Research Paper

Lean Management in the Medical Records Department: A Case Study

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ABSTRACT
A medical records department (MRD) is the whole soul of any information of the patient who is discharged from the hospital after treatment. It mainly functions to store the medical records or treatment files of patients who are either treated in the hospital. Lean management in healthcare improves the efficiency and quality of healthcare, improved safety, the delivery of innovations to drive continuous service delivery improvement, redesigning the patient journey to improve access and reduce waiting times, medical supply chain management etc. Initiation of lean tools have been found to have positive impacts on timely delivery of services, cost, quality and healthcare productivity. Hence this study was done with the aim of identifying wastes in the processes in order to improve the processes of the MRD.
Key words: Medical Record, Medical Record department, Lean Management

I. INTRODUCTION

A medical records department (MRD) is the whole soul of any information of the patient who is discharged from the hospital after treatment. It mainly functions to store the medical records or treatment files of patients who are either treated in the hospital. The medical records department also send data to the government about the number of births and deaths in the hospital for their registrations in the census and also serve useful in legal proceedings as proof of treatment. 1 It has clinical, legal, scientific and administrative importance.

In carrying out its various functions, the department generally has to deal with problems like coping up with technology, incomplete patient records, difficulty in timely completion of the task, unnecessary movement of personnel etc. The existing procedures must be as effective and efficient as necessary to satisfy the needs of department.2 In order to address these problems, organization and practitioners have developed many methods and processes. One of these is Lean Management, that have proved its effectiveness in service sectors as well. Simplifying the process is the goal of Lean Management, which is achieved through cutting out waste and streamlining procedures.3 Lean in healthcare organizations firstly help in improving the quality of the outcomes in terms of mistakes and reduce the error. Secondly the amount of time taken to complete whole process significantly improves.

Using lean principles, all people in the organization, from clinicians to operations and administration staff, continuously try to identify waste in all the areas and to eliminate those things which do not add value for patients. Implementing lean healthcare leads to improve patient satisfaction as the decisions making processes become patient centered. In order to reduce medication errors and also to make the process defect free Six Sigma system can be used. Lean methodologies in healthcare sector can help in eliminate eight wastes like reducing the patient waiting time, inventory can be minimized, the movements can be decreased, talents can be utilized, motion can be reduced, resources can be maximized by minimizing over processing, can eliminate over production etc.4

Lean management in healthcare improves the efficiency and quality of healthcare, improved safety, the delivery of innovations to drive continuous service delivery improvement, redesigning the patient journey to improve access and reduce waiting times, medical supply chain management etc. Initiation of lean tools have been found to have positive impacts on timely delivery of services, cost, quality and healthcare productivity5.

Hence this study was done with the aim of identifying wastes in the processes in order to improve the processes of the MRD

II.   MATERIALS AND METHODS

This study was observational and was conducted in a teaching hospital. Data was collected by personal observation of workflow of the department and informal interview withthe Medical Record officer**,** Department In-charge.

III.   RESULTS:

The study explored the existing process flow in detail, in the medical records department. The value added & non value added steps in the process were identified. The various movements by the staff were also observed to identify wasteful motions. The findings are presented below:

1.   Studying the current process in MRD

The current process of the department was studied & a detailed process map was prepared in order to identify various waste generated. The process map showed the sequence of events that take place in the medical records department, from receipt of medical records from various wards to their physical storage, on shelves.
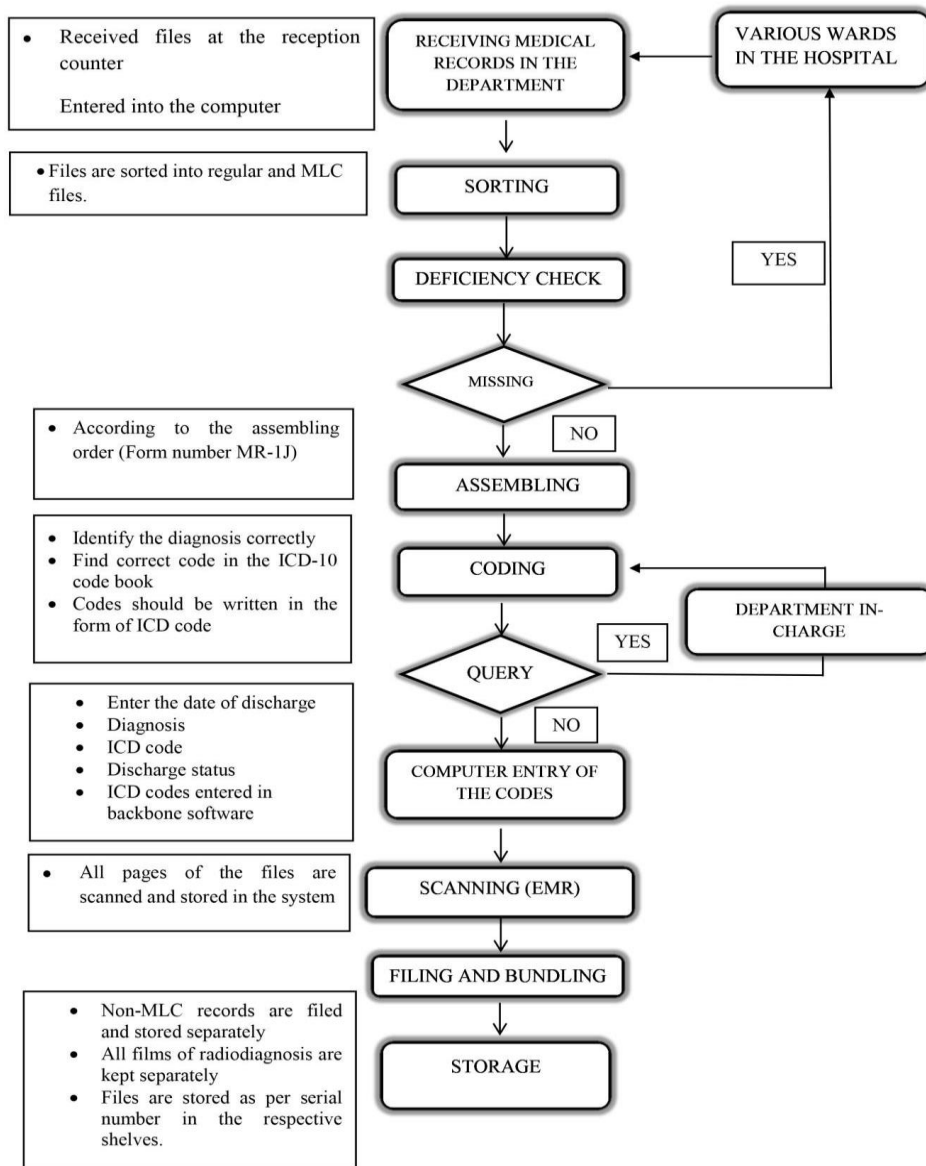

Fig 1: Process Map

2.   Identifying value & non value added activities in MRD

Table 1: Value and non-value-added activities.

MRD sub processes	Number of processes	No. of non-value-adding activities	No. of value-adding activities
Receiving	1. Files were received at the department within 48 hours. 2. Regular follow up to receive the discharge files from the ward. 3. The records are received and are checked against the entries made in the admission registers of the ward, and are received in the IP-MRD. 4. Received chart ward wise entered in the notice board. 5.Files are sorted as per date 6.Clerical staff receive the case sheet both manually as well as in software	3	3
Deficiency check	1. The assembled medical record is checked for deficiencies by analyzing the deficiency checklist. 2. Any deficiency identified is entered in the deficiency form. 3. The medical record along with the deficiency form is then sent to the respective ward, for completion. 4. The analyst has to sign against the blank space provided in the in-patient admission record after the completion and analysis of deficiency check. 5. Some files were received incomplete or forms in the files were missing for which the files are re-sent to the respective ward for the completion.	1	4
Assembling	1. The IP chart is arranged according to chronological order referring to the assembling order of the medical records. 2. The analyst has to sign against the blank space provided in the in-patient admission record after assembling analysis. 3. Some report received late by the analyst to be reassembled after receiving.	1	2
Coding	1. the MRD technician goes through all the forms & compares diagnosis mentioned in the admission record with the discharge summary & then enter code. 2. Ensure that the primary diagnosis has been listed first and any secondary codes are listed in the correct coding sequence. 3. Code is given to the identified diagnosis, operation and procedure, this is listed on in-patient admission record in the column marked ICD code. 4. The analyst has to sign against the blank space provided in the in-patient admission record on the completion of ICD Coding. 5.Whenever clerical staff are uncertain about code it will be sent to Incharge for coding 6. After the manual ICD- coding, the codes are entered in to the Health Information System of the hospital. The entered ICD codes helps in retrieval and research.	3	3
Sorting	1.Files are sorted as per IP number 2.Medico Legal files are sorted separately		2
Filing	1.The coded medical records are filed on racks in the MRD storage area in serial numeric filing system. 2.The death and MLC inpatient medical records are filled with the Outpatient folder Separately in the MRD.		2
Scanning	1.Preparation of medical records 2.Scanning of medical record 3.Organizing and indexing scanned documents 4.Uploading and creating documents 5.Giving access to users 6.Retrieval of stored data		6
Total	**34**	**10**	**20**

Non value added/waste processes and their categories based on the workflow at the Medical Records Department were identified. They are as follows:

Receiving Section -
•   Regular follow up to receive the discharge files from the ward.(waiting, time waste)
•   The records are received and are checked against the entries made in the admission registers of the ward, and are received in the IP-MRD.(process /duplication)
•   Clerical staff receive the case sheet both manually as well as in software. (process /duplication)

Deficiency check section
- Some files were received incomplete or some forms were missing for which the files are re-sent to the respective ward for the completion. (Time, wait and information waste).

Assembling
- Some report received late by the analyst to be reassembled after receiving (time waste, process waste)

Coding
- Checking each form with discharge summary instead of directly entering code by referring admission record. (Process/Duplication)
- The clerical staff when uncertain about the code refers the file to the In-Charge. (Process waste).
- Manual ICD- coding, and entering into the Health Information System. (overprocessing)

Filling
- Recent files were kept pending on the shelves without getting labelled, as they were awaiting being digitalized. (Time waste)
- The software was keep on lagging therefore all the data was again filled in excel sheets.(time waste)
- Sometime the files were numbered wrongly by the attenders while bundling them. (Re-work, process waste)

3. **Identifying waste of movements:**

The various movements of the personnel were observed for a week as they were carrying out routines. Here,

- Person 1 is the attender who does the job of carrying the files from the reception counter to the sorting desk using trolleys. Once the sorting is done then they will take it to the in-charge from where the files are divided among various clerical staff. Once the clerical staff finishes their work the files are then taken to the EMR desk then they are taken to the storage area and arranged on shelves.
- Person 2 is the clerical staff who is doing the work of entering the statistics in the system.
- Person 3 is the clerical staff assigned to do the birth and death registration desk.
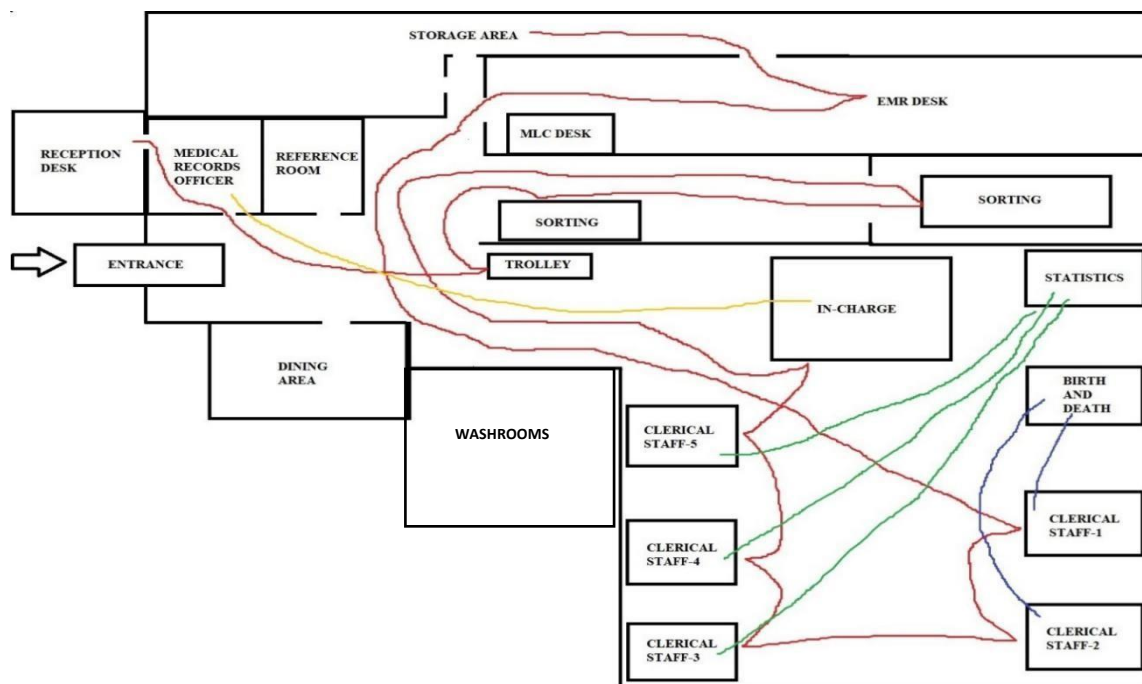- Person 4 is the Assistant Medical Records Officer who has to work with the In-charge.

Fig 2: Spaghetti Diagram

Person 1 (Attender)
Person 2(Clerical staff assigned for entering statistics)

Person 3 (Clerical staff assigned for birth and death entry)
Person 4 (Medical records officer)

It is observed that there is a lot of criss-cross movement as person 1 (Attender) was moving from reception to sorting, clerical staff, scanning unit and storage area. Person 4 (Medical Records Officer) cabin is located where she does not have direct visual of working area.

4.   Delay in receipt of Medical Records in the Department:

As one of the major waste was delay, observation was made on a sample of 100 files to identify delay in receiving files

● None of them reached the department within 48 hours of discharge.
● 42 records reached before 7 days after the discharge.
● 14 records reached between 7 to 10 days after the discharge.
● 34 records took 10 to 20 days to reach the department after discharge.
● 10 files took more than 20 days as they were sent back for deficiency check.

In discussion with MRD Officer & Ward Incharge, the various reasons for delay was identified.

• Doctors and nurses are not punctual in completing & signing medical records
• If the nurses or doctors responsible were on emergency leave, it remains pending
• Improper handover by nurses during shift change may result in some details not being filled up and kept pending.
• Lack of knowledge regarding the deadline for returning medical record files in case of newly joined staff
• Credit patient files kept back in ward to complete the insurance formalities
• After clearance of bill, discharge status is not entered in the system by the clerk
• If ward is closed for maintenance work and patients are shifted t another, some files are left back.

IV.   DISCUSSION

The study identified that various wastes were involved in the process. There were 5 sub units in the department. Receiving had 6 processes, 3 non value add activities, and 3 value added activities. Deficiency check unit had 5 processes, 1 non value add activity, and 4 value added activities. Assembling section had 3 process, 1 non value added activity, and 2 non value added activities. Coding unit had 6 processes, 3 non value added activities and 3 value added activities. Sorting had 2 processes, which were value added. Filing section had 2 processes which are value added and the Scanning unit had 6 activities, which are value added. This was similar to a study conducted by **Ajami et al.,[3]** who used the value stream map to analyze the value- added and non-value added activities and represented them in the form of table. The results showed there were 4 unit which include admission unit had 5 wastes and 4 value added, Statistics unit had 6 wastes and 1 value, Coding unit had 4 wastes and Archive unit had 11 wastes.

Motion study using spaghetti diagram identified that there is a waste of movement in the department in carrying of files from one unit to another. It also detected that the layout is also not suitable as MRO cabin does not have visual access to monitor the activities in the department. Similarly, a study by **Bhat et al.,[6]** also found waste of movement by using a Spaghetti Diagram. As the layout of the entire workplace was not effective, a cell layout was proposed to represent the arrangement of workstations, and equipment to process the product minimum waste as possible and to support the smooth flow of materials and components.

Observations showed that no files were returned to Medical Records Department within 48 hours as per guidelines. Too much time gap was there between the date of discharge and the date on which files were received in the Medical Records Department. **Putra [7] et al.,** mentions that people are not responsible for the return of medical records, but it's the organizations lack of oversight through the improper management of medical record returns. Therefore, it is important to pay attention to the factors which cause delay, so that the return of medical records will be on time. The factors that influence the return of medical records are the lack of accountability of (human) medical record keepers, and the form of charts that doctors and nurses fill out.

V.   CONCLUSION

Lean management is a set of operating philosophies and methods that help create maximum value by reducing waste and waits. This study helped in identifying various wasteful activities that are involved in the Medical Records Department process and it showed that implementation of Lean Management is so helpful and desirable. Tools like Process Map, Spaghetti Diagram, helped in analyzing the various value-added and non-value-added activities. It also highlighted the defects in their unit and suggestions as to what should be

done in the future in order to avoid them were given to management.

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