter diagram, stratification charts, and check shit. This project will, however, use the cause- and –effect (fishbone) diagram in its analysis to ensure that all the causes of the problem are identified and addressed accordingly. Given that the project will take a long time and is done in phases, fishbone appears to be the best tool (Cleary & Duncan, 2008). This is because it can be used to identify the problems and the phase in which they are likely to be resolved such that at the end of every phase, an evaluation is done to see if the problem has indeed been solved. The fishbone is also significant for this project as it allows the project team to perform the lean management and value streaming to mapping (Kamma, 2010; Lawal *et al.,* 2014). The figure below shows the fishbone diagram that shows the problems in the process.

## The Fishbone Diagram

The fishbone diagram, in this case, has identified four major problems that cause long wait time in the ICU department. The four problems include lack of enough personnel, lack of enough beds to accommodate patients, unclear procedures in the hospital and laziness of some health practitioners. This study is, however, interested in only one problem which is the lack of enough beds.

Lack of enough beds

Lack of enough personnel

The wards are small to accommodate extra beds

The administration not ready to add the beds

Underemployment

Overcrowding of patients

Influx of patients overwhelming bed capacity

Long admission time

Lack of proper supervision

Staff not readily available to assist

Lazy health practitioners

Unclear procedures

**Figure 3: The fishbone diagram**

 In this scenario, it has been established that the time taken to admit a patient to the ICU ward in many hospitals are longer than are expected (Leaders for Global Operations Program., 2015). Most patients and caretakers complain that the admission process takes too long and has in some cases contributed to deaths that would otherwise have been avoided (Wells, Pasero & McCaffery, 2008). According to the diagram above, there are some other minor factors that contribute to the lack of enough beds in the hospitals. These factors include too small wards to accommodate extra beds, nonreadiness of the hospital administrations to add beds, and overwhelming influx of patients for the bed capacity.

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## Lean Management and Value Streaming Map

The final stage of this project is to assess the value added to the process (Lawal *et al.,* 2014). The process has gained a lot from the project as it now has an electronic system in which the bed's updates are posted after a minimum of 30 minutes and a maximum of 2 hours. There is also an improved system of recording information which has, in turn, led to regular filling and update of patients for transfer, discharge, and potential discharge. It has also led to the redistribution of man power in the bid to have a smooth running of the process. Finally, the project has also led to the creation of bed management policy in which most nurses have also been trained. Having implemented the project, we now perform a value streaming mapping to represent the current situation and also to identify the remaining problem areas within the project (Koelling *et al.,* 2005). The figure below is a value stream map of the process and is aimed at identifying some of the problems that are remaining in the process. 

**Figure 4: value stream map**  (Source: Koelling et al., 2005)

## Conclusion and Recommendations

According to the map, there are still some problems that have not been resolved. First, the staff in charge is not automatically notified of an empty bed. He or she has to confirm this manually by visiting the ward. The study recommends that cameras should be installed on the wards to assist in facilitating the process. The second problem is that the patients and staff still have to wait for the lifts just like the other general patients. There is, therefore, the need to construct a ramp. However, this problem is beyond the scope of the project and can only be resolved by a separate initiative by the hospital administration.

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