

### **Project Title**

Electronic Meal Ordering System (EMOS)

### **Project Lead and Members**

Project Lead: Yak Gai Wee, Senior Dietitian

Project Members:

- Sheue Mei Tong, Snr. Dietitian
- Zhii Yee Ng, Dietitian
- Wang Yan Mok, Dietitian
- Zhirong Chua, Snr. System Analyst

### **Organisation(s) Involved**

Ang Mo Kio-Thye Hua Kwan Hospital

### **Healthcare Family Group(s) Involved in this Project**

Allied Health

### **Applicable Specialty or Discipline**

Nutrition and Dietetic

### **Project Period**

Start date: July 2020

Completed date: March 2021

### **Aim(s)**

To reduce total time taken for meal ordering by 50% within 6 months of implementation

### **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Lessons Learnt**

See poster appended/ below

## **Conclusion**

See poster appended/ below

## **Additional Information**

Although, it took a lot of time and efforts during the application development, the benefits of the new application outweigh the costs that we spent. All in all, science and technology are able to save significant amount of time, improve overall efficiency and productivity. It is also able to reduce manpower spent significantly; thus producing substantial in cost savings which can add further value to community hospital resources.

## **Project Category**

Care & Process Redesign, Value Based Care, Productivity, Time Saving, Quality Improvement, Job Effectiveness

## **Keywords**

Electric Meal Ordering System (EMOS)

## **Name and Email of Project Contact Person(s)**

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# Electronic Meal Ordering System (EMOS) Ang Mo Kio-Thye Hua Kwan Hospital

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Zhiron Chua (Snr. System Analyst)**

## Introduction/Background

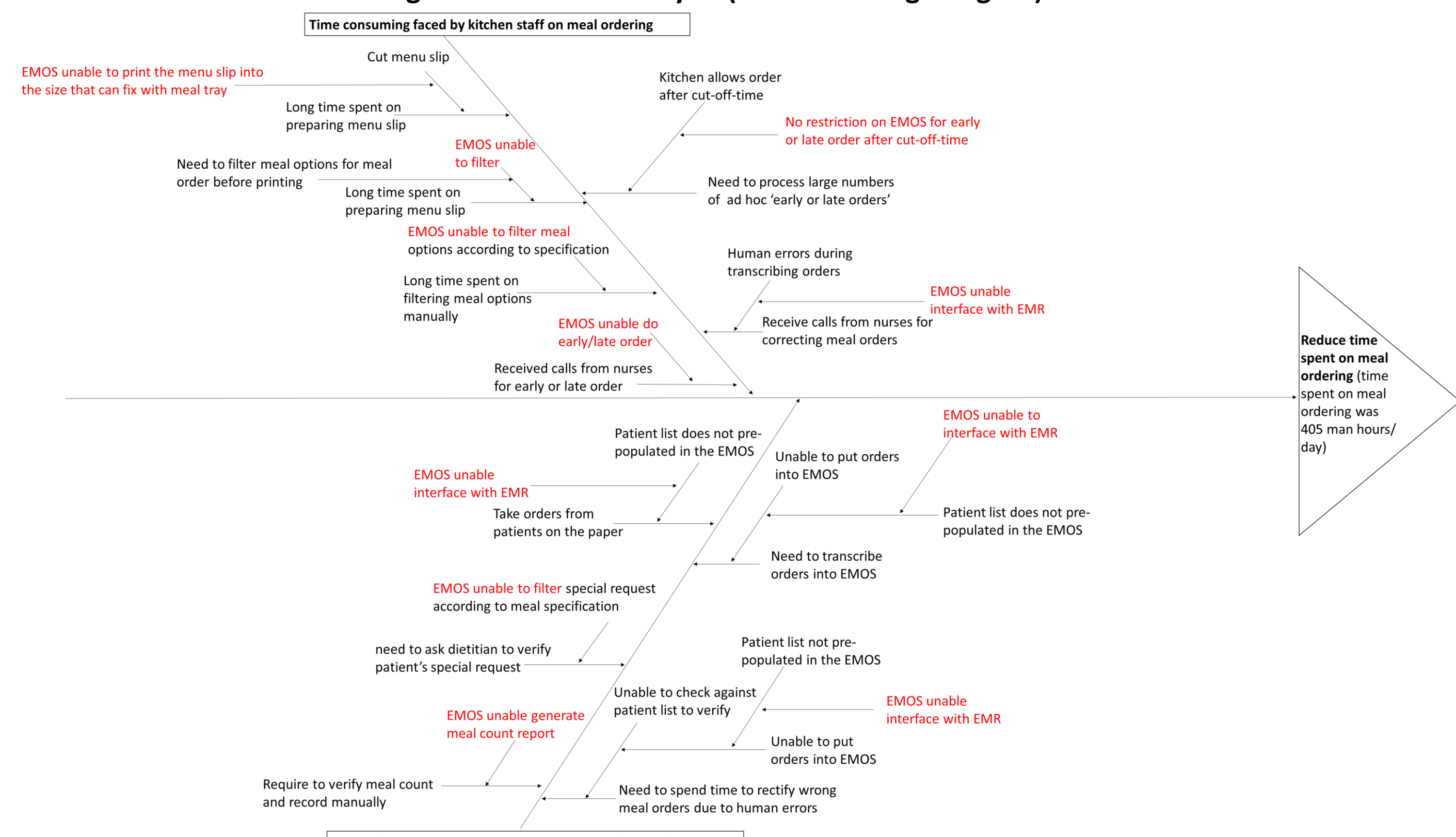
- Hospital Electronic Meals Ordering system (EMOS) application is used by allied health, nursing, operations and kitchen staff to provide meal services to inpatients. Transitioning from paper to electronic meal ordering has improved the accuracy of meal ordering and efficiency of staff.
- However, the old application was a basic EMOS application with no online interface with the hospital electronic medical record system (EMR).
- The application was not able to eliminate all the manual processes faced by the ground staff such as taking meal orders and transcribing orders into system, manual counting of meal orders, inability to filter meal choices according to the therapeutic diet specifications, food preferences and allergies; and inability to order early or late order.
- Hence, all these challenges led to ineffective and inefficient productivity, increased manpower cost and possibility of human errors during manual processing which may compromise patient's safety and experience.
- Furthermore, this application was provided and owned by the kitchen vendor and it will be removed once the contract expires.

## Goal/Objective

- The aim of the project is to reduce total time taken for meal ordering by 50% within 6 months of implementation.

## Problem Analysis

Figure 1: Problem analysis (refer to enlarged figure)



- Therefore, we require a new application that can address above problems and eliminate all manual processes to enhance productivity and patient's safety.

## Implementation Plan

No	Intervention	Personnel involve	Date of implementation
1	Study and propose requirements for the new application	MIS, nursing, allied health, vendor	Jul –Sep 2020
2	Finalized requirements	MIS, vendor	Oct 2020
3	System development	Vendor	Nov-Dec 2020
3	UAT	Nursing, allied health, food service provider	Jan 2021
4	Data merging	MIS, allied health	Feb 2021
5	Go-live	MIS, allied health, nursing, food service	Mar 2021

## Benefits/Results

FIGURE 2: TOTAL TIME SPENT FOR MEAL ORDERING (REFER TO ENLARGED FIGURE)

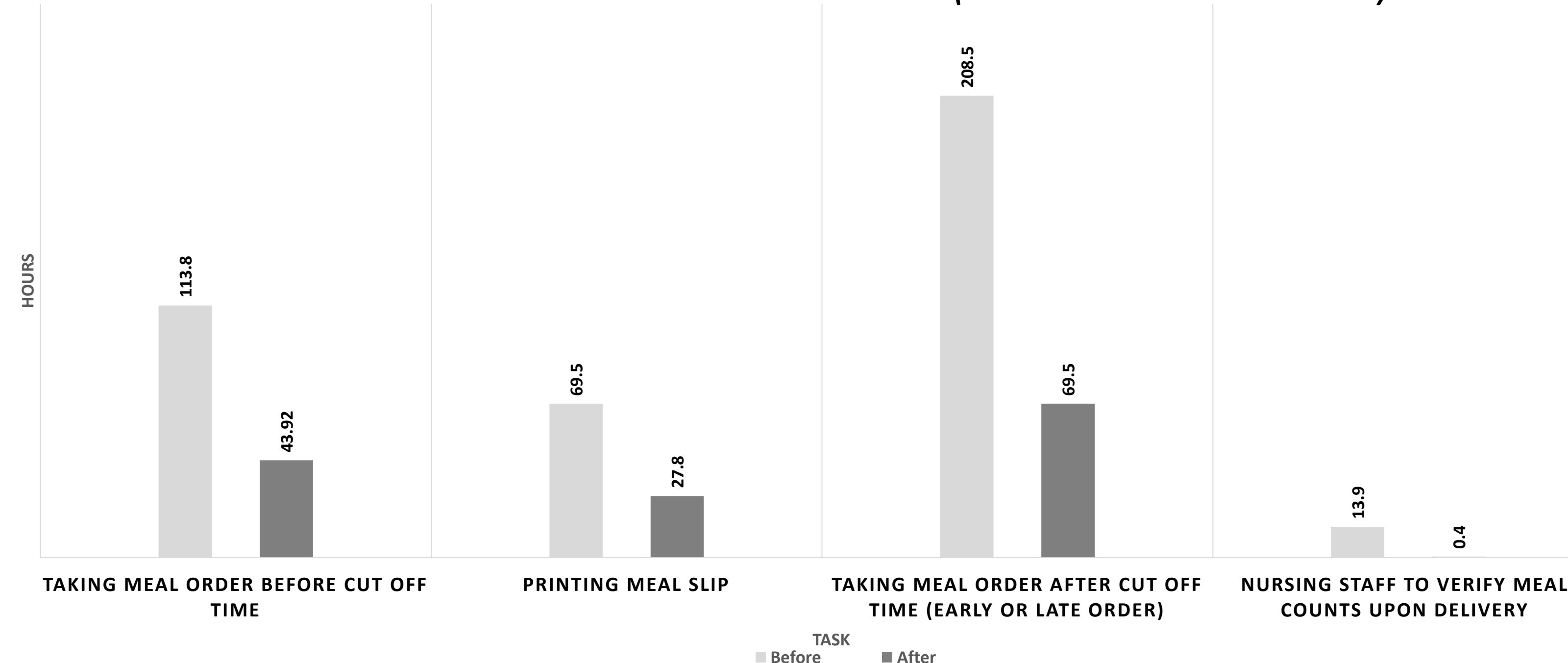


Table: Cost of running for meal ordering system

	Before (SGD/month)	After (SGD/month)
Manpower cost	303,990	116,655
CAPEX		7,749
OPEX		16,992
<b>Total cost</b>	<b>303,990</b>	<b>141,397</b>
<b>Total saving cost is SGD 162,593/ month OR SGD 1,951,116/ year</b>		

## Other benefits:

- Reducing time spent on meal ordering can add much value especially during pandemic as manpower is scarce.
- By eliminating all manual processes for meal ordering, staff productivity and efficiency are increased and time saved can be spent on other core responsibilities in patient's care thereby adding value.
- Filtering system for meal options is able to minimize inappropriate food for patients secondary to human errors. This adds to patient safety and saves crucial time for staff who previously would have to manually check to eliminate mistakes from reaching patients.
- Customised reports such as meal count reconciliation and ingredients usage can be used for management analysis.

## Sustainability & Reflections

- Significant reduction in time spent on meal order after cut-off time post implementation. However, meal order after cut-off time still accounts for the largest proportion of time spent in meal ordering process. Therefore, further reviews of the workflow and enhancing the application to reduce the time spent in this process may further amplify gains.
- Exploring the possibility for patients to use this system to order their own meals in the future may add value to patient empowerment.
- Periodical training is important for all staff especially for new hires to ensure everyone are familiar with the application so that the use of the application is sustainable.
- Collecting feedbacks from users and discussing with vendor for continued process improvements.
- Maintenance/ timely upgrade of the system to ensure smooth usage for end users.
- Multiple rounds of UAT prior to Go-live are important. Possible errors or issues during meal ordering were discussed and rectified. This is to ensure that the new EMOS is tailored to our needs.
- Early nurses training and identified champions for each ward are important to assist smooth transition from the old to the new EMOS
- Proper planning of the timeline for cut-off period and back up plan allow seamless transition of both old and new system.

Figure 1: Problem analysis

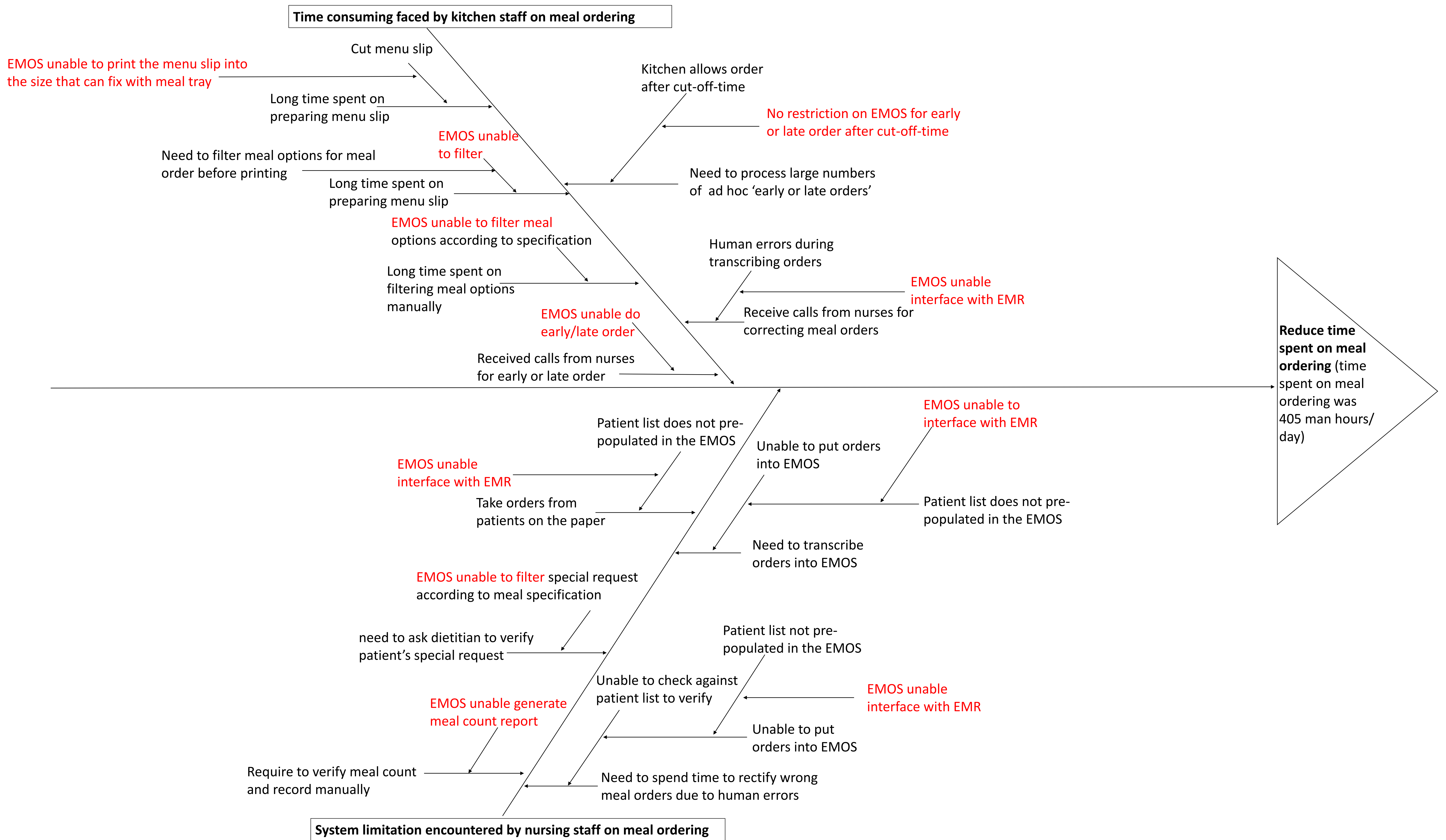


FIGURE 2: TOTAL TIME SPENT FOR MEAL ORDERING

