

Project Title

Kitchen Automation in support of Care Model Enhancements of IMH

Project Lead and Members

Project lead: Ong Lay See

Project members: Gan Chee Huang, Edward, Lee Wai Sing, Solex Leo, Ng Kim Koon, Malliga D/O Alagappan, Siti Arfah Binte Nordin, Chin Chooi Yie, Natalie, Pang Choo Kiat, Leonard

Organisation(s) Involved

Institute of Mental Health

Project Period

Start date: Sept 2019

Completed date: Feb 2020

Aims

To transform the kitchen so as to ease labour-intensive tasks, improve the working environment and provide job upskilling opportunity for kitchen staff at IMH's Dietetics and Catering Services department.

Background

Dietetics and Catering Services department (DCS) caters all meals for almost 2,000 patients at IMH. Unlike other hospitals, DCS kitchen is naturally ventilated with no air-conditioning. The environment is hot and humid and the food preparations are labourious and physically demanding. This is especially taxing for our aging workforce, of which, 22% is over 60 years old and another 16% will be over 60 years old by end 2022.

Since 2015, DCS have been facing difficulties in recruitment due to:

- a. Laborious / physically demanding works
- b. Harsh working environment

c. Low skill set / job prospect

Coupled with relatively high staff turnover rate (ranging from 5 to 15% a year over last 3 years), DCS will not be able to get the manpower required to replace its aging chefs / cooks. Hence, there is a need to transform the kitchen so as to ease those labour-intensive tasks, improve the working environment and provide job upskilling opportunity.

Methods

A team comprising of various representatives of DCS staff (from chefs / cooks, admin staff to the Head of Dept) with supports from Clinical Governance & Quality department (CGQ) and Infection Control Unit (IFC) was formed. Study trips to hospitals (TTSH, KTPH, YCH, CGH & SKH) and commercial (Sakae Sushi, SATS, NTUC Food Fare & Indian Restaurants Association Singapore) kitchens were conducted. Objectives were to learn and analyse various practises, methods and technologies that these central kitchens used and to bring back good practises for discussion with rest of the team who could not make it for the trips.

The team adopted the below approach (see Annex A for details):

- a. Re-engineer food preparation & workflow
- b. Introduce automated kitchen equipment
- c. Upskill the kitchen workforce

A value stream mapping exercise (facilitated by CGQ) was carried out by the team to analyse the current kitchen workflow, identify wastes and inefficiencies, and to gather feedback from staff. A Kitchen design specialist was also engaged to provide needed technical supports. The team applied Lean 2P (Preparation/Process) improvement technique to streamline the food preparation and cooking workflows. Various proposals were evaluated and prototype work stations were set up and tested out before finalising the revamp kitchen layout.

The results were discussed with equipment suppliers and appropriate automated / mechanised equipment were then recommended. For example, with the auto-rice cooker, the weighing, loading, washing & cooking of rice will be fully automated by just pressing a button. Instead of having 4 staff to prepare the rice/porridge cooking, we would only require to deploy 1 staff for this purpose only.

Results

The kitchen will reopen with new workflow and automated equipment to improve its productivity. As a result of innovation and productivity improvement, IMH is able to achieve a reduction of 11 FTEs. No staff replacement will be needed upon natural attritions or resignations. Balance headcounts will be ring-fenced for redeployment to other areas.

Lessons Learnt

When 'automated equipment' was first brought up to DCS staff, they were initially resistant to the idea as they were worried about several issues, such as being made redundant and losing their jobs, or whether they will be up to the new tasks, if the equipment would be easy to operate, and whether having equipment in place would mean more work such as more cleaning chores. However, management managed to seek the kitchen staff's buy in and convinced them that having automated equipment would be beneficial to both patients and staff themselves. Patients would enjoy consistent quality food, while staff would benefit greatly from having a safer work environment, less laborious jobs, and gaining new skills. Staffs who went on study visit other hospitals and institutions with new kitchen set ups saw for themselves how the new kitchen and workflow would benefit themselves and the kitchen productivity as a whole. Sharing sessions were organised by Executive Chef and staff to share what they have learnt with those who were unable to go on these learning trips. IMH management have also assured staff that there would not be any retrenchment.

Conclusion

As a result of innovation and automation, there are skill set upgrading opportunities for staff as they learn how to handle automated equipment instead of performing labour-intensive cooking duties. In order to upskill and better equip kitchen staff with future challenges, selected staff were being sent for in-house IT courses and Food Hygiene Officer course. These staff could also double up as food hygiene officer who will in turn conduct audit and ensure that the kitchen complies with food safety standards. Staff will also know how to operate and to do minor programming on the automated equipment. Staff also benefited in terms of work health and safety, as they will have less muscle aches and physical injuries as current work are being made less labourious, as well as working in a safer and cooler environment.

Project Category

Workforce Transformation

Keywords

Workforce Transformation, Staff Training, Institute of Mental Health, Value Stream Mapping, Workflow Redesign, Lean Improvement, Kitchen Workflow

Name and Email of Project Contact Person(s)

Name: Ong Lay See

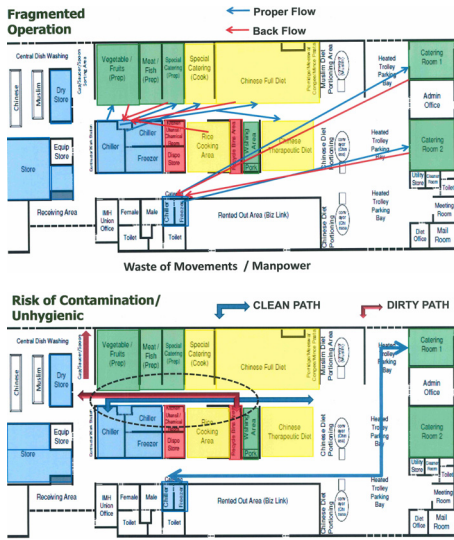
Email: lay_see_ong@imh.com.sg

Transforming IMH Central Kitchen

Our transformation journey – Maximising efficiency and optimising resources

Dietetics and Catering Department manages the kitchen in IMH which caters close to 2000 patients per meal. Due to our aging workforce, we anticipated the need of innovative equipment to meet demand and improve the quality of our food. This aims to reduce the over-reliance on manpower and to support automated equipment that will complete labour-intensive tasks. We are also taking this opportunity to renovate the kitchen to comply with new regulations.

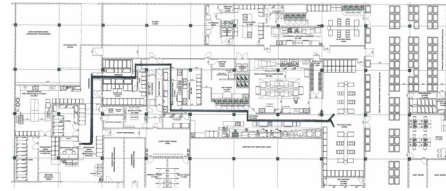
Before Re-engineer Food Preparation & Workflow After



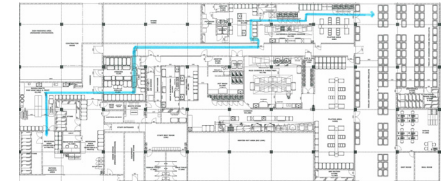
Workflow was a challenge as layout was not ideal and fragmented across the kitchen. The clean and dirty paths are in one pathway and there is no proper workflow. This may lead to higher risk of contamination.

One Direction Workflow

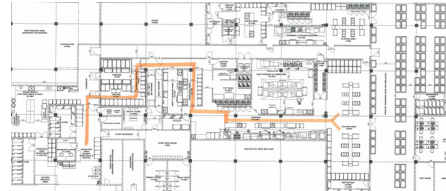
Meat Path



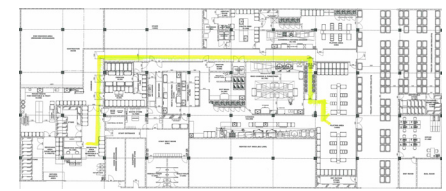
Fruits Path



Vegetable Path

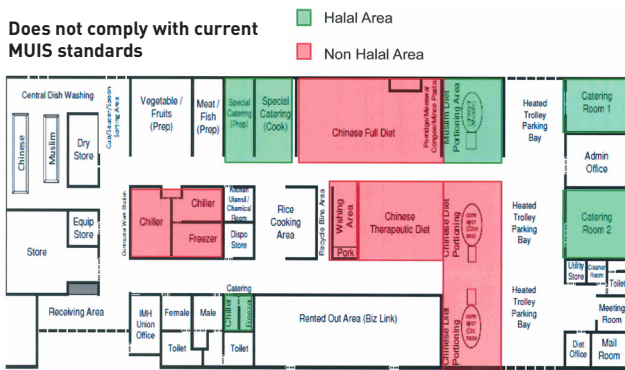


Rice Path



The new layout features one direction workflow and meets current food safety standards. Besides cutting down on contamination risk, this will also cut down on manpower and movement.

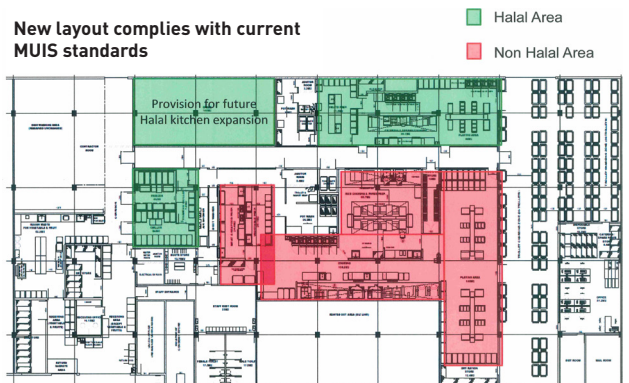
Does not comply with current MUIS standards



No proper segregation between Halal & Non Halal areas

Mixture of Halal and Non-Halal areas does not comply with current MUIS standards.

New layout complies with current MUIS standards



Proper segregation of Halal and Non-Halal areas.

Before Introduce Automated Kitchen Equipment & Upskill the Kitchen Workforce After

3800 patient meals (1900 x 2 meals) are prepared and cooked daily. More than 400 kg of raw food per meal: thawing, washing, chopping, mixing, stirring, frying, steaming, etc. done manually.



Cooking of 225kg of rice per day which involves 3 staff

Implementation of Automated Equipment in the kitchen aims to reduce the over-reliance on manpower and leverage on automated equipment to complete labour-intensive tasks.



Automated Rice-Pro machine which can handle the washing of rice to cooking and segregation of rice (only involve 1 staff).



Cooking of dishes which involves at least 4 staff



Revolving cooker and tilting braising pan cuts down on labour-intensive work (only involves 2 staff).