Project Title

E-documentation to improve productivity for Emergency Department (ED) Out-patient X-ray section

Organisation(s) Involved

Tan Tock Seng Hospital

Project Period

Start date: Nov 2012

Project Category

Process Improvement, Quality Improvement, Productivity, Technology

Keywords

Tan Tock Seng Hospital, Emergency Department, Lean Methodology, MyCare Program,, Root Cause Analysis, Diagnostic Radiology, X-ray Orders, Process Improvement, , Productivity, Missing Order Forms, Report Turn-Around-Time, Reduce Process Wastes, Electronic Order Forms, Radiology Information System (RIS), Needless Traveling Time

Name and Email of Project Contact Person(s)

Name: Dr Gregory Kaw, Head & Senior Consultant, Department of Diagnostic Radiology

Email: gregory_kaw@ttsh.com.sg

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ENTRY FORM FOR
SERVICE IMPROVEMENT FOR INTERNAL CUSTOMERS CATEGORY

These are awards for any hospital department or unit that implemented any outstanding projects on how better to serve their co-departments or employees better. How well did the project look upon the other department(s) as a "customer"? Special weight is given to how innovative the project is, how well it reinforces the concept of "internal customer", at no additional expense and how it improves service to its clientele.

INSTRUCTIONS

a. Please fill out all the sections below and abide strictly by the word count. Words exceeding the maximum word count will be cut off automatically/truncated.

b. IMPORTANT: It is necessary that the CEO certifies that all information you provide is true and correct by signing the form indicated in the last page.

c. By submitting an entry, you agree that HMA will share relevant aspects of the Entry submitted on the HMA or related Resource Center website.

Background Information

Project Title   E-documentation to improve productivity for Emergency Department (ED) Out-patient X-ray section

Date Project Started   November 2012

Enhancements made (for projects that did not start operations between January 2012 to May 2013)

Key staff involved in the project

1. Name   Dr Gregory Kaw

   Department/Function   Department of Diagnostic Radiology / Snr Consultant

2. Name   Magdalene Wong

   Department/Function   Department of Diagnostic Radiology / Manager

3. Name   Naini Surender Reddy

 Department/Function Department of Diagnostic Radiology / Principal Radiographer

4. Name   Koo Lay Yam

 Department/Function Department of Diagnostic Radiology / Principal Radiographer

5. Name   Clint Ong Ming Lung

 Department/Function Department of Diagnostic Radiology / Principal Radiographer

PLEASE ANSWER THE FOLLOWING QUESTIONS USING THE MAXIMUM WORD ALLOCATIONS INDICATED

1. Please give some background to the project or program including how it originated. Give details of the extent to which the project improves the efficiency or effectiveness of co- departments or employees who are "internal customers". Outline any specific goals or targets you had in mind prior to the project being put together. **MAX 350 WORDS.**

   Background:

   Before the project was implemented, ED doctors would order x-ray procedures in their system (ED web) and a manual paper request form with the order would be printed and given to the attending radiographer in the X-Ray rooms to carry out X-ray examinations. The radiography assistant would periodically collate the forms and send them to the main Radiology Department reporting room for the radiologist to commence reporting.

   Feedback from radiologists indicated that delivery of request the forms took a long time to reach them. This method proves to be inefficient, as radiologists are required to wait for forms before reporting is initiated. There were also cases of missing or misplaced request forms require time to investigate and solve Due to multiple factors contributing to the inefficiency of the workflow, at 6 hours, an average report turn-around-time (RTAT) of 70% of general x-ray cases in ED are reported. At 24 hours, an average of 80% of general x-ray cases in ED are reported.

Aim:

The team needed to review of current workflow and check for areas for improvement. The team performed root cause analysis and provided several options to explore in order to improve productivity and reduce process waste. By eliminating process waste, we will be able to answer the feedback of our internal customers.

Interventions:

The team performed a root cause analysis and concluded that having an electronic form will eliminate the current waste in the system. An efficient and cost effective method to achieve this was to scan the manual paper request form into Radiology Information System (RIS). The concept is not new but having just upgraded the RIS, engineers and RIS administrators have to work out the correct configuration as well as workflow to ensure that the ground staff are able to execute the scanning process effortlessly.

A pilot study was implemented after the final configuration for the scanning workflow was established. Preliminary results were encouraging as sustainable positive reports were noted. The pilot study was expanded to include the entire X-ray section at ED.

Word count: 338 / 350

2. Please explain how the project benefitted a large number of internal customer staff or a select group? Or what other benefits were derived. **MAX 200 WORDS.**

A pilot study was implemented after the final configuration for the scanning workflow was established. Preliminary results were encouraging as sustainable positive reports were noted. The pilot study was expanded to include the entire X-ray section at ED.

By converting the forms to E-documents the inefficiency was reduced drastically. This was evident by the marked improvement of average RTAT for 6 hours improved from 70% to 80%. For 24 hours RTAT, the results improved from 80% to above 90% RTAT. Along with achieving our main objective, there were collateral benefits.

With the elimination of physical forms, there were no further reports of lost forms. These forms were now easily ==retrievable electronically==. Radiography assistants could now assist radiographers more efficiently during X-ray examinations, as they are no longer needed to dispatch hard copy forms for reporting.

Word count: 135 / 200

3. Please describe IF and how the project of internal customer service was also beneficial from the patient's perspective and experience, and how it improved patient care, patient safety or service. Preferably please present quantifiable information such as "before and after" measurements if any. **MAX 200 WORDS.**

Improvement of average RTAT for 6 hours improved from 70% to 80%. For 24 hours RTAT, the results improved from 80% to above 90% RTAT helps by allowing attending doctors at the emergency department to obtain radiological input about patients' conditions. This is important in the chain of patient care management. By eliminating the delivery of hard copy forms and converting it into E-document, the loss of forms was eliminated and these forms will be stored for easy retrieval. In addition, the radiography assistants do not need to travel needlessly. To deliver the hard copy forms, the radiography assistants need travel a distance of 300 meters, every hour. With the intervention, we eliminated the need to travel 2,400 meters (for 8 hours duty) for the radiography assistants. The radiography assistants are able assist radiographers more efficiently during X-ray examinations. This translates into a value-add factor because better patient care can be delivered.

Word count: 152 / 200

4. Please explain how the project is innovative and what the reaction of the internal customers that benefited was. **MAX 150 WORDS.**

The resultant faster RTAT is proof that process waste was achieved. It is innovative because using a scanner to convert the hard copy forms into

electronic document can be a cheaper alternative to function as an interface between 2 major electronic platforms in the hospital. In addition, radiologists reporting the radiographs are not frustrated with problems of inconsistent delivery and lost hard copy forms.

Word count: 64 / 150

5. Please give some background to the project team that originated, studied and developed the project or program. **MAX 200 WORDS.**

The team member consists of a senior consultant, department manager and 3 principal radiographers. Their understanding of the workflow and the capability of the existing IT infrastructure were valuable in this project. Feedbacks from the internal customers (i.e.; radiologists) were studied carefully. The team members were able to:
- Identify gaps in the workflow in order to eliminate process waste.
- Design an optimal solution to balance cost and implement effective interventional measures.
- Eliminate process waste such as needless traveling time for radiography assistants to send the hard copy forms, the need for the radiologists to wait for hard copy forms and unnecessary action to access different ordering platforms.

Word count: 110 / 200

6. Please give any other information, including third party testimonial regarding your project which you think would help convince the judges that this project (or program) should win this category. **MAX 200 WORDS.**

This project was presented during the divisional Allied Health Services and Clinical Support services MyCare Champions update and received positive feedback that this project can also be further develop to be part of an overall system that can deliver an accurate, error-free report before the patient leaves the hospital. More importantly, the internal customers (i.e.; radiologists) gave positive feedbacks because they can view the ordering

forms in real-time and do not need to wait the forms to be sent over by the radiography assistants.
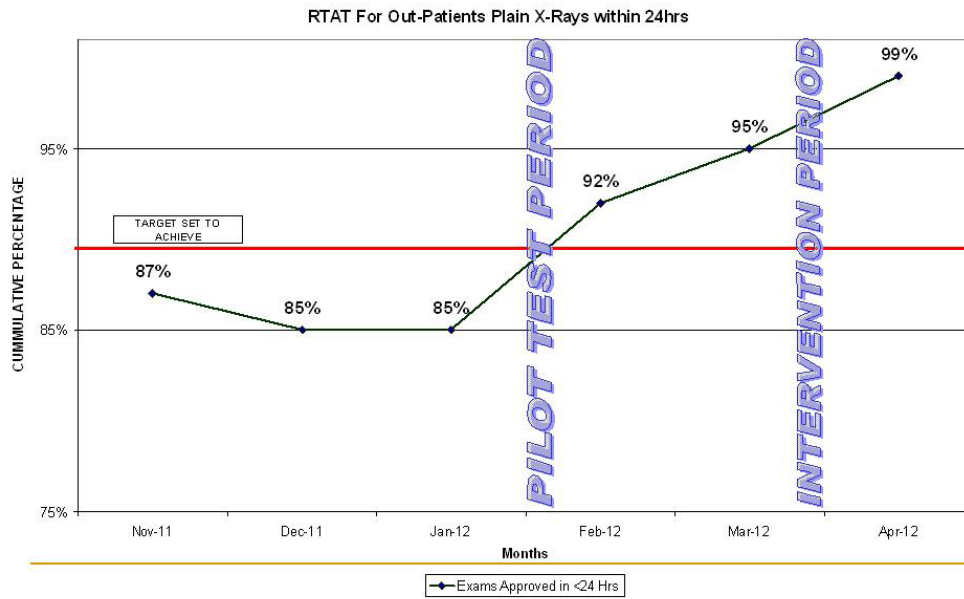
Word count: 84 / 200

Attached Files:

1.

2.

Results Review

RTAT For Out-Patients Plain X-Rays within 24hrs

3.
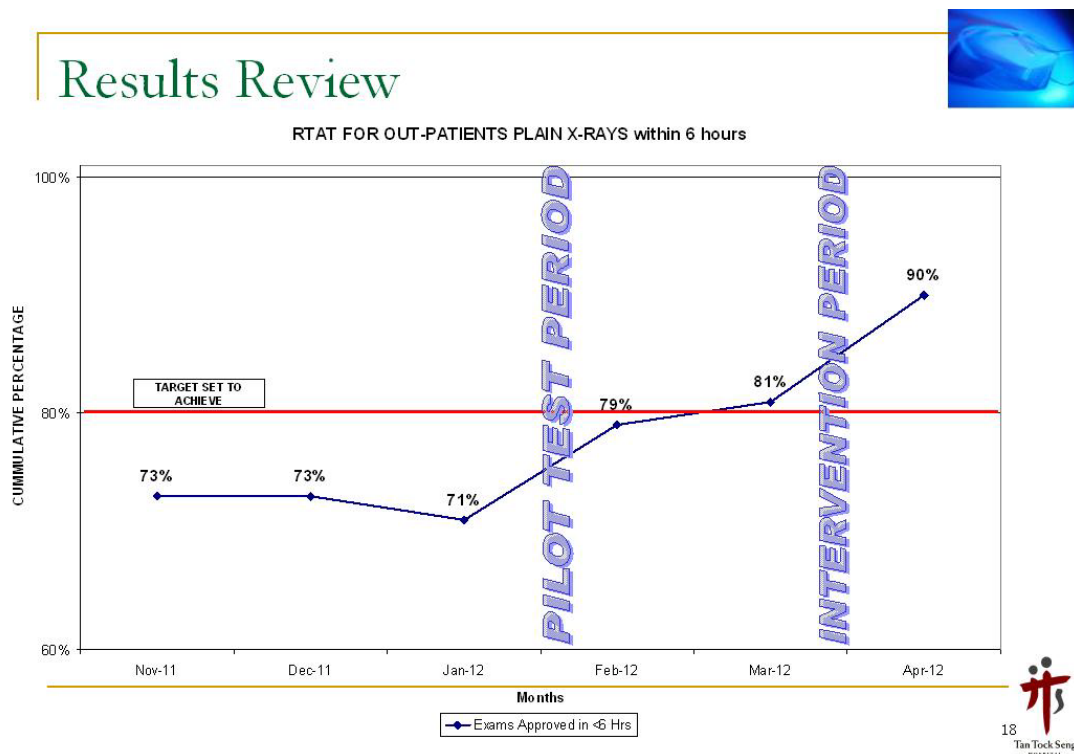
AHS and CSS
Champions Update 2013

Dear AHS and CSS Champions and Team,

Thank you for your sharing during MyCare Champions Update. We truly enjoyed the story of your improvement journey!

Cheers,
MyCare Basic Team

Feedback & Comments

Team effort in improving delivery of care

COO praised the team for their spirit of collaboration and teamwork in their improvement journey. COO mentioned that the level of involvement among the entire team was evident, and improvement should be a team effort that involves all staff.

Paper Forms vs Digital Forms

CMB mentioned that while the team has done well to cut down the time for filling up forms by coming up with concise carbon-copy based paper forms, he feels that the team should explore the use of digital forms and not to go back to manual forms. He suggested using mail merge from Microsoft Office and Excel to quickly generate complete digital forms.

Using patient value as an indicator

CMB mentioned that patient value must be used as an key indicator to measure the outcome of improvement projects. While the turn-around-time to generate reports has been reduced, the team should also look at optimizing the reporting time by doctors. The aim should be to improve the overall system and to deliver an accurate, error-free report before the patient leaves the hospital – which is what the patient values.

Creating a culture of continuous improvement

In response to a question posed to the champions, the team shared that moving forward, the goal is to spread the MyCare message among all staff, and to create a culture of continuous improvement in the department. To do so, the team will provide MyCare soft skills training to ground staff, and to generate ground-up ideas for improvement.