



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

Full Based User Manual Therapeutic Drug Monitoring (TDM)

Version	:8th 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-8th EDITION

Application reference: PhIS & CPS v1.8.1



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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.

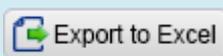
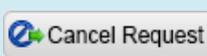
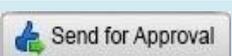
1.3 Organised Sections

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
<input type="checkbox"/>	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			
Acknowledge	To Acknowledge	Drug Info	Drug Info
New	To Do New Order	Verify	To Verify
Cancel Order	Cancel the Order	+ Add New Sample	To Add New Sample
Send	To send request	CP2	Ward Pharmacy

Note

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

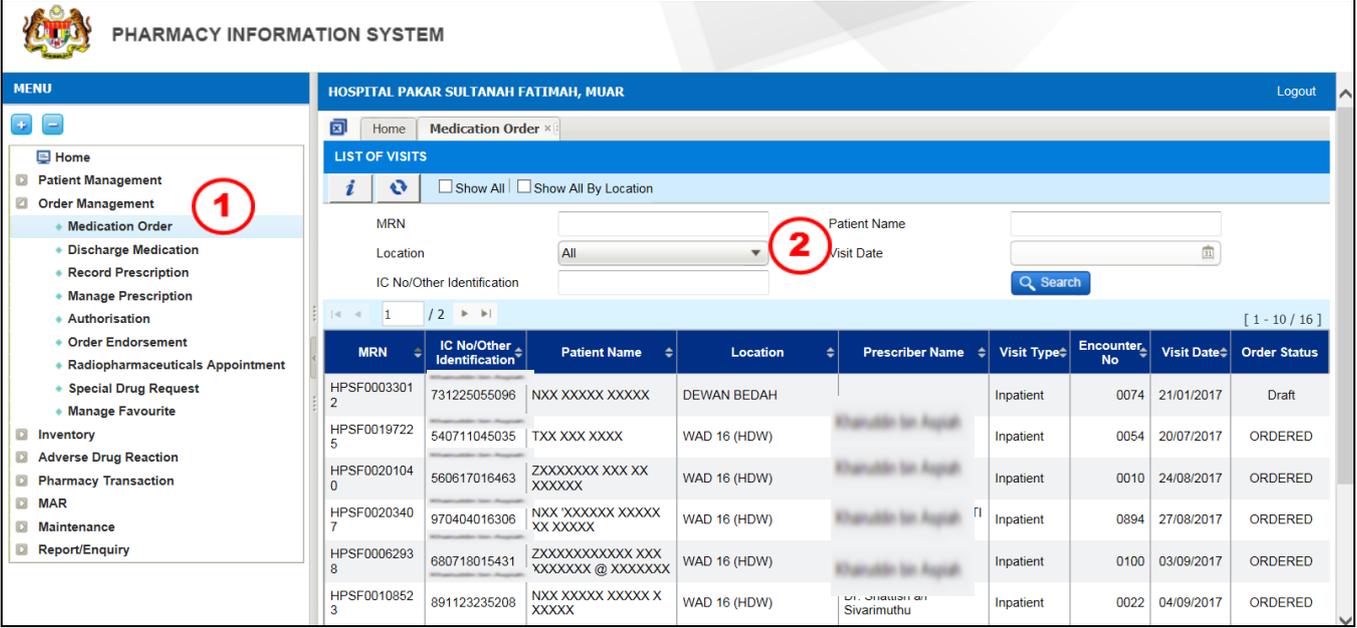


2.2 Latest Enhancement and Updates

Latest Functions	Page
Tdm Order <ul style="list-style-type: none">• New flow of ordering TDM Drug• Can 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 previous	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.



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: Visit Date:

IC No/Other Identification:

1 / 2 [1 - 10 / 16]

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)	Unavailable for Approval	Inpatient	0054	20/07/2017	ORDERED
HPSF00201040	560617016463	ZXXXXXXXX XXX XX XXXXXX	WAD 16 (HDW)	Unavailable for Approval	Inpatient	0010	24/08/2017	ORDERED
HPSF00203407	970404016306	NXX XXXXXX XXXXX XX XXXXX	WAD 16 (HDW)	Unavailable for Approval	Inpatient	0894	27/08/2017	ORDERED
HPSF00062938	680718015431	ZXXXXXXXXXXXX XXX XXXXXX @ XXXXXX	WAD 16 (HDW)	Unavailable for Approval	Inpatient	0100	03/09/2017	ORDERED
HPSF00108523	891123235208	NXX XXXXX XXXXX X XXXXX	WAD 16 (HDW)	Dr. 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

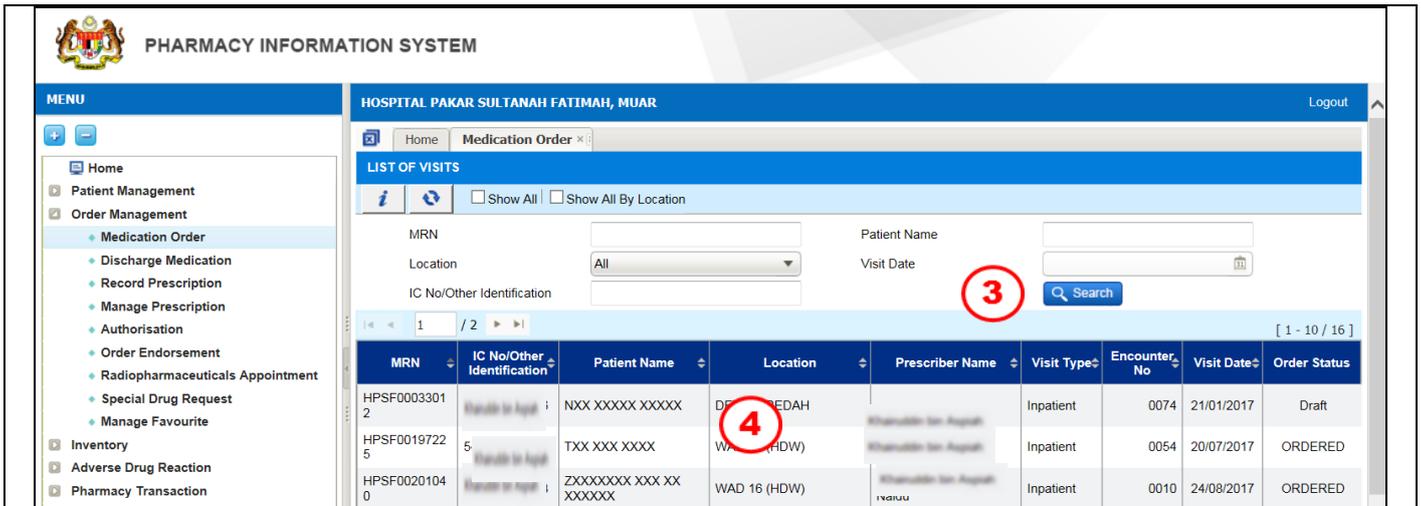
STEP 2

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

Home Medication Order

LIST OF VISITS

MRN: Patient Name:

Location: All Visit Date:

IC No/Other Identification: **3** 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	XXXXXXXXXX	Inpatient	0074	21/01/2017	Draft
HPSF00197225	XXXXXXXXXX	TXX XXX XXXX	WAD 16 (HDW)	XXXXXXXXXX	Inpatient	0054	20/07/2017	ORDERED
HPSF00201040	XXXXXXXXXX	ZXXXXXXXX XXX XX XXXXXX	WAD 16 (HDW)	XXXXXXXXXX	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

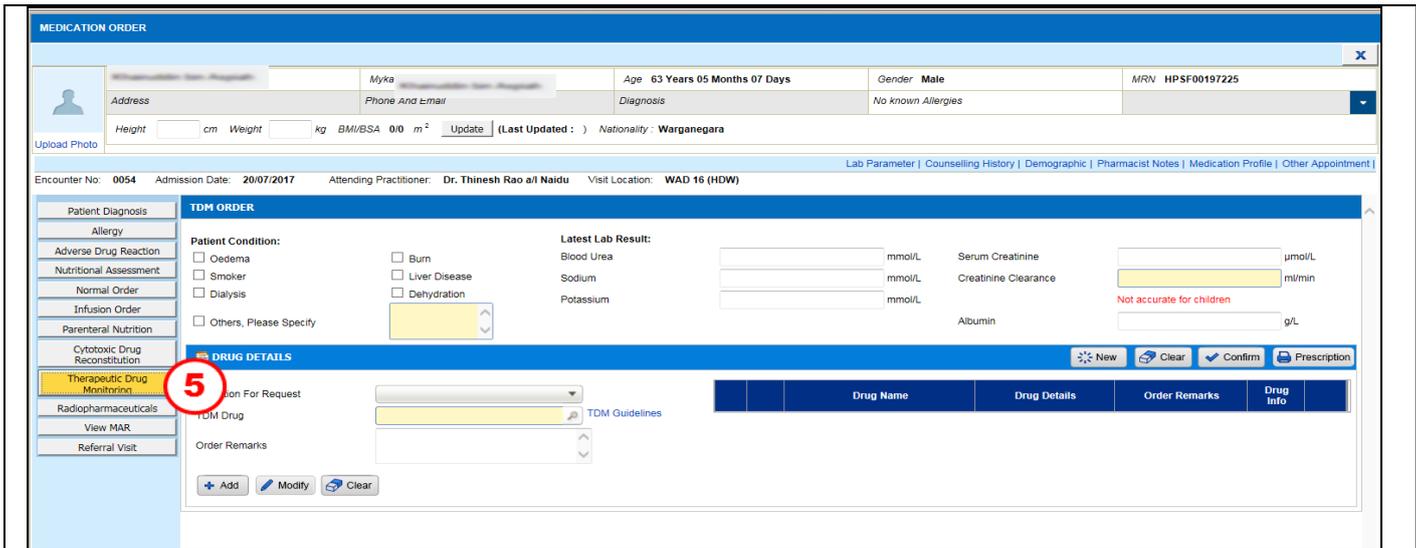


Figure 3.0-3 Medication Order

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

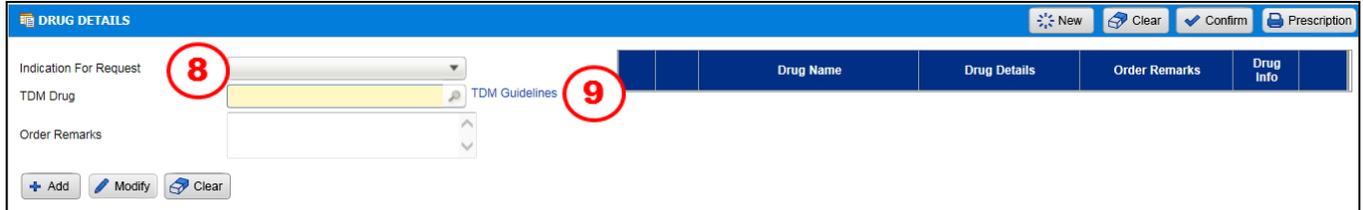


Figure 3.0-5 TDM Drug Details

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

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

Time to reach steady state: N/A

Calculator:

- Digoxin
- Aminoglycoside Pre
- Carbamazepine
- Phenobarbitone
- Vancomycin Pre
- Theophylline
- Valproic Acid
- Vancomycin Post

Phenytoin

Total Cost of Analysis(RM):

Remarks:

TDM GUIDELINE DETAIL

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

DRUG DETAILS

Indication For Request:

TDM Drug: TDM Guidelines

Order Remarks:

Drug Name	Drug Details	Order Remarks	Drug Info
Acetylsalicylic Acid 300 mg Soluble Tablet	150 mg, OM (every morning), Oral Disp/Sol Tab, Oral, 10/08/2015 (90 Days), Start Date: 10/08/2015 End Date: 08/11/2015		<input type="button" value="i"/> <input type="button" value="trash"/>

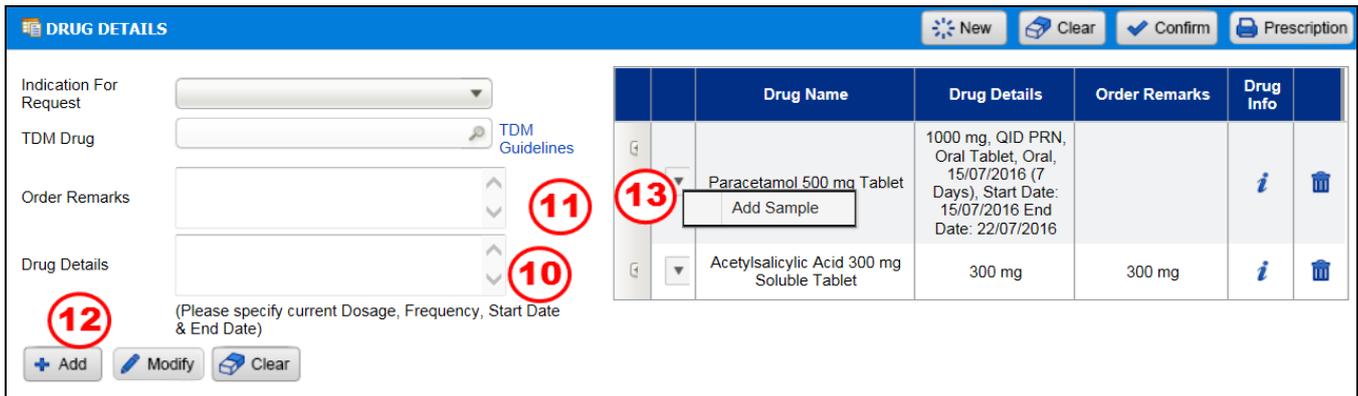
Figure 3.0-8 TDM Drug Detail

MEDICATION ORDER

TEY: Mykad 6t: 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 (Last Updated: 23/10/2014)

[Lab Results](#) [Counselling History](#) [Demographic](#) [Pharmacist Notes](#) [Medication Profile](#) [Other Appointment](#)

Figure 3.0-9 Lab Result Hyperlink



Drug Name	Drug Details	Order Remarks	Drug Info
Paracetamol 500 mg Tablet	1000 mg, QID PRN, Oral Tablet, Oral, 15/07/2016 (7 Days), Start Date: 15/07/2016 End Date: 22/07/2016		<i>i</i>
Acetylsalicylic Acid 300 mg Soluble Tablet	300 mg	300 mg	<i>i</i>

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  button to added drug and will be display as Figure 3.0.10

Note

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

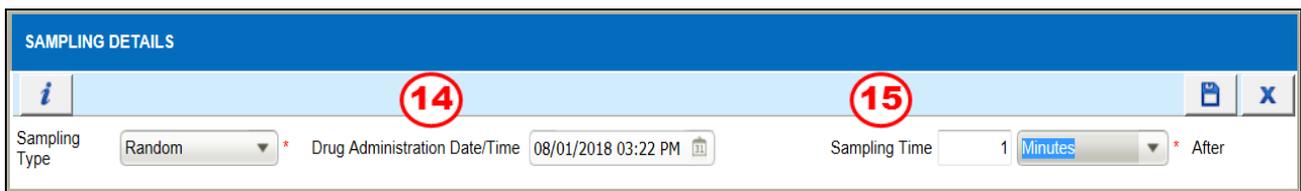


Figure 3.0-11 Sampling Details

STEP 13

Right click on the  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.

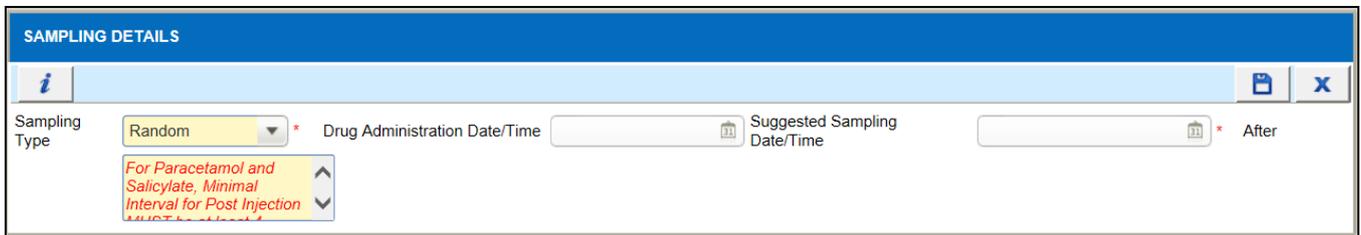
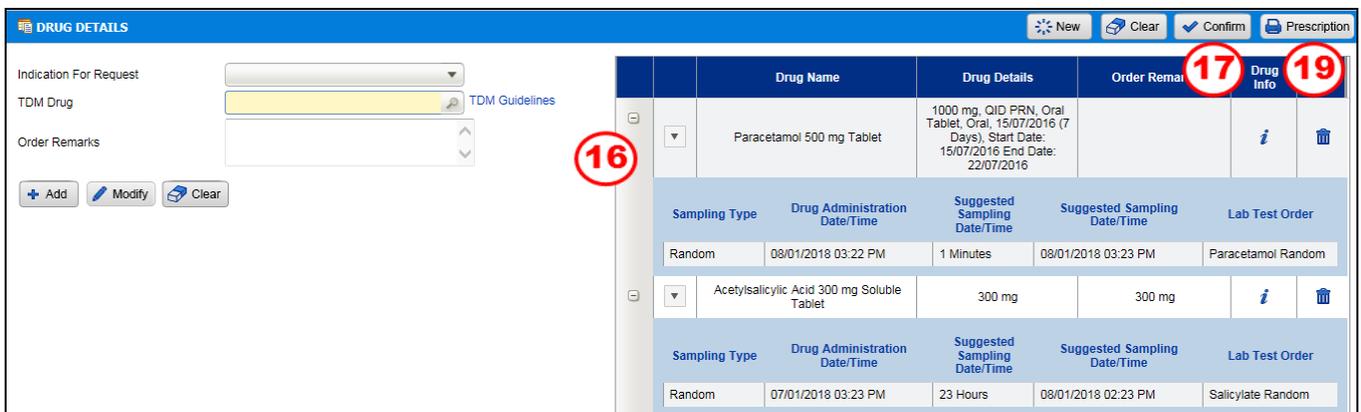


Figure 3.0-12 Sampling Details

STEP 16

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



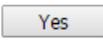
Drug Name	Drug Details	Order Remarks	Drug Info
Paracetamol 500 mg Tablet	1000 mg, QID PRN, Oral Tablet, Oral, 15/07/2016 (7 Days), Start Date: 15/07/2016 End Date: 22/07/2016		
Acetylsalicylic Acid 300 mg Soluble Tablet	300 mg	300 mg	

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

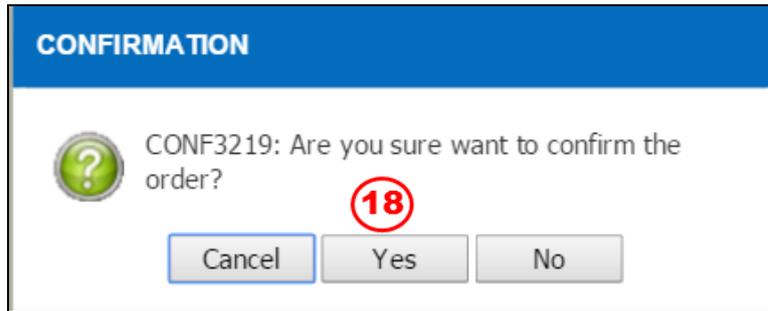


Figure 3.0-14 Confirmation alert message

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

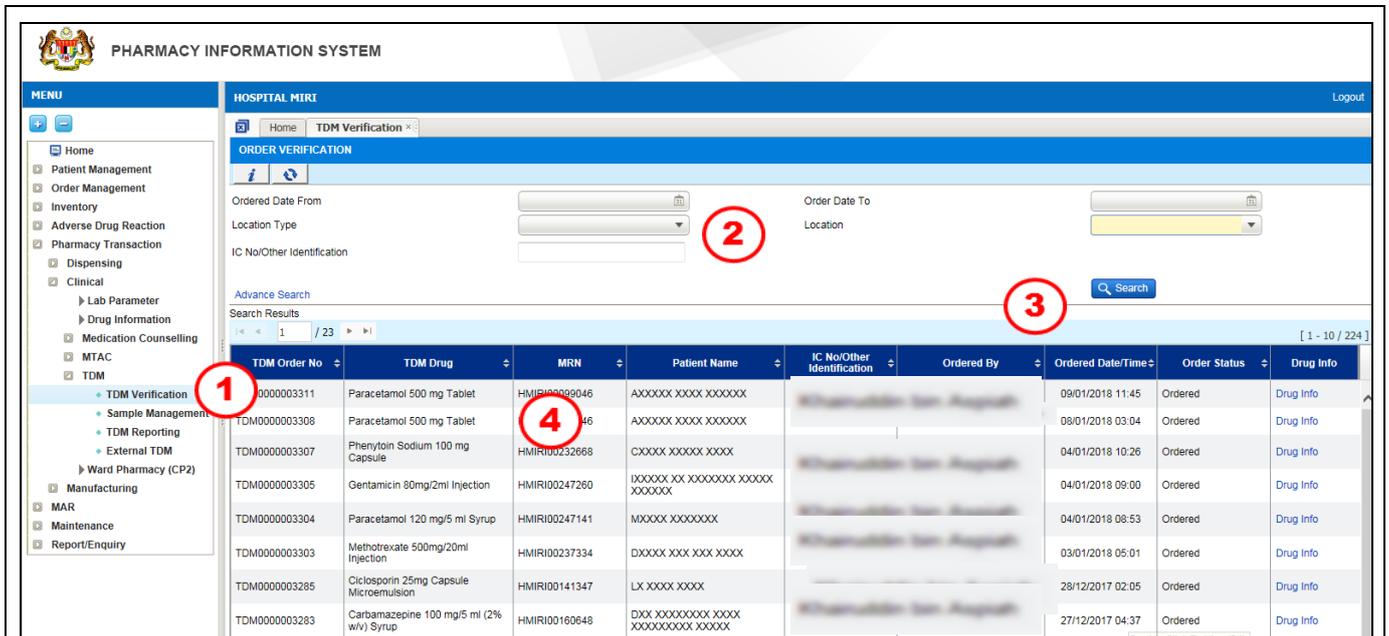
Ordered By _____ TDM Order No : TDM0000003311
 Ordered Date/Time 09/01/2018 11:45

PATIENT DETAILS					
Name: _____	MRN NO: _____		IC: _____		
Age: 24 Years 06 Months		Sex: Male	Race: _____		
Weight: 77 kg	Height: 177 cm		Ward/Unit: WARD PSYCHIATRIC AND MENTAL HEALTH		
LATEST LAB RESULT :					
Blood Urea	Sodium	Potassium	Serum Creatinine	Creatinine Clearance	Albumin
PATIENT CONDITION					
Oedema: YES	Smoker: NO		Dehydration: NO		
Dialysis: NO	Burn: NO		Liver Disease: NO		
Others: NO	Details: _____				
TDM DRUG DETAILS					
No	TDM No	Drug Name	Drug Details	Indication Request	Remarks
1	TDM0000003311	Paracetamol 500 mg Tablet	500 mg Tablet	Suspected Toxicity	
Sample Type	Lab Test Order	Drug Administration Date/Time		Suggested Sampling Date/Time	Interval
RANDOM	Paracetamol Random	2018-01-09 11:41:00		2018-01-09 12:41:00	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



TDM Order No	TDM Drug	MRN	Patient Name	IC No./Other Identification	Ordered By	Ordered Date/Time	Order Status	Drug Info
0000003311	Paracetamol 500 mg Tablet	HMIRI00099046	AXXXXX XXXX XXXXXX			09/01/2018 11:45	Ordered	Drug Info
TDM0000003308	Paracetamol 500 mg Tablet	46	AXXXXX XXXX XXXXXX			08/01/2018 03:04	Ordered	Drug Info
TDM0000003307	Phenytoin Sodium 100 mg Capsule	HMIRI00232668	CXXXX XXXXX XXXX			04/01/2018 10:26	Ordered	Drug Info
TDM0000003305	Gentamicin 80mg/2ml Injection	HMIRI00247260	DXXXXXX XXXXXXXXXX XXXXXX			04/01/2018 09:00	Ordered	Drug Info
TDM0000003304	Paracetamol 120 mg/5 ml Syrup	HMIRI00247141	MXXXX XXXXXXXX			04/01/2018 08:53	Ordered	Drug Info
TDM0000003303	Methotrexate 500mg/20ml Injection	HMIRI00237334	DXXXX XXX XXX XXXX			03/01/2018 05:01	Ordered	Drug Info
TDM0000003285	Ciclosporin 25mg Capsule Microemulsion	HMIRI00141347	LX XXXX XXXX			28/12/2017 02:05	Ordered	Drug Info
TDM0000003283	Carbamazepine 100 mg/5 ml (2% w/v) Syrup	HMIRI00160648	DXX XXXXXXXXXX XXXX XXXXXXXXXX XXXXXX			27/12/2017 04:37	Ordered	Drug Info

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

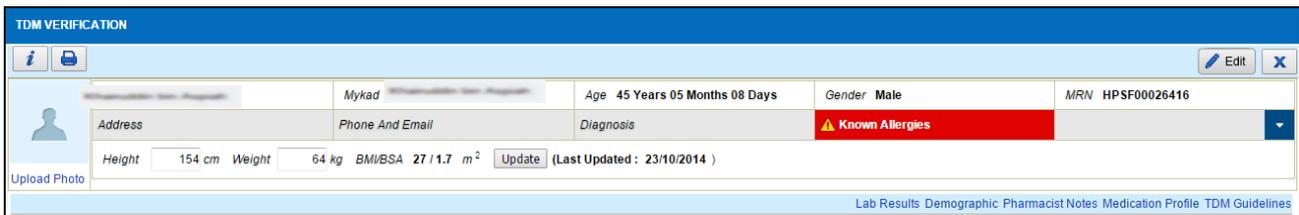
Click on the  button to search for TDM orders

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.



TDM VERIFICATION

Mykad: [Redacted] Age: 45 Years 05 Months 08 Days Gender: Male MRN: HPSF00026416

Address: [Redacted] Phone And Email: [Redacted] Diagnosis: [Redacted] **Known Allergies**

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

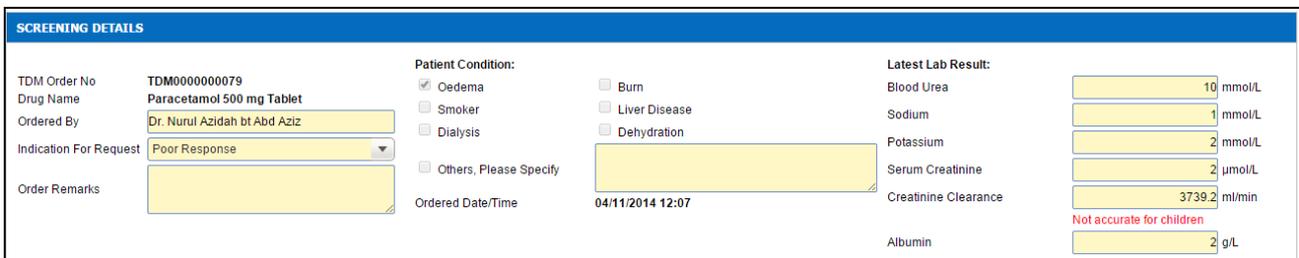
Lab Results Demographic Pharmacist Notes Medication Profile TDM Guidelines

Figure 4.0-2 Patient's Banner

Note

TDM Verification consists of:

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



SCREENING DETAILS

TDM Order No: TDM000000079
 Drug Name: Paracetamol 500 mg Tablet
 Ordered By: Dr. Nurul Azizah bt Abd Aziz
 Indication For Request: Poor Response
 Order Remarks: [Redacted]

Patient Condition:
 Oedema
 Burn
 Smoker
 Liver Disease
 Dialysis
 Dehydration
 Others, Please Specify [Redacted]
 Ordered Date/Time: 04/11/2014 12:07

Latest Lab Result:
 Blood Urea: 10 mmol/L
 Sodium: 1 mmol/L
 Potassium: 2 mmol/L
 Serum Creatinine: 2 µmol/L
 Creatinine Clearance: 3739.2 ml/min
 Albumin: 2 g/L
 (Note: Creatinine Clearance is marked as 'Not accurate for children')

Figure 4.0-3 Screening Details

- b) 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



DRUG DETAILS

Rx No: WAD 70000017267 Dosage: 500 mg Frequency: PRN Duration: 5 Days
 Route: Oral Start Date: 30/10/2014 End Date: 04/11/2014

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

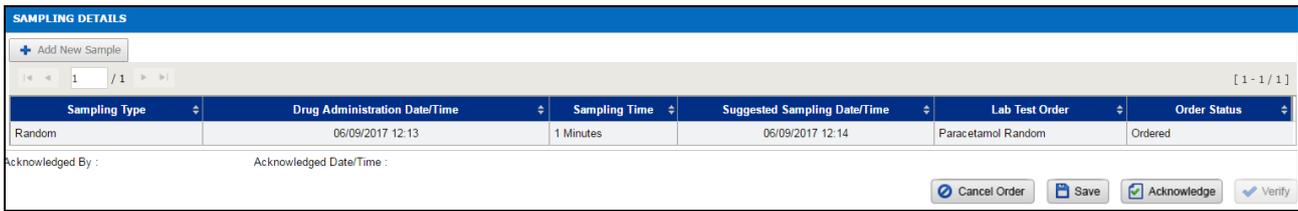


Figure 4.0-5 Sampling Details

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

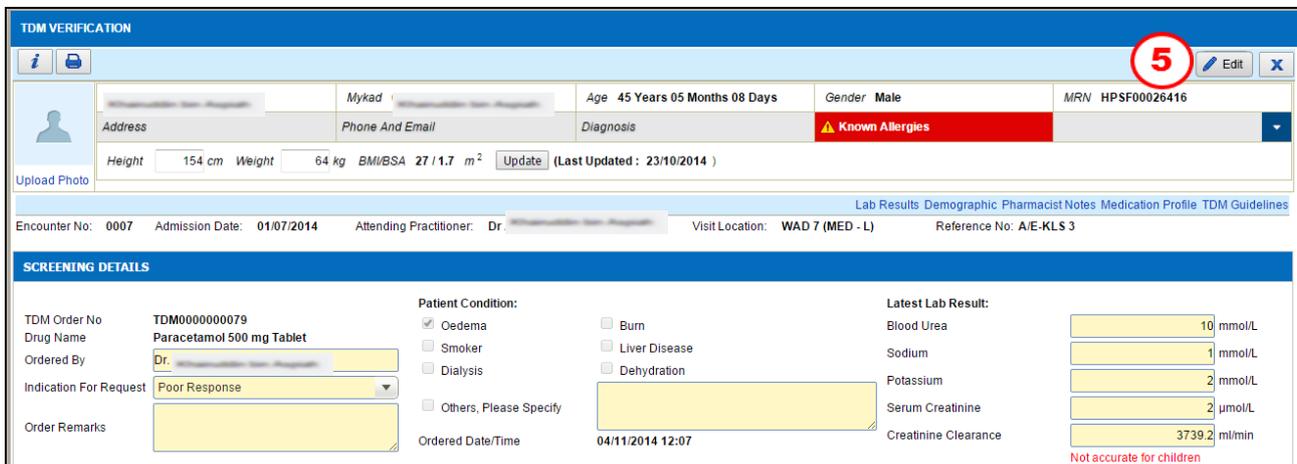


Figure 4.0-6 TDM Verification

STEP 5

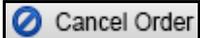
Click on the  button to edit record

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

Figure 4.0-8 Edit Sampling Details

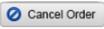
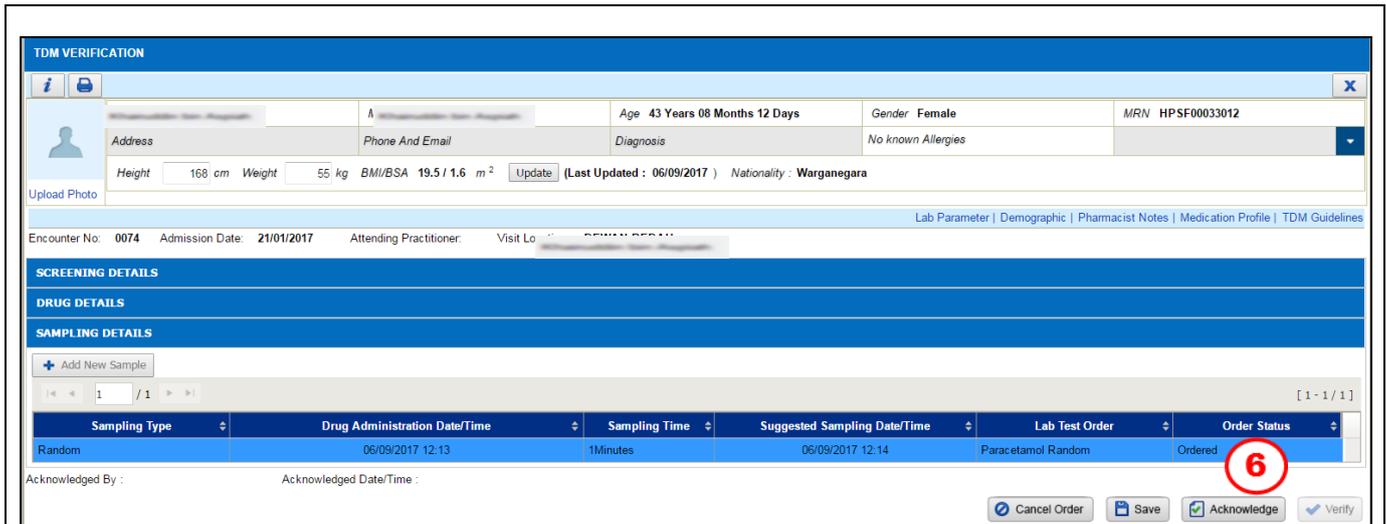
TDM VERIFICATION					
  					
		Age	43 Years 08 Months 12 Days	Gender	Female
Address		Phone And Email	Diagnosis	No known Allergies	
Height	168 cm	Weight	55 kg	BMI/BSA	19.5 / 1.6 m ²
Upload Photo | Update (Last Updated : 06/09/2017 ) | Nationality : Warganegara					
Lab Parameter | Demographic | Pharmacist Notes | Medication Profile | TDM Guidelines					
Encounter No:	0074	Admission Date:	21/01/2017	Attending Practitioner:	
SCREENING DETAILS					
DRUG DETAILS					
SAMPLING DETAILS					
+ Add New Sample					
[1 - 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 :			
   					

Figure 4.0-9 Reject and Cancel Order Function



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: SEMANJANG

SCREENING DETAILS

DRUG DETAILS

SAMPLING DETAILS

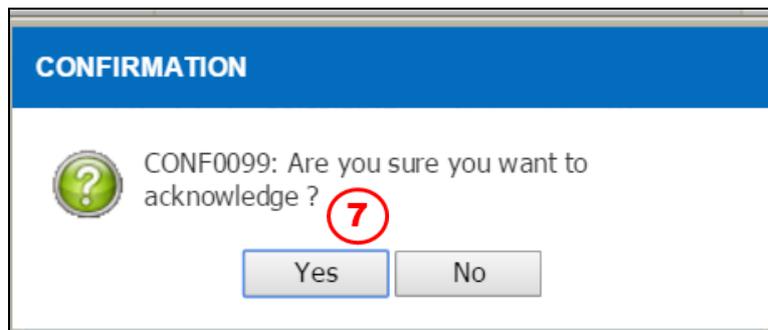
+ Add New Sample

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 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**

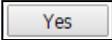
Yes | No

Figure 4.0-11 Confirmation alert message

STEP 6

Click on the  button to acknowledge order

STEP 7

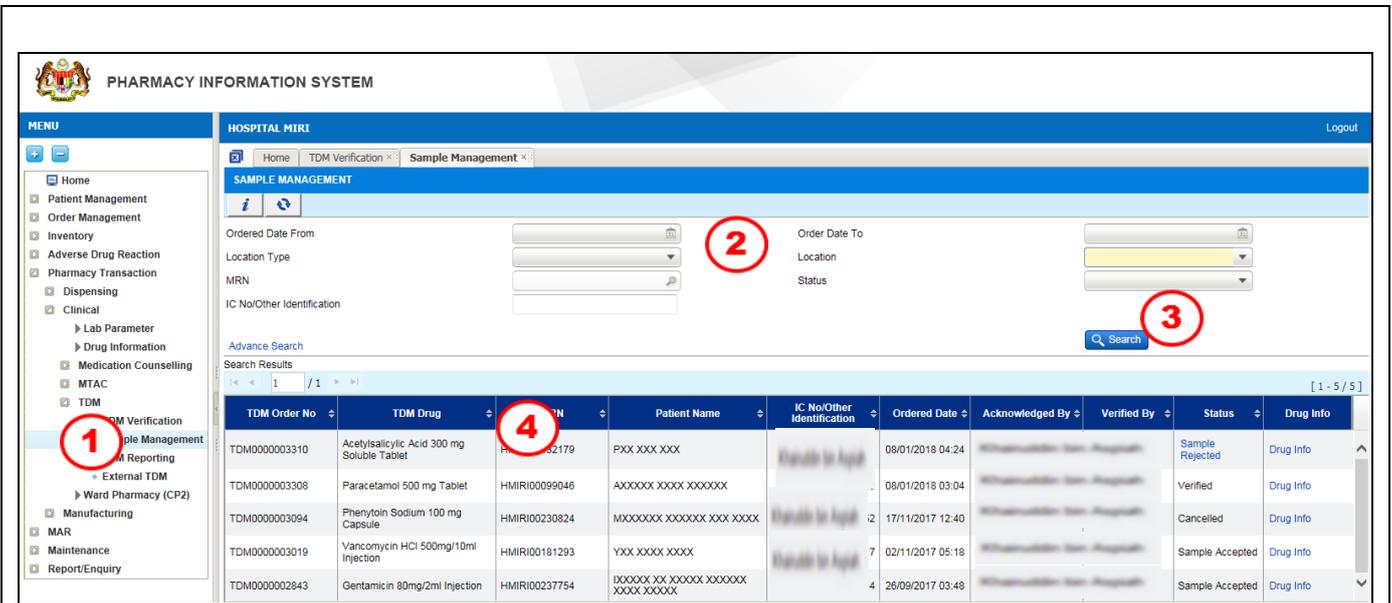
Click on the  button to save record

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	MRN	Patient Name	IC No./Other Identification	Ordered Date	Acknowledged By	Verified By	Status	Drug Info
TDM0000003310	Acetylsalicylic Acid 300 mg Soluble Tablet	HMIRI00099046	PXX XXX XXX	[]	08/01/2018 04:24	[]	[]	Sample Rejected	Drug Info
TDM0000003308	Paracetamol 500 mg Tablet	HMIRI00099046	AXXXXX XXXX XXXXXX	[]	08/01/2018 03:04	[]	[]	Verified	Drug Info
TDM0000003094	Phenyltoin Sodium 100 mg Capsule	HMIRI00230824	MXXXXX XXXXXX XXX XXXX	[]	17/11/2017 12:40	[]	[]	Cancelled	Drug Info
TDM0000003019	Vancomycin HCl 500mg/10ml Injection	HMIRI00181293	YXX XXXX XXXX	[]	02/11/2017 05:18	[]	[]	Sample Accepted	Drug Info
TDM0000002843	Gentamicin 80mg/2ml Injection	HMIRI00237754	[]	[]	26/09/2017 03:48	[]	[]	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

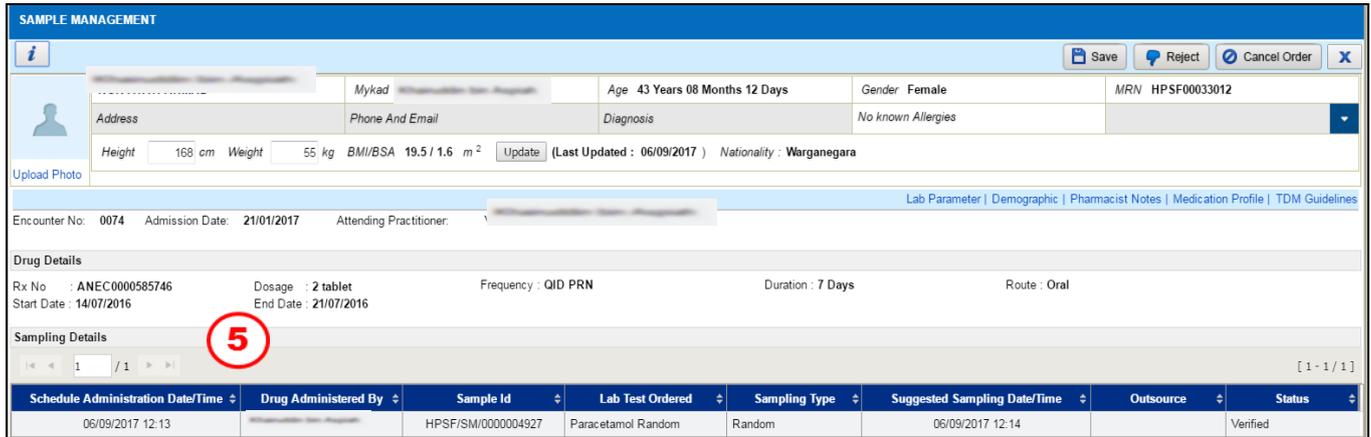
Click on the [Go To Advance Search](#) hyperlink for advance search.

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

Mykad: [Redacted] Age: 43 Years 08 Months 12 Days Gender: Female MRN: HPSF00033012

Address: [Redacted] Phone And Email: [Redacted] Diagnosis: [Redacted] 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: [Redacted]

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 (5)

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

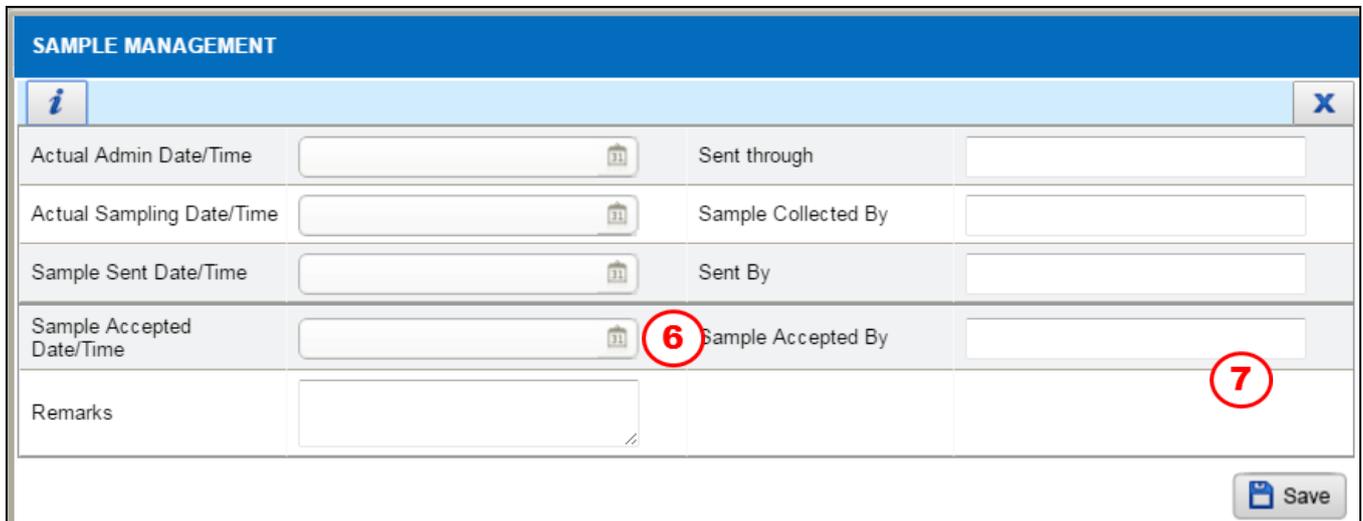
STEP 5

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

Actual Admin Date/Time [Field] Sent through [Field]

Actual Sampling Date/Time [Field] Sample Collected By [Field]

Sample Sent Date/Time [Field] Sent By [Field]

Sample Accepted Date/Time [Field] (6) Sample Accepted By [Field] (7)

Remarks [Field]

Save

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”.

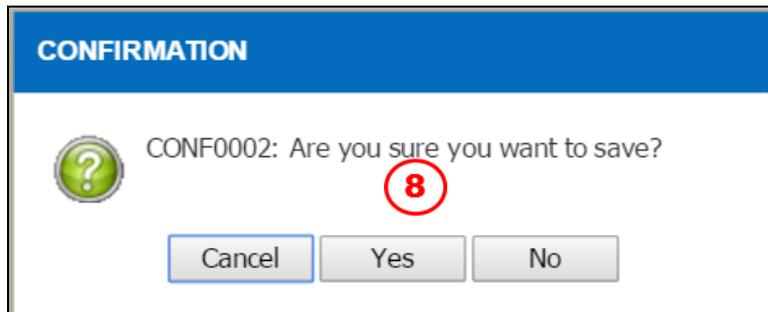


Figure 5.0-4 Confirmation alert message

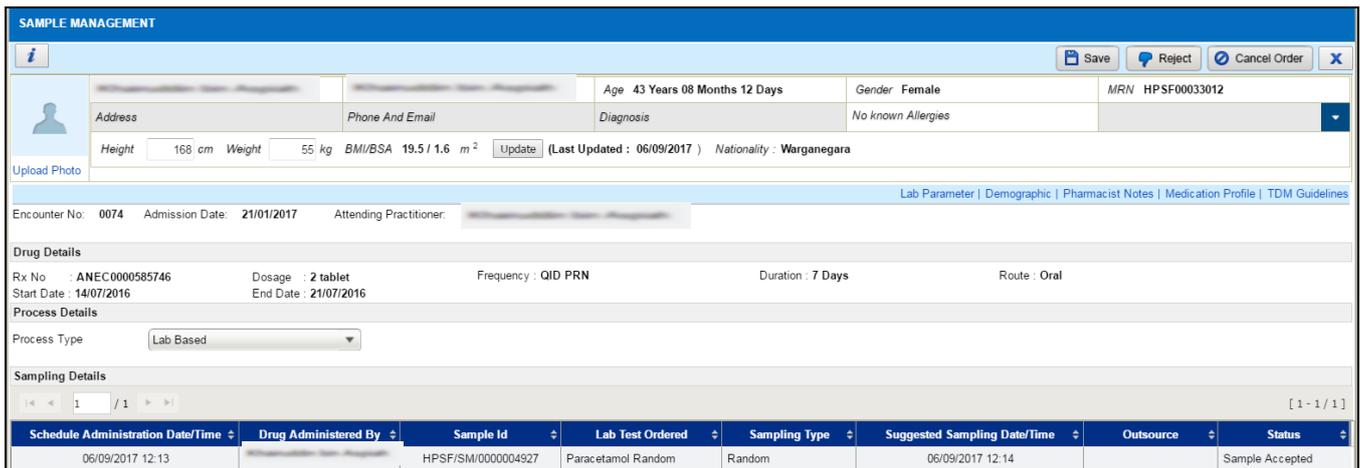


Figure 5.0-5 Outsource

STEP 8

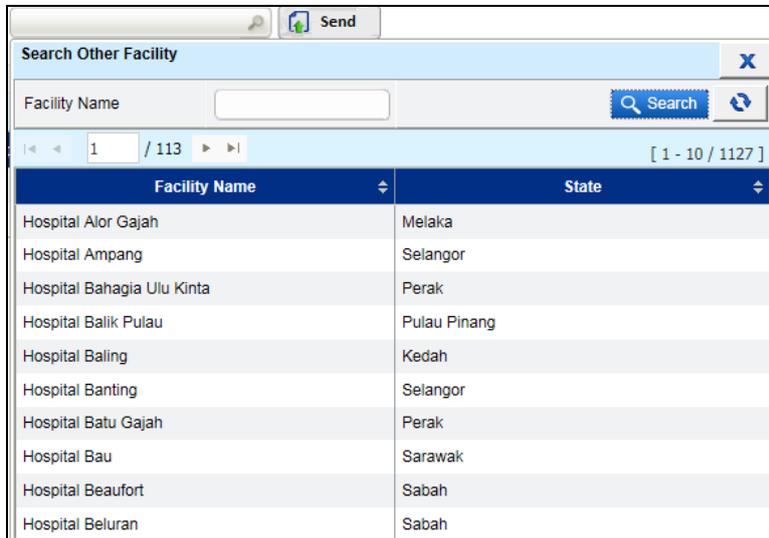
Note

- 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



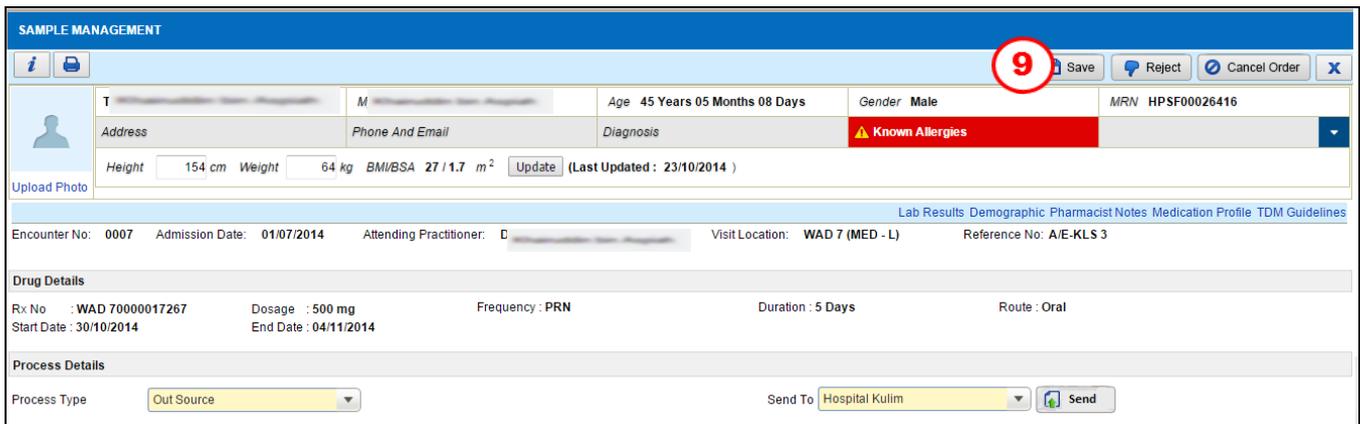
Figure 5.0-6 Process Type

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



Facility Name	State
Hospital Alor Gajah	Melaka
Hospital Ampang	Selangor
Hospital Bahagia Ulu Kinta	Perak
Hospital Balik Pulau	Pulau Pinang
Hospital Baling	Kedah
Hospital Banting	Selangor
Hospital Batu Gajah	Perak
Hospital Bau	Sarawak
Hospital Beaufort	Sabah
Hospital Beluran	Sabah

Figure 5.0-7 Search Other Facility



SAMPLE MANAGEMENT

Save Reject Cancel Order

T: [Redacted] M: [Redacted] Age: 45 Years 05 Months 08 Days Gender: Male MRN: HPSF00026416

Address: [Redacted] Phone And Email: [Redacted] Diagnosis: [Redacted] Known Allergies: [Redacted]

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

Encounter No: 0007 Admission Date: 01/07/2014 Attending Practitioner: D: [Redacted] Visit Location: WAD 7 (MED - L) Reference No: A/E-KLS 3

Drug Details

Rx No: WAD 70000017267 Dosage: 500 mg Frequency: PRN Duration: 5 Days Route: Oral

Start Date: 30/10/2014 End Date: 04/11/2014

Process Details

Process Type: Out Source Send To: Hospital Kulim Send

Figure 5.0-8 Outsource

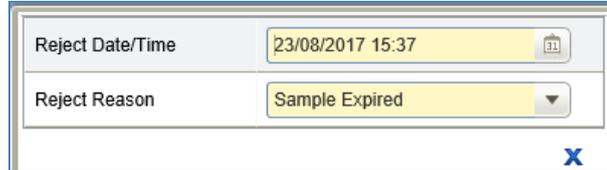
STEP 9

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.

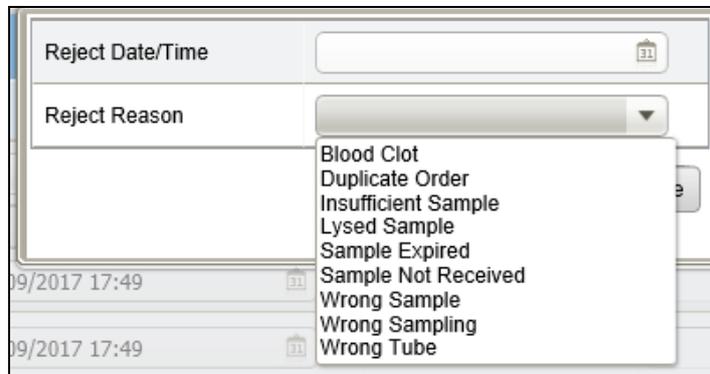
- Click on the  button to reject the sampling details. User needs to place a new order.
- User can see hyperlink to view reject reason if the status is 'Reject'. Click on the Sample Rejected Hyperlink to view the reason such as below:



A screenshot of a web form titled 'Reject Reason'. It contains two input fields: 'Reject Date/Time' with the value '23/08/2017 15:37' and a calendar icon, and 'Reject Reason' with a dropdown menu showing 'Sample Expired'. A blue 'X' button is located at the bottom right of the form.

Figure 5.0-9 Reject Reason

- To add new data reject Reason as below:

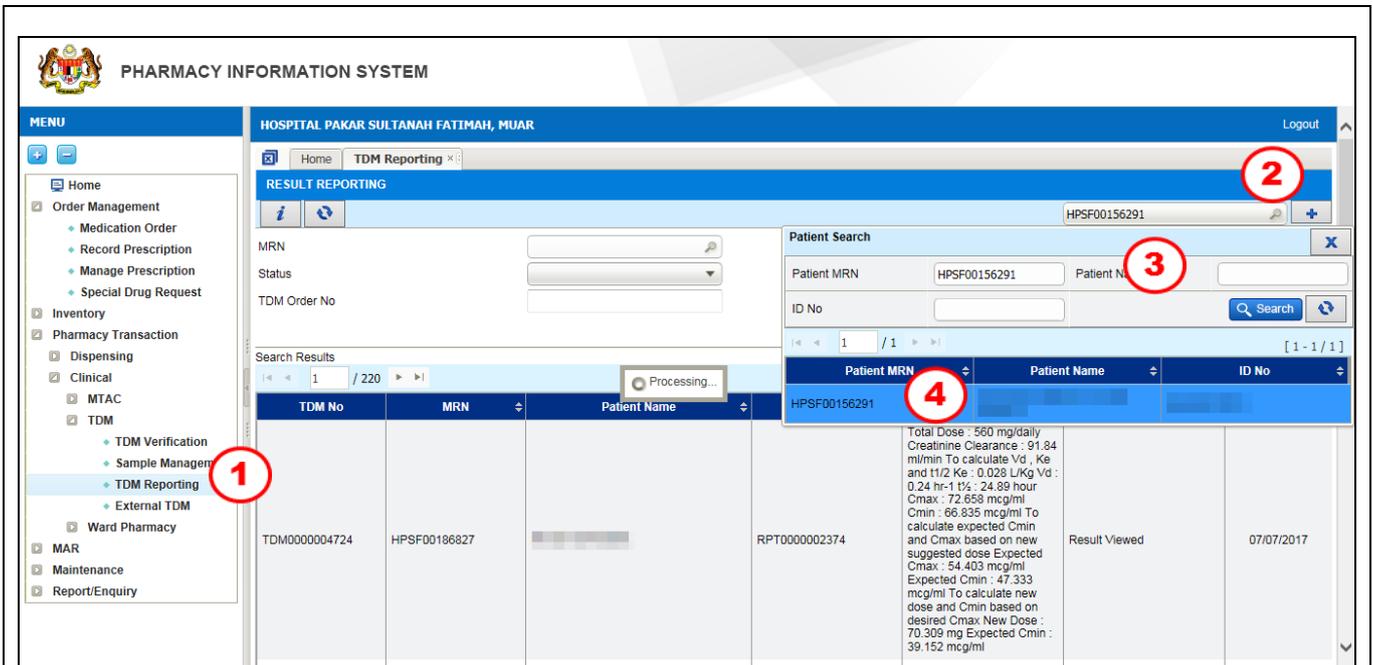


A screenshot of a web form titled 'Add Reject Reason'. It contains two input fields: 'Reject Date/Time' and 'Reject Reason'. The 'Reject Reason' dropdown menu is open, showing a list of reasons: Blood Clot, Duplicate Order, Insufficient Sample, Lysed Sample, Sample Expired, Sample Not Received, Wrong Sample, Wrong Sampling, and Wrong Tube. Below the form, there are two rows of data with dates and times: '09/2017 17:49' and '09/2017 17:49'.

Figure 5.0-10 Add Reject Reason

6.0 TDM Reporting

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



TDM No	MRN	Patient Name	Report ID	Report Content	Status	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 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	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 [1 - 10 / 2191]

TDM No	MRN	Patient Name	Report Number	Remarks	Order Status	Report Date
TDM0000004724	HPSF00186827	[blurred]	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

MOHAMMAD ABUULLAH BIN SULAIMAN Mykad: 8402011001 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

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

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

+ 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: [text area]

Remarks: [text area]

Total Cost of Analysis: [input field]

TDM service Charge in RM: [input field]

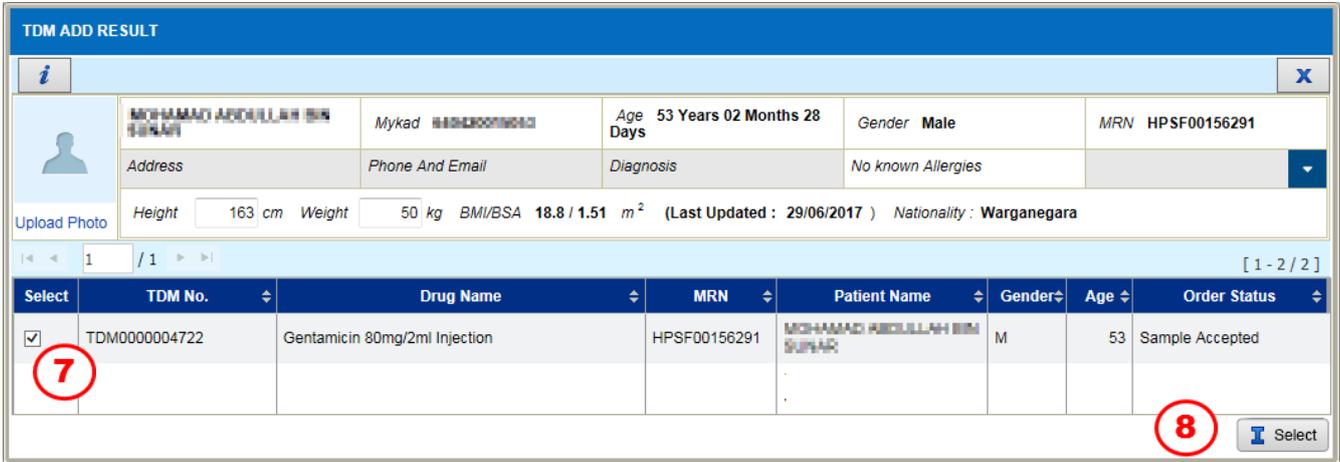
Save Confirm

+ Place TDM Order Save

Figure 6.0-3 TDM Reporting

STEP 6

Click on the  button to display TDM Add Result screen



TDM ADD RESULT

MOHAMAD ABDULLAH BIN SUNAR | Mykad: 88040000000 | 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

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 SUNAR	M	53	Sample Accepted

[1 - 2 / 2]



Figure 6.0-4 TDM Add Result

STEP 7

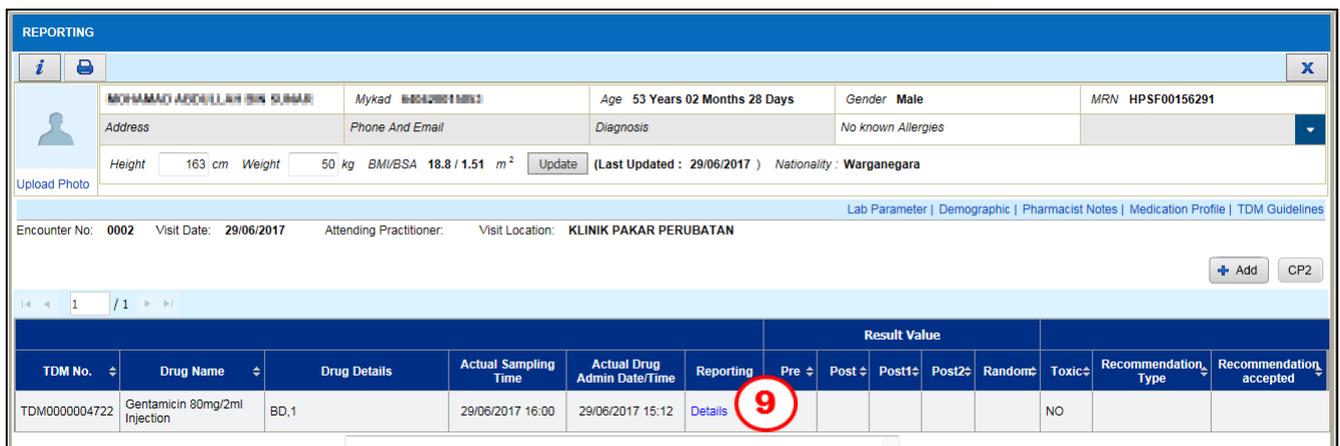
Select on checkbox(es) for selected TDM order

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



REPORTING

MOHAMAD ABDULLAH BIN SUNAR | Mykad: 88040000000 | 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

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

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

 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
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

<p>Post1 Sample</p> <p>Result Value <input style="width: 80px;" type="text"/> <input style="width: 80px;" type="text"/></p> <p>Reported By <input style="width: 150px;" type="text"/> Details</p> <p>Post2 Sample</p> <p>Result Value <input style="width: 80px;" type="text" value="21"/> <input style="width: 80px;" type="text" value="mcg/ml"/> 10</p> <p>Reported By <input style="width: 150px;" type="text"/> Details</p> <p>Random Sample</p> <p>Result Value <input style="width: 80px;" type="text"/> <input style="width: 80px;" type="text"/></p> <p>Reported By <input style="width: 150px;" type="text"/> Details</p> <p>Calculator <input style="width: 100px;" type="text"/> 11</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> Aminoglycoside Pre -Post Aminoglycoside Pre Aminoglycoside Post1-Post6 Aminoglycoside Post </div> <p>Pharmacokinetics Profile</p> <p>Recommendation Type <input style="width: 150px;" type="text"/></p> <p>Toxic <input type="checkbox"/> <input checked="" type="checkbox"/> No</p>	<p>Latest Lab Result:</p> <p>Blood Urea <input style="width: 80px;" type="text" value="25"/> mmol/L</p> <p>Sodium <input style="width: 80px;" type="text" value="31"/> mmol/L</p> <p>Potassium <input style="width: 80px;" type="text" value="33"/> mmol/L</p> <p>Serum Creatinine <input style="width: 80px;" type="text" value="35"/> µmol/L</p> <p>Creatinine Clearance <input style="width: 80px;" type="text" value="152.87"/> ml/min Not accurate for Children</p> <p>Albumin <input style="width: 80px;" type="text" value="37"/> g/L</p>
---	--

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

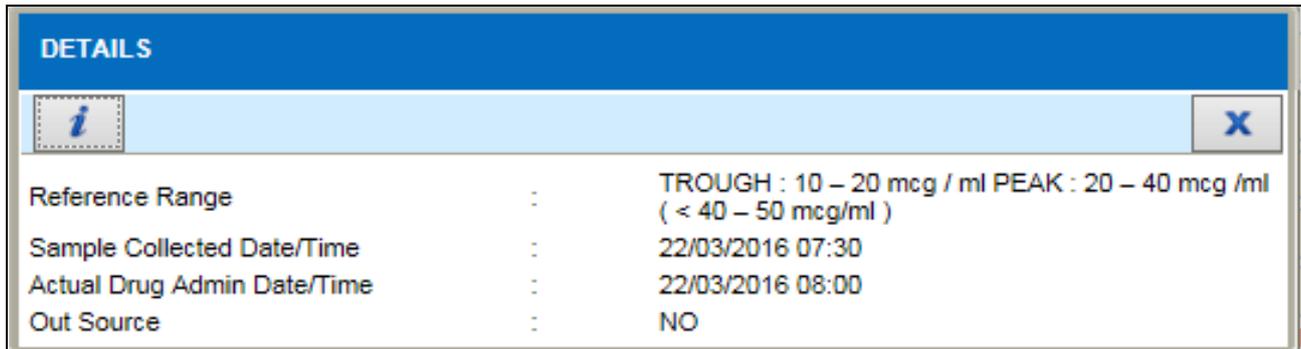
STEP 10

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



DETAILS	
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

<p>Post1 Sample</p> <p>Result Value <input type="text"/> <input type="text"/></p> <p>Reported By <input type="text"/> Details</p> <p>Post2 Sample</p> <p>Result Value <input type="text" value="21"/> <input type="text" value="mcg/ml"/></p> <p>Reported By <input type="text"/> Details</p> <p>Random Sample</p> <p>Result Value <input type="text"/> <input type="text"/></p> <p>Reported By <input type="text"/> Details</p> <p>Calculator <input type="text"/></p>	<p>Latest Lab Result:</p> <p>Blood Urea <input type="text" value="25"/> mmol/L</p> <p>Sodium <input type="text" value="31"/> mmol/L</p> <p>Potassium <input type="text" value="33"/> mmol/L</p> <p>Serum Creatinine <input type="text" value="35"/> μmol/L</p> <p>Creatinine Clearance <input type="text" value="152.87"/> ml/min Not accurate for Children</p> <p>Albumin <input type="text" value="37"/> g/L</p>
--	--

Pharmacokinetics Profile

t_{1/2} : 24.89 hour
C_{max} : 72.658 mcg/ml
C_{min} : 66.835 mcg/ml

To calculate expected C_{min} and C_{max} based on new suggested dose
Expected C_{max} : 54.403 mcg/ml
Expected C_{min} : 47.333 mcg/ml

To calculate new dose and C_{min} based on desired C_{max}
New Dose : 70.309 mg
Expected C_{min} : 39.152 mcg/ml

Recommendation Type

Toxic No

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

MOHAMMAD ABUJALAN BIN SUHAR	Mykad: 8804200110002	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

< < 1 / 1 > >
[1 - 1 / 1]

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

TDM0000004722 - Gentamicin 80mg/2ml Injection - Maintain The Dose
Result Value :-
Y : 21.0 mcg/ml

Pharmacist Note

1904 characters allowed

Remarks

Total Cost of Analysis

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".
- button and button will be enabled.

REPORTING



MOHAMMAD ABDULLAH BIN SUKRI Mykad: **880420115951** 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**

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]

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

Pharmacist Note

TDM0000004722 - Gentamicin 80mg/2ml Injection - Maintain The Dose
Result Value :-
Y :21.0 mcg/ml

18

Remarks

1904 characters allowed

Total Cost of Analysis:

TDM service Charge in RM:

+ Place TDM Order

19

Figure 6.0-10 TDM Reporting

STEP 18

Click 'Yes' or 'No' at the button under **Recommendation accepted**

STEP 19

Click on the button to authorize the report

Note

- The status will change to "Result Viewed".
- Click on the 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.



PhIS & CPS Project User Manual – Therapeutic Drug Monitoring



REPORTING

MOHAMMAD HADIPULLAH BIN SUDIR Mykad: **980420015051** 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 : 05/06/2017 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:	1
External TDM Result Received:	0
Online SPUB R1 Request Received:	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	Register
<input type="checkbox"/> Hospital Pakar Sultanah Fatimah, Muar	HPSF00007006	[blurred]	[blurred]	carBAMAZepine 200mg Tablet	RANDOM	22/07/2014 13:26	Register
<input type="checkbox"/> Hospital Pakar Sultanah Fatimah, Muar	HPSF00017231	[blurred]	[blurred]	Sodium Valproate 200 mg Tablet	PRE	22/09/2014 15:48	Register

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	Register
<input type="checkbox"/> Hospital Pakar Sultanah Fatimah, Muar	HPSF00007006	[blurred]	[blurred]	carBAMAZepine 200mg Tablet	RANDOM	22/07/2014 13:26	Register
<input checked="" type="checkbox"/> Hospital Pakar Sultanah Fatimah, Muar	HPSF00017231	[blurred]	[blurred]	Sodium Valproate 200 mg Tablet	PRE	22/09/2014 15:48	Registered

Figure 7.1-3 Outsource Listing – Registered Patient

STEP 3

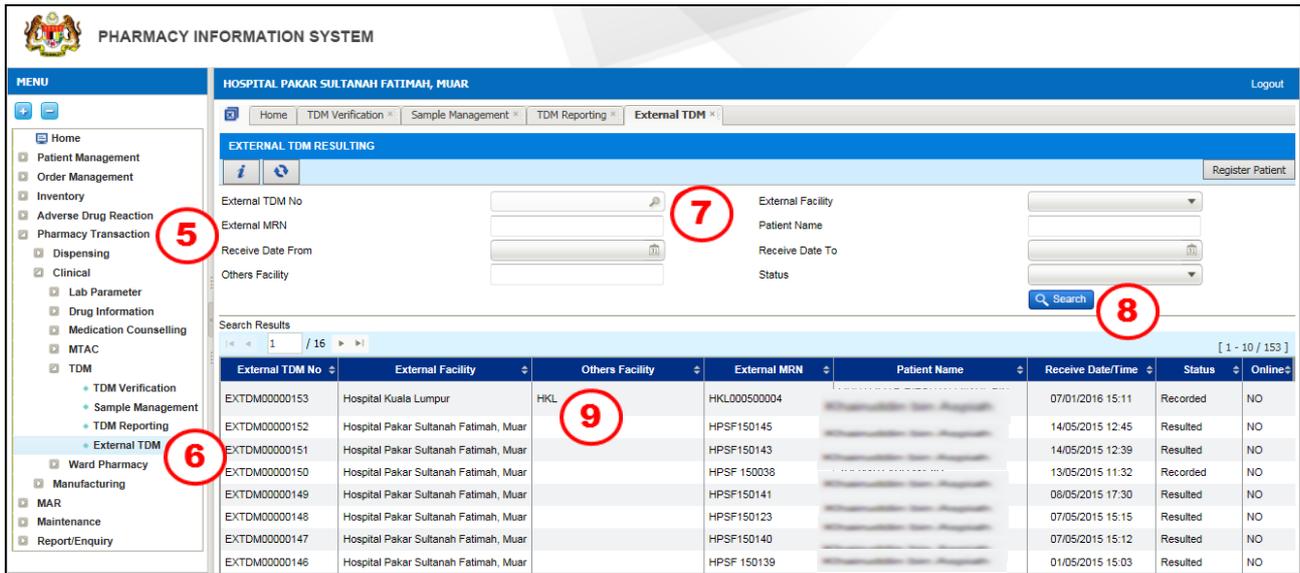
Click on the checkbox for selected patient

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 [1 - 10 / 153]

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

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

1 / 1
[1 - 1 / 1]

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
Remarks

Figure 7.1-5 External TDM Resulting

STEP 10

Enter **Delivery Details** as below:

- a) Sample Sent By
- b) Sample Sent Date/Time
- c) Sample Received By
- d) 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.

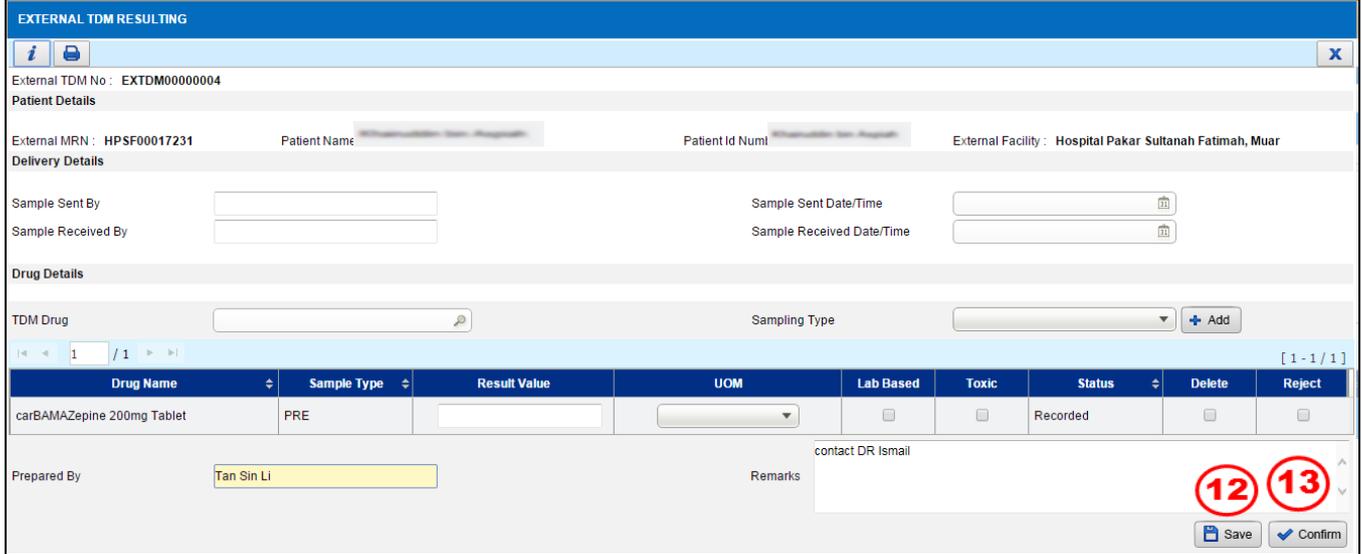


Figure 7.1-6 External TDM Resulting

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](#))

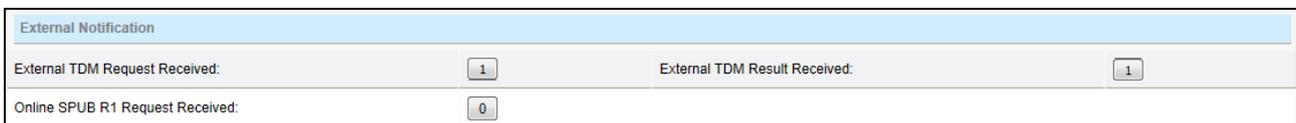
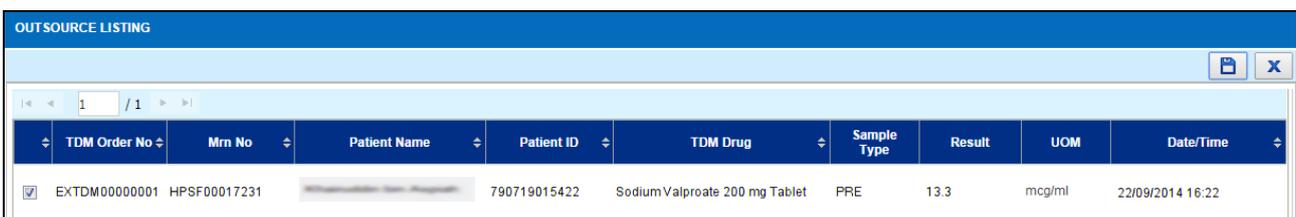


Figure 7.1-7 External Notification

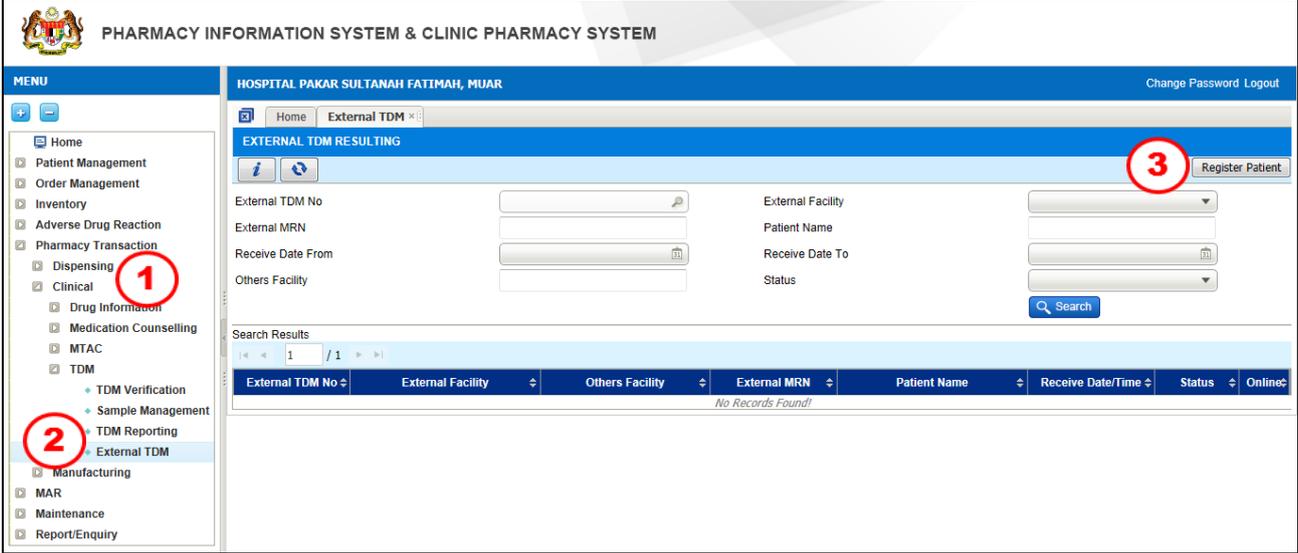


TDM Order No	Mrn No	Patient Name	Patient ID	TDM Drug	Sample Type	Result	UOM	Date/Time
<input checked="" type="checkbox"/> EXTDM0000001	HPSF00017231	[Redacted]	790719015422	Sodium Valproate 200 mg Tablet	PRE	13.3	mcg/ml	22/09/2014 16:22

Figure 7.1-8 Outsource Listing

7.2 External TDM Offline

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



The screenshot displays the 'EXTERNAL TDM RESULTING' page. The left-hand menu is expanded to 'External TDM', which is circled with a red '2'. The main area contains a 'Register Patient' button circled with a red '3'. Below this are input fields for 'External TDM No', 'External MRN', 'External Facility', 'Patient Name', 'Receive Date From', 'Receive Date To', and 'Others Facility'. A 'Search' button is located at the bottom right of the search area. The search results table is currently empty, displaying 'No Records Found!'.

Figure 7.2-1 External TDM Listing Page

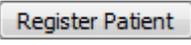
STEP 1

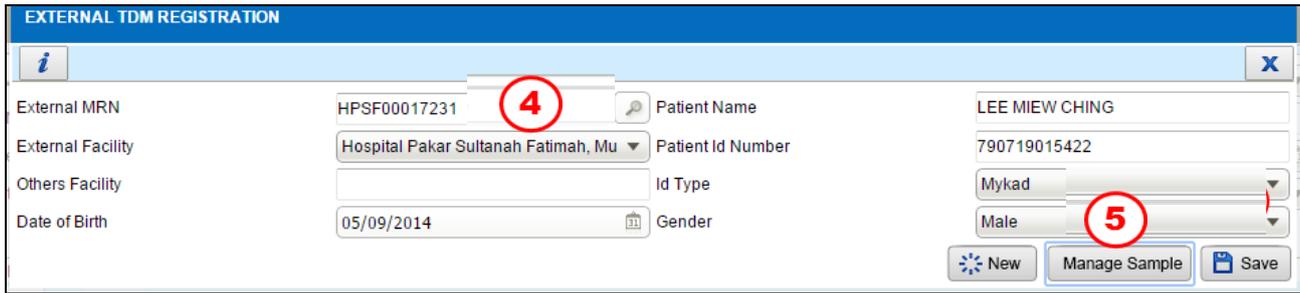
Click on 'Pharmacy Transaction' menu follow by 'Clinical' sub-menu

STEP 2

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

STEP 3

Click on the  button to register external patient



EXTERNAL TDM REGISTRATION			
External MRN	HPSF00017231	Patient Name	LEE MIEW CHING
External Facility	Hospital Pakar Sultanah Fatimah, Mu	Patient Id Number	790719015422
Others Facility		Id Type	Mykad
Date of Birth	05/09/2014	Gender	Male

New Manage Sample Save

Figure 7.2-2 External TDM Registration

STEP 4

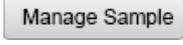
Enter details in the fields below:

- 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 7.2-2

Note

Click on the  button to save the record

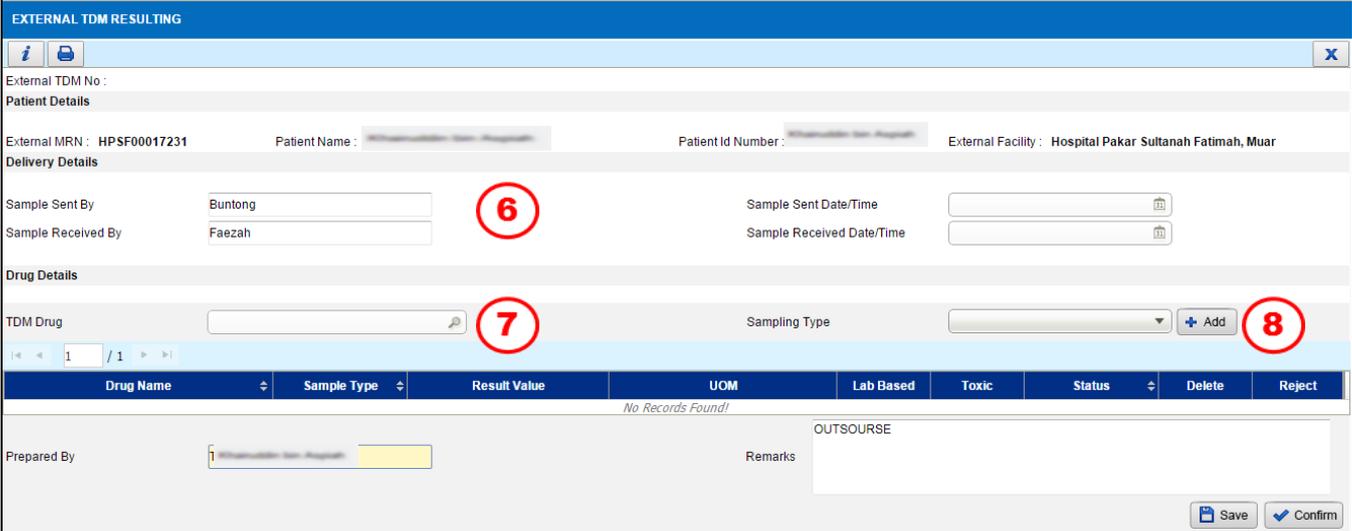


Figure 7.2-3 External TDM Resulting

STEP 6

Enter **Delivery Details** as below:

- a. Sample Sent By
- b. Sample Sent Date/Time
- c. Sample Received By
- d. Sample Received Date/Time

STEP 7

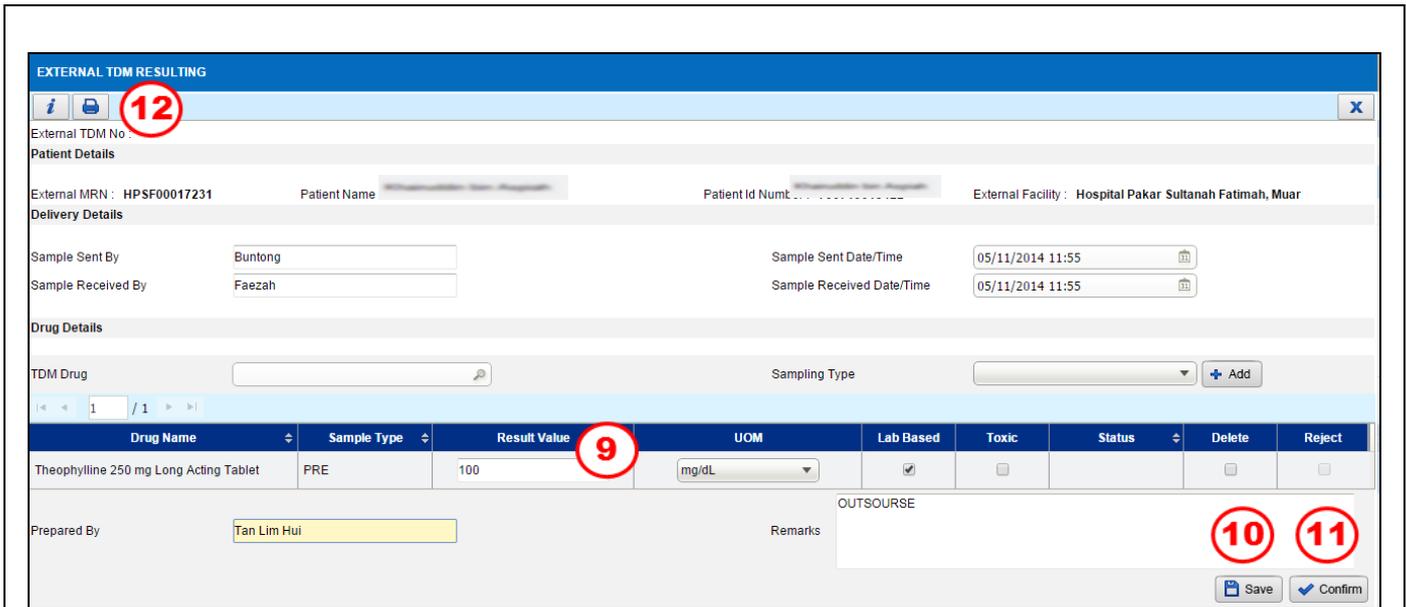
Click on the **TDM Drug**  button to search for drug

STEP 8

Select **Sampling Type** from dropdown box:

- Pre
- Post
- Random

and click on the  button to add the information



EXTERNAL TDM RESULTING

External TDM No. []

Patient Details

External MRN : HPSF00017231 Patient Name [] Patient Id Numk [] External Facility : Hospital Pakar Sultanah Fatimah, Muar

Delivery Details

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

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

Drug Details

TDM Drug [] Sampling Type [] + Add

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

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

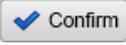
Note

- 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



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
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
8	<i>MTAC</i>	Click Here	19	<i>Special Drug Request</i>	Click Here
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			