Application of Principles of Process Re Engineering for Improvement of Functional Flows of Dietary Services of a Tertiary Care Hospital

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Abstract- The purpose of the study was to identify, study analyse and improve the various functional flows in a Dietary Service of a Tertiary Care Teaching Hospital in India. This observational and descriptive study is based on the concept of improvement through Process Reengineering to map the As-Is and To-Be processes. The study identifies key areas of concern and recommends improvement measures for improvement of quality of services provided by applying principles of process reengineering.

Index Terms- As-Is & To-Be Processes, Dietary Services, Process reengineering, Quality

I. Introduction

Dietary services is one of the most important hospital support services contributing to the recovery of health through scientifically prepared diets and educating the patients regarding the use and utility of different foods and balanced diets.

Planning principles for efficient and effective dietary services for a hospital are as under [1]:

a) Patients receive food according to their clinical needs.
b) Nutritional therapy is planned and provided in a collaborative manner.
c) Food is prepared, handled, stored and distributed in a safe manner.
d) The dietary services to be designed in a manner that there is no criss-cross of traffic. All the activities fall in a sequence.
e) Dedicated food storage/refrigeration areas exist to ensure food preservation.
f) Food storage areas/refrigerators are maintained appropriately.
g) All food products are stored off the floor.
h) Cleaning supplies stored in a separate location way from food.
i) Separate dedicated food preparation areas exist.
j) Measures are in place to ensure that flies do not come in contact with pre pared/stored food.
k) Food distribution to patients occurs where possible in temperature appropriate food service trolleys (hot food kept hot and cold food kept cold).
l) Application of principles of ergonomics as far as possible

Ideal Layout and functional flows [2]

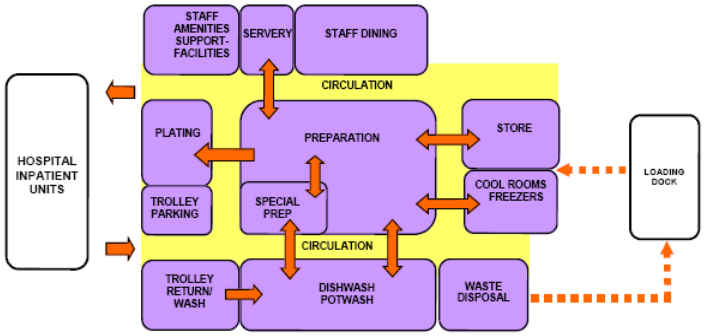
The dietary services have four major zones based on the function.

Zone 1 where reception, inspection, storage and issue f of raw materials is conducted.

Zone 2 where preliminary preparation of food, peeling, cutting f vegetables and washing procedures are carried out.

Zone 3 for cooking area.

Zone 4 as waste disposal area.



Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed. [3].Now the question comes what to reengineer? According to many in the Business Process Reengineering field of reengineering should focus on processes and should not be limited to thinking about organizations. After all, the organization is only as effective as its processes.

Talking about the importance of processes just as institutions has organization charts they should also have what is called as process maps to give a picture of how work flows in a particular service. Process mapping provides tools and proven methodology for identifying your current As-Is functional processes and can be used to provide a To-Be roadmap for reengineering of product or service. [3]

After a feedback from the stakeholders it was identified that the dietary services of the tertiary care teaching hospital has issues of suboptimal service delivery. The clientele and staff highlighted the issues of inadequate and poorly maintained equipment, insufficient staff, poor service, inadequate space, more time for service delivery and poor waste management practices.

II. AIM & OBJECTIVES

Aim: To enhance the standard of Quality of Dietary Services in a Tertiary Care Hospital by applying principles of process re-engineering.

Objectives:

1. To understand the functional process flows and existing infrastructure of dietary services and process maps.
2. Apply principles of process engineering to the existing processes.
3. Recommend improved functional flows along with infrastructural changes so that form follows function and overall quality improvement of dietary services.

III. METHODOLOGY

An observational and descriptive study was carried out in Dietary Services of a tertiary care teaching hospital. The study was carried out for a period of three months from January to March 2015. A consolidated methodology with a structured approach has been adopted to facilitate understanding of the processes which includes:

Building cross functional teams
Adequate representation from stakeholders

Map and analyse As –Is Process:

a) Study of relevant guidelines on the subject:
b) Physical study of the existing facility. and functional processes
c) On ground measurement of space available and flanking verandahs
d) Study of available documents

Design To- Be Processes:

a) Benchmarking Processes
b) Design To Be processes

IV. OBSERVATIONS AND SUGGESTIONS

The observations are made with respect to improvement in location of physical facilities as per best practices, Functional process flows, infrastructure improvements and suggested equipment and costing with an aim for efficient and effective dietary services.

