

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

Full Based User Manual Therapeutic Drug Monitoring (TDM)

Version	: 10th EDITION
Document ID	: FB_U. MANUAL_THERAPEUTIC DRUG MONITORING



PhIS & CPS Project
User Manual – Therapeutic Drug
Monitoring



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Reference ID : FB_U. MANUAL_THERAPEUTIC DRUG MONITORING-10th EDITION

Application reference: PhIS & CPS v2.1 & v2.2



Table of Contents

1.0	Introduction	1
1.1	Overview of PhIS	1
1.2	Purpose and Objectives	1
1.3	Organised Sections.....	1
2.0	Application Standard Features.....	2
2.1	PhIS Legend	2
2.2	Latest Enhancement and Updates	4
3.0	Therapeutic Drug Monitoring (TDM) Order	5
4.0	Therapeutic Drug Monitoring (TDM) Verification.....	14
5.0	Sample Management.....	19
6.0	TDM Reporting.....	25
7.0	External TDM.....	35
7.1	External TDM Online.....	35
7.2	External TDM Offline.....	39
8.0	Acronyms	44
9.0	Links to Clinical Modules.....	44

1.0 Introduction

1.1 Overview of PhIS

Pharmacy Information System or better known as PhIS, is a complete and comprehensive system that integrates pharmacy related services that geared toward pharmacy excellence. PhIS implementation would transform most of current manual process to electronic system would benefit facility end user in the health care sector.

There are 12 modules to assist services delivery by the health care sector which comprises of:

1. Order Management
2. Inpatient Pharmacy
3. Outpatient Pharmacy
4. Medication Counselling
5. Ward Pharmacy
6. Pharmacy Inventory
7. Manufacturing of Cytotoxic Drug Reconstitution, Parenteral Nutrition, IV Admixture & Eye Drop, Radiopharmaceuticals and Extemporaneous
8. Adverse Drug Reaction & Drug Allergic (ADR & DAC)
9. Clinical Pharmacokinetics Services (TDM)
10. Drug Information & Consumer Education (DICE)
11. Medication Therapy Adherence Clinic (MTAC)
12. Data Mining (PhARM)

1.2 Purpose and Objectives

This user manual outlines the Clinical Pharmacokinetics Services (TDM) sub-module, its key features and functionalities. The primary objective is to guide users through the process of completing PhIS application process.


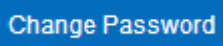




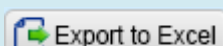
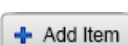

1.3 Organised Sections


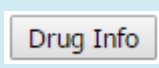


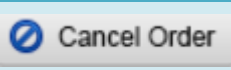
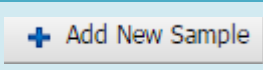
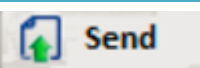
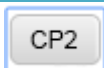
These are the sections within this document:

- Section 1 : Introduction
- Section 2 : Application Standard Features
- Section 3 : Clinical Pharmacokinetics Services (TDM)
- Section 4 : Acronyms
- Section 5 : Links to clinical modules

2.0 Application Standard Features

2.1 PhIS Legend

Standard Legend			
	Login to PhIS		Logout from PhIS
	Change Login Password		Reset Login Screen
	Expand Menu		Collapse Menu
	Display Home Tab		Expand Module
	Collapse Module		Close All Open Tabs
	Refresh Screen		Search Record
	Add/Create New Record		Show Help
	Print		Mandatory Field
	Calendar Icon		Search Icon
	Close Window		Radio Button
	Checkbox		Edit Record
	Cancel		Delete Record
	Save		Export and Open Report in Excel Format
	Add Item to the list		Delete Item from the list
	Request for Approval		Cancel the Request
	Approve Transaction		Reject Transaction
	Send for Approval		Dropdown Box
	Automatically Display/Retrieve Box		Empty Text Box

Therapeutic Drug Monitoring Module Legend			
	To Acknowledge		Drug Info
	To Do New Order		To Verify
	Cancel the Order		To Add New Sample
	To send request		Ward Pharmacy

Note

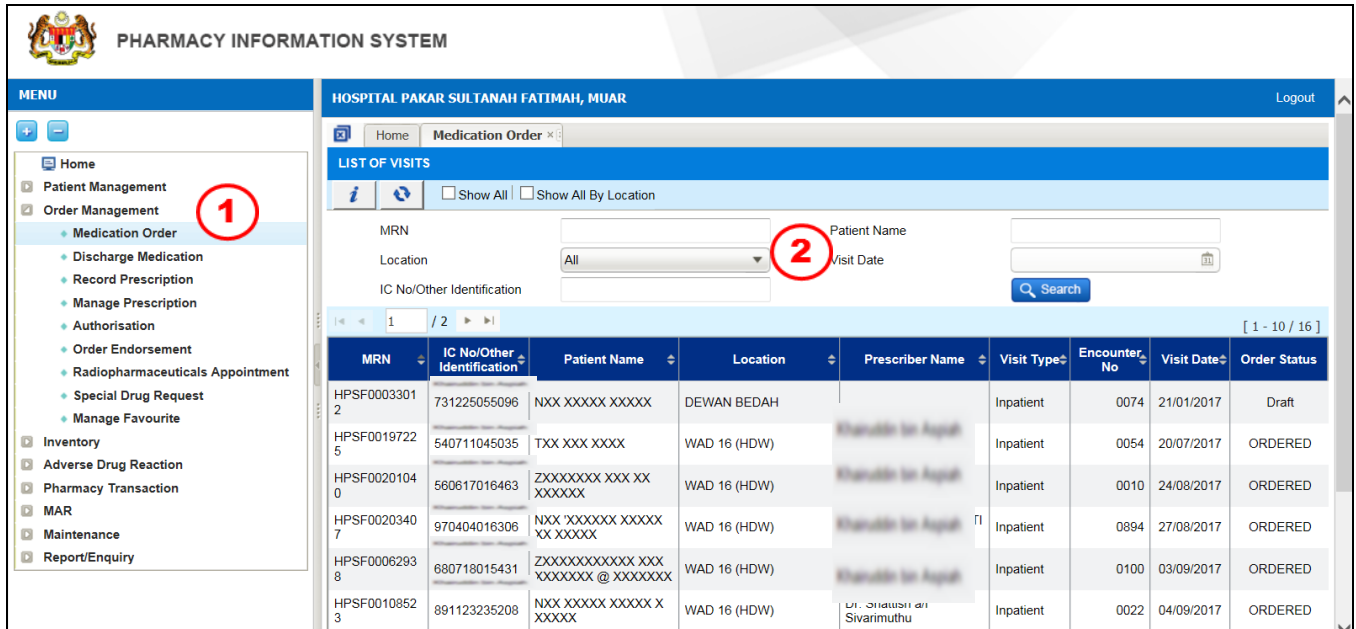
To learn more about Login Information, kindly click [Login Information](#) module for descriptive steps.

2.2 Latest Enhancement and Updates

Latest Functions	Page
Tdm Order <ul style="list-style-type: none">New flow of ordering TDM DrugCan do multiple TDM Drug in one time	5
Sample Management <ul style="list-style-type: none">Change Facility field from drop down menu to Auto complete search drop down	22
Sample Management <ul style="list-style-type: none">Add on reject reason from previousAdd on cancel outsource button	21-23

3.0 Therapeutic Drug Monitoring (TDM) Order

TDM Order screen allows Prescriber to place TDM Services order. The order will be sent to Pharmacist for verification and reporting.



MRN	IC No/Other Identification	Patient Name	Location	Prescriber Name	Visit Type	Encounter No	Visit Date	Order Status
HPSF00033012	731225055096	NXX XXXXX XXXXX	DEWAN BEDAH		Inpatient	0074	21/01/2017	Draft
HPSF00197225	540711045035	TXX XXX XXXX	WAD 16 (HDW)	Khairuddin bin Asyraf	Inpatient	0054	20/07/2017	ORDERED
HPSF00201040	560617016463	ZXXXXXXXX XXX XX XXXXXX	WAD 16 (HDW)	Khairuddin bin Asyraf	Inpatient	0010	24/08/2017	ORDERED
HPSF00203407	970404016306	NXX XXXXXX XXXXX XX XXXXX	WAD 16 (HDW)	Khairuddin bin Asyraf	Inpatient	0894	27/08/2017	ORDERED
HPSF00062938	680718015431	ZXXXXXXXXXXXX XXX XXXXXX @ XXXXXX	WAD 16 (HDW)	Khairuddin bin Asyraf	Inpatient	0100	03/09/2017	ORDERED
HPSF00108523	891123235208	NXX XXXXX XXXXX X XXXXX	WAD 16 (HDW)	Dr. Chaturan Sri Sivarimuthu	Inpatient	0022	04/09/2017	ORDERED

Figure 3.0-1 Medication Order Listing Page

STEP 1

Click on 'Order Management' module and click on 'Medication Order' sub-module

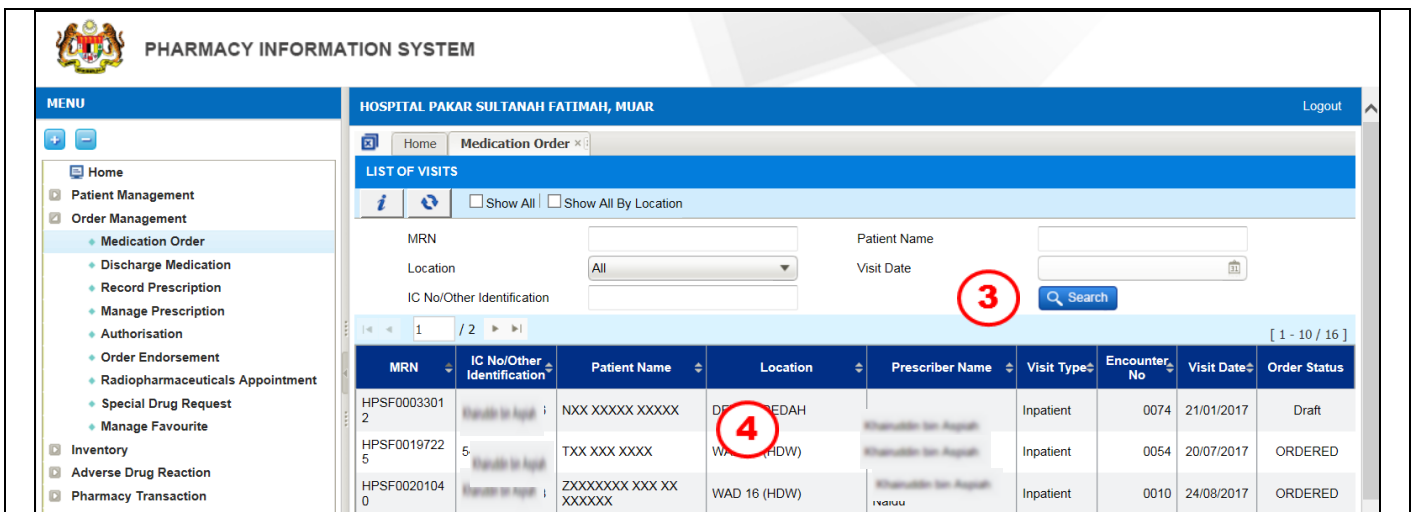
STEP 2

Search for patient records by:

- MRN
- Patient's Name
- Location
- Visit Date
- IC No/Other Identification

Note

- Location is defaulted to user's login ID but user is allowed to change to other assigned location.
- Select on ☐ Show All checkbox to display all patients' records based on user's assigned locations.
- Select on ☐ Show All By Location checkbox to display all patients' records based on user's login location.



PHARMACY INFORMATION SYSTEM

HOSPITAL PAKAR SULTANAH FATIMAH, MUAR

Logout

Home Medication Order

LIST OF VISITS

Show All Show All By Location

MRN Patient Name

Location All Visit Date

IC No/Other Identification

Search

MRN	IC No/Other Identification	Patient Name	Location	Prescriber Name	Visit Type	Encounter No	Visit Date	Order Status
HPSF00033012	XXXXXXXXXX	NXX XXXXX XXXXX	DEDAH		Inpatient	0074	21/01/2017	Draft
HPSF00197225	XXXXXX	TXX XXX XXXX	WAD 16 (HDW)		Inpatient	0054	20/07/2017	ORDERED
HPSF00201040	XXXXXXXXXX	ZXXXXXXXX XXX XX XXXXXX	WAD 16 (HDW)		Inpatient	0010	24/08/2017	ORDERED

Figure 3.0-2 Medication Order Listing Page

STEP 3

Click on the  button to search for patient records

STEP 4

Double-click on selected patient to display the Medication Order screen

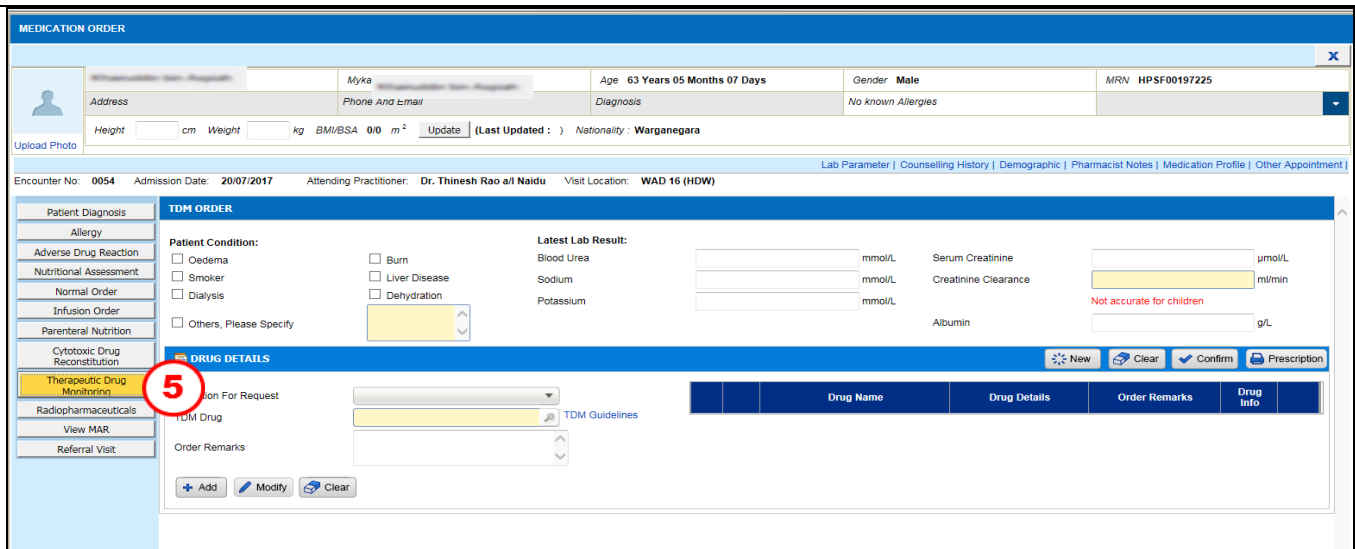


Figure 3.0-3 Medication Order

STEP 5

Click on the **Therapeutic Drug Monitoring** button to create TDM order

Note

- User have to enter patient's height and weight and click on the **Update** button and system will automatically calculate the BMI/BSA in m^2 .
- Visit Record will display Breast Feeding and Pregnant checkboxes only if the patient is a female.
- User is allow to do multiple TDM Order

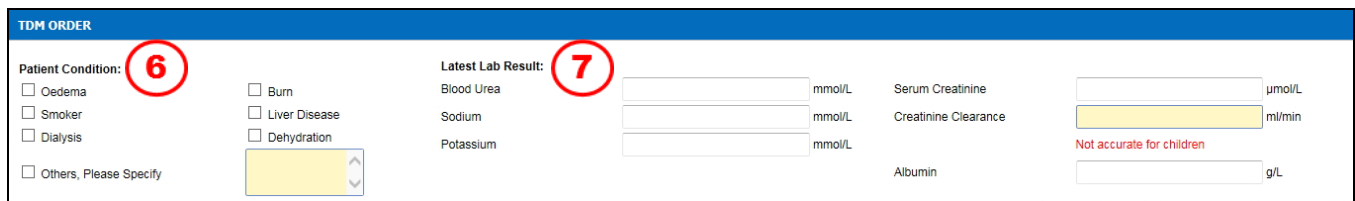


Figure 3.0-4 TDM Order

STEP 6

Select **Patient Condition** checkbox(es):

- Oedema
- Burn
- Smoker
- Liver Disease
- Dialysis
- Dehydration
- Others

Note

- User may select more than one condition.
- If 'Others' is selected, user needs to state the patient's condition in the text box provided.
- Fill in Order **Remarks** if applicable.

STEP 7

Enter **Latest Lab Result** which consists of:

- Blood Urea
- Sodium
- Potassium
- Serum Creatinine
- Creatinine Clearance
- Albumin

Note

- Creatinine Clearance will be automatically calculated by system in ml/min when Serum Creatinine is filled.
- Lab result data will be updated in the **Lab Result** hyperlink

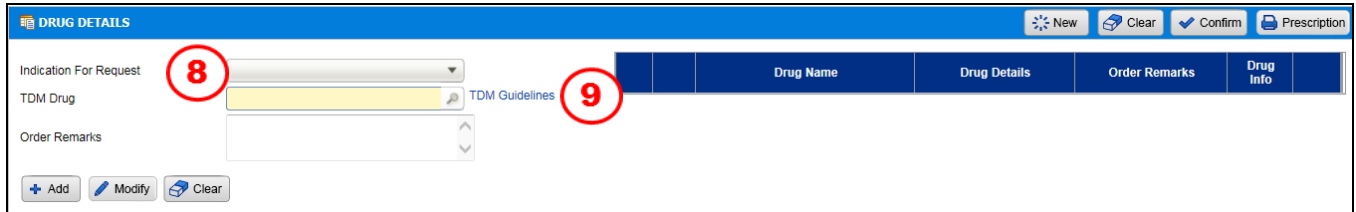


Figure 3.0-5 TDM Drug Details

STEP 8

Select **Indication For Request** from dropdown box:

- Non Compliance
- Poor Response
- Therapeutic Monitoring
- Suspected Toxicity

Note

- Selected Indication For Request will be the search key for TDM Drug field.

STEP 9

Click on the  button to search for TDM drug based on:

- Current Medication
- Previous Medication
- All Drugs

Note

- If the selected Indication for Request 'Non Compliance/ Poor Response/ Therapeutic Monitoring', TDM Drug search can be select from three (3) sources :
 - Current Medication
 - Medication which patient still take and active in the system as drug classified as TDM drug only
 - Previous Medication
 - Medication which patient taken before and completed in the system as drug classified as TDM drug only
 - All Drugs
 - All medication classified in TDM drug
- If the selected TDM Drug is the Current Medication or Previous Medication, system will automatically display the Drug Details as per Figure 3.0-6.
- Click on [TDM Guidelines](#) hyperlink to view TDM Guideline details on the selected TDM Drug as per Figure 3.0-7.
- TDM Guideline master setup is controlled by HQ.
- If the selected Indication for Request is 'Suspected Toxicity', TDM Drug search will default to 'All drugs' which comes from drugs that have been set in TDM Guideline master.
- The Drug Details field will be a free text field for user to enter the current dosage and frequency as per Figure 3.0-8.

TDM Drug Search

X

☐ Current Medication
 ☒ Previous Medication
 ☐ All Drugs

Drug Code
 Drug Name

1

/ 1

[1 - 5 / 5]

Drug Code	Drug Name	Order Txn Number	Start Date	End Date	Order Type
N02BE01000T1001XX	Paracetamol 500 mg Tablet	ANEC0000585746	14/07/2016 09:40 AM	21/07/2016 09:40 AM	NM
N02BE01000T1001XX	Paracetamol 500 mg Tablet	STFC0000796948	21/01/2017 10:49 AM	31/01/2017 10:49 AM	NM

Figure 3.0-6 TDM Drug Search

TDM GUIDELINE						
TDM Drug		Paracetamol 500 mg Tablet		Total Cost of Analysis(RM)		0
Time to reach steady state		N/A		Remarks		
<div> <div>Calculator</div> <div> <div> <div>Digoxin</div> <div>Aminoglycoside Pre</div> <div>Carbamazepine</div> <div>Phenobarbitone</div> <div>Vancomycin Pre</div> <div>Theophylline</div> <div>Valproic Acid</div> <div>Vancomycin Post</div> </div> <div> <div>Phenytoin</div> </div> </div> </div>						
TDM GUIDELINE DETAIL						
<div> <div>1 / 1</div> <div>[1 - 1 / 1]</div> </div>						
Sampling Type	After/Before	Default time	Lab Order	Therapeutic Range	UOM	Updated On
RANDOM	AFTER	1 MINUTES	Paracetamol Random	At least 4 hours post ingestion	mcg/ml	03/11/2013


Figure 3.0-7 TDM Guidelines

Patient Diagnosis	Patient Condition: <input type="checkbox"/> Oedema <input checked="" type="checkbox"/> Smoker <input type="checkbox"/> Dialysis <input type="checkbox"/> Others, Please Specify	Latest Lab Result: Blood Urea: 20 mmol/L Sodium: 20 mmol/L Potassium: 2 mmol/L	Serum Creatinine: 200 µmol/L Creatinine Clearance: 49.08 ml/min Albumin: 23 g/L
-------------------	--	--	---

Not accurate for children

DRUG DETAILS													
Patient History Normal Order Infusion Order Parenteral Nutrition Cytotoxic Drug Reconstitution Therapeutic Drug Monitoring Radiopharmaceuticals View MAR Referral Visit	Indication For Request: Non Compliance TDM Drug: Acetylsalicylic Acid 100 mg, Glycine 45 Order Remarks: Drug Details: (Please specify current Dosage, Frequency, Start Date & End Date)	Add New Clear Confirm Print	<table border="1"> <thead> <tr> <th></th> <th>Drug Name</th> <th>Drug Details</th> <th>Order Remarks</th> <th>Drug Info</th> </tr> </thead> <tbody> <tr> <td></td> <td>Gentamicin 80mg/2ml Injection</td> <td>80mg bd</td> <td></td> <td> </td> </tr> </tbody> </table>		Drug Name	Drug Details	Order Remarks	Drug Info		Gentamicin 80mg/2ml Injection	80mg bd		
	Drug Name	Drug Details	Order Remarks	Drug Info									
	Gentamicin 80mg/2ml Injection	80mg bd											

Figure 3.0-8 TDM Drug Detail



MEDICATION ORDER

TEY SWEE KEAN Mykad 690527015091 Age 45 Years 05 Months 08 Days Gender Male MRN HPSF00026416

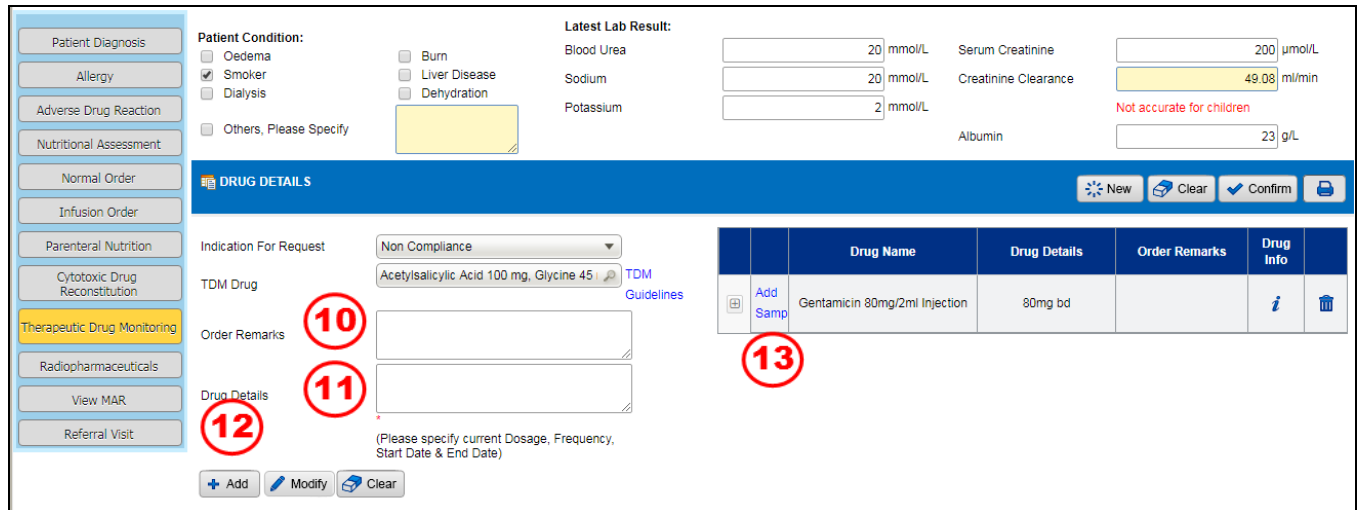
Address Phone And Email Diagnosis Known Allergies

Height 154 cm Weight 64 kg BMI/BSA 27 / 1.7 m² Update (Last Updated : 23/10/2014)

Upload Photo

Lab Results Counseling History Demographic Pharmacist Notes Medication Profile Other Appointment

Figure 3.0-9 Lab Result Hyperlink



DRUG DETAILS

Indication For Request: Non Compliance

TDM Drug: Acetylsalicylic Acid 100 mg, Glycine 45 TDM Guidelines

Order Remarks: 10

Drug Details: 11

(Please specify current Dosage, Frequency, Start Date & End Date)

+ Add Modify Clear

Drug Name	Drug Details	Order Remarks	Drug Info
Gentamicin 80mg/2ml Injection	80mg bd		i

13

Figure 3.0-10 Drug Details

STEP 10

Fill the **Order Remark** if neccessarily.

STEP 11

Fill the **Drug Detail**.

Note

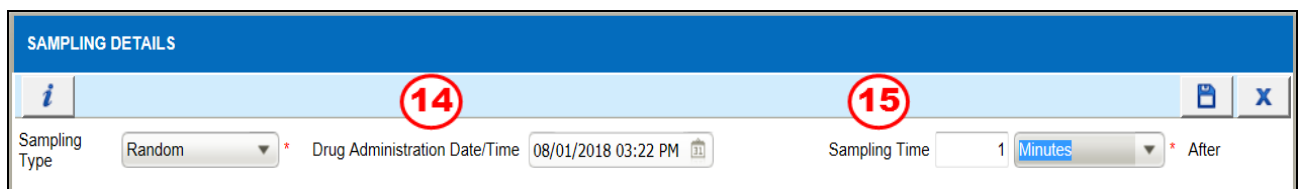
- Please specify current **Dosage, Frequency, Start Date & End Date** if choose 'All Drug' for TDM Drug Request.

STEP 12

Click on the **+ Add** button to added drug and will be display as Figure 3.0.10

Note

- Click on the **Modify** button to change any information.
- Click on the **Clear** button to clear the drug detail part before added any new information.



SAMPLING DETAILS

Sampling Type: Random * Drug Administration Date/Time: 08/01/2018 03:22 PM Sampling Time: 1 Minutes * After

14 15

Figure 3.0-11 Sampling Details

STEP 13

Add
Sample

Click on the  hyperlink to fill in sampling details, sampling details screen will be displayed as Figure 3.0.11.

Note

- There are several sampling type that can be choose
 - Post 1
 - Post 2
 - Post
 - Pre
 - Random
- Screen for Sampling Details will be displayed differently based on selected 'Indication For Request' below:
- Sampling Type will be displayed differently based on choosen medication together from TDM guideline
Example:
 - Paracetamol for random and pre sampling .
 - Vancomycin for Pre ,post and random sampling
- If 'Suspected Toxicity', Sampling Type is defaulted to 'Random' and the 'Suggested Sampling Date/Time' field will be displayed as per Figure 3.0-12.

STEP 14

Click on the  button to select **Drug Administration Date/Time**

Note

Drug Administration Date/Time to be default as empty and change the time format to 12 Hour format

STEP 15

Select **Sampling Time** from dropdown box and enter **Interval** and select Hours/Minutes

Note

The Interval field is only enable if user choose the Indication for Request as Non Compliance/Poor Response/Therapeutic Monitoring.

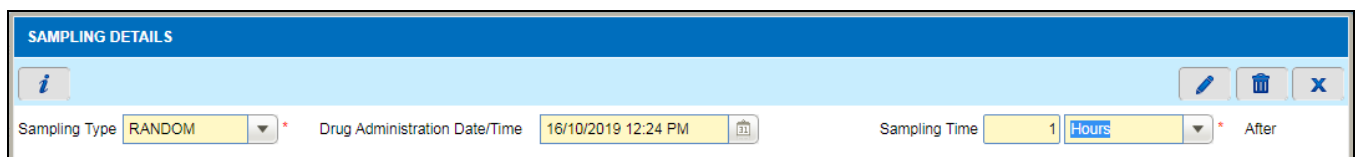


Figure 3.0-12 Sampling Details

STEP 16

Click on the  to view the sampling details added as Figure 3.0.13

TDM ORDER

Patient Condition:
☐ Oedema
☒ Smoker
☐ Dialysis
☐ Others, Please Specify

☐ Burn
☐ Liver Disease
☐ Dehydration

Latest Lab Result:

Blood Urea

20

mmol/L

Sodium

20

mmol/L

Potassium

2

mmol/L

Serum Creatinine

200

μmol/L

Creatinine Clearance

49.08

ml/min

Albumin

23

g/L

Not accurate for children

DRUG DETAILS

Indication For Request

Non Compliance

TDM Drug

Acetylsalicylic Acid 100 mg, Glycine 45

Order Remarks

Drug Details

Add
Sample

Drug Name	Drug Details	Order Remarks
Gentamicin 80mg/2ml Injection	80mg bd	


Sampling Type	Drug Administration Date/Time	Sampling Time	Suggested Sampling Date/Time	Lab Test Order
Random	16/10/2019 12:24 PM	1 Hours	16/10/2019 01:24 PM	Gentamicin random

Add
Modify
Clear

New
Clear
Confirm

Figure 3.0-13 Drug Details


STEP 17

Click on the  to confirm TDM order and TDM Order No. will be generated.

STEP 18

Click on the  button to save record

CONFIRMATION



CONF3219: Are you sure want to confirm the order?

Cancel

Yes



No


Figure 3.0-14 Confirmation alert message

STEP 19

Click on the  button to print TDM Request Form as per Figure 3.0-15

Note

- Click on the  button to clear all entered data.
- Click on the  button to create a new TDM Order and the system will reset all fields in TDM Order screen.



CLINICAL PHARMACOKINETICS SERVICES
Therapeutic Drug Monitoring (TDM) Request Form

Ordered By: [REDACTED] TDM Order No : TDM1900009063

Ordered Date/Time 27/09/2019 03:35 PM

PATIENT DETAILS					
Name: [REDACTED]		MRN NO: HPSF00011596		IC: [REDACTED]	
				Race: Malay	
Age: 26 Years 01 Months 24 Days		Sex: Male		Ward/Unit: WAD 2 L (MED/SURG/ORTO)	
Weight: 70 kg		Height: 170 cm			
LATEST LAB RESULT :					
Blood Urea	Sodium	Potassium	Serum Creatinine	Creatinine Clearance	Albumin
20	20	2	200	49.08	23
PATIENT CONDITION					
Oedema: NO		Smoker: YES		Dehydration: NO	
Dialysis: NO		Burn: NO		Liver Disease: NO	
Others: NO		Details:			
TDM DRUG DETAILS					
No	TDM No	Drug Name Injection	Drug Details [REDACTED]	Indication Request [REDACTED]	Remarks
RANDOM		Gentamicin random	16/10/2019 12:24 PM	16/10/2019 01:24 PM	1 Hours

Figure 3.0-15 TDM Request Form

4.0 Therapeutic Drug Monitoring (TDM) Verification

TDM Verification module is for user to acknowledge and verify TDM order

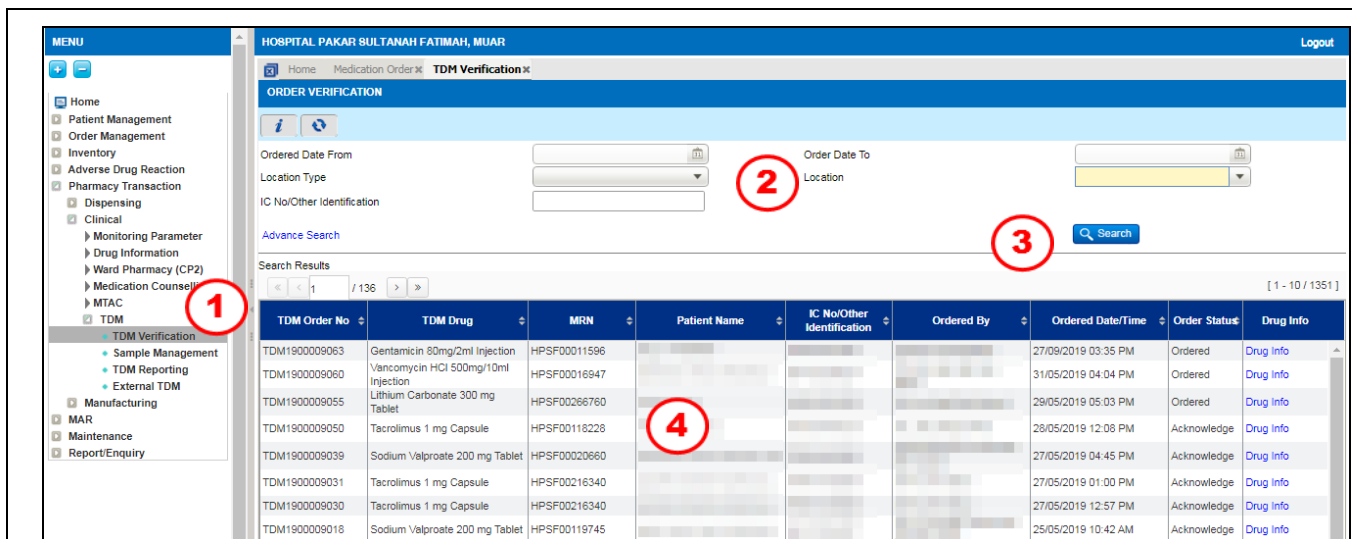


Figure 4.0-1 TDM Verification Listing Page

STEP 1

Click on 'TDM' module and click on 'TDM Verification' function

STEP 2

Search for TDM orders by:

- Ordered Date From
- Order Date To
- Location Type
- Location
- IC No./Others Identification

STEP 3

Click on the  button to search for TDM orders

STEP 4

Double click on selected record to display TDM Verification screen

Note

- Click on [Go To Advance Search](#) hyperlink for advance search using below criteria:
 - TDM Order No
 - Status
 - TDM Drug
 - Ordered By
 - Acknowledged By
 - MRN
- Click on [Back To Basic Search](#) hyperlink for basic search as per Step 2.

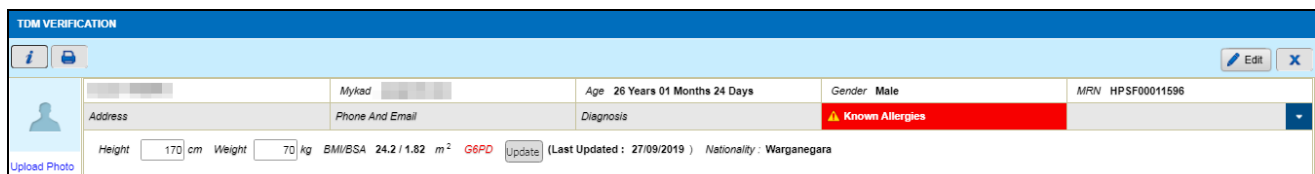


Figure 4.0-2 Patient's Banner

Note

TDM Verification consists of:

- Patient's Banner
 - Patient's Banner display patient's profile. User can update patient's height and weight.
 - Click on the [Update](#) button and system will automatically calculate the BMI/BSA in m².

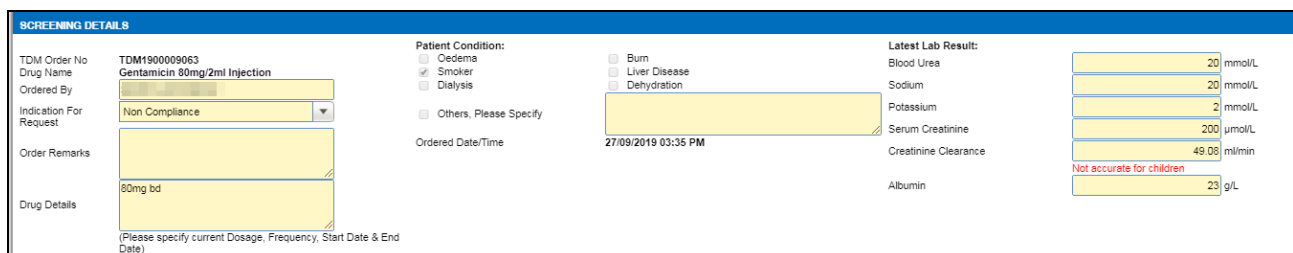


Figure 4.0-3 Screening Details

- Screening Details
 - Screening Details consists of:
 - TDM Order No.
 - Drug Name
 - Ordered By
 - Indication For Request
 - Order Remarks
 - Patient Conditions
 - Ordered Date/Time
 - Latest Lab Result



Figure 4.0-4 Drug Details

- c) Drug Details
- Drug Details consists of:
 - Rx. No. (Order No.)
 - Dosage
 - Frequency
 - Duration
 - Route
 - Start Date
 - End Date

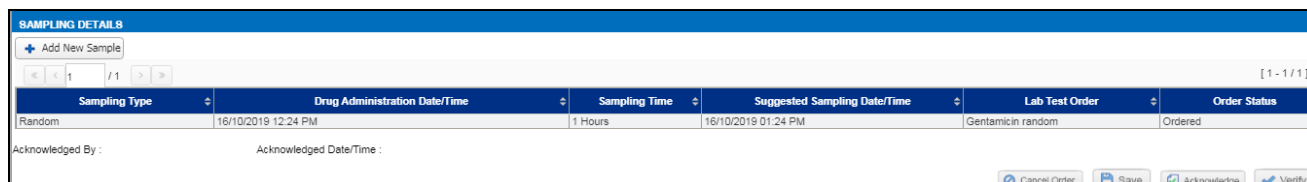


Figure 4.0-5 Sampling Details

- d) Sampling Details
- Sampling Details consists of:
 - Sampling Type
 - Drug Administration Date/Time
 - Interval
 - Suggested Sampling Date/Time
 - Lab Test Order

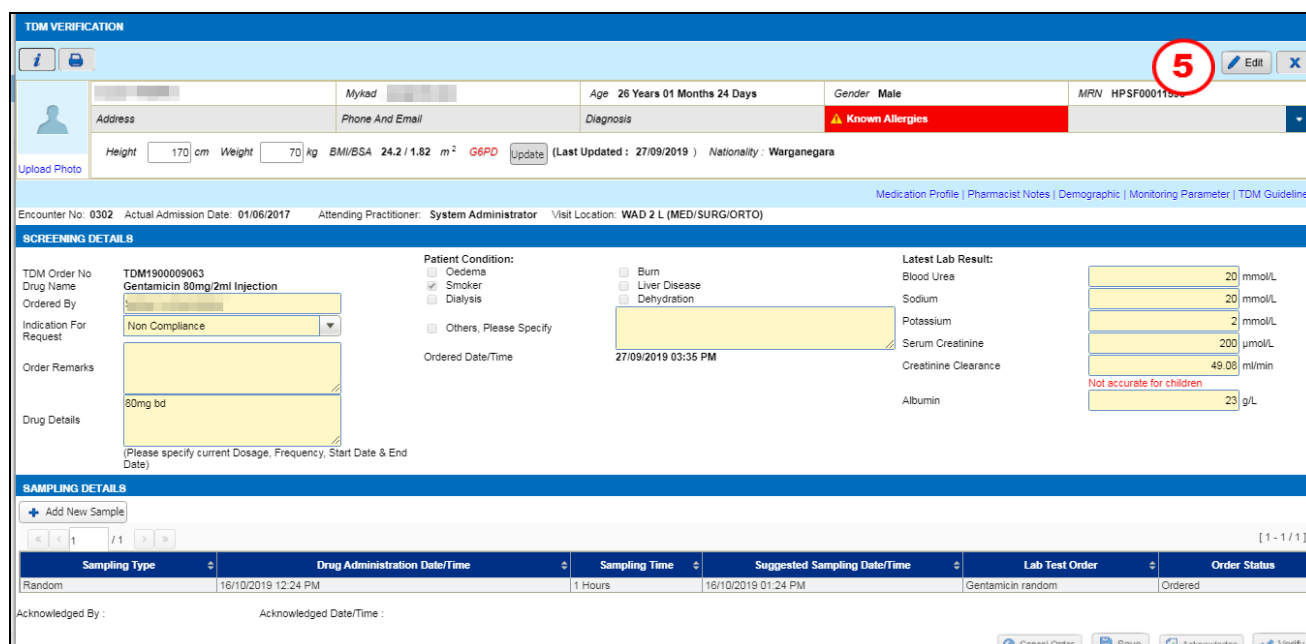


Figure 4.0-6 TDM Verification



STEP 5

Click on the  button to edit record




Note

- User able to edit details in Screening Details section as below:
 - Order Remarks
 - Patient Condition
 - Latest Lab Result
- These are additional functions in TDM Verification (If applicable):
 - Edit Sampling Details
 - Add new sample
 - Reject sample
 - Cancel Order

Edit Sampling Details as per Figure 4.0-7:

- Double click on sample record to display sampling details.
- Click on the  button to edit record as per Figure 4.0-8.
- Edit sampling details as below:
 - Sampling Type
 - Drug Administration Date/Time
 - Interval
- Click on the  button to save sampling details

Add New Sample

- Click on the  button to add new sample
- Edit sampling details as below:
 - Sampling Type
 - Drug Administration Date/Time
 - Interval
- Click on the  button to save new sample record.
- Click on the  button to cancel order.
- Order Status will be changed to “Cancelled” and users not necessary to place new order.

