EFFECTS OF IMPLEMENTATION OF FOCUS-PDCA MODEL TO DECREASE PATIENTS' LENGTH OF STAY IN EMERGENCY DEPARTMENT

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ABSTRACT

Introduction: Boarding patients in emergency department (ED) is a universal problem in all health care sectors, facilitating patients flow in and out of the emergency department is an important step to improve patients and staff satisfaction and even patients outcome. **Objectives:** To study the effect of implementing one of the quality improvement methods, the FOCUS-PDCA in decreasing patients length of stay in the ED. **Methods:** Multidisciplinary team was formed and the process of finding opportunity, organizing team, Clarify the process, understand the process and select the desired outcome followed by (Plan-Do-Check-Act) process over six months period at the Emergency department of a university hospital setting. A consensus-based approach was performed to identify areas of improvement with time limits and responsible assigned personal. **Results:** After implementation of the above suggestions for the period of 6 months, the data was collected to study the rate of ER overstay. Overall, the rate of ER overstay was reduced from 9.81/1000 to 6.92 per 1000 patients, demonstrating a 29.5% decrease [Figure 1]. This performance improvement project was achieved significant improvement (P =0.030).**Conclusion:** FOCUS-PDCA quality improvement method was effective in reducing emergency department patients' length of stay.

INTRODUCTION

Emergency department (ED) crowding has been described as the most serious problem that endangers the reliability of health care system worldwide [1]

It has been reported to cause delays in diagnosis, delays in treatment, decreased quality of care, and poor patient outcomes.[2,3] According to the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), over one half of all "sentinel event" cases of morbidity and mortality secondary to delays in treatment occur in hospital EDs, and ED overcrowding has been cited as a contributing factor in 31% of these cases.[4]

The true causes of ED overcrowding are much more complex,[3,5] and include, inadequate inpatient bed capacity, higher severity of illness, and hospital system restructuring. Hospital bed shortages have been studied as factors that potentially affect crowding. Non availability of ED beds because they are occupied by admitted patients waiting for transfer from the ED to inpatient units restrict the EDs capacity to accept new arrivals and consume EDs resources [6-7].

Because the main causes of ED overcrowding seem to originate outside the ED, the only way to truly alleviate ED overcrowding is to focus our attention on system-wide reform. In this project, we used FOCUS-PDCA methodology looking for improvement process. The (PDCA) method was presented first time by a quality expert Dr. Edwards Deming in 1950's.[8] This process helps in identifying and solving problems and also applicable for the continuous quality improvement of various clinical aspects.[9]

The FOCUS-PDCA is an improvement methodology that many organizations use to guide their improvement efforts. It's simply a formalized process for improvement and we aimed here to achieve shortening the ED length of stay of our patients by applying this methodology.

METHODS

Study Settings

This study was conducted at King Fahd Hospital of the university, University of Dammam, Saudi Arabia during the process of attaining Joint Commission International accreditation during the period from Jan to June 2015. As a measure to improve the quality emergency services, one critical issue consists of overcrowding in Emergency department. From the KPI annual report 2014, researchers found that the rate of patients who stay longer than 6 hours in the ER was 9.2 /1000 patients, where six hours is the internal target. Accordingly, the researcher decided to use FOCUS-PDCA Model with an objective to reduce the ER overstay. The study was conducted for the duration of 6 months and necessary process redesign was carried during this period for obtaining optimal results.

Statistical analysis

Data's were presented by mean with standard deviation. Control charts were used to measure the variation of the process. Performance improvement after implementation of the project was tested by using independent sample t-test. All the analysis were performed using MINITAB version 17. P value less than 0.05 was considered to be significant.

RESULTS

FOCUS-PDCA

The quality improvement methodological framework adopted in this study is based on FOCUS-PDCA Model. The Quality tools and techniques and the strategies adopted in each phase of FOCUS-PDCA to optimize the ER overstay is described below:

Find an opportunity

The rate of ER overstay 9.2 per 1000 patients as per the key performance report of 2014, it was inferred that there is need to reduce the ER overstay, which had been identified as one of the critical factor contributing to dissatisfaction among ER patients.

Organize a team

To accomplish this project, a special team was formulated and its consisted of Team leader (ER
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consultant), Laboratory representative, Radiology Superintendent, Nursing quality officer, there are 2 IT specialty, 1 special ER nurse and a supporting staff from the Quality office of the hospital. The primary objective of the team is to improve and optimize the ER overstay.

Clarify the process

This phase involves documentation and evaluation of the existing systems in various processes of ER services. The team members was explored all the issues related with ER stay process and its described below, it was carried out using process flow chart to analyze all the staps starting from the arrival of patients in ER and continued with sequential activities until the patients stay more than 6 hours in ER
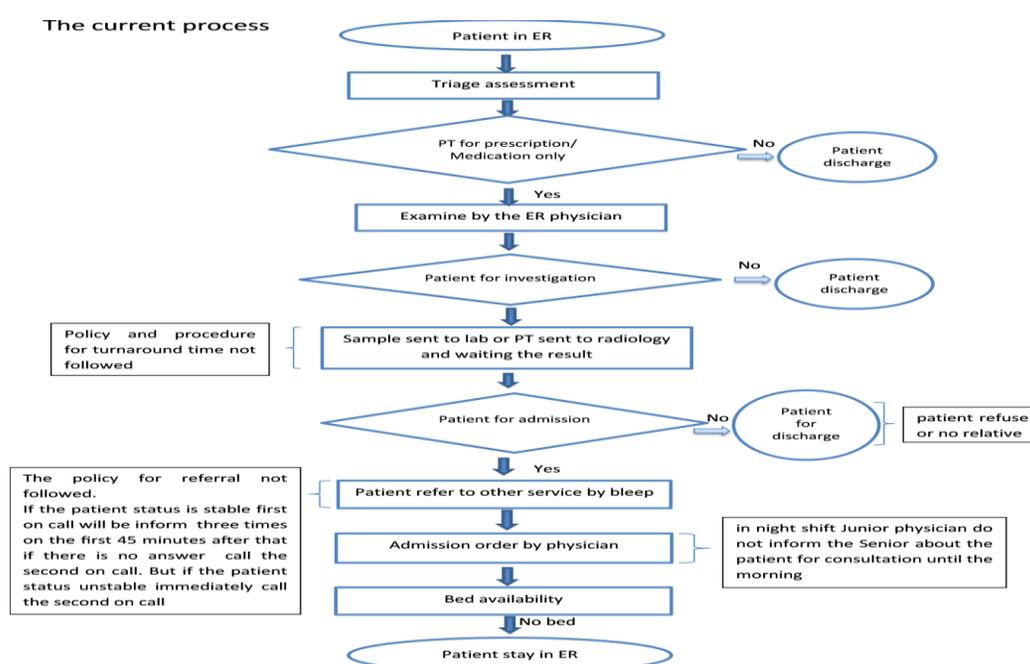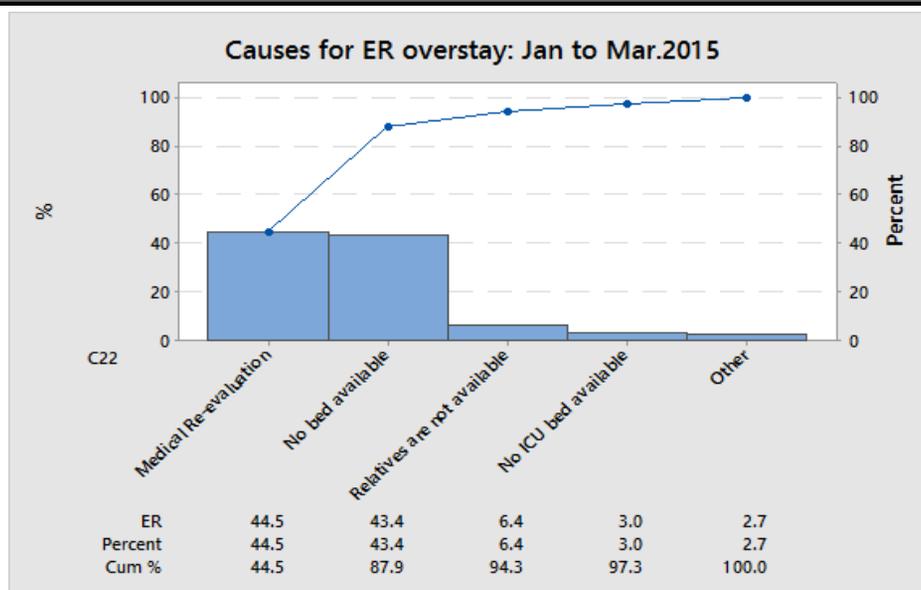

Understand the process

In order to find out the reasons for the delay in each of the sub processes of the ER overstay, a root cause analysis was carried out and it is depicted below:
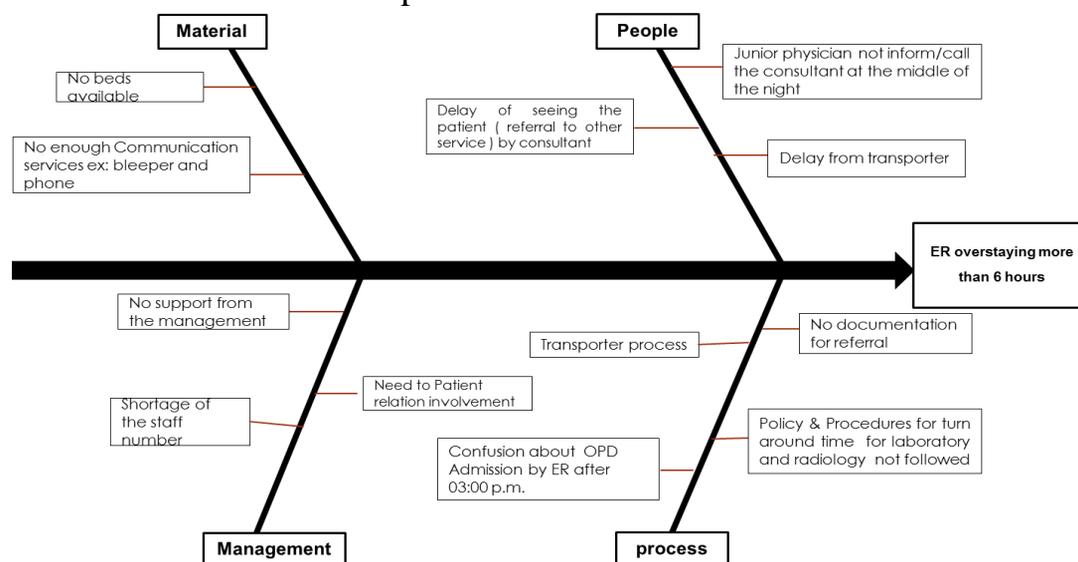
Significant causes for ER overstay were depicted below (Figure 1), its indicate that most of them were due medical re-evaluation.

Causes for ER overstay: Jan to Mar.2015

	Medical Re-evaluation	No bed available	Relatives are not available	No ICU bed available	Other
ER	44.5	43.4	6.4	3.0	2.7
Percent	44.5	43.4	6.4	3.0	2.7
Cum %	44.5	87.9	94.3	97.3	100.0

Select a desired outcome

To decrease 20% from the rate of patient who are staying in Emergency Department more than 6 hours by the end of august 2015.

Plan

A plan for optimal solution of ER overstay was made and circulated to all responsible persons to ensure the improved process [Table 1]

Table 1: The process plan to sustain and control the process for long run

Item	Action Plan
Transportation for ER STAT samples to laboratory	• Re-educate porters regarding STAT samples • Have a STAT lab in the ER • To increase no. of porters
Medical re-evaluation: Junior doctors are seeing the patients then the seniors: They are hesitate to call the consultants	• To send consultancy policy to all department heads to be aware about it. • Monitor the process of consultation • Validity the data accuracy
Bed availability /ICU bed not available/ non-eligibility	Whenever the bed is not available, inform medical director to find a bed even in another ward or service.

DO

In this phase, after formation the action plan the team members were implemented the following things along with optimal plan.

• Continuous education to all ER staffs
• Reasons for Overstay should be discussed frequently during the Unit Staff Meeting, Administration Meeting and performance improvement opportunities be explored and shared through the ER units.
• Complete the issue on the action plan that is assigned to each member

Check the Improvement (Analysis of the data)

After implementation of the above suggestions for the period of 6 months, the data was collected to study the rate of ER overstay. Overall, the rate of ER overstay was reduced from 9.81/1000 to 6.92 per 1000 patients, demonstrating a 29.5% decrease [Figure 1]. This performance improvement project was achieved significant improvement (P =0.030) [Table 2]
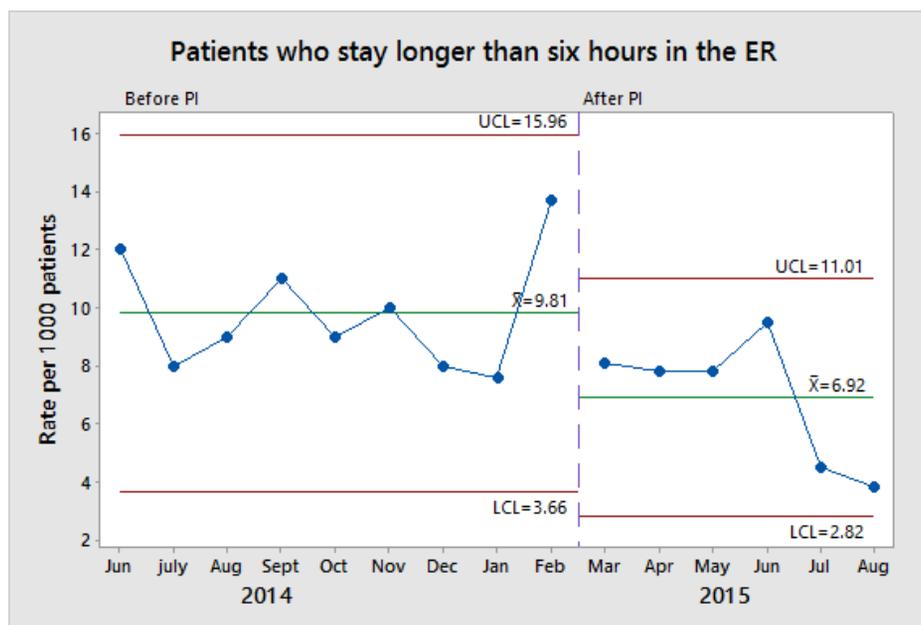

Figure 1: Effectiveness of FOCUS-PDCA model

Table 2: Independent t-test for testing the Project improvement

Time period	N	Mean	S,D	Mean diff.	P value
Before PI	9	9.81	2.07		
After PI	6	6.92	2.24	2.89	0.030

Act

The improvement strategies were adopted in the plan will be continued until getting the most feasible solution. In addition, the team members were updated by the process owners on a monthly basis through data tracking and also for getting optimal of solution for ER overstay the following things should be adopted:

• Transparent bed management through proper Bed Management systems

• Use a protocol for common conditions.

• Focus on efficient use of the available bed particularly through admission and discharge planning.

DISCUSSION

FOCUS-PDCA is easy to learn quickly, and with time It keeps everyone focused on the improvement effort. The structure of the process encourages focus and accountability for completing assigned tasks. It gets employees (and volunteers) involved in the process of problem solving. This improvement model places value on the wisdom and experience of front-line workers (employees or volunteers) and encourages the use of their expertise. It provides a plan and steps for improvements. These plans help to eliminate the frustrations that come with working in an environment that allows organizational problems to dictate internal processes, instead of the opposite. In this quality improvement project we prove that the FOCUS-PDCA method shortened the overstaying time in the emergency department and improved over all patients flow and satisfactions. Such improvement usually its reflected on patients outcome. Studies have shown that delayed admission especially in critically ill patients in emergency department worsen their outcome, Chalfin and his group found that critically ill emergency department patients stays in ER more than 6-hr delay before being transferred to ICU had more length of hospital of stay and mortality also.[10] his suggests the need to identify factors associated with delayed transfer as well as specific determinants of adverse outcomes. FOCUS-PDCA was used in many improvement projects in clinical practice, Oyvind and colleagues proved that the FOCU-PDCA made Change and improvement in health care achievable despite limited financial resources. [11]Also in critical care practice using the FOCUS-PDCA found to reduce severe pain and stress-related events while moving ICU-patients which is associated with a decrease of serious adverse events on those group of patients.[12]

CONCLUSION

Based on the results of this study, it seems that FOCUS-PDCA is an effective quality improvement method that helped in decreasing overstaying in ED which is a vey challenging problem in clinical practice.

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