Physical facilities (Figure 1)

a) **Location**. The kitchen is located on the ground floor of the hospital.

b) **Interdepartmental relationship**. The hospital kitchen is appropriately located with easy access from all the departments with lifts available for transportation of food.

c) **Accessibility** The kitchen is assessable from two places with dedicated entrance for receipt of raw materials and other end for delivery of food.

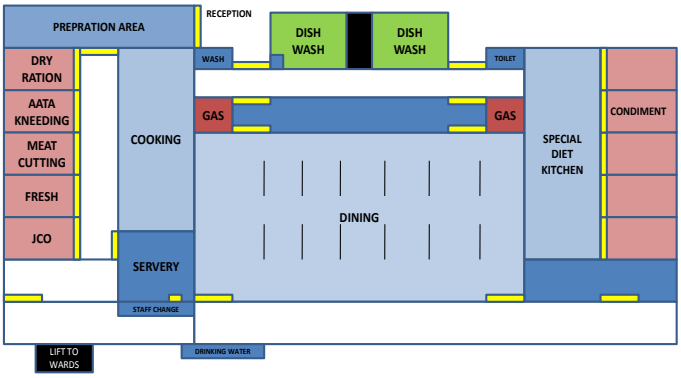


Figure 1: Present Layout

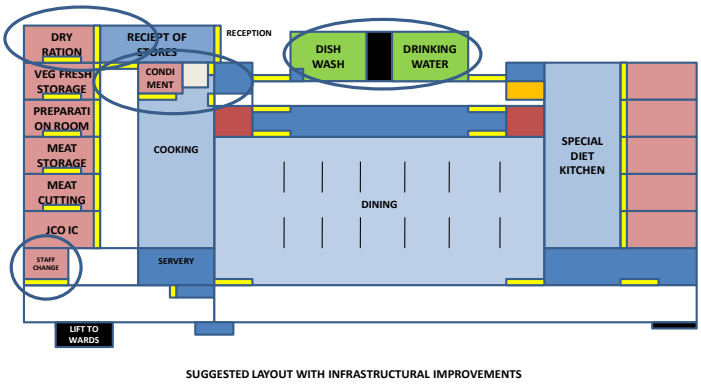


Figure 2: Suggested layout with infrastructural improvements

Functional Processes

A critical examination of the work processes was undertaken identifying the various activities in the process. Broadly the processes undertaken were reception of stores, layout of the facility, flow of storage and preparation area, movement of pots, dining member flow and retrieval of condiments.

The activities under the respective processes included:

(a) **Preparation of Food**. The activities undertaken in the process were fetching of dry, fresh and perishable ration from store room, inspection of ration, chopping & washing of vegetables, kneading of dough, cooking of food, shifting of cutting table, preparation of chapattis and transport and storage of food in pantry.

(b) **Dining Room Service.** Dining Room service identified the following activities; transport of food to warmer in dining room, service, dirty

plates collected and transferred to wash area in pantry and transport of left over food to pantry.

(c) **Cleaning & Upkeep.** Cleaning and upkeep of the activities included washing of plates and utensils in wash area, transport of clean plates to stacked area and storage, transport of clean kitchen utensils and storage, transport of waste disposal to waste bin through kitchen, retrieving of cleaning material and cleaning of kitchen and dining room, storage of cleaning material and inspection of kitchen.

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Activity No 1

Activity Element	Observation	Improvement measures
Reception of stores Place – Open area in front of the entrance Means - Manual retrieval **(Figure 1)**	No platform for reception of stores	Platform can be built utilizing a part of parking space
	Absence of trolley bay No covered area for reception of stores	Provisioning of trolley bay along the platform built in parking space. Over head shelter for receipt of stores from vehicle
	After retrieval from vehicle temporary storage clubbed with preparation area which is hindering the ideal functional flow.	The reception cum preparation area can be divided into two parts with. The one near entrance for receipt and temp storage of stores and next one for storage of Dry ration.
	Multiple Ventilating windows present	Needs to be closed **(Figure 2)**

Activity No 2

Activity Element	Observation	Improvement measures
Layout and flow of storage and preparation area **(Figure 1)**	Layout of various subsections like aata kneeding room, meat cutting room, fresh ration storage etc leading to repeated crisscrossing.	Modification as suggested in layout to enable ideal functional flow and facilitating easy retrieval.

		(Figure 2)

Activity No 3

Activity Element	Observation	Improvement measures
Movement of pots from cooking to pot Washing area and back Place- Cooking hall Sequence – used pots and cleaned pots entering and leaving from same door Means - Manual work **(Figure 3)**	Mixing of clean and dirty traffic Inefficiency in flows Inappropriate layout	Separate flow for clean and dirty traffic to improve processes as suggested in the layout (**Figure 4**)

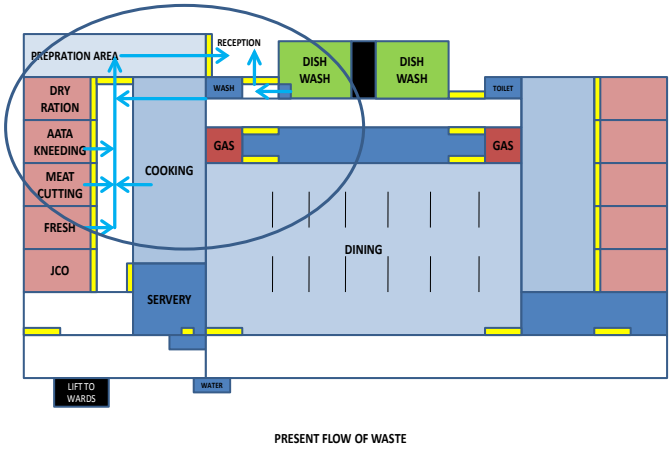

Figure 3: Activity no 3 & 4 (Existing)

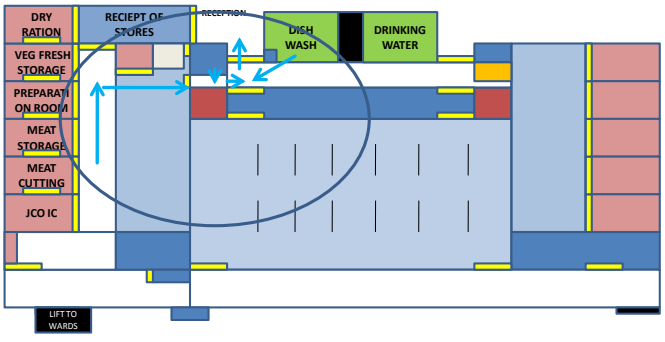

Figure 4: Activity no 3 & 4 (Improved)

Activity no 4

Activity Element	Observation	Improvement measures
Disposal left over food/ Waste from preparation, cooking and pot washing area Place - Through cooking area Sequence - Dirty flow through cooking area in each activity Means – Manual (**Figure 3**)	No dedicated path disposal of waste Mixing of clean and dirty traffic	Developing segregated path for waste as per the modifications suggested (**Figure 4**)

Activity No 5

Activity Element	Observation	Improvement measures
Dining member flow Place - Dining room Sequence – Entry and exit from same door with location of drinking water at the entrance of the room. **(Figure No 5)**	Mixing of incoming and out going traffic Absence of hand washing area Inappropriate location of drinking water area Exit doors for outgoing traffic present but closed	Relocation of drinking water area and instead having hand washing area in the same location. The closed doors can be open to segregate the incoming and outgoing traffic **(Figure No 6)**

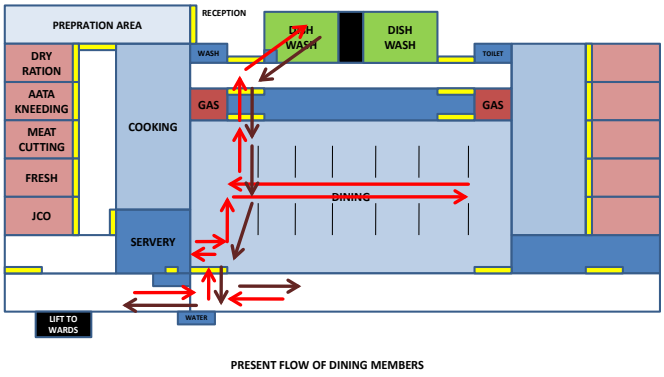

Figure 5: Activity no 5 (Existing)

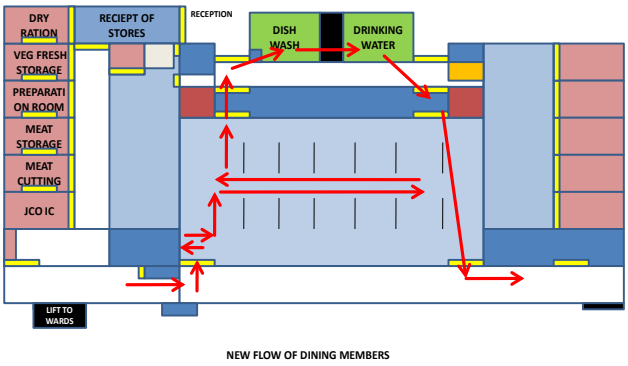

Figure No 6: Activity No 5 (Improved)

Due to above mentioned improvements some of the other processes improved automatically for e.g. flow of serving of food to dining hall and wards. (Figure 7 & 8), reception and movement of raw materials inside the kitchen (Figure 9 & 10) and entry and movement of cooking staff(Figure 11 & 12).

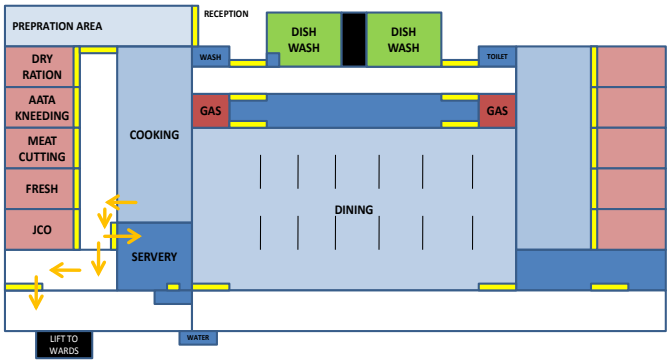

Figure 7: Serving of food (Existing)

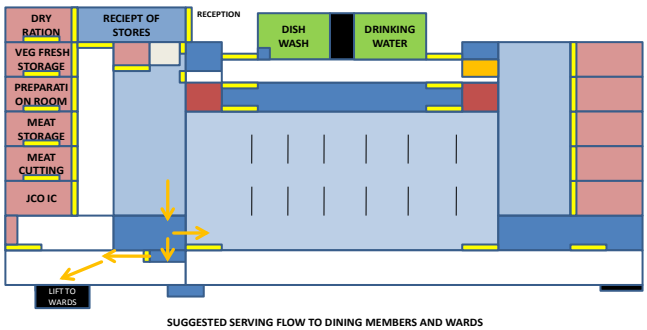

Figure 8: Serving of food (Improved)

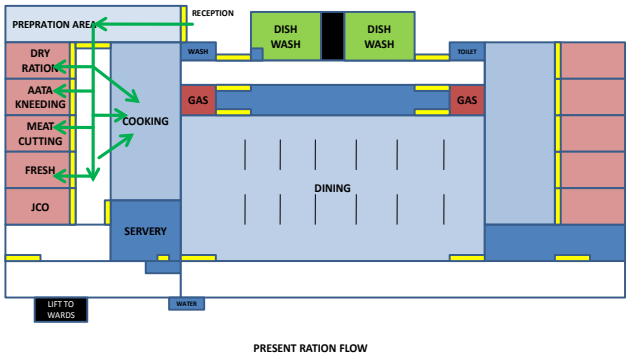

Figure 9: Movement of raw materials (Existing)

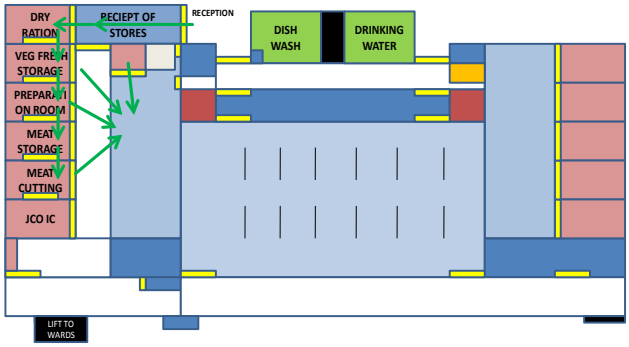

Figure 10: Movement of raw materials (Improved)

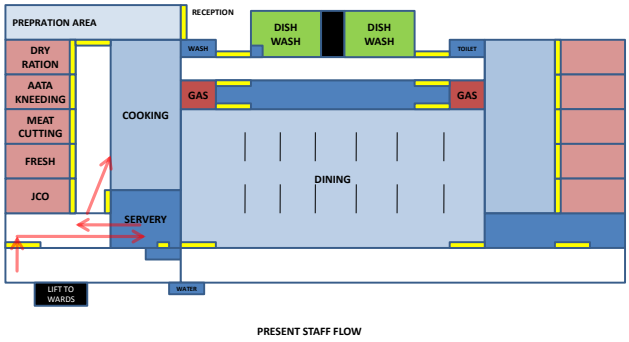

Figure 11: Movement of staff (Existing)

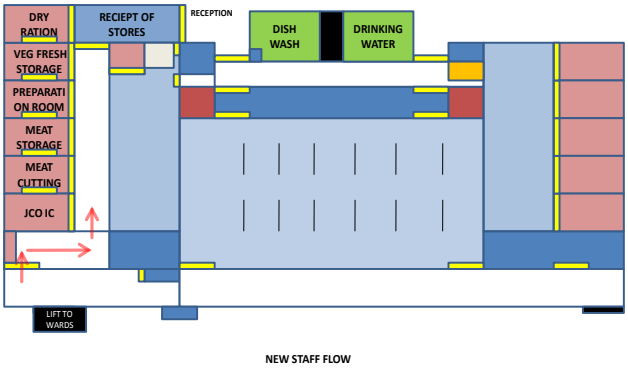

Figure 12: Movement of staff (Improved)

Overall process improvement: An overall process improvement was seen at the end of the study. Figure No 13 & 14 aptly depicts no criss crossing of traffic.

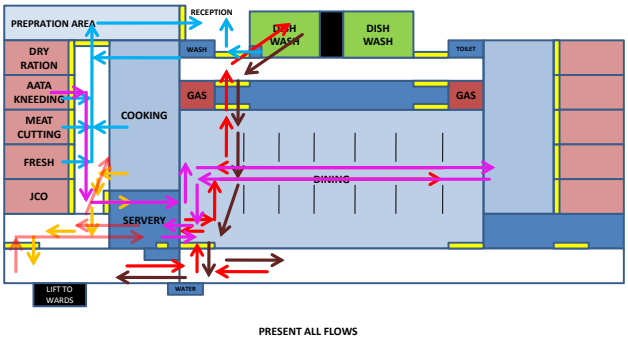

Figure No 13: Existing flows

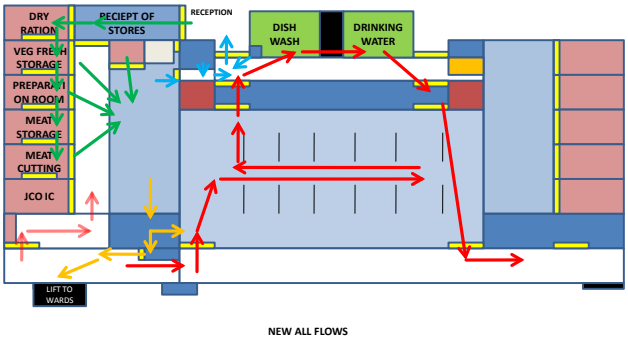

Figure No 14: Improved flows

V. DISCUSSION

This study was conducted for a period of three months in Dietary Services of a Tertiary Care Teaching Hospital. The study was designed to identify and analyze the deficiencies in the existing processes. The concepts and principles of process reengineering have been applied to improve the process outcome of the services. Infrastructure improvements were also suggested so that form follows function.

VI. CONCLUSION

Quality and efficiency of dietary services, like any other departments, can be improved through modern scientific management techniques can be applied in health care facility settings to improve work processes. The problem issues listed above are an apt organizational environment to implement these practices and bring efficiency and economy. Principles of Process Reengineering can be applied to Dietary Services thus radically redesigning the process and carry out various infrastructural improvement necessary to bring about a change in efficiency and effectiveness of dietary services of the hospital.

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