SAMPLING DETAILS					
+ Add New Sample					
1 / 1 [1 - 1 / 1]					
Sampling Type	Drug Administration Date/Time	Interval	Suggested Sampling Date/Time	Lab Test Order	Order Status
RANDOM	04/11/2014 12:14	1 Hours	04/11/2014 13:14	Paracetamol Random	Ordered

Figure 4.0-7 Sampling Details

SAMPLING DETAILS					
i					
Sampling Type	Random	Drug Administration Date/Time	06/09/2017 12:13	Sampling Time	1 Minutes

Figure 4.0-8 Edit Sampling Details

TDM VERIFICATION

Age: 43 Years 08 Months 12 Days | Gender: Female | MRN: HPSF00033012

Address: | Phone And Email: | Diagnosis: | No known Allergies

Height: 168 cm | Weight: 55 kg | BMI/BSA: 19.5 / 1.6 m² | Update (Last Updated: 06/09/2017) | Nationality: Warganegara

Encounter No: 0074 | Admission Date: 21/01/2017 | Attending Practitioner: | Visit Location: DEWAN BEDAH

Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines

SCREENING DETAILS

DRUG DETAILS

SAMPLING DETAILS

+ Add New Sample

1 / 1

Sampling Type	Drug Administration Date/Time	Sampling Time	Suggested Sampling Date/Time	Lab Test Order	Order Status
Random	06/09/2017 12:13	1Minutes	06/09/2017 12:14	Paracetamol Random	Ordered

Acknowledged By: | Acknowledged Date/Time:

Cancel Order | Save | Acknowledge | Verify

Figure 4.0-9 Reject and Cancel Order Function

TDM VERIFICATION

Age: 26 Years 01 Months 24 Days | Gender: Male | MRN: HPSF00011596

Address: | Phone And Email: | Diagnosis: | Known Allergies

Height: 170 cm | Weight: 70 kg | BMI/BSA: 24.2 / 1.82 m² | G6PD | Update (Last Updated: 27/09/2019) | Nationality: Warganegara

Encounter No: 0302 | Actual Admission Date: 01/06/2017 | Attending Practitioner: | Visit Location: WAD 2 L (MED/SURG/ORTO)

Medication Profile | Pharmacist Notes | Demographic | Monitoring Parameter | TDM Guidelines

SCREENING DETAILS

TDM Order No: TDM1900009063

Drug Name: Gentamicin 80mg/2ml Injection

Ordered By: | Indication For Request: Non Compliance

Order Remarks: | Drug Details: 80mg bd

(Please specify current Dosage, Frequency, Start Date & End Date)

Patient Condition:

- ☐ Oedema
- ☒ Smoker
- ☐ Dialysis
- ☐ Others, Please Specify

Ordered Date/Time: 27/09/2019 03:35 PM

Latest Lab Result:

- Blood Urea: 20 mmol/L
- Sodium: 20 mmol/L
- Potassium: 2 mmol/L
- Serum Creatinine: 200 µmol/L
- Creatinine Clearance: 49.08 ml/min
- Albumin: 23 g/L

Not accurate for children

SAMPLING DETAILS

+ Add New Sample

1 / 1

Sampling Type	Drug Administration Date/Time	Sampling Time	Suggested Sampling Date/Time	Lab Test Order	Order Status
Random	16/10/2019 12:24 PM	1 Hours	16/10/2019 01:24 PM	Gentamicin random	6

Acknowledged By: | Acknowledged Date/Time:

Cancel Order | Save | Acknowledge | Verify

Figure 4.0-10 Save and Acknowledge Function

CONFIRMATION

CONF0099: Are you sure you want to acknowledge? 7

Yes | No

Figure 4.0-11 Confirmation alert message

STEP 6

Click on the  button to acknowledge order

STEP 7

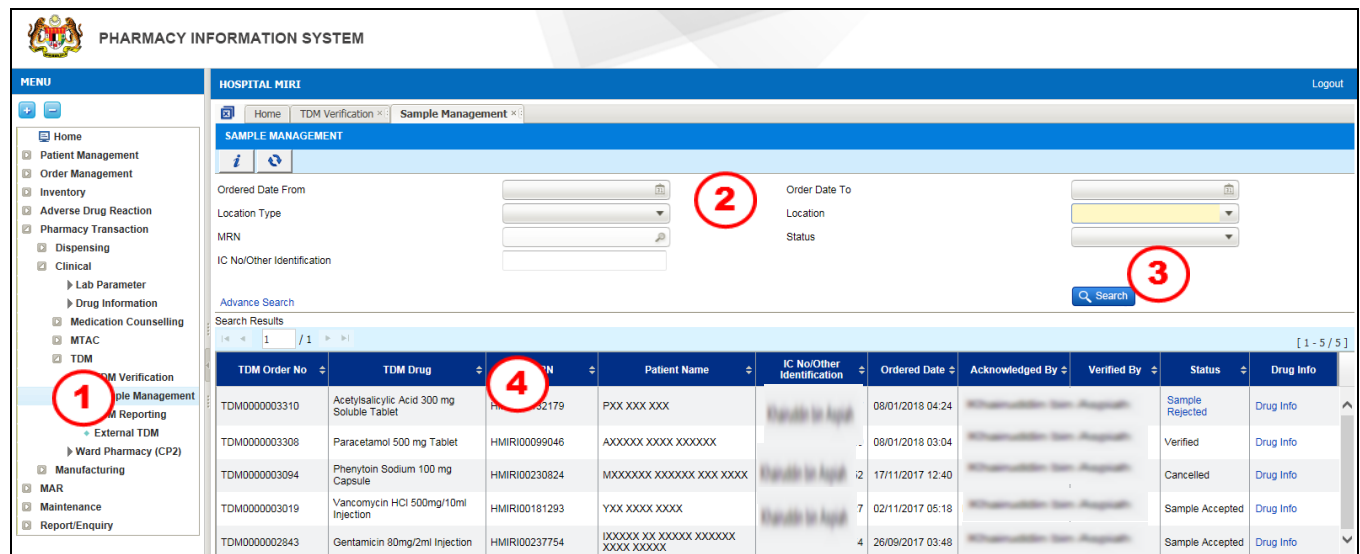
Click on the  button to save record

Note

- Order Status changed from “Ordered” to “Acknowledge”.
- User still can update sampling details.
- Acknowledged By and Acknowledged Date/Time will be displays.

5.0 Sample Management

This sub-module is to record the movement of the sample.



PHARMACY INFORMATION SYSTEM

HOSPITAL MIRI Logout

Home TDM Verification Sample Management

SAMPLE MANAGEMENT

Ordered Date From: [] Order Date To: []
 Location Type: [] Location: []
 MRN: [] Status: []
 IC No/Other Identification: []

Advance Search [Search]

Search Results [1 - 5 / 5]

TDM Order No	TDM Drug	Patient Name	IC No/Other Identification	Ordered Date	Acknowledged By	Verified By	Status	Drug Info
TDM0000003310	Acetylsalicylic Acid 300 mg Soluble Tablet	FXXX XXXX XXXX	XXXXXXXXXXXXXXXXXXXX	08/01/2018 04:24	XXXXXXXXXX	XXXXXXXXXX	Sample Rejected	Drug Info
TDM0000003308	Paracetamol 500 mg Tablet	AXXXXX XXXX XXXXXX	XXXXXXXXXXXXXXXXXXXX	08/01/2018 03:04	XXXXXXXXXX	XXXXXXXXXX	Verified	Drug Info
TDM0000003094	Phenytoin Sodium 100 mg Capsule	MXXXXX XXXXXX XXX XXXX	XXXXXXXXXXXXXXXXXXXX	17/11/2017 12:40	XXXXXXXXXX	XXXXXXXXXX	Cancelled	Drug Info
TDM0000003019	Vancomycin HCl 500mg/10ml Injection	YXXX XXXX XXXX	XXXXXXXXXXXXXXXXXXXX	02/11/2017 05:18	XXXXXXXXXX	XXXXXXXXXX	Sample Accepted	Drug Info
TDM0000002843	Gentamicin 80mg/2ml Injection	XXXXXXXX XXXXXX XXXXXX	XXXXXXXXXXXXXXXXXXXX	26/09/2017 03:48	XXXXXXXXXX	XXXXXXXXXX	Sample Accepted	Drug Info

Figure 5.0-1 Sample Management Listing Page

STEP 1

Click on 'TDM' module and click on 'Sample Management' function

STEP 2

Search for TDM order using basic search:

- Ordered Date From
- Order Date To
- Location Type
- Location
- MRN
- Status

•IC No./ Other Identification

Note

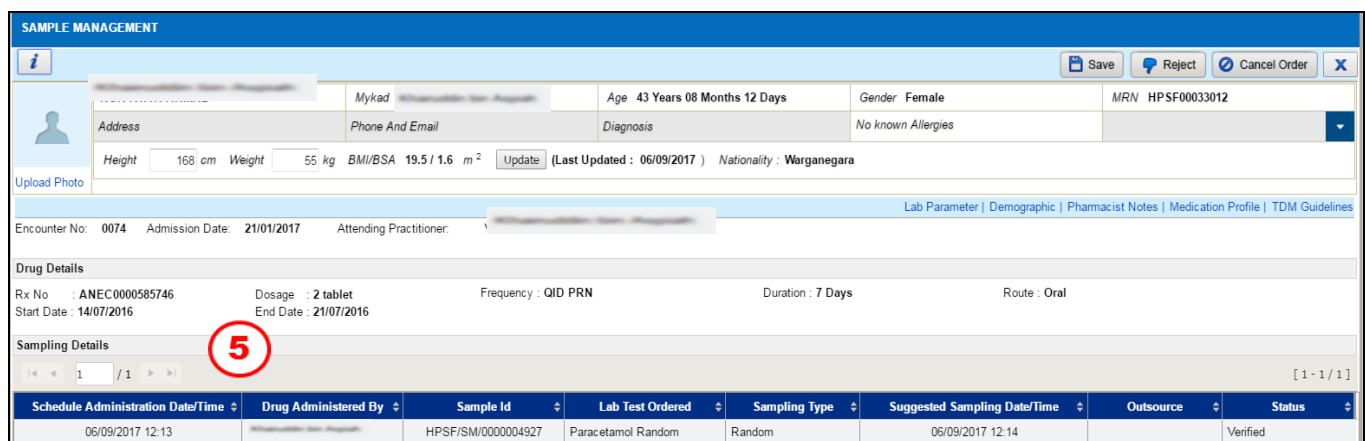
Click on the [Go To Advance Search](#) hyperlink for advance search.

STEP 3

Click on the  button to search for records

STEP 4

Double-click on the record to display Sample Management screen



SAMPLE MANAGEMENT

Save Reject Cancel Order X

Mykrad Age 43 Years 08 Months 12 Days Gender Female MRN HPSF00033012

Address Phone And Email Diagnosis No known Allergies

Height 168 cm Weight 55 kg BMI/BSA 19.5 / 1.6 m² Update (Last Updated : 06/09/2017) Nationality : Warganegara

Upload Photo

Encounter No: 0074 Admission Date: 21/01/2017 Attending Practitioner: [Redacted]

Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines

Drug Details

Rx No : ANEC0000585746 Dosage : 2 tablet Frequency : QID PRN Duration : 7 Days Route : Oral

Start Date : 14/07/2016 End Date : 21/07/2016

Sampling Details

1 / 1

Schedule Administration Date/Time	Drug Administered By	Sample Id	Lab Test Ordered	Sampling Type	Suggested Sampling Date/Time	Outsource	Status
06/09/2017 12:13	[Redacted]	HPSF/SM/0000004927	Paracetamol Random	Random	06/09/2017 12:14		Verified

Figure 5.0-2 Sample Management

STEP 5

Double-click on the record to proceed to next step

Note

These fields are inserted by the Nurse for the sampling process:

- Actual Admin Date/Time
- Actual Sampling Date/Time
- Sample Sent Date/Time
- Sent Through
- Sample Collected By
- Sent By

SAMPLE MANAGEMENT			
<div> <div>i</div> <div>X</div> </div>			
Actual Admin Date/Time	<input type="text"/>	Sent through	<input type="text"/>
Actual Sampling Date/Time	<input type="text"/>	Sample Collected By	<input type="text"/>
Sample Sent Date/Time	<input type="text"/>	Sent By	<input type="text"/>
Sample Accepted Date/Time	<input type="text"/>	Sample Accepted By	<input type="text"/>
Remarks	<input type="text"/>		
<div>Save</div>			

Figure 5.0-3 Sampling Process

STEP 6

Enter details in these fields:

- Sample Accepted Date/Time
- Sample Accepted By
- Remarks

Note

These field are entered by Pharmacist/Assistant Pharmacist when receiving the sample.

STEP 7

Click on the  button to save record

Note

The system will change order status from “Verified” to “Sample Accepted”.


CONFIRMATION	
	CONF0002: Are you sure you want to save?
<div> <div>8</div> </div>	
Cancel	Yes No

Figure 5.0-4 Confirmation alert message

SAMPLE MANAGEMENT

Save Reject Cancel Order Cancel Outsource X

Age 57 Years 07 Months 29 Days Gender Male MRN HPSF00023831

Address Phone And Email Diagnosis No known Allergies

Height 175 cm Weight 65 kg BMI/BSA 21.2 / 1.78 m² Update (Last Updated : 27/12/2018) Nationality : Warganegara

Upload Photo

Medication Profile | Pharmacist Notes | Demographic | Monitoring Parameter | TDM Guideline

Encounter No: 1241 Actual Admission Date: 22/05/2019 Attending Practitioner: Visit Location: WAD 8 (MED - L)

Drug Details

Rx No : WRD8840001806865 Dosage : 600 mg , 600 mg , 800 mg Frequency : TDS (3 times a day) Duration : 7 Days Route : Oral

Start Date : 22/05/2019 End Date : 29/05/2019

Process Details

Process Type Lab Based

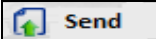
Sampling Details

Schedule Administration Date/Time	Sample Id	Lab Test Ordered	Sampling Type	Suggested Sampling Date/Time	Outsource	Status
23/05/2019 04:00 PM	HPSF/SM/0000008709	Valproic Acid random	Random	23/05/2019 05:00 PM	No	Sample Accepted

Figure 5.0-5 Outsource

STEP 8

Note

- If Process Type is "Outsource", the system will display **Send To** dropdown box and  button.
- Send To** dropdown box will list down all facilities that will receive the Outsource request.
- Select **Process Type** from dropdown box:
 - Pharmacy Based
 - Lab Based
 - Outsource

Process Details

Process Type Out Source Send To Send

Figure 5.0-6 Process Type

- For Outsource the Change Facility field from drop down menu to Auto complete search drop down menu as Figure 5.0.7



Figure 5.0-7 Search Other Facility

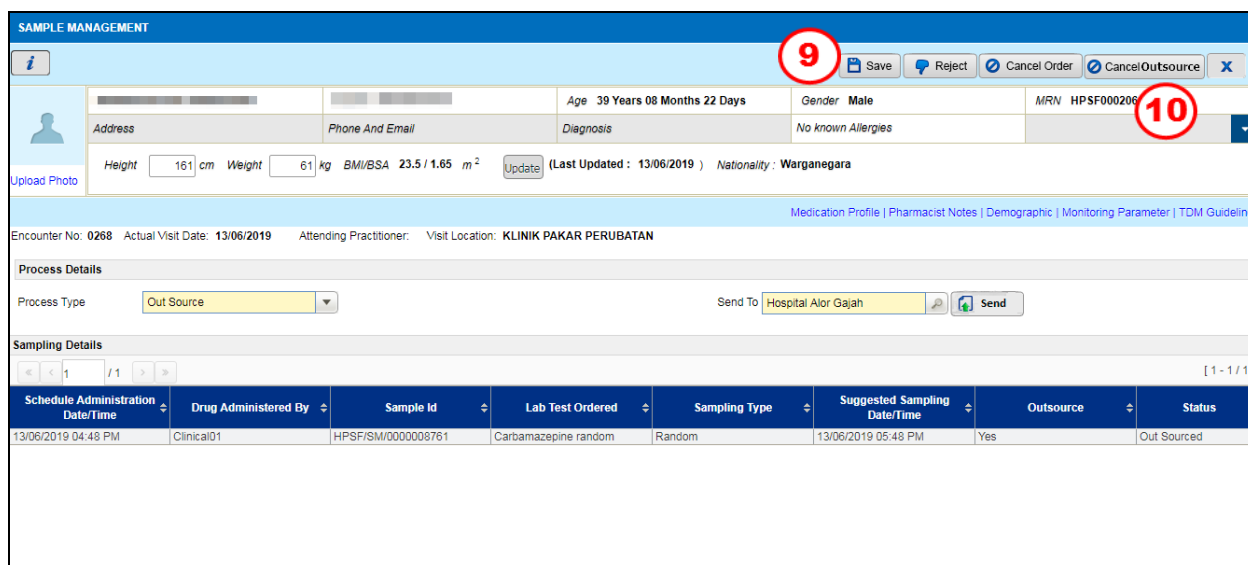

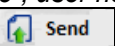



Figure 5.0-8 Outsource


STEP 9

Click on the  button to save record (Repeat Step 8)

Note

- If Process Type is "Outsource", in the Outsource column under Sampling Details will be set as "Yes". Otherwise Outsource will be set as "No".
- If "Outsource", user needs to select which facility to send the order to under Send To dropdown box and click on the  button.
- Click on the  button to cancel the order. User may not need to place new order.

STEP 10

Click on the  button to cancel outsource and pop up will appear as per Figure 5.0-9

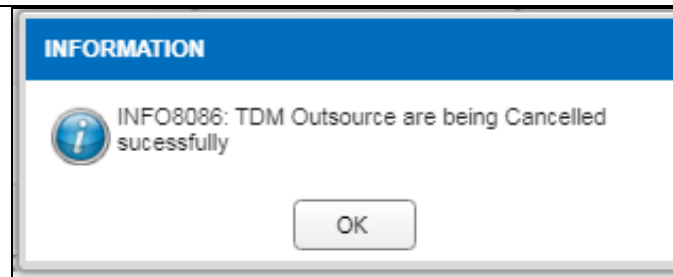
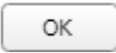
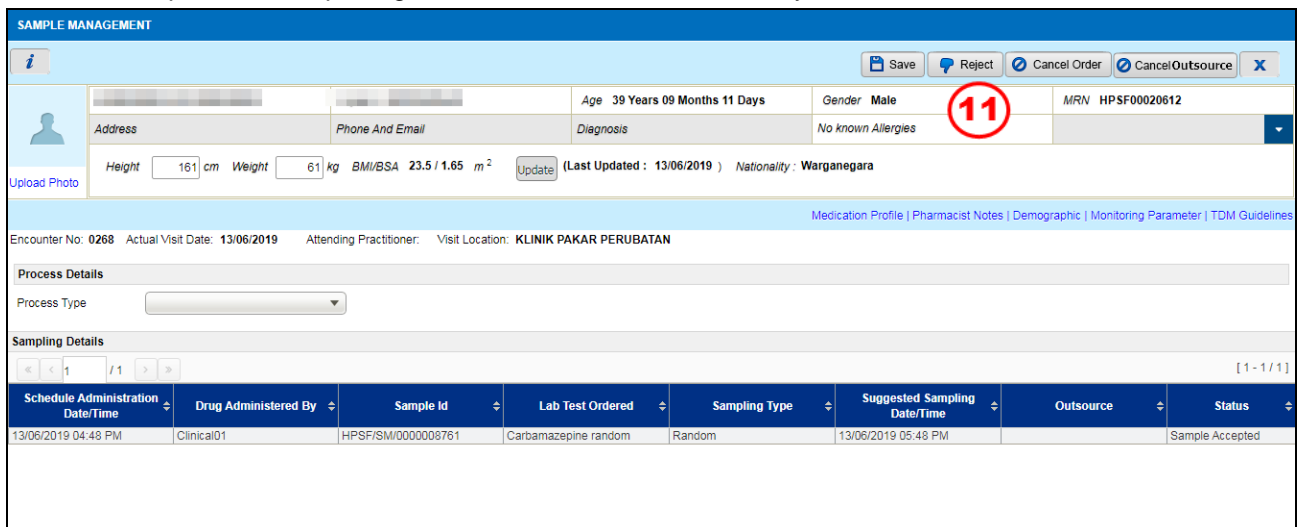


Figure 5.0-9 Cancel Outsource

Note


- Click on  button to confirm Cancel Outsource
- The cancellation is only valid if the record not yet register by the receiver.
- Status at sending facility will be '**Sample Accepted**' as shown in Figure 5.0-10
- User can proceed to reporting or send outsource to other facility




Schedule Administration Date/Time	Drug Administered By	Sample Id	Lab Test Ordered	Sampling Type	Suggested Sampling Date/Time	Outsource	Status
13/06/2019 04:48 PM	Clinical01	HPSPF/SM/00000008761	Carbamazepine random	Random	13/06/2019 05:48 PM		Sample Accepted

Figure 5.0-10 Sample Management

STEP 11

Click on the  button to reject outsource and pop up will appear as per Figure 5.0-11

Note

- Click on the  button to reject the sampling details. User needs to place a new order.
- User can see hyperlink to view reject reason if the status is 'Reject'. Click on the Sample Rejected

Hyperlink to view the reason such as below:

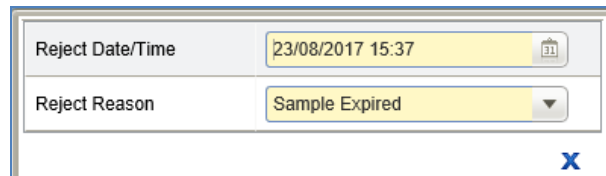


Figure 5.0-11 Reject Reason

- To add new data for Reject Reason as below:

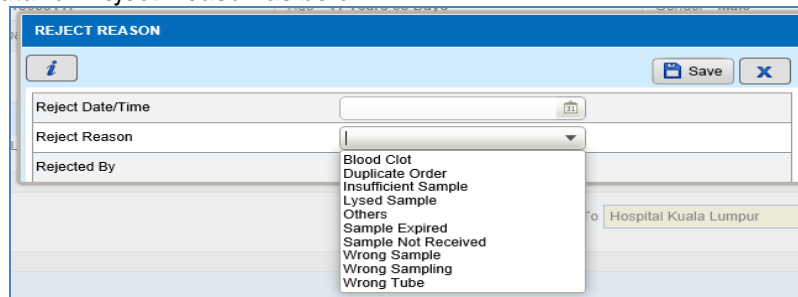
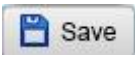


Figure 5.0-12 Add Reject Reason

- Click at  button to save the reject reason and pop up will appear as Figure 5.0-13

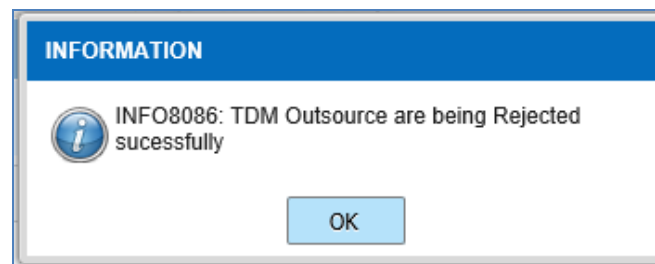

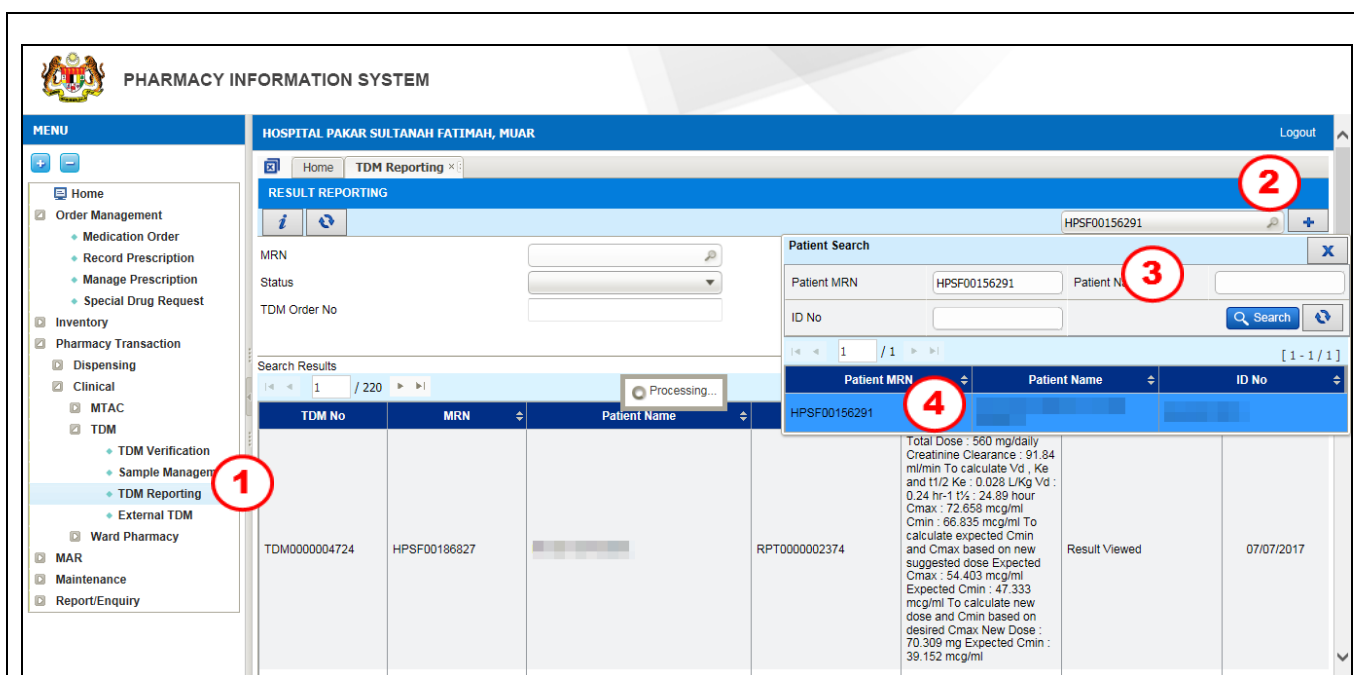


Figure 5.0-12 TDM Outsource Rejected

- Click on  button to confirm Reject Outsource

6.0 TDM Reporting

TDM Reporting module is for user to record the TDM results and Pharmacist Recommendation.



PHARMACY INFORMATION SYSTEM

HOSPITAL PAKAR SULTANAH FATIMAH, MUAR Logout

Home TDM Reporting

RESULT REPORTING

MRN: Status: TDM Order No:

Search Results: 1 / 220 Processing...

TDM No	MRN	Patient Name	Patient MRN	Patient Name	ID No
TDM0000004724	HPSF00186827		HPSF00156291		

Total Dose : 560 mg/daily
Creatinine Clearance : 91.84 ml/min To calculate Vd , Ke and t1/2 Ke : 0.028 L/Kg Vd : 0.24 hr-1 t1/2 : 24.89 hour
Cmax : 72.658 mcg/ml
Cmin : 66.835 mcg/ml To calculate expected Cmin and Cmax based on new suggested dose Expected Cmax : 54.403 mcg/ml Expected Cmin : 47.333 mcg/ml To calculate new dose and Cmin based on desired Cmax New Dose : 70.309 mg Expected Cmin : 39.152 mcg/ml


Result Viewed 07/07/2017

Figure 6.0-1 TDM Reporting Listing Page

STEP 1

Click on 'TDM' module and click on 'TDM Reporting' function

STEP 2

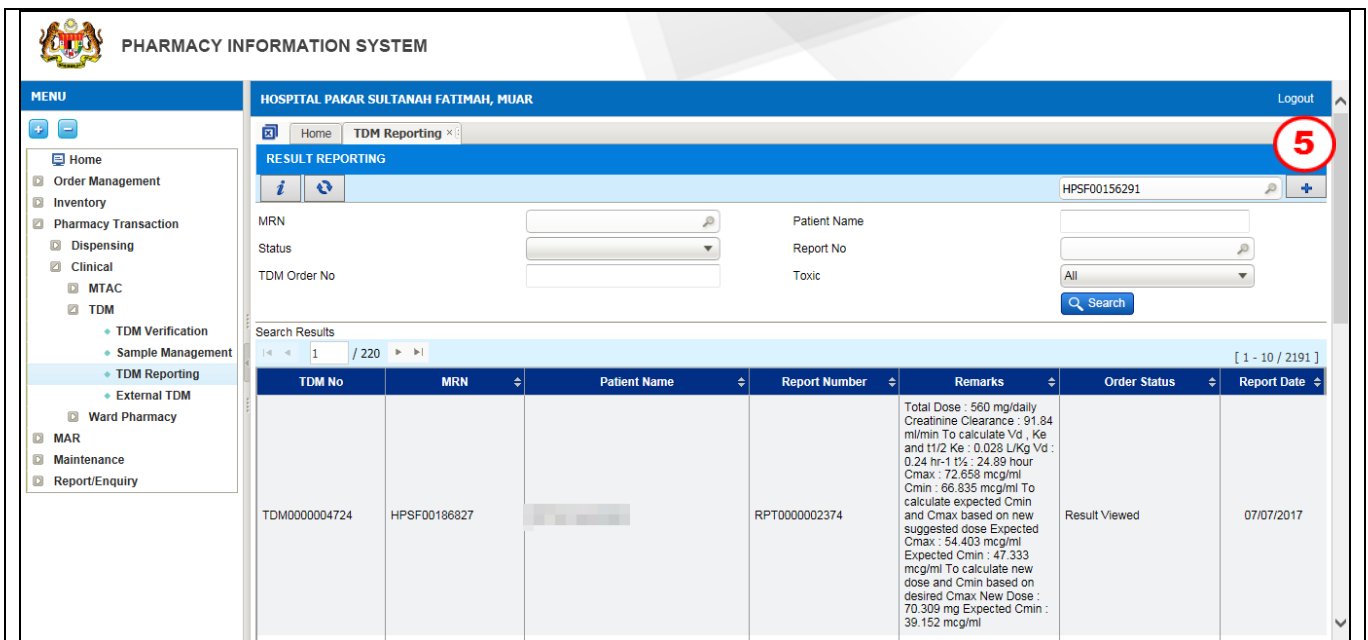
Click on the  button to search patient MRN

STEP 3

Enter Patient MRN or Patient Name or ID no and click on the  button

STEP 4

Double click on patient name



PHARMACY INFORMATION SYSTEM

HOSPITAL PAKAR SULTANAH FATIMAH, MUAR

Logout

Home TDM Reporting

RESULT REPORTING

HPSF00156291

MRN: [Input Field] Patient Name: [Input Field]

Status: [Dropdown] Report No: [Input Field]

TDM Order No: [Input Field] Toxic: [Dropdown]

Search

Search Results

TDM No	MRN	Patient Name	Report Number	Remarks	Order Status	Report Date
TDM0000004724	HPSF00186827	[Redacted]	RPT0000002374	Total Dose : 560 mg/daily Creatinine Clearance : 91.84 ml/min To calculate Vd , Ke and t1/2 Ke : 0.028 L/Kg Vd : 0.24 hr-1 t1/2 : 24.89 hour Cmax : 72.658 mcg/ml Cmin : 66.835 mcg/ml To calculate expected Cmin and Cmax based on new suggested dose Expected Cmax : 54.403 mcg/ml Expected Cmin : 47.333 mcg/ml To calculate new dose and Cmin based on desired Cmax New Dose : 70.309 mg Expected Cmin : 39.152 mcg/ml	Result Viewed	07/07/2017

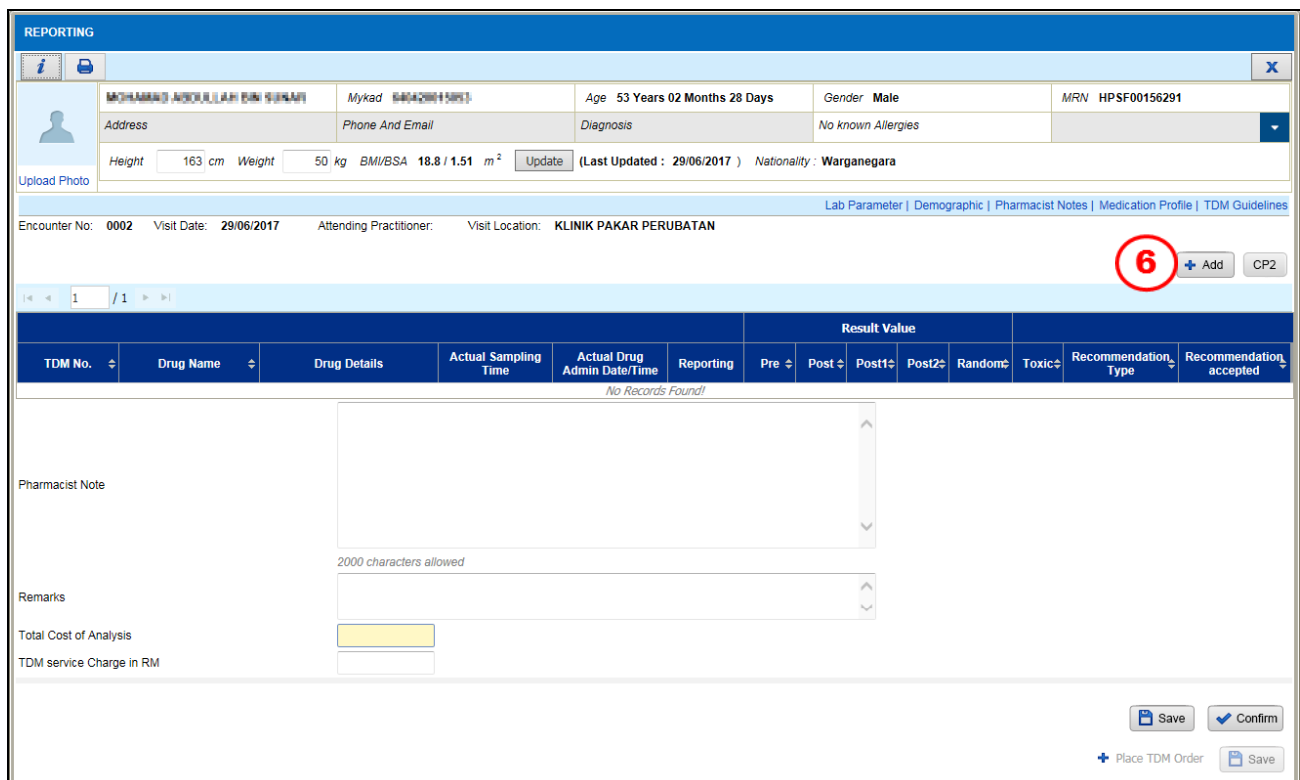
Figure 6.0-2 TDM Reporting Listing Page

STEP 5

Click on the  button

Note

Reporting screen will be displayed as Figure 6.0-3



REPORTING

Mykad: [Input Field] Age: 53 Years 02 Months 28 Days Gender: Male MRN: HPSF00156291

Address: [Input Field] Phone And Email: [Input Field] Diagnosis: [Input Field] No known Allergies

Height: 163 cm Weight: 50 kg BMI/BSA: 18.8 / 1.51 m² Update (Last Updated : 29/06/2017) Nationality: Warganegara

Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines

Encounter No: 0002 Visit Date: 29/06/2017 Attending Practitioner: Visit Location: KLINIK PAKAR PERUBATAN

1 / 1

6 + Add CP2

TDM No.	Drug Name	Drug Details	Actual Sampling Time	Actual Drug Admin Date/Time	Reporting	Pre	Post	Post1	Post2	Random	Toxic	Recommendation Type	Recommendation accepted
No Records Found!													

Pharmacist Note

2000 characters allowed

Remarks

Total Cost of Analysis


TDM service Charge in RM

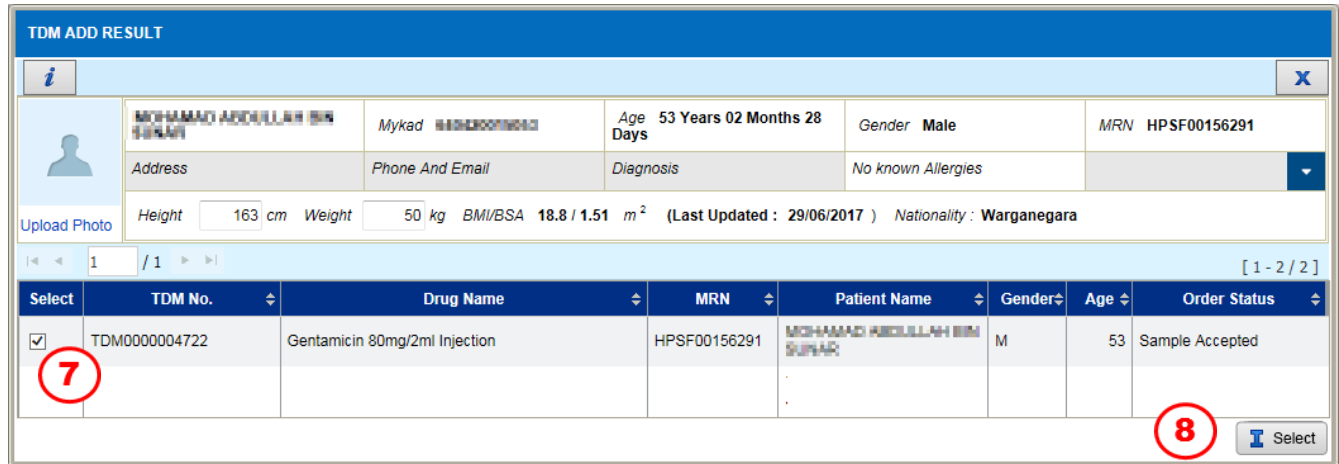
Save Confirm

Place TDM Order Save

Figure 6.0-3 TDM Reporting

STEP 6

Click on the  button to display TDM Add Result screen



Select	TDM No.	Drug Name	MRN	Patient Name	Gender	Age	Order Status
<input checked="" type="checkbox"/>	TDM0000004722	Gentamicin 80mg/2ml Injection	HPSF00156291	MOHAMAD ABDULLAH BIN SUMAR	M	53	Sample Accepted

Figure 6.0-4 TDM Add Result


STEP 7

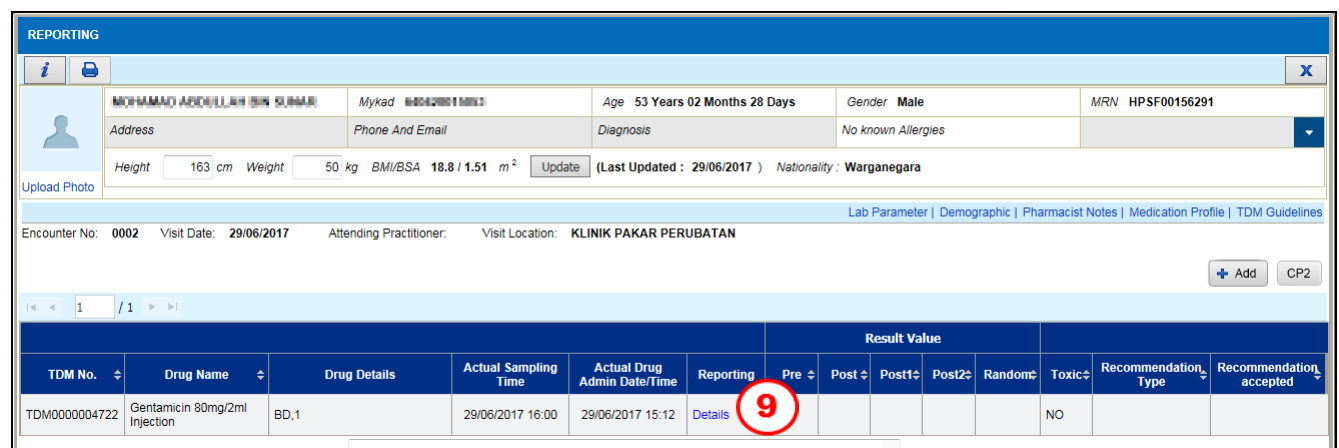
Select on ☐ checkbox(es) for selected TDM order

Note

The system will display all the active TDM order for the patient. User can combine the TDM orders in one reporting process.

STEP 8

Click on the  button to proceed with TDM reporting process



TDM No.	Drug Name	Drug Details	Actual Sampling Time	Actual Drug Admin Date/Time	Reporting	Pre	Post	Post1	Post2	Random	Toxic	Recommendation Type	Recommendation accepted
TDM0000004722	Gentamicin 80mg/2ml Injection	BD,1	29/06/2017 16:00	29/06/2017 15:12	Details						NO		

Figure 6.0-5 Reporting Details Hyperlink

STEP 9

Click on [Details](#) hyperlink to display Reporting screen

REPORTING

i
X

Post1 Sample

Result Value ▼

Reported By Details

Post2 Sample

Result Value mcg/ml 10

Reported By Details

Random Sample

Result Value ▼

Reported By Details

Calculator ▼ 11

Aminoglycoside Pre -Post
Aminoglycoside Pre
Aminoglycoside Post1-Post6
Aminoglycoside Post

Pharmacokinetics Profile

Recommendation Type ▼

Toxic ☐ ☒ No

Latest Lab Result:

Blood Urea mmol/L

Sodium mmol/L

Potassium mmol/L

Serum Creatinine µmol/L

Creatinine Clearance ml/min

Not accurate for Children

Albumin g/L

Ok

Figure 6.0-6 Reporting

Note

- User needs to enter sample details for pre sample, post sample or random sample based on TDM order.
- Latest Lab Result will display the latest lab results recorded for:
 - Blood Urea
 - Sodium
 - Potassium
 - Serum Creatinine
 - Creatinine Clearance
 - Albumin

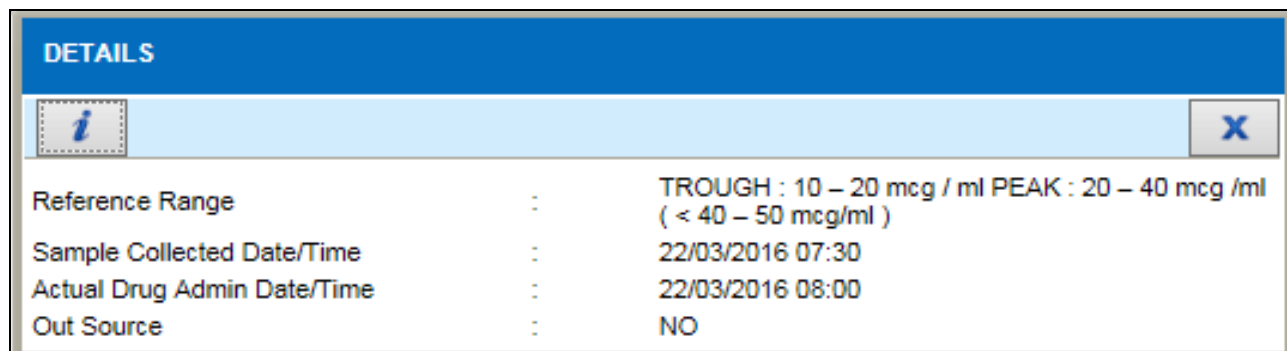
STEP 10

Enter sample details as below:

- a. Result Value
- b. Resulted By

Note

- Click on [Details](#) hyperlink to view sample details as per Figure 6.0-7. Sample Details consists of:
- Reference Range
- Sample Collected Date/Time
- Actual Drug Admin Date/Time
- Outsource



The screenshot shows a window titled 'DETAILS' with a blue header bar. Below the header is a light blue bar containing an information icon (i) on the left and a close button (X) on the right. The main area of the window displays the following information:

Reference Range	:	TROUGH : 10 – 20 mcg / ml PEAK : 20 – 40 mcg /ml (< 40 – 50 mcg/ml)
Sample Collected Date/Time	:	22/03/2016 07:30
Actual Drug Admin Date/Time	:	22/03/2016 08:00
Out Source	:	NO

Figure 6.0-7 Sample Details

STEP 11

Select calculator from dropdown box. Please refer to [TDM Calculator](#) to view sample calculator calculation.

REPORTING

i
X

Post1 Sample

Result Value ▼

Reported By Details

Post2 Sample

Result Value mcg/ml ▼

Reported By Details

Random Sample

Result Value ▼

Reported By Details

Calculator ▼

Latest Lab Result:

Blood Urea mmol/L

Sodium mmol/L

Potassium mmol/L

Serum Creatinine µmol/L

Creatinine Clearance ml/min
Not accurate for Children

Albumin g/L

Pharmacokinetics Profile

t½ : 24.89 hour

Cmax : 72.658 mcg/ml

Cmin : 66.835 mcg/ml

To calculate expected Cmin and Cmax based on new suggested dose

Expected Cmax : 54.403 mcg/ml

Expected Cmin : 47.333 mcg/ml

To calculate new dose and Cmin based on desired Cmax

New Dose : 70.309 mg

Expected Cmin : 39.152 mcg/ml

Recommendation Type Maintain The Dose ▼

Toxic ☐ No

Ok

Figure 6.0-8 Reporting

STEP 12

Enter **Pharmacokinetics Profile**

STEP 13

Select **Recommendation Type** from dropdown:

- Increase The Dose
- Maintain The Dose
- Reduce The Dose
- Refer to Pharmacist Notes
- Stop The Dose
- Withhold The Dose

Note

Recommendation Type will be copied and displayed in Pharmacist Notes.

STEP 14


Select **Toxic**:

- a. Yes
- b. No

STEP 15

Click on the  button to proceed with TDM reporting process

REPORTING



Mykad: **MYKAD 123456789**

Age: 53 Years 02 Months 28 Days

Gender: Male

MRN: HPSF00156291

Address

Phone And Email

Diagnosis

No known Allergies

Height: 163 cm Weight: 50 kg BMI/BSA: 18.8 / 1.51 m²

Update (Last Updated: 29/06/2017) Nationality: Warganegara

Upload Photo

Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines

Encounter No: 0002 Visit Date: 29/06/2017 Attending Practitioner: Visit Location: KLINIK PAKAR PERUBATAN

+ Add CP2

1 / 1

[1 - 1 / 1]

TDM No.	Drug Name	Drug Details	Actual Sampling Time	Actual Drug Admin Date/Time	Reporting	Pre	Post	Post1	Post2	Random	Toxic	Recommendation Type	Recommendation accepted
TDM0000004722	Gentamicin 80mg/2ml Injection	BD,1	29/06/2017 16:00	29/06/2017 15:12	Details					21.0	NO	Maintain The Dose	

Pharmacist Note

TDM0000004722 - Gentamicin 80mg/2ml Injection - Maintain The Dose

Result Value :-

Y :21.0 mcg/ml

1904 characters allowed

Remarks

Total Cost of Analysis

0

TDM service Charge in RM

16

17

Save Confirm

+ Place TDM Order Save

Figure 6.0-9 TDM Reporting

Note

- Pharmacist Notes field will automatically display:
 - Drug Name
 - Recommendation Type
- User may edit Pharmacist Note.
- Enter Remarks if applicable.
- Total Cost of Analysis will be based on TDM Guideline master setup.

STEP 16

Click on the  button to save report

Note

The status will be set as "In-Process".



STEP 17


Click on the  button to confirm report

Note

- The status will change to “TDM Completed”.
-  **Save** button and  **Place TDM Order** button will be enabled.

REPORTING



Mykad: 9404200145011

Age 53 Years 02 Months 28 Days

Gender Male

MRN HPSF00156291

Address

Phone And Email

Diagnosis

No known Allergies

Height 163 cm Weight 50 kg BMI/BSA 18.8 / 1.51 m² (Last Updated : 29/06/2017) Nationality : Warganegara

Upload Photo

Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines

Encounter No: 0002 Visit Date: 29/06/2017 Attending Practitioner: Visit Location: KLINIK PAKAR PERUBATAN

+ Add

CP2

1 / 1

[1 - 1 / 1]

TDM No.	Drug Name	Drug Details	Actual Sampling Time	Actual Drug Admin Date/Time	Reporting	Pre	Post	Post1	Post2	Random	Toxic	Recommendation Type	Recommendation accepted	
TDM0000004722	Gentamicin 80mg/2ml Injection	BD,1	29/06/2017 16:00	29/06/2017 15:12	Details					21.0		NO	Maintain The Dose	Yes 18

Pharmacist Note

TDM0000004722 - Gentamicin 80mg/2ml Injection - Maintain The Dose

Result Value :-

Y :21.0 mcg/ml

1904 characters allowed

Remarks

Total Cost of Analysis

0

TDM service Charge in RM


Save 19

+ Place TDM Order


Save

Figure 6.0-10 TDM Reporting



STEP 18

Click ‘Yes’ or ‘No’ at the  button under **Recommendation accepted**

STEP 19

Click on the  **Save** button to authorize the report

Note

- The status will change to “Result Viewed”.
- Click on the  **Place TDM Order** button to place new TDM order.
- User can click on the  button to print the external TDM resulting as Figure 6.0-11. The TDM report will be display as in Figure 6.0-12.

FB U. MANUAL_THERAPEUTIC DRUG MONITORING (TDM)-10th E
33

Page

REPORTING



Mykad

6804200158951

Age

53 Years 02 Months 28 Days

Gender

Male

MRN

HPSF00156291

Address

Phone And Email

Diagnosis

No known Allergies

Height

163 cm

Weight

50 kg

BMI/BSA

18.8 / 1.51 m²

(Last Updated : 29/06/2017)

Nationality : Warganegara

Upload Photo

Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines


Encounter No: 0002

Visit Date: 29/06/2017

Attending Practitioner:

Visit Location: KLINIK PAKAR PERUBATAN

Figure 6.0-11 Print Report



CLINICAL PHARMACOKINETICS SERVICES Therapeutic Drug Monitoring (TDM) Report Hospital Pakar Sultanah Fatimah, Muar

Report No: RPT0000002341

PATIENT DETAILS

Name :
MRN NO :
IC :

Age : 25 Years 08 Months 25 Days
 Sex : Female
 Race : Malay

Weight : 80 Kg
 Height : 155 Cm
 Ward/Unit : WAD 9 (MED - P)

No	TDM No	Drug Name	Drug Details	Indication Request	Recommendation Type	Recommendation Accepted	Toxic
1	TDM0000004684	Phenytoin Sodium 100 mg Capsule	300 mg, ON (every night), Oral Capsule, Oral, 26/03/2017 (7 Days), Start Date: 26/03/2017 End Date: 02/04/2017	Therapeutic Monitoring		Yes	No

Sampling Id	Sample Type	Actual Sampling Date Time	Actual Drug Admin Date Time	Result Value	Therapeutic Range
HPSF/SM/0000004848	RANDOM	3/27/17 12:00 AM	3/27/17 3:28 PM		TROUGH : 10 – 20 mcg /ml

Pharmacist Note:

DRUG REGIMEN MEASURED LEVEL (mcg/ml) Adjusted level (mcg/ml)
 LOADING DOSE IV PHENYTOIN 1G +5.7 14.61
 100mg TDS
 *Adjusted level was be calculated due to patient on dialysis and hypoalbumin
 DESIRED THERAPEUTIC RANGE:
 Phenytoin: 10-20 mcg/ml

Comments:
 Adjusted level of phenytoin is WITHIN the therapeutic range.
 May continue with maintenance of IV Phenytoin 100mg TDS.
 Kindly monitor patient's liver function and albumin level.
 Please repeat TDM (pre dose) only if patient fits.
 Thank you.

Printed Date : 05/09/2017 Printed By : Unit Name : Source : PhIS

Page 1 of 1

Figure 6.0-12 TDM Report

7.0 External TDM

7.1 External TDM Online

External Notification	
External TDM Request Received:	<input type="text" value="1"/>
External TDM Result Received:	<input type="text" value="0"/>
Online SPUB R1 Request Received:	<input type="text" value="0"/>

Figure 7.1-1 External Notification

External TDM module is for user to record external TDM resulting (Outsource) via online or offline.

It will be recorded online if both facilities use PhIS to perform TDM processes.

STEP 1

Click on the **External TDM Result Received** button to view Outsource information

OUTSOURCE LISTING							
	Hosp/Clinic	Mrn No	Patient Name	Patient ID	TDM Drug	Sample Type	Date/Time
<input type="checkbox"/>	Hospital Pakar Sultanah Fatimah, Muar	HPSF00007006	[Redacted]	[Redacted]	carBAMAZepine 200mg Tablet	RANDOM	22/07/2014 13:26
<input type="checkbox"/>	Hospital Pakar Sultanah Fatimah, Muar	HPSF00017231	[Redacted]	[Redacted]	Sodium Valproate 200 mg Tablet	PRE	22/09/2014 15:48

Figure 7.1-2 Outsource Listing

STEP 2

Click on **Register** hyperlink to register the patient in the system

Note

The status will change to 'Registered' as per Figure 7.1-2

OUTSOURCE LISTING							
	Hosp/Clinic	Mrn No	Patient Name	Patient ID	TDM Drug	Sample Type	Date/Time
<input type="checkbox"/>	Hospital Pakar Sultanah Fatimah, Muar	HPSF00007006	[Redacted]	[Redacted]	carBAMAZepine 200mg Tablet	RANDOM	22/07/2014 13:26
<input checked="" type="checkbox"/>	Hospital Pakar Sultanah Fatimah, Muar	HPSF00017231	[Redacted]	[Redacted]	Sodium Valproate 200 mg Tablet	PRE	22/09/2014 15:48

Figure 7.1-3 Outsource Listing – Registered Patient

STEP 3

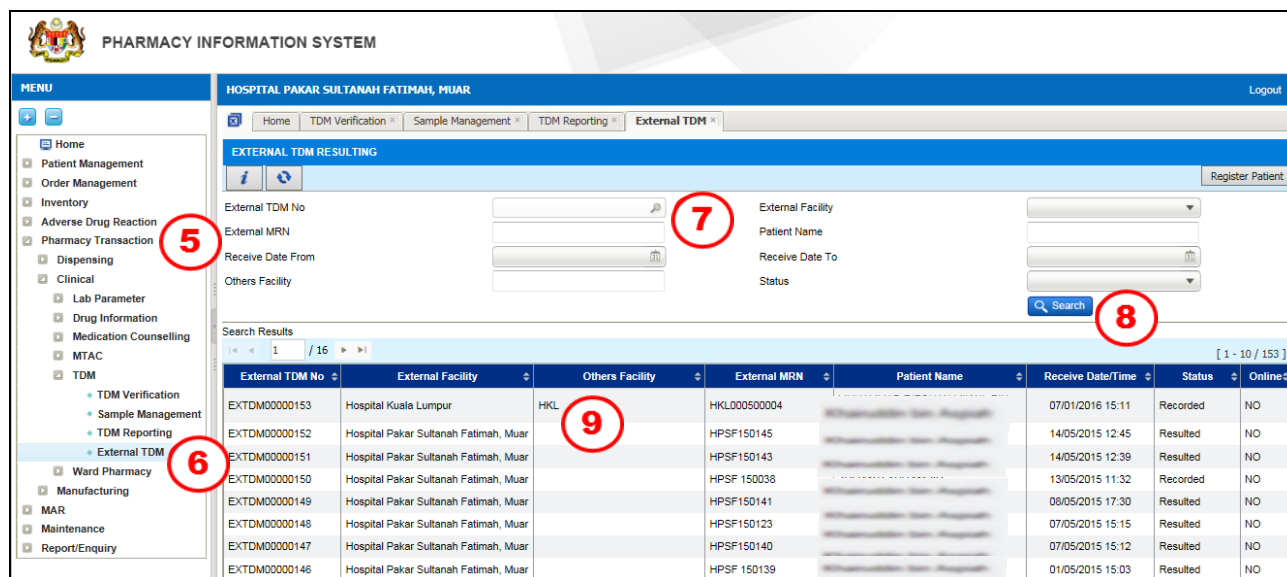
Click on the ☒ checkbox for selected patient

STEP 4

Click on the button to save the record

Note

Registered patient will be uploaded to the External TDM listing page.



PHARMACY INFORMATION SYSTEM

HOSPITAL PAKAR SULTANAH FATIMAH, MUAR

Logout

Home TDM Verification Sample Management TDM Reporting External TDM

EXTERNAL TDM RESULTING

Register Patient

External TDM No. External Facility
 External MRN Patient Name
 Receive Date From Receive Date To
 Others Facility Status

Search

Search Results

External TDM No.	External Facility	Others Facility	External MRN	Patient Name	Receive Date/Time	Status	Online
EXTDM00000153	Hospital Kuala Lumpur	HKL	HKL000500004	[Redacted]	07/01/2016 15:11	Recorded	NO
EXTDM00000152	Hospital Pakar Sultanah Fatimah, Muar		HPSF150145	[Redacted]	14/05/2015 12:45	Resulted	NO
EXTDM00000151	Hospital Pakar Sultanah Fatimah, Muar		HPSF150143	[Redacted]	14/05/2015 12:39	Resulted	NO
EXTDM00000150	Hospital Pakar Sultanah Fatimah, Muar		HPSF 150038	[Redacted]	13/05/2015 11:32	Recorded	NO
EXTDM00000149	Hospital Pakar Sultanah Fatimah, Muar		HPSF150141	[Redacted]	08/05/2015 17:30	Resulted	NO
EXTDM00000148	Hospital Pakar Sultanah Fatimah, Muar		HPSF150123	[Redacted]	07/05/2015 15:15	Resulted	NO
EXTDM00000147	Hospital Pakar Sultanah Fatimah, Muar		HPSF150140	[Redacted]	07/05/2015 15:12	Resulted	NO
EXTDM00000146	Hospital Pakar Sultanah Fatimah, Muar		HPSF 150139	[Redacted]	01/05/2015 15:03	Resulted	NO

Figure 7.1-4 External TDM Listing Page

STEP 5

Click on 'Pharmacy Transaction' menu follow by 'Clinical' sub-menu

STEP 6


Click on 'TDM' and click on 'External TDM' function

STEP 7

Search for patient records by:

- External TDM No.
- External Facility
- External MRN
- Patient Name
- Receive Date From
- Receive Date To
- Others Facility
- Status
 - Recorded
 - Rejected
 - Resulted

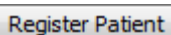
STEP 8

Click on the  button to search for patient records

STEP 9

Double-click on the selected patient and External TDM Resulting screen will be displayed as per Figure 7.1-5

Note



button is for offline External TDM (refer to [section 7.2 External TDM Offline](#))

EXTERNAL TDM RESULTING

External TDM No : EXTDM00000004

Patient Details

External MRN : HPSF00017231

Patient Name

Patient Id Nun

External Facility : Hospital Pakar Sultanah Fatimah, Muar

Delivery Details

Sample Sent By

Sample Sent Date/Time

Sample Received By

Sample Received Date/Time

Drug Details

TDM Drug

Sampling Type

+ Add

Drug Name	Sample Type	Result Value	UOM	Lab Based	Toxic	Status	Delete	Reject
carBAMAZepine 200mg Tablet	PRE			<input type="checkbox"/>	<input type="checkbox"/>	Recorded	<input type="checkbox"/>	<input type="checkbox"/>

Prepared By

Tan Sin Li

Remarks

contact DR Ismail

Save

Confirm

Figure 7.1-5 External TDM Resulting

STEP 10

Enter **Delivery Details** as below:

- Sample Sent By
- Sample Sent Date/Time
- Sample Received By
- Sample Received Date/Time

STEP 11

Enter **Result Value** and select **UOM** from dropdown box :

- mcg/ml
- mg/dl
- mmol/l
- ng/ml

Note

- Select on ☐ **Lab Based** checkbox if TDM resulting process is done at a laboratory.
- Select on ☐ **Toxic** checkbox if TDM results show toxicity for selected patient.
- Select on ☐ **Reject** checkbox to reject sampling received.
- Select on ☐ **Delete** checkbox to delete TDM order.
- Enter **Remarks** if applicable.

EXTERNAL TDM RESULTING

External TDM No : EXTDM00000004

Patient Details

External MRN : HPSF00017231

Patient Name

Patient Id Numt

External Facility : Hospital Pakar Sultanah Fatimah, Muar

Delivery Details

Sample Sent By

Sample Received By

Sample Sent Date/Time

Sample Received Date/Time

Drug Details

TDM Drug

Sampling Type

+ Add

1 / 1

[1 - 1 / 1]

Drug Name	Sample Type	Result Value	UOM	Lab Based	Toxic	Status	Delete	Reject
carBAMAZepine 200mg Tablet	PRE					Recorded		

Prepared By

Tan Sin Li

Remarks

contact DR Ismail

12


13

Save


Confirm

Figure 7.1-6 External TDM Resulting



STEP 12

Click on the  button to save external TDM resulting

STEP 13

Click on the  button to confirm external TDM resulting

Note

- The status will change to “Resulted”.
- Outsource TDM Resulting will be sent back to the requester.
- To receive an **External TDM Result Received**:
- Click on the **External TDM Result Received**  button to view the outsource listing.
- Select on ☐checkbox(es) on selected outsource request.
- Click on the  button to upload the patient record in order to proceed with TDM Reporting processes.(refer to [section 6.0 TDM Reporting](#))

External Notification

External TDM Request Received:

1

External TDM Result Received:

1

Online SPUB R1 Request Received:

0

Figure 7.1-7 External Notification

OUTSOURCE LISTING									
1 / 1									
TDM Order No	Mrn No	Patient Name	Patient ID	TDM Drug	Sample Type	Result	UOM	Date/Time	
<input checked="" type="checkbox"/> EXTDM00000001	HPSF00017231		790719015422	Sodium Valproate 200 mg Tablet	PRE	13.3	mcg/ml	22/09/2014 16:22	

Figure 7.1-8 Outsource Listing

7.2 External TDM Offline

External TDM module is for user to record external TDM received via offline.

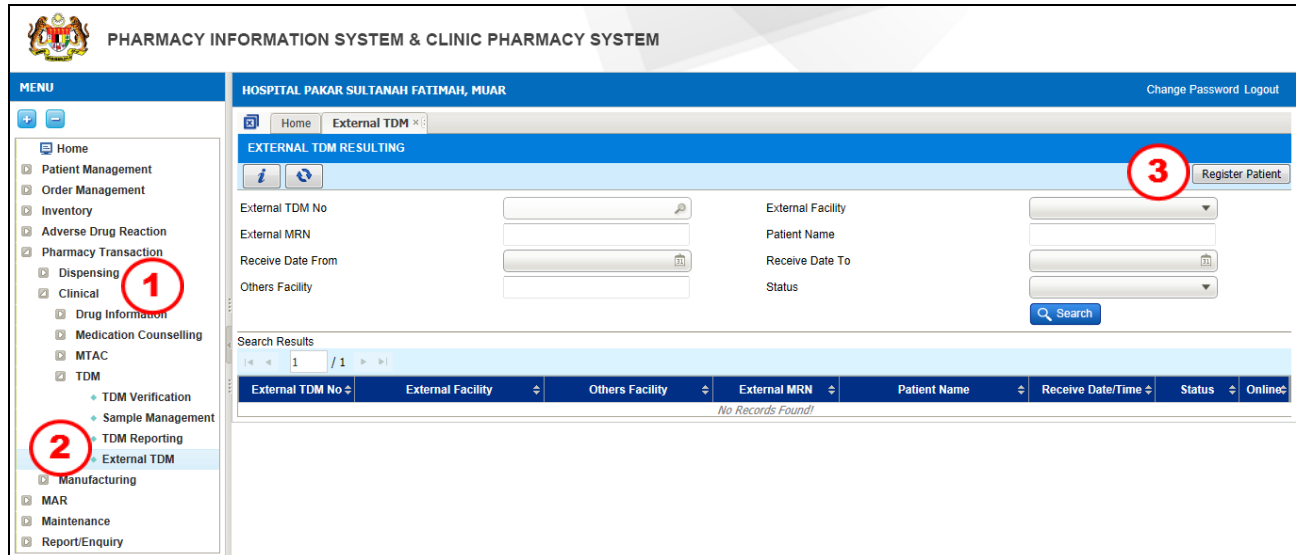


Figure 7.2-1 External TDM Listing Page

STEP 1

Click on 'Pharmacy Transaction' menu follow by 'Clinical' sub-menu

STEP 2

Click on 'TDM' and click on 'External TDM' function

STEP 3

Click on the  button to register external patient

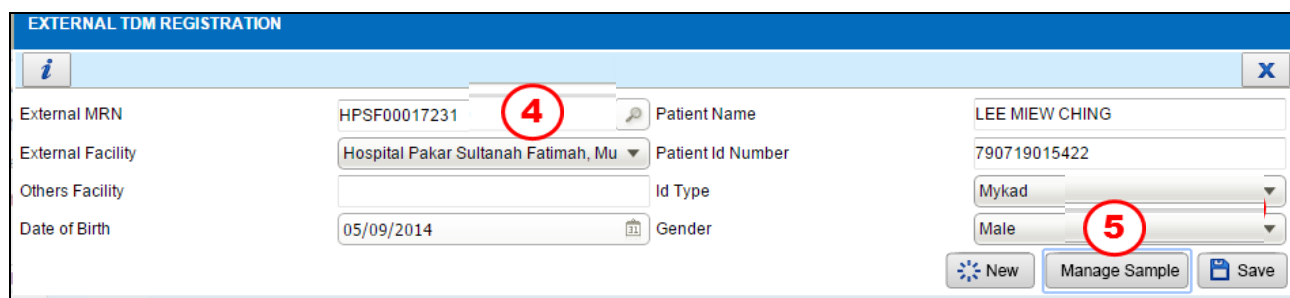


Figure 7.2-2 External TDM Registration

STEP 4

Enter details in the fields below:

- External MRN
- Patient Name
- External Facility
- Patient Id Number
- Other Facility
(If the sample come from private sector or facility which is not listed under MOH facilities)
- Id Type

Note

Click on the External MRN  button to search for registered patient and all fields will be automatically retrieved.

STEP 5

Click on the  button and External TDM Resulting screen will be displayed as per Figure 7.2-3

Note

Click on the  button to save the record

EXTERNAL TDM RESULTING

12

External TDM No. :

External MRN : HPSF00017231

Patient Name :

Patient Id Num :

External Facility : Hospital Pakar Sultanah Fatimah, Muar

Sample Sent By : Buntong

Sample Received By : Faezah

Sample Sent Date/Time : 05/11/2014 11:55

Sample Received Date/Time : 05/11/2014 11:55

TDM Drug :

Sampling Type :

1 / 1

Drug Name	Sample Type	Result Value	UOM	Lab Based	Toxic	Status	Delete	Reject
Theophylline 250 mg Long Acting Tablet	PRE	100	mg/dL	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Prepared By : Tan Lim Hui

Remarks :

OUTSOURCE

10

11

Save

Confirm

Figure 7.2-4 External TDM Resulting

STEP 9


Enter **Result Value** and select **UOM** from dropdown box :

- mcg/ml
- mg/dl
- mg/ml


Note

- Select on ☐ **Lab Based** checkbox if TDM resulting process is done at a laboratory.
- Select on ☐ **Toxic** checkbox if TDM results show toxicity for selected patient.
- Select on ☐ **Reject** checkbox to reject sampling received.
- Select on ☐ **Delete** checkbox to delete TDM order.
- Enter **Remarks** if applicable.

STEP 10

Click on the  button to save external TDM resulting


STEP 11

Click on the  button to confirm external TDM resulting

STEP 12



Click on the button to print the external TDM resulting as per Figure 7.2.5



MINISTRY OF HEALTH, MALAYSIA
Hospital Miri
External TDM Resulting


Patient Name : OXX XXXX XXX

Age :

Gender :

External Facility : Hospital Limbang

External TDM No : EXTDM00000001

Patient ID : 


MRN : HLBG00005547

Sample Sent :

Sample Received : 29/07/2016 03:20 PM

NO.	Drug Name	Sample Type	Result Value	UOM
1	Paracetamol 500 mg Tablet	RANDOM	0.5	mcg/ml

Remarks:
OUTSOURCE

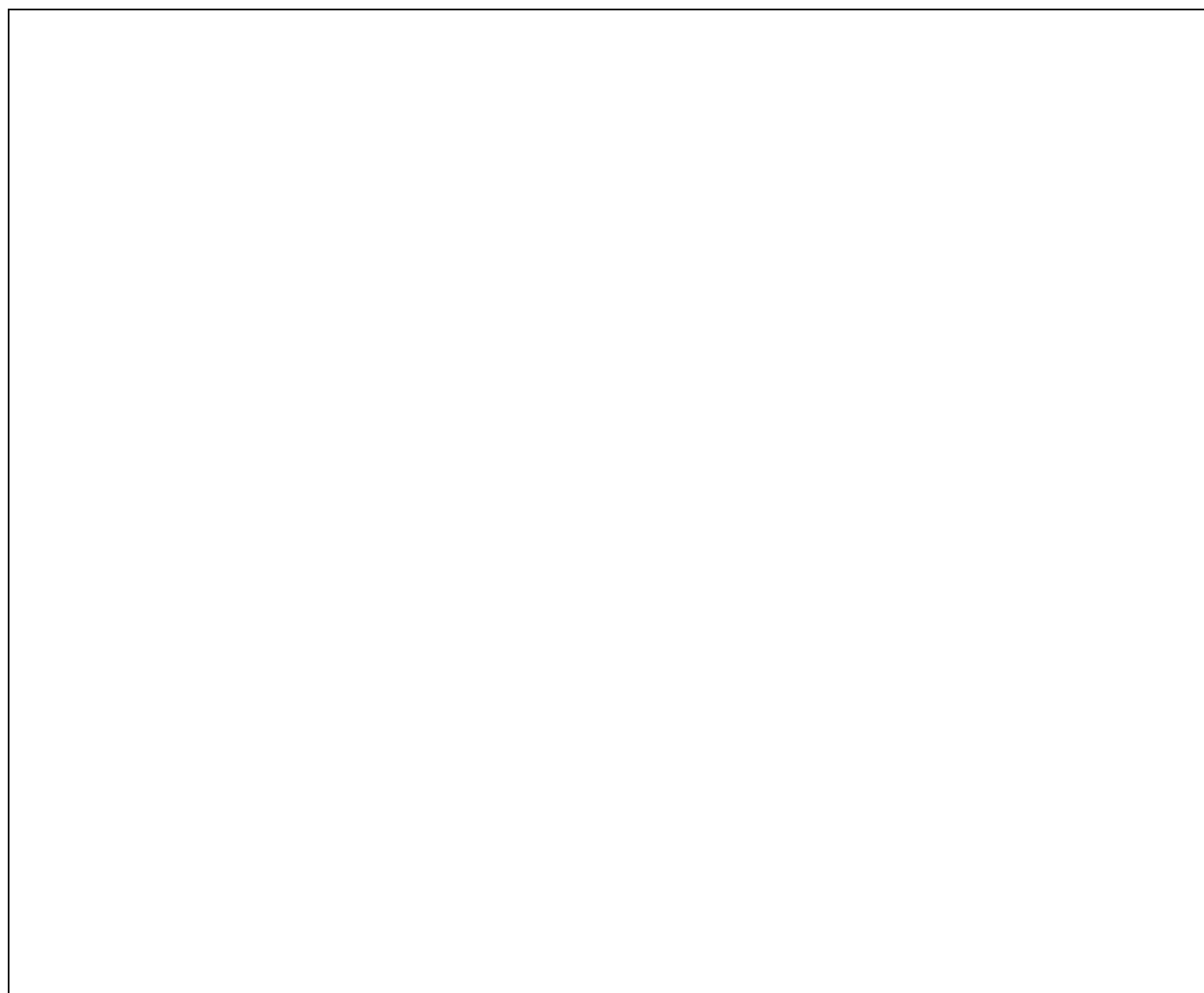
Resulted By : 

Designation : PF

Department : Pharmacy

Page 1 of 1

Figure 7.2-5 External TDM Resulting



8.0 Acronyms

Abbreviation	Definition
PhIS	Pharmacy Information System
CPS	Clinical Pharmacy System
PM	Patient Management
eGL	Electronic Guarantee Letter
HRMIS	Human Resource Management Informasi System
MRN	Medical Record Number
MOH	Ministry Of Health

9.0 Links to Clinical Modules

No	Module	PDF Links	No	Module	PDF Links
FB U. MANUAL_THERAPEUTIC DRUG MONITORING (TDM)-10 th E					
Page					



PhIS & CPS Project
User Manual – Therapeutic Drug
Monitoring



1	<i>Inpatient</i>	Click Here	12	<i>CDR Dispensing</i>	Click Here
2	<i>CDR Order</i>	Click Here	13	<i>Methadone Dispensing</i>	Click Here
3	<i>TDM Order</i>	Click Here	14	<i>PN Dispensing</i>	Click Here
4	<i>PN Order</i>	Click Here	15	<i>Order Management</i>	Click Here
5	<i>IV Order</i>	Click Here	16	<i>Patient Management</i>	Click Here
6	<i>Prepacking</i>	Click Here	17	<i>Radiopharmaceutical</i>	Click Here
7	<i>Galenical</i>	Click Here	18	<i>Outpatient</i>	Click Here
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9	<i>ADR & DAC</i>	Click Here	20	<i>MAR</i>	Click Here
10	<i>Medication Counselling</i>	Click Here	21	<i>DICE</i>	Click Here
11	<i>Ward Pharmacy</i>	Click Here			