Pharmacy Information System (PhIS)
and
Clinic Pharmacy System (CPS)

System Design Document
(SDD)

Medication Administration Record – Web Application

Version	: 1.0
Document ID	: PhIS_CPS/SDD/MAR_WEB

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REVISION HISTORY

Version No	Date of Release	Prepared by	Reviewed by	List of changes from Previous Version
1.0	16/05/2018	Sitinor Megawati bt Saurani	Zainura Said	Document baseline for MAR Web and follow PhIS version 1.7

Table of Content

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1. Introduction

Pharmaniaga Logistics Sdn. Bhd. executes software development, enhancement and maintenance projects for its clients. The term "project" is used to describe the full set of activities from the time the proposal is accepted and project initiation note or contract is signed to the time all the software and services are delivered according to the acceptance of the proposal/contract.

This process is to ensure both user requirements and software requirements of the projects developments are gathered appropriately from stakeholders and are documented in User Requirements Specification (URS) and System Design Documentation (SDD) specifically.

2. Purpose

The purpose of the document is to describe the purpose and functionality of the software product requested by client. This document outlines the project's details, requirements, interface, design issues, and components to ensure that each requirement has been met.
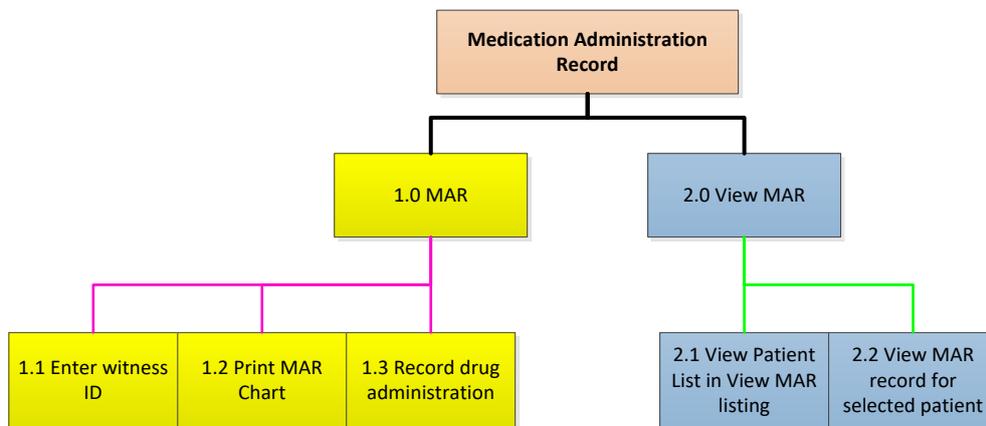
3. Detailed System Design

3.1 Medication Administration Recording (MAR) Overview
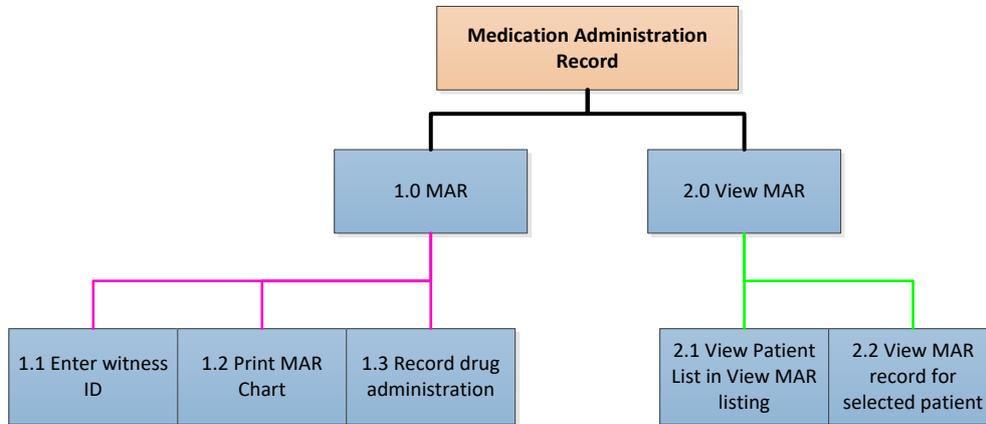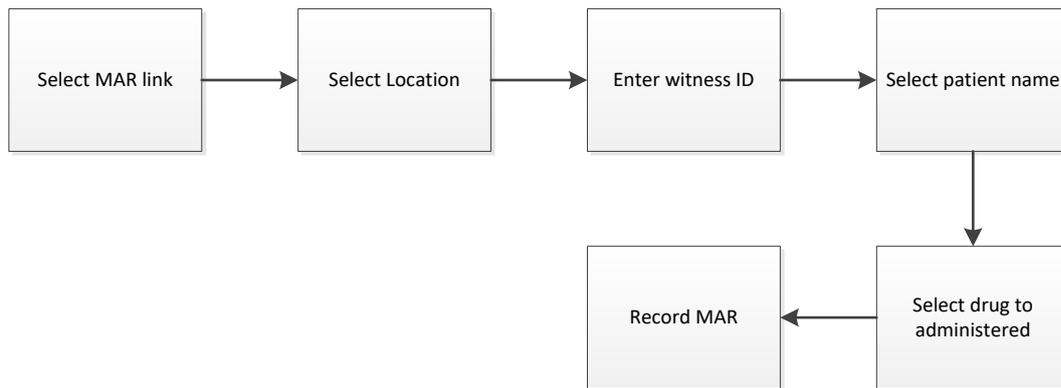

MAR.OVW1: MAR Overall Overview

3.2 MAR Overview

3.2.1 MAR Overview

MAR.OVW2: MAR Overview
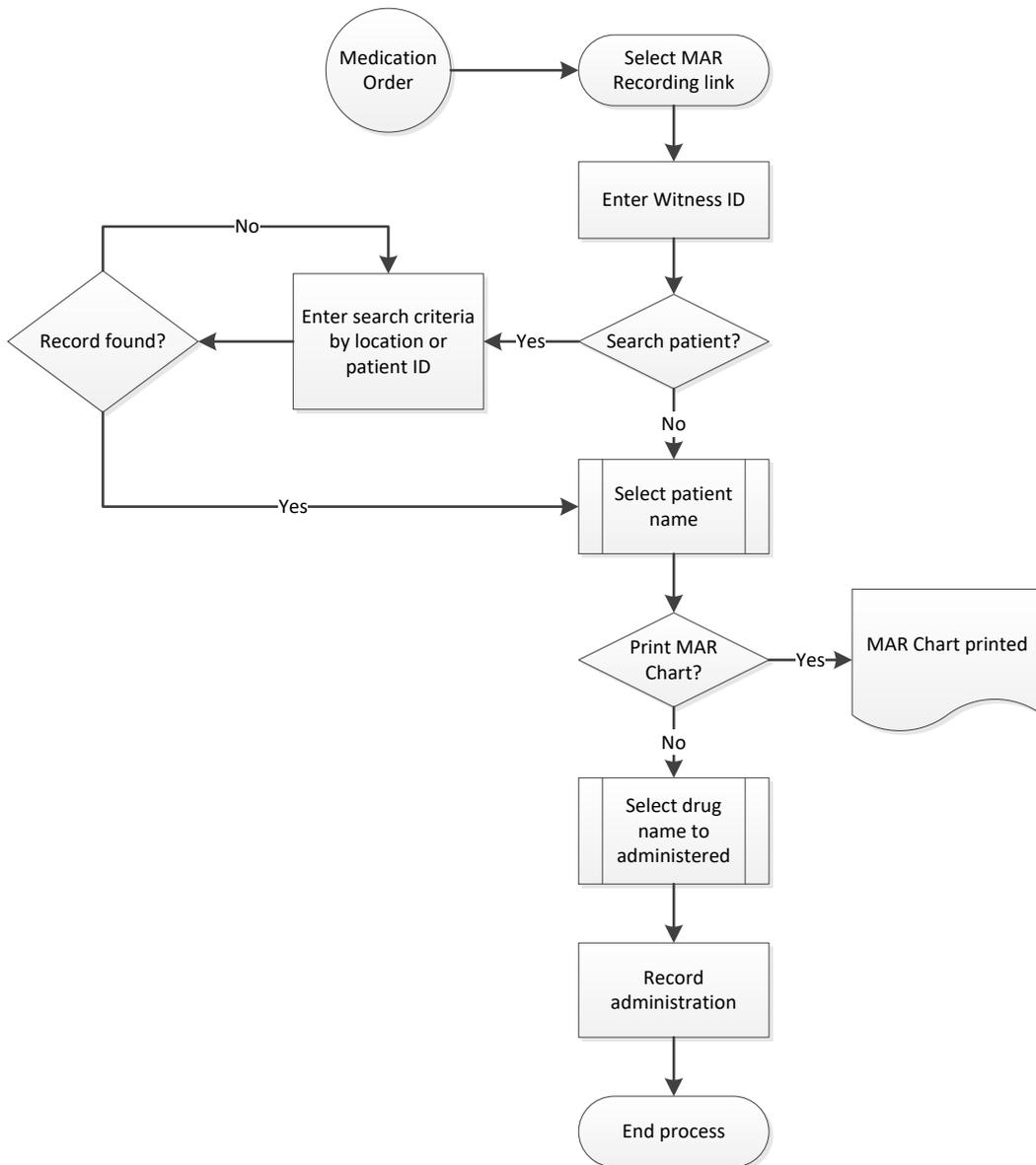
3.2.2 Block Diagram

MAR.BD1: MAR Web block diagram

3.2.3 Purpose

Medication Administration Record screen allows Nurses to administer patient based on drug and time. The patient name will appear based on granted location of the nurse ID. MAR screen is used for inpatient order only.

3.2.4 Screen Navigation Diagram

MAR.SND1: MAR Flow

3.2.5 Detail Functionality and Screen

3.2.5.1 Medication Administration Record

3.2.5.1.1 Screen Design

ID	MAR.SD1
Description	MAR screen
Diagram	
i. *Witness Login ID screen*	

ii. MAR Listing screen

iii. MAR Search screen (Patient MRN)

iv. MAR Dialog Screen (normal order)

v. MAR Dialog (Infusion order)

vi.   MAR Chart

Hospital Miri

MEDICATION CHART

Name	: ▨▨▨▨▨	Age	: 56Y 07M 09D
ID No	: ▨▨▨▨	Weight	: 66 Kg
MRN	: HMIRI00250482	Ward/Bed	: FMW
Diagnosis	: AGE with metabolic acidosis and AKI	Allergy	:

No	Drug Name	Order Details		Date/Time						
				04/02	05/02	06/02	07/02	08/02	09/02	10/02
1	~~Metoclopramide HCl 10mg/2ml Injection~~ (WS) Prescriber name: Dr. ▨▨▨▨ Order date:04/02/2018 02:45 AM	~~10 mg, **PRN**, 7 Days, Intravenous~~ Remarks :								
2	Atorvastatin 20 mg Tablet Prescriber name: DR ▨▨▨▨ Order date:16/04/2018 11:32 AM	20 mg, **ON (EVERY NIGHT)**, 1 Weeks, Oral Remarks :	10:00 PM	16/04						
3	Prazosin HCl 1 mg Tablet Prescriber name: DR ▨▨▨▨ Order date:16/04/2018 11:32 AM	2 mg, **Q8H**, 1 Weeks, Oral Remarks :	5:00 AM 1:00 PM 9:00 PM	16/04	17/04					
4	Metoprolol Tartrate 50 mg Tablet Prescriber name: DR ▨▨▨▨ Order date:16/04/2018 11:32 AM	50 mg, **BD (TWICE DAILY)**, 1 Weeks, Oral Remarks :	5:00 AM 5:00 PM	16/04	17/04					

vii.   MAR Late Administered Remarks screen

Notes	• Click on MAR link, witness id screen will appear first. • Click on Confirm to confirm the witness ID entered. • Click on Cancel to close the witness id screen. • Click on Medication Chart button to print MAR chart. • Click on Refresh list icon to refresh the MAR patient list. • Double Click on patient name to open Mar Dialog screen. • Click on Remarks link to open Late Administered screen. • Click on Patient MRN search icon to open Patient Search screen. • Tick on checkbox at the admin time column for the selected drug to administered the drug.
Cross References	**Medication Order** – PhIS_CPS_SDD_OM_v1.0

3.2.5.1.2   Application Business Rules

No.	Name	Description

1.	Search Patient	• MAR listing screen is displayed for user to select patient based on user's granted location and patient's visit location.
		• User shall be able to search patient by Patient MRN or by patient location.
		• On click of Patient MRN search icon, Patient MRN [____] user shall be able to search the patient by MRN number of patient name.
		• Listing is sorted in ascending order based on visit date.
		• By default, patient's record is displayed based on the visit type as below:
		  i. Inpatient: Patient record is displayed until the patient discharge.
		  ii. Daycare: Patient record is displayed until the patient discharge.
		  iii. Emergency: Patient record is displayed until the patient discharge. System auto discharge after 24 hours.
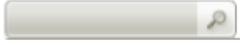
2.	Witness ID	• User must enter a valid witness ID before open MAR screen. Witness ID should came from a pharmacist or doctors that has the same granted location with patient location but with higher roles.

		• Click on Confirm button [Confirm] to confirm the witness ID and MAR screen will appear.
		 • Click on Cancel [Cancel] button to close the witness ID screen and go back to main menu.
		 • '*Admin*' user is prohibited to be witnessed id. An alert will appear if user try to enter admin id as a witness id.
		 • Below are the rules on witness id:
		    1. If user did not enter the witness, system should not open the administration screen. Witness criteria;
		      - Witness must have system access login.
		      - Witness must be different with user login.
		      - Witness can be anybody from the same discipline only.
		    2. If user did not enter the witness, system should not open the administration screen.
		    3. If the MAR screen has been close, then user is required to key-in the witness login again in order to access the patient list.
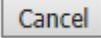
3.	Refresh listing	Click on the Refresh button to reset all searched records and searching criteria to default value.
4.	Medication Chart	User shall be able to print the MAR chart by clicks on this button [Medication Chart] .Once click, a preview page of MAR chart will appear for user to print it. However, before user click on this button, select the drug record first by tick on Select All **Select** [☐] checkbox or single selection of checkbox [☐] .
5.	Administered drug record	• User shall be able to administered the drug record by ticked on the checkbox [☐] for a due record (yellow color) like this [1:00 PM ▯] . User shall be able to admin the drug with yellow color within one hour before the actual admin time or 1 hour after the actual admin time. To record the admin time, user shall need to click on Record [Record] button after ticked on the checkbox. • User also shall be able to enter remarks for late administration record by click on Remarks [Remarks] link. Late administered drug will be describe in red color like this [8:00 AM ▮] . It means that the serving time has passed. If drugs admin time has passed, checkbox will be disable. • For future dose which describe in dark green color as this [8:00 PM ▮] , user shall able to enter the remarks only. • Click on arrow left/right [◄] [►] to find previous day of record or next day record for the patient order. • Refresh button [↻ Refresh] , used to refresh the drug order, in case if other user has administer the record but not updated automatically to the current page. • For a discontinue/stopped drug, the drug name will be strike through with red and the drug will be sort to last page. User shall not be able to admin the discontinue drug.
6.	Administered Infusion Drug	• User shall be able to administered infusion order by start button [Start] . After click on Start button, text field will be filled with current time
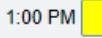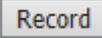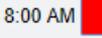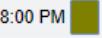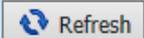
		Start 03:01 PM . Start button will be disable and yellow box ☐ will changed color to green ■. • User shall be able to end the infusion order by click on end button End . After click on End button, the text field will be filled with current time End 03:04 PM . End button will be disable.
7.	MAR Remarks	• For overdue drugs, user shall be able to update the drug as Not Administered or Late Administered through MAR Remarks screen. • Click on Edit ✎ button first before update the drug as late admin or not admin. Enter any Reason or Remarks if related. • Save the drug remarks by click on Save button 💾.
8.	MAR color code	Administration of drug inside MAR screen is differentiate by a color code. Below is the standard color code used in MAR: • Served Green – drug record has been administered on time; • Overdue Red – drug admin time has passed/overdue; • Withold Blue – drug with 'hold' status; • Not Serve Purple – drug record is being updated as not serve; • Due Yellow – drug record need to be admin on time (+- 1 hour); • Late Turquoise – drug record is being updated as late serve; • Future Dose Olive Green – drug record admin time is for future dose; • Discontinue Orange – drug record has been stopped/discontinue by prescriber.
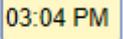
3.2.5.1.3 Input Validation Rules

| No.	Name	Description	Manda tory	Format
Witness ID Screen				
1.	Witness ID	User shall be able to enter witness ID.	Yes	Text field
MAR Listing				
1.	Location	By default, location is default to user's login location. The listed location values are based on the user's granted location as setup in User Profile screen.	Yes	Drop down list (searching field)
2.	Patient MRN	MAR listing shall be retrieved from the database for all inpatients with confirmed ordered drug based on matching Patient MRN.	No	Text field (searching field)
3.	Patient Name	MAR listing shall be retrieved from the database for all inpatients with confirmed ordered drug based on matching Patient Name.	No	Text field (searching field)

No.	Name	Description	Mandatory	Format
MAR Dialog Screen				
1.	View	User shall be able to filter by active drug or non-active (expired) drug for the patient.	No	Drop down (search field)
2.	Drug Name	User shall be able to search on specific drug name by entered drug name into this field.	No	Text field (search field)
3.	Order Date	User shall be able to search based on drug order date.	No	Calendar format in dd/mm/yyyy (search field)
4.	Administered drug: Checkbox	User shall be able to administer the drug by ticked on this checkbox. Once ticked, user need to click on Record button to administered the drug and current time will be updated.	Yes	Check box
5.	Administered drug: Time field	Current time will be updated into this field after user click on Record button. It is non editable field.	Yes	Read only
6.	Administered infusion drug: Start time	User shall be able to administer the infusion drug by click on Start button and start time will auto fill into the start time text field. It is non editable field.	Yes	Read only
7.	Administered infusion drug: End time	User shall be able to administer the end time for infusion drug by click on End button and end time will auto fill into the end time text field. It is non editable field.	Yes	Read only
MAR Remarks				
1.	Not Administered	User shall be able to update the drug to 'Not Administered' which means no drug given to the patient.	Yes	Radio button
2.	Late Administered	User shall be able to update the drug to 'Late Administered' which means drug is given to patient but at later time.	Yes	Radio button
3.	Reason	User shall be able to enter the reason for late admin or not admin. Reason consists a dataset of (Allergy, Changed Drug, Haemodialysis, Medication/Drug With Hold, Nil By Mouth, Nil In Stock, No IV Access, Not In Bed, Others, Patient Discharged, Refused).	No	Drop down
4.	Remarks	User shall be able to enter any remarks regarding the update.	No	Text field

3.2.6   Integration

None.

3.3 View MAR Overview

3.3.1 Overview
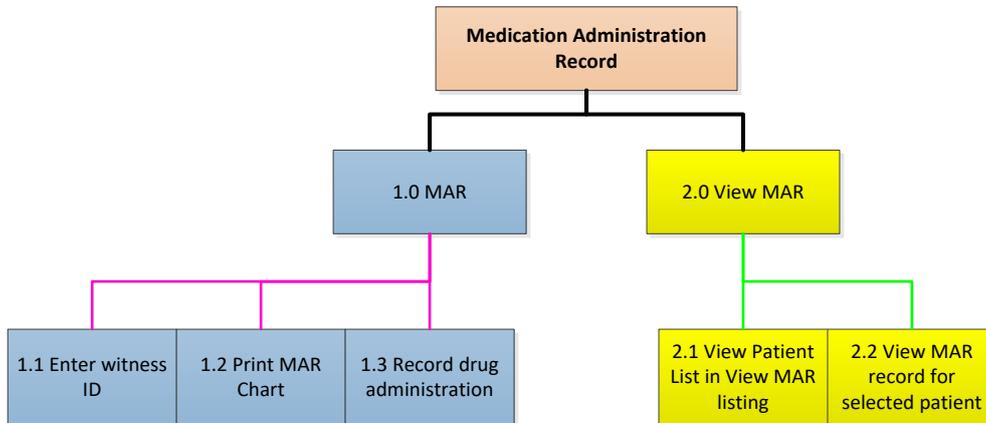
VM.OVW1: View MAR Overview

3.3.2 Block Diagram
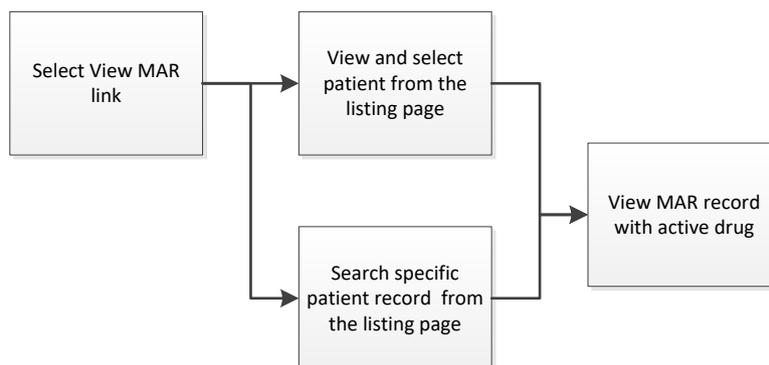
VM.BD1: View MAR flow

3.3.3 Purpose

This screen for user to view all medication administration details as a chart. The data should show only for the active patient visit where patient visit as inpatient. Once patient discharged, system should not show in this MAR.

3.3.4　　Screen Navigation Diagram
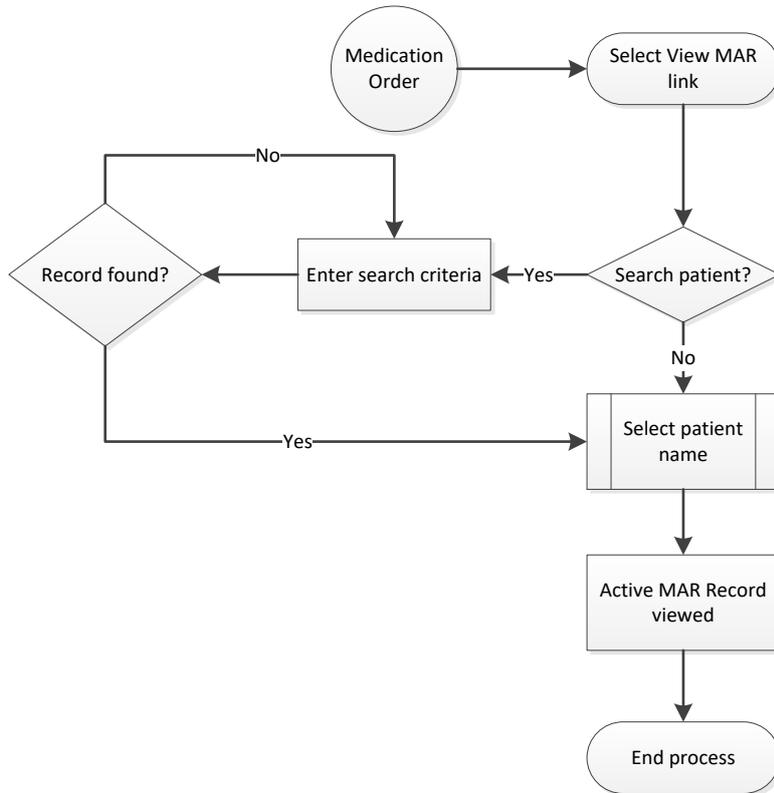
VM.SND1: View MAR Flow

3.3.5　　Detail Functionality and Screen

3.3.5.1　　View MAR Listing

3.3.5.1.1　Screen Design

ID	VM.SD1
Description	View MAR Listing
Diagram	
i.　View MAR Listing	

Notes	• Click on Search to search patient name based on filter criteria.
	• Double Click on the patient to open MAR chart (read only).
Cross References	**Medication Order** – PhIS_CPS_SDD_OM_v1.0

3.3.5.1.2 Application Business Rules

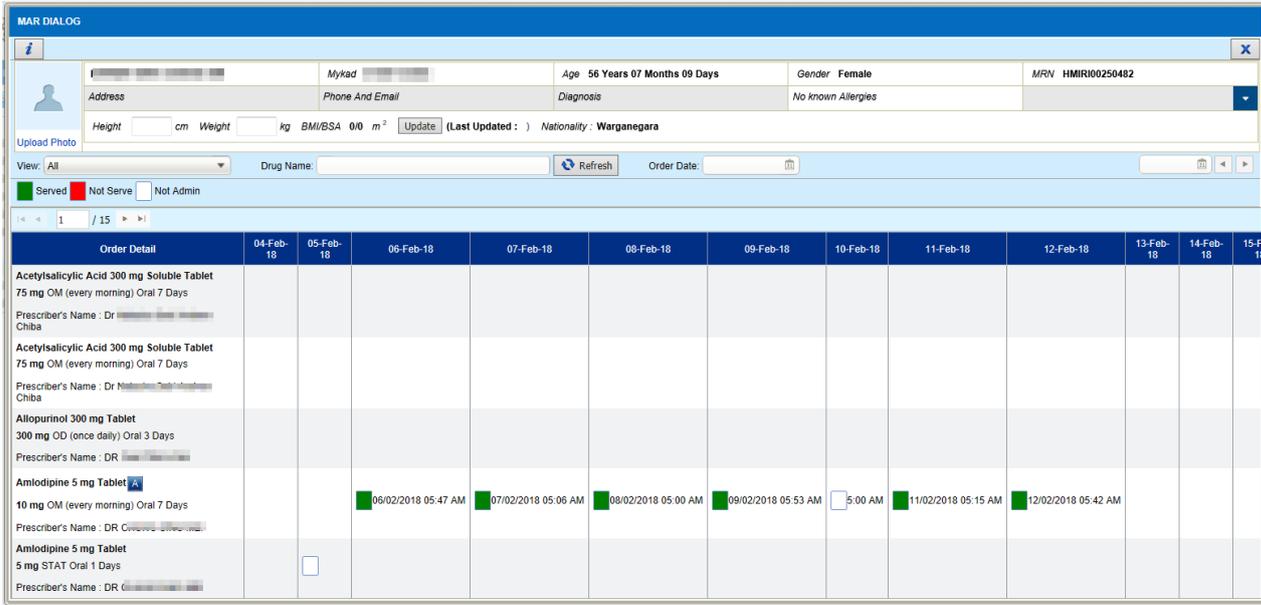| No.	Name	Description
1.	View MAR Listing	• By default, the listing will show patient based on granted location by user with active drugs.
		• In the patient listing, the list will show only the patient with active visits (where patient discharged flag is false) and the active prescription (one of the drugs end date is greater than current date and status not equal to discontinue or cancelled.
		• The screen should have 4 columns;
		o MRN – Patient MRN
		o Patient Name
		o IC No/Other Identification
		o Location
		o Last Visit Date
		• Use can click the patient name to open the MAR record.
		• The medication administration chart is for read only. It will show the status of the drugs for every single schedule.
2.	Refresh Listing	Click on the Refresh button to reset all searched records and searching criteria to default value.
3.	Search MAR record	• System shall provide the filtering function for user to search on specific record.
		• By default, system shall display MAR record with Active medication.
		• Click on Search [Q Search] button after enter the search criteria and system shall query based on the input filter criteria.
4.	MAR Dialog	• By default the drug name will be listed in alphabetical order.
		• All active and inactive drug will be display but user able to filter out this drug by using View dropdown (Active/Inactive)
		• Click on Refresh [Refresh] button to refresh the list.

5.	View MAR Color Code	Administration of drug inside View MAR screen is differentiate by a color code. Below is the standard color code used in View MAR: Green – drug record has been administered whether on time or not on schedule time; Red – drug is updated as 'Not Serve'. White – drug is not administered at all

3.3.5.1.3   Input Validation Rules

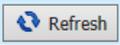| No.	Name	Description	Mand atory	Format
1.	MRN	Manage Prescription listing shall be retrieved from the database for all registered patients with visit based on matching MRN and related to original prescriber/pharmacist name that create the order.	No	Text field (search field)
2.	Location	By default, Location is set to All. List of Location appear based on granted location of the user.	No	Drop down (search field)
3.	Patient Name	Medication order listing shall be retrieved from the database for all registered patients with visit based on matching Patient Name.	No	Text field (search field)
4.	IC Number/ Other Identification Number	Manage Prescription listing shall be retrieved from the database for all registered patients with visit based on matching IC number or other identification number and related to original prescriber/pharmacist name that create the order.	No	Text field (search field)
5.	Admin Time	User shall be able to search by admin time. By default it will be blank.	No	Time format in hh:mm AM/PM (search field)

3.3.5.2 View MAR

3.3.5.2.1 Screen Design

ID	VM.SD2
Description	View MAR Dialog

Diagram

i. MAR Dialog

Notes	• Click on Refresh button to refresh the list. • Click on arrow next/previous to view record for previous day or next day.
Cross References	**Medication Order** – PhIS_CPS_SDD_OM_v1.0

3.3.5.2.2 Application Business Rules

No.	Name	Description
1.	MAR Dialog	• User shall be able to view on MAR chart for the active drug and inactive drug. • The serve drug will be highlight with green color with date and time display. • Drug with no color indicate that it was not being administered at all. • Drug with red color indicate that it was updated to 'Not Serve'. • For a discontinue/stopped drug, the drug name will be strike through with red and the drug will be sort to last page.
2.	Refresh list	User shall be able to refresh the listing by click on Refresh button.

3.3.5.2.3   Input Validation Rules

No.	Name	Description	Mand atory	Format
1.	View	User shall be able to filter drug by Active or Inactive.	No	Drop down (search field)
2.	Drug Name	User also shall be able to filter by drug name by enter value at Drug Name column and then click away to show the result.	No	Text field (search field)
3.	Order Date	User shall be able to filter the drug list based on date by enter date value at Order Date column.	No	Calendar format in dd/mm/yyyy
17.	Date	User shall be able to filter by date using a calendar function.	No	Calendar format in dd/mm/yyyy

3.3.6   Integration

None.

4.   References

Document	Description/ Expansion
PhIS_CPS_SDD_OM_v1.0	System Design Document (SDD) for Order Management Module

5.   Acronyms

Item	Description
URS	User Requirement Specification
SDD	System Design Documentation
SPUB	*Sistem Pendispensan Ubat*
IWP	Integration Web Portal
KPK	*Ketua Penolong Pengarah*
IV	Intravenous
CDR	Cytotoxic Drug Reconstitution
MTAC	Medication Therapy Adherence Clinic
PN	Parenteral Nutrition
TDM	Therapeutic Drug Monitoring
MAR	Medication Administration Record

6.   Appendix