



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

Pharmacy Based User Manual Therapeutic Drug Monitoring (TDM)

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



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

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

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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 geared towards 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 Therapeutic Drug Monitoring (TDM) module and its key features/functionalities. The primary objective is to help guide user through the process of completing PhIS application process. User will understand the following activities in detail:



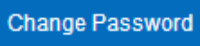











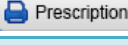









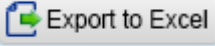






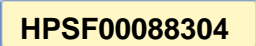


1.3 Organised Sections








These are the sections within this document:

- Section 1 : Introduction
- Section 2 : Application Standard Features
- Section 3 : Therapeutic Drug Monitoring
- 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
 Home	Display Home Tab		Expand Module
	Collapse Module		Close All Open Tabs
	Refresh Screen		Search Record
	Add/Create New Record		Show Help
 Prescription	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
	Automatically Display/Retrieve Box		Empty Text Box
	Dropdown Box		

TDM Module Legend			
 Delete	Delete Record	 Update	Update Record
TDM Guidelines	Display TDM Guidelines Details	 Add	Add Sampling Details
 Update	Update Sampling Details	Drug Info	Display Selected TDM Drug Information
 New	Create New TDM Order	 Add New Sample	Add New Sampling Details
 Place TDM Order	Display TDM Order Screen to Place New TDM Order	Details	Display Reporting Details Screen
Register Patient	Register External Patient for Outsource	Manage Sample	Display External TDM Resulting Screen

Note

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

3.0 Therapeutic Drug Monitoring (TDM)

Overview

The Order Management - Therapeutic Drug Monitoring (TDM) module handles all the information to specify the ordered items as per local drug formulary, MOH and non-MOH including registered and non-registered drugs. This function is to enable data mining. All medication orders must be prescribed by authorized personnel only and in compliance with guidelines on prescribing in the drug formulary (drug category, discipline / specialty) as defined by MOH.

User Group

This module is intended for Pharmacist, Assistant Pharmacist and Nurse.

Functional Diagram

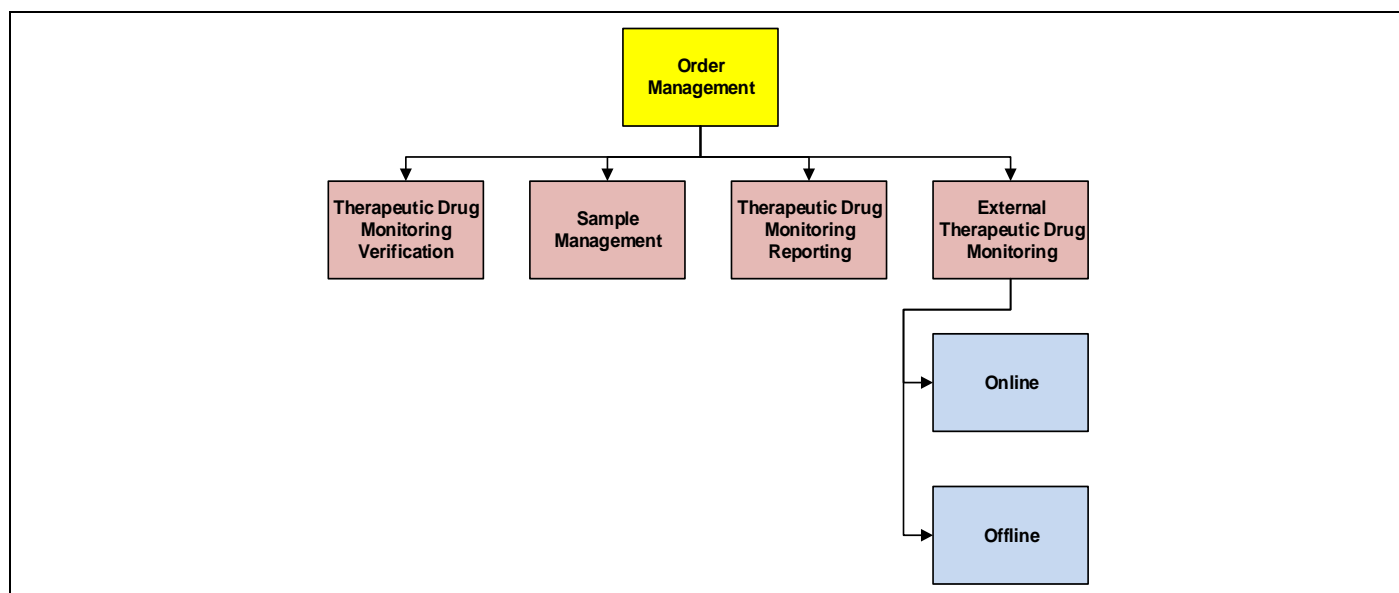


Figure 3.0-1

Functional Description

Therapeutic Drug Monitoring (TDM) comprises of four (4) main functions:

- **Verification**
Verification is for pharmacist to verify the prescriptions received from order management. This process is mandatory for all prescriptions receive before the user can proceed with reporting.
- **Sample Management**
TDM Sampling Management is to record the sampling details into the system including information of the samples which need to be send outsource.
- **Reporting**
TDM Reporting is to enter the TDM resulting and the interpretation to the Doctor.
- **External TDM**
External TDM is for record TDM resulting received from other facility

3.1 Search Registered Patient

To view existing patient record, perform steps below:

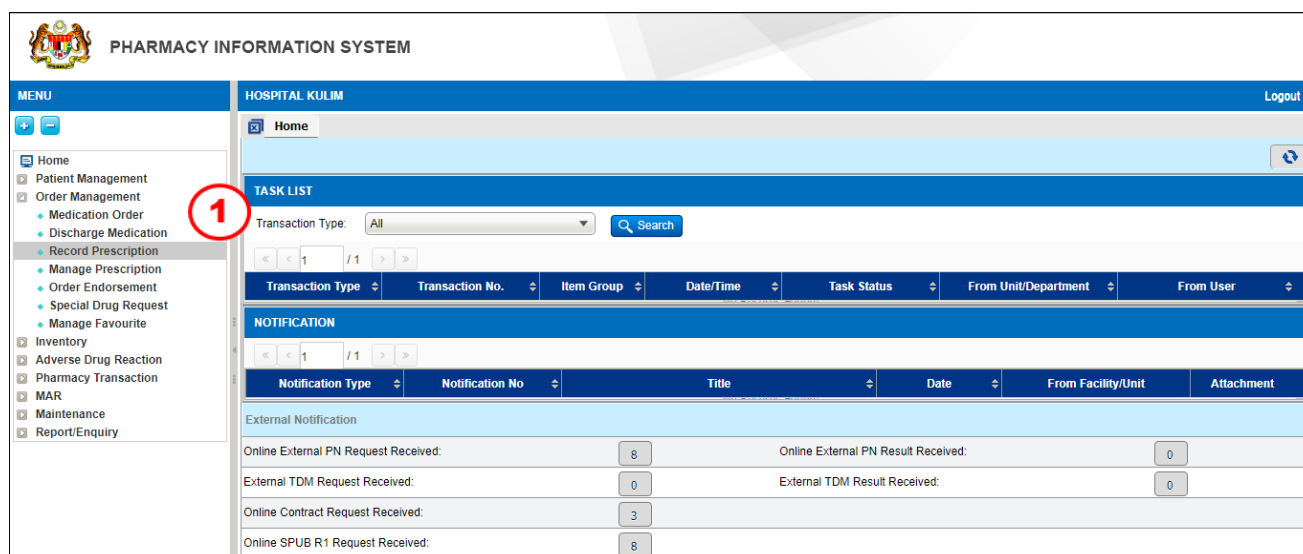


Figure 3.1-1 PhIS Home page

STEP 1

Click on 'Order Management' menu followed by 'Record Prescription' and screen will be displayed as per Figure 3.1-1

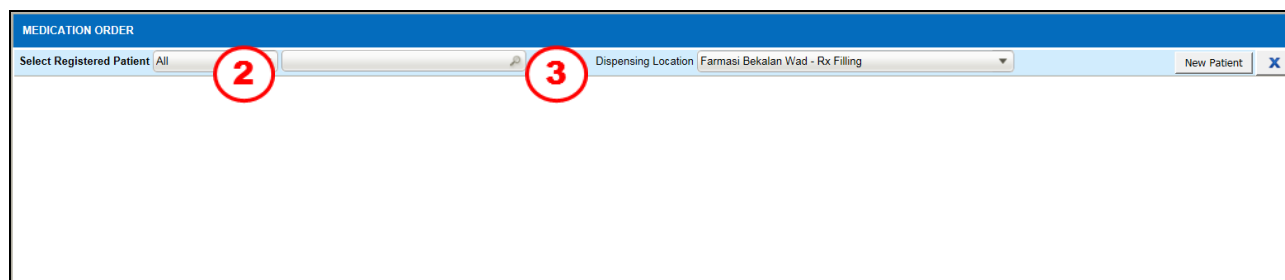



Figure 3.1-2 Medication Order


STEP 2

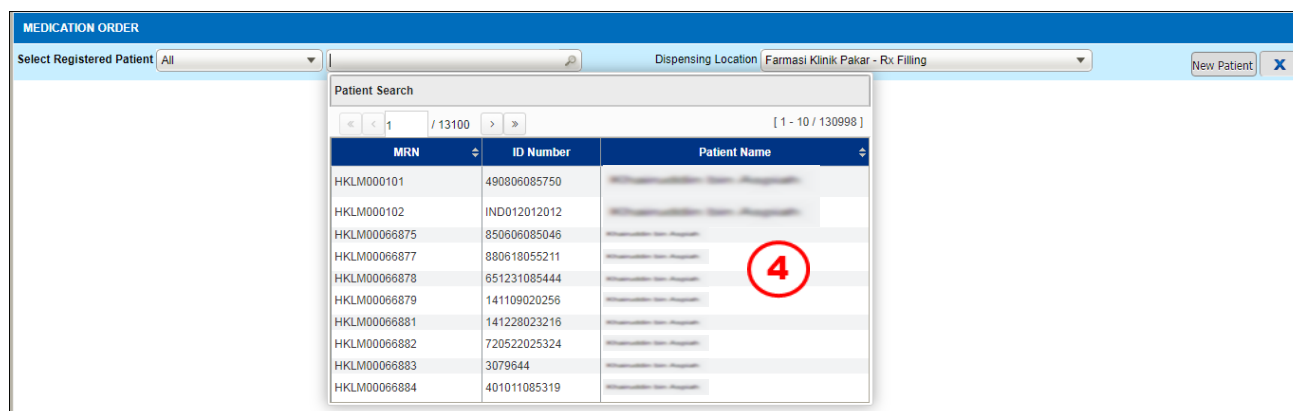
Enter registered patient name

STEP 3

Click on the  button to search for a registered patient

Note

- This page is used to search for a registered patient
- If the patient is not registered, click on the  button and the Patient Registration screen will be displayed.



MRN	ID Number	Patient Name
HKLM000101	490806085750	[Redacted]
HKLM000102	IND012012012	[Redacted]
HKLM00066875	850606085046	[Redacted]
HKLM00066877	880618055211	[Redacted]
HKLM00066878	651231085444	[Redacted]
HKLM00066879	141109020256	[Redacted]
HKLM00066881	141228023216	[Redacted]
HKLM00066882	720522025324	[Redacted]
HKLM00066883	3079844	[Redacted]
HKLM00066884	401011085319	[Redacted]

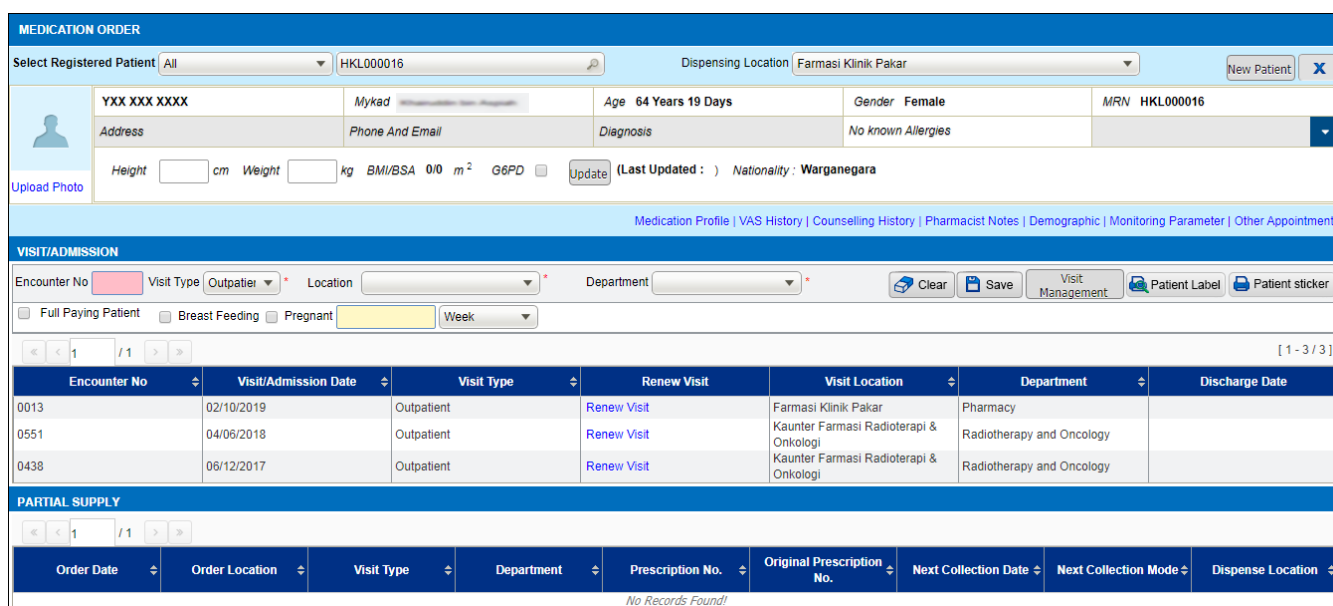
Figure 3.1-3 Search Patient

STEP 4

Double-click on the selected patient and the details will be displayed as per Figure 3.1-4

Note

- Click on the 'Renew Visit' hyperlink to renew a visit for the same location.
- Select the 'Visit Type' and 'Location' to create a new visit.
- Click on the [Visit Management](#) button to assess 'Visit Management' Screen. (Refer to Appendix 1).



PATIENT DETAILS

Select Registered Patient: All | HKL000016 | Dispensing Location: Farmasi Klinik Pakar | New Patient X

YXX XXX XXXX | Mykad: [Redacted] | Age: 64 Years 19 Days | Gender: Female | MRN: HKL000016

Address: [Redacted] | Phone And Email: [Redacted] | Diagnosis: [Redacted] | No known Allergies

Height: [Redacted] cm | Weight: [Redacted] kg | BMI/BSA: 0/0 m² | G6PD: [Redacted] | Update (Last Updated:) | Nationality: Warganegara

[Medication Profile](#) | [VAS History](#) | [Counselling History](#) | [Pharmacist Notes](#) | [Demographic](#) | [Monitoring Parameter](#) | [Other Appointment](#)

VISIT/ADMISSION

Encounter No: [Redacted] | Visit Type: Outpatient | Location: [Redacted] | Department: [Redacted] | Clear | Save | Visit Management | Patient Label | Patient sticker

☐ Full Paying Patient ☐ Breast Feeding ☐ Pregnant | Week: [Redacted]

Encounter No	Visit/Admission Date	Visit Type	Renew Visit	Visit Location	Department	Discharge Date
0013	02/10/2019	Outpatient	Renew Visit	Farmasi Klinik Pakar	Pharmacy	
0551	04/06/2018	Outpatient	Renew Visit	Kaunter Farmasi Radioterapi & Onkologi	Radiotherapy and Oncology	
0438	06/12/2017	Outpatient	Renew Visit	Kaunter Farmasi Radioterapi & Onkologi	Radiotherapy and Oncology	

PARTIAL SUPPLY

Order Date	Order Location	Visit Type	Department	Prescription No.	Original Prescription No.	Next Collection Date	Next Collection Mode	Dispense Location
No Records Found!								

Figure 3.1-4 Medication Order Screen

MEDICATION ORDER

Select Registered Patient

All

HKL000016

Dispensing Location

Farmasi Klinik Pakar

New Patient

X

YXX XXX XXXX

Mykad

Age 64 Years 19 Days

Gender Female

MRN HKL000016

Address

Phone And Email

Diagnosis

No known Allergies

Height

cm

Weight

kg

BMI/BSA 0/0 m²

G6PD

Update

(Last Updated :)

Nationality : Warganegara

Upload Photo

Medication Profile | VAS History | Counselling History | Pharmacist Notes | Demographic | Monitoring Parameter | Other Appointment |

VISIT/ADMISSION

Encounter No

Visit Type Outpatient

Location

Department

Clear

Save

Visit Management

Patient Label

Patient sticker

Full Paying Patient

Breast Feeding

Pregnant

Week

<

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1

/ 1

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[1 - 3 / 3]

Encounter No	Visit/Admission Date	Visit Type	Renew Visit	Visit Location	Department	Discharge Date
0013	02/10/2019	Outpatient	5 Renew Visit	Farmasi Klinik Pakar	Pharmacy	
0551	04/06/2018	Outpatient	Renew Visit	Kaunter Farmasi Radioterapi & Onkologi	Radiotherapy and Oncology	
0438	06/12/2017	Outpatient	Renew Visit	Kaunter Farmasi Radioterapi & Onkologi	Radiotherapy and Oncology	

PARTIAL SUPPLY

<

>

1

/ 1

>

Order Date	Order Location	Visit Type	Department	Prescription No.	Original Prescription No.	Next Collection Date	Next Collection Mode	Dispense Location
No Records Found!								

Figure 3.1-5 Visit/Admission Detail

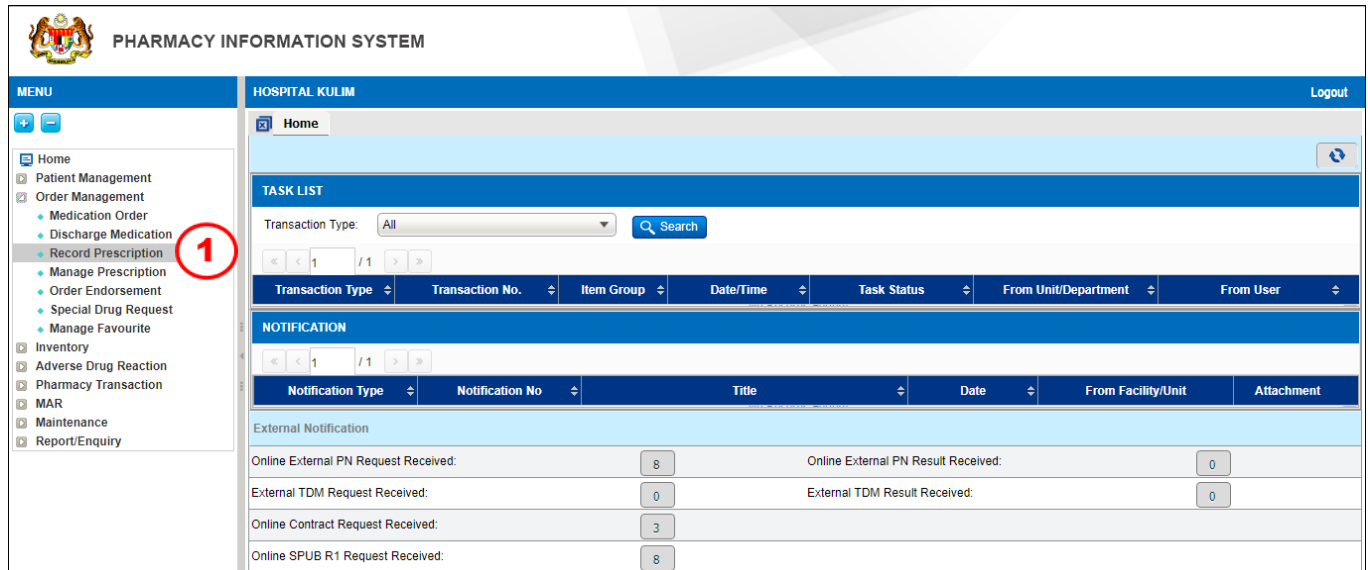
STEP 5

Double-click on the selected visit as per Figure 3.1-5

3.2 New Patient Registration

This page is used to register new patient

To register new patient in to the system, perform the steps below:



PHARMACY INFORMATION SYSTEM

HOSPITAL KULIM Logout

Home

TASK LIST

Transaction Type: All Search

Transaction Type Transaction No. Item Group Date/Time Task Status From Unit/Department From User

NOTIFICATION

Notification Type Notification No Title Date From Facility/Unit Attachment

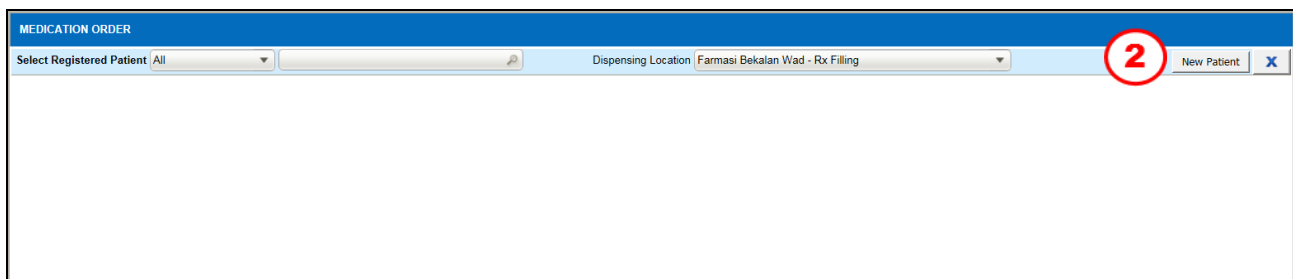
External Notification

Online External PN Request Received:	8	Online External PN Result Received:	0
External TDM Request Received:	0	External TDM Result Received:	0
Online Contract Request Received:	3		
Online SPUB R1 Request Received:	8		

Figure 3.2-1 PhIS Home Page

STEP 1

Click on 'Order Management' menu followed by 'Record Prescription' and screen will be displayed as per Figure 3.2-1



MEDICATION ORDER

Select Registered Patient All Dispensing Location Farmasi Bekalan Wad - Rx Filling New Patient X

Figure 3.2-2 Transcribe Order Create New Patient

STEP 2

Click on the New Patient to register for new patient

PATIENT REGISTRATION			
i		Full Registration	
REGISTRATION INFORMATION			
MRN	<input type="text"/>	Date of Birth	<input type="text"/>
Patient Name	<input type="text"/>	Age	<input type="text"/>
Identification Card Number	MYKAD <input type="text"/>	Gender	<input type="text"/>
Other Identification Number	-SELECT- <input type="text"/>	Contact Number(Mobile)	<input type="text"/>
Pensioner	<input type="checkbox"/>		
PATIENT DETAILS			
VISIT/ADMISSION			
Click to Open Full Visit Screen Visit Management			
Visit Type	Outpatient	Department	<input type="text"/>
Encounter No	<input type="text"/>	Location	<input type="text"/>
Collection Mode	<input type="text"/>		
<div> <input type="button" value="Previous"/> <input type="button" value="Next"/> </div>			
Encounter No	Visit/Admission Date	Visit Type	Visit Location
Discharge Date	Medication Order	Renew Visit	
No Records Found!			

Figure 3.2-3 Registration Information

STEP 3

Enter **Patient Name**

STEP 4

Select from **Identification Card Number** drop down box:

- MYKAD
- MYKID

and enter the relevant number

Note

- After entering the Identification Card Number, the below details will be displayed:
 - Date of Birth (dd/mm/yy)
 - Age (Y M D)
 - Gender (Male/Female/Unknown)
- If MYKAD/MYKID is unavailable, user is required to select the Other Identification Number dropdown box:
 - BIRTH CERTIFICATE
 - DRIVING LICENSE
 - FATHER IC
 - MILITARY CARD NUMBER
 - MOTHER IC
 - MYKAS
 - MYPR
 - OLD IC
 - OTHERS
 - PASSPORT
 - PENSION CARD
 - POLICE CARD NUMBER
 - UNHCR
 - UNKNOWN PATIENT
 - WORK PERMIT

and enter the relevant number.

STEP 5

Enter **Contact Number (Mobile)**

PATIENT REGISTRATION			
<div> <div></div> <div>Full Registration</div> <div></div> <div></div> </div>			
REGISTRATION INFORMATION			
MRN		Date of Birth	
Patient Name		Age	
Identification Card Number	MYKAD	Gender	
Other Identification Number	-SELECT-	Contact Number(Mobile)	
Pensioner			
PATIENT DETAILS			
VISIT/ADMISSION			
<div> <div>Click to Open Full Visit Screen</div> <div>Visit Management</div> </div>			
Visit Type	Outpatient	Department	
Encounter No		Location	
Collection Mode			
<div> <div><</div> <div>1</div> <div>/ 1</div> <div>></div> </div>			
Encounter No	Visit/Admission Date	Visit Type	Visit Location
			Discharge Date
			Medication Order
			Renew Visit
No Records Found!			

Figure 3.2-4 Visit/Admission

STEP 6

Select the **Visit Type** from dropdown box:

- Daycare
- Emergency
- Inpatient
- Outpatient
- Outsource
- SPUB
- Walk-in

Note

User able to select Collection Mode

- Appointment Card
- Email and Take
- Fax and Take
- Normal Collection
- Others
- SMS and Take
- UMP
- Leave and Collect
- Home Visit

STEP 7

Select the **Department** from dropdown box:

Note

Department will tie to the selected **Visit Type**.

STEP 8

Select **Location** from dropdown box



Note

Location will tie to the selected **Department**.

STEP 9

Click on the  button to save the record and medication order screen will display as per Figure 3.2.5

Note

- After clicking the save button, system will automatically generate the MRN (Medical Record Number) and  and  buttons will be enabled.
- Click on the **Full Registration** button to assess 'Visit Management' Screen. (Refer to Appendix 2).
- Another option to register a new patient is to click on the **New Patient Registration** button located under Patient Quick Registration that will display the same screen as Figure 3.2-3.

MEDICATION ORDER

Select Registered Patient

All

HKL000016

Dispensing Location

Farmasi Klinik Pakar

New Patient

YXX XXX XXXX

Mykad

Age 64 Years 19 Days

Gender Female

MRN HKL000016

Address

Phone And Email

Diagnosis

No known Allergies

Height

cm

Weight

kg

BMI/BSA 0/0 m²

G6PD

Update

(Last Updated :)

Nationality : Warganegara

Medication Profile | VAS History | Counselling History | Pharmacist Notes | Demographic | Monitoring Parameter | Other Appointment

VISIT/ADMISSION

Encounter No 0003

Visit Type Outpatient

Location Farmasi Klinik Pakar

Department Pharmacy

Clear

Visit Management

Patient Label

Patient sticker

Breast Feeding

Pregnant

Week

PARTIAL SUPPLY

VISIT RECORD

Queue Series Normal

Queue No

Original Prescription Serial Number

Clinic TCA

Patient Diagnosis

Allergy

Adverse Drug Reaction

Nutritional Assessment

Normal Order

Infusion Order

Parenteral Nutrition

Cytotoxic Drug Reconstitution

Therapeutic Drug Monitoring

Radiopharmaceuticals

NORMAL ORDER - DRUG DETAILS

View Order

Draft

Confirm

Total Price : RM 0.00

Alert

Drug Name

Order Details

Order Qty

Drug Info

Original Prescriber Name

Drug

Dosage

Admin Route

Frequency

Duration

Start Date / Time 09/10/2019 2:05 PM

End Date / Time 09/10/2019 2:05 PM

Order Quantity

Drug Indication

Drug Remarks

Available Qty

Advanced Search

Own Medication

Ward Stock

Patient Require Counselling

Add

Modify

Clear

Figure 3.2-5 Medication Order

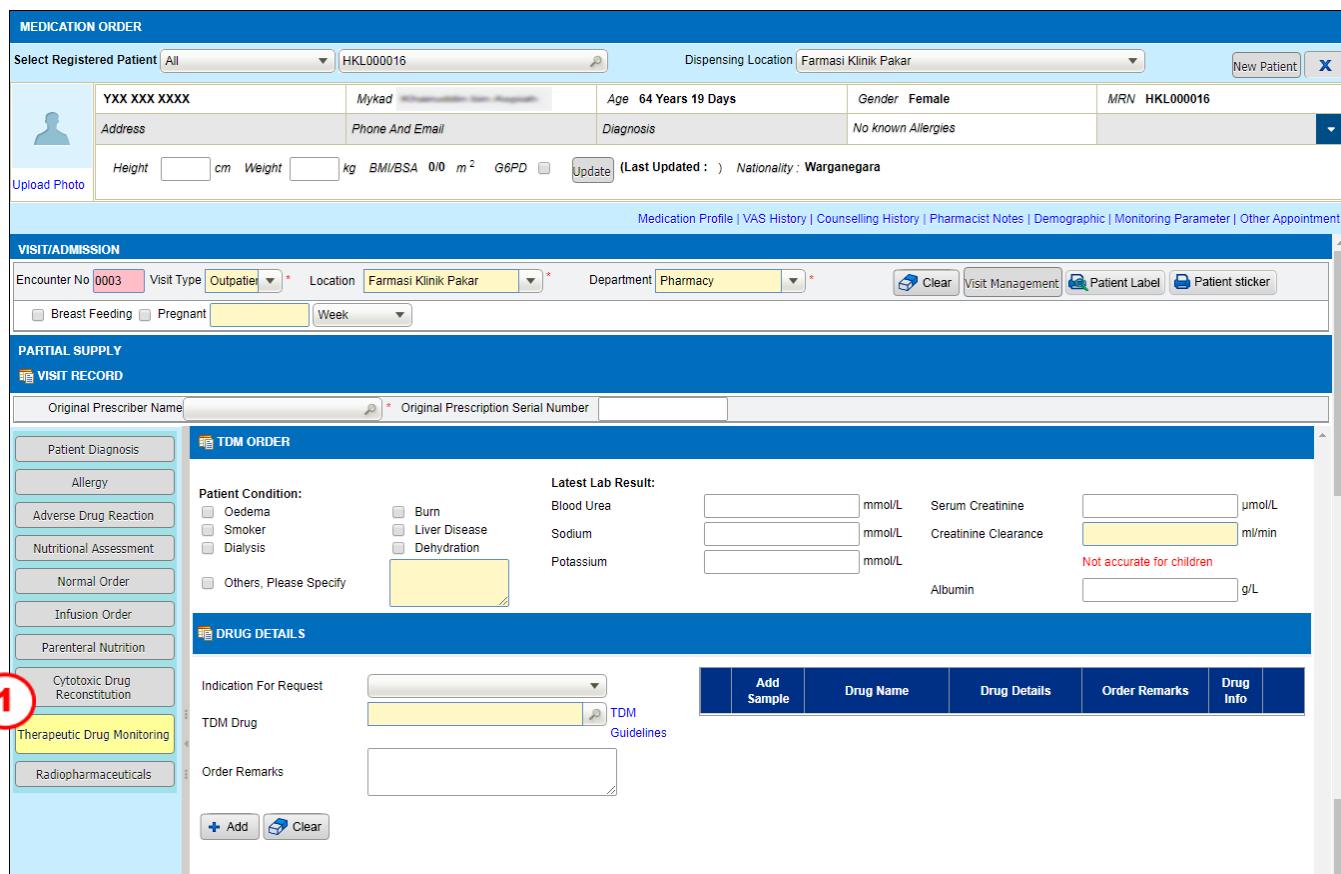
3.3 Therapeutic Drug Monitoring (TDM) Order

Perform these steps below to create new order for TDM

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

TDM Order User Groups:

- **Authorised Pharmacist**



MEDICATION ORDER

Select Registered Patient: All HKL000016 Dispensing Location: Farmasi Klinik Pakar New Patient X

YXX XXX XXXX Mykad: [Redacted] Age: 64 Years 19 Days Gender: Female MRN: HKL000016

Address: [Redacted] Phone And Email: [Redacted] Diagnosis: [Redacted] No known Allergies

Height: [Redacted] cm Weight: [Redacted] kg BMI/BSA: 0/0 m² G6PD: [Redacted] Update (Last Updated:) Nationality: Warganegara

Upload Photo

Medication Profile | VAS History | Counselling History | Pharmacist Notes | Demographic | Monitoring Parameter | Other Appointment |

VISIT/ADMISSION

Encounter No: 0003 Visit Type: Outpatient Location: Farmasi Klinik Pakar Department: Pharmacy Clear Visit Management Patient Label Patient sticker

Breast Feeding: [Redacted] Pregnant: [Redacted] Week: [Redacted]

PARTIAL SUPPLY

VISIT RECORD

Original Prescriber Name: [Redacted] Original Prescription Serial Number: [Redacted]

TDM ORDER

Patient Condition:

- ☐ Oedema
- ☐ Burn
- ☐ Smoker
- ☐ Liver Disease
- ☐ Dialysis
- ☐ Dehydration
- ☐ Others, Please Specify

Latest Lab Result:

Blood Urea: [Redacted] mmol/L Serum Creatinine: [Redacted] umol/L

Sodium: [Redacted] mmol/L Creatinine Clearance: [Redacted] ml/min

Potassium: [Redacted] mmol/L Albumin: [Redacted] g/L

Not accurate for children

DRUG DETAILS

Indication For Request: [Redacted]

TDM Drug: [Redacted] TDM Guidelines

Order Remarks: [Redacted]

Add Sample Drug Name Drug Details Order Remarks Drug Info

Add Clear

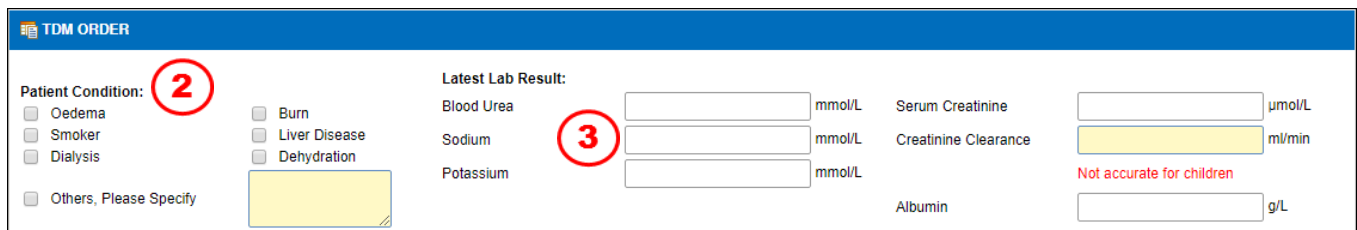
Figure 3.3-1 Medication Order

STEP 1

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

Note

- User is allowed to update patient's height and weight and click on the **Update** button and system will automatically calculate the BMI/BSA in m².
- Visit Record will display Breast Feeding and Pregnant checkboxes only if the patient is a female.
- **User is allowing to do multiple TDM Order**



TDM ORDER

Patient Condition: 2

☐ Oedema ☐ Burn ☐ Liver Disease ☐ Dehydration

☐ Smoker ☐ Dehydration

☐ Dialysis

☐ Others, Please Specify

Latest Lab Result:

Blood Urea 3 mmol/L

Sodium mmol/L

Potassium mmol/L

Serum Creatinine $\mu\text{mol/L}$

Creatinine Clearance ml/min

Albumin g/L

Not accurate for children

Figure 3.3-2 TDM Order

STEP 2

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.

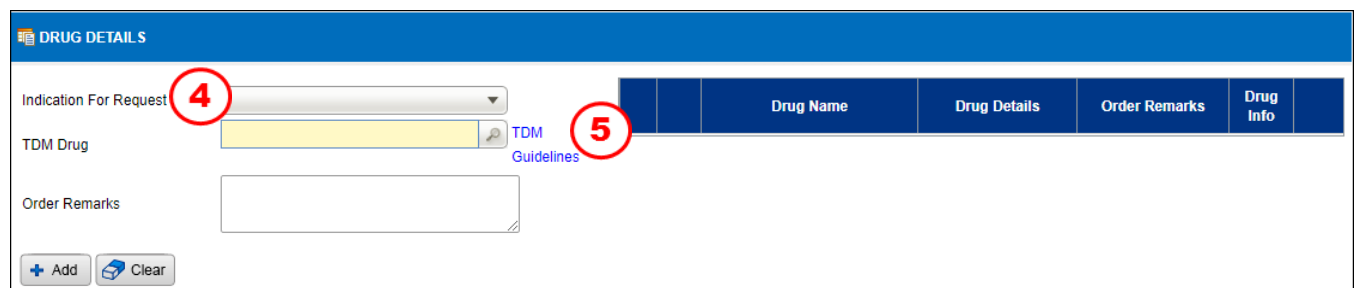
STEP 3

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



DRUG DETAILS

Indication For Request 4

TDM Drug 5 [TDM Guidelines](#)

Order Remarks

Figure 3.3-3 TDM Drug Details

STEP 4

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 5

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 3.3-4.
- Click on [TDM Guidelines](#) hyperlink to view TDM Guideline details on the selected TDM Drug as per Figure 3.3-5.
- TDM Guideline master setup is controlled by HQ.
- Select any type of indication of request system will default to 'All Drugs'.
- The Drug Details field will be a free text field for user to enter the current dosage and frequency as per Figure 3.3-7.

TDM Drug Search

☐ Current Medication
 ☐ Previous Medication
 ☒ All Drugs

Drug Code
 Drug Name

«

<

3

/ 4

>

»

[21 - 30 / 40]

Drug Code	Drug Name	Strength
N02BE01000L9001XX	Paracetamol 120 mg/5 ml Syrup	120 mg
N02BE01000S2002XX	Paracetamol 125 mg Suppository	125 mg
N02BE01000S2001XX	Paracetamol 250 mg Suppository	250 mg
N02BE01000T1001XX	Paracetamol 500 mg Tablet	1000 mg
N03AA02000T1002XX	Phenobarbitone 30 mg Tablet	30 mg

Figure 3.3-4 Drug Search

TDM GUIDELINE

TDM Drug:

Time to monitor:

Total Cost of Analysis(RM):

Remarks:

Calculator

Digoxin

Aminoglycoside Pre

Carbamazepine

Phenobarbitone

Vancomycin Pre

Theophylline

Valproic Acid

Vancomycin Post

Vancomycin Pre -Post

Aminoglycoside Post

Aminoglycoside Pre -Post

Aminoglycoside Post1-Post6

Phenytoin

➡

➡

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➡

➡

➡

➡

➡

➡

➡

➡

➡

TDM GUIDELINE DETAIL

/ 1

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 3.3-5 TDM Guidelines

DRUG DETAILS

Indication For Request:

TDM Drug: TDM Guidelines

Order Remarks:

Drug Details:

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

Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
Add Sample	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		i

Figure 3.3-6 Drug Details

DRUG DETAILS

Indication For Request:

TDM Drug: TDM Guidelines

Order Remarks:

Drug Details:

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

Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
Add Sample	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		i

Figure 3.3-7 Drug Details

STEP 6

Fill the **Order Remark** if necessarily.


STEP 7

Fill the **Drug Detail**.



Note

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

STEP 8

Click on the  button to added drug and will be display as Figure 3.3-7

Note

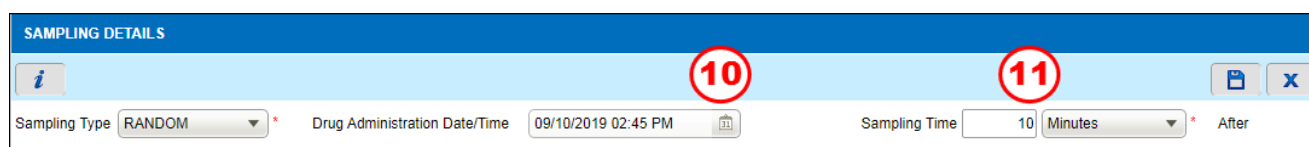
- Click on the  button to change any information.
- Click on the  button to clear the drug detail part before added any new information.

STEP 9

Click on the   to fill in sampling details, sampling details screen will be displayed as Figure 3.3-8

Note

- There are several sampling types 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 chosen 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 3.3-9.



The screenshot shows the 'SAMPLING DETAILS' form. It includes fields for 'Sampling Type' (set to RANDOM), 'Drug Administration Date/Time' (09/10/2019 02:45 PM), and 'Sampling Time' (10 Minutes). Red circles with numbers 10 and 11 highlight the 'Drug Administration Date/Time' and 'Sampling Time' fields respectively.

Figure 3.3-8 Sampling Details

STEP 10

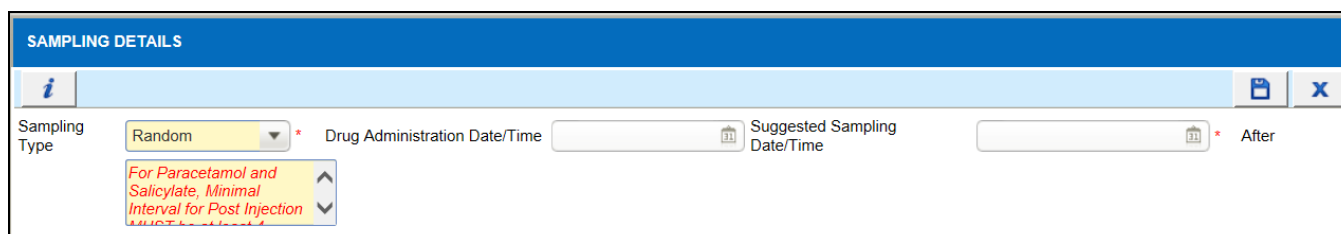
Click on the  button to select **Drug Administration Date/Time**

Note

Drug Administration Date/Time defaulted as empty with 12 hour time format

STEP 11

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



The screenshot shows the 'SAMPLING DETAILS' form. It includes fields for 'Sampling Type' (set to Random), 'Drug Administration Date/Time', and 'Suggested Sampling Date/Time'. A dropdown menu is open for 'Sampling Type', showing options like 'For Paracetamol and Salicylate, Minimal Interval for Post Injection'.

Figure 3.3-9 Sampling Details

DRUG DETAILS

Clear Confirm

Indication For Request

TDM Drug

Order Remarks

+ Add Clear

12

Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
Add Sample	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		i

13


Sampling Type	Drug Administration Date/Time	Sampling Time	Suggested Sampling Date/Time	Lab Test Order
Random	09/10/2019 03:14 PM	10 Minutes	09/10/2019 03:24 PM	Paracetamol Random

Figure 3.3-10 Drug Details

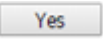
STEP 12

Click on the  to view the sampling details added as Figure 3.3.10


STEP 13

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

Note

- Click on the  button to confirm the record as Figure 3.3-11

CONFIRMATION



CONF3219: Are you sure want to confirm the order?

Cancel

Yes

No

Figure 3.3-11 Confirmation alert message

DRUG DETAILS

14 Verify

Indication For Request

TDM Drug

Order Remarks

Clear

15

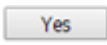
Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		i

Figure 3.3-12 Verify Sampling Details

STEP 14

Click on the  button to verify order

Note

- Order Status changed to “Verified” as Figure 3.3-14
- Users not allowed to update sampling details if order status is “Verified”.
- Click on the  button to verify the record.

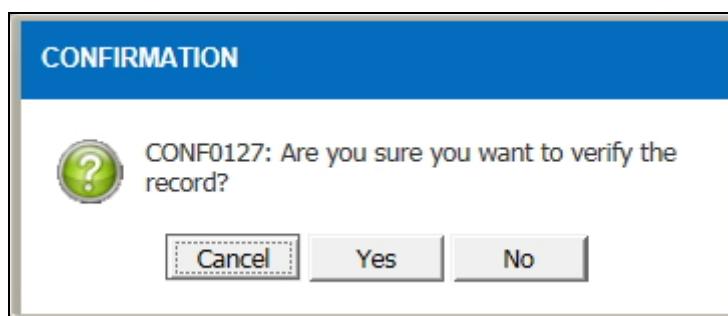






Figure 3.3-13 Confirmation Alert Message

STEP 15

Click on the  button to print TDM Request Form as per Figure 3.3-15

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 as Figure 3.3-14



Indication For Request


TDM Drug

Order Remarks

Clear

TDM Guidelines

Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		





Sampling	Drug Name	Drug Details	Order Remarks	Drug Info	Status
Details	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019			Verified

Figure 3.3-14 Verified Sampling Details



CLINICAL PHARMACOKINETICS SERVICES
Therapeutic Drug Monitoring (TDM) Request Form

Ordered By : XXXXXXXXXX TDM Order No : XXXXXXXXXX

Ordered Date/Time 09/10/2019 02:37 PM

PATIENT DETAILS					
Name : YXX XXX XXXX	MRN NO : HKL000016	IC : XXXXXXXXXX			
		Race :			
Age : 64 Years 19 Days	Sex : Female	Ward/Unit : Farmasi Klinik Pakar			
Weight : 55 kg	Height : 163 cm				
LATEST LAB RESULT :					
Blood Urea	Sodium	Potassium	Serum Creatinine	Creatinine Clearance	Albumin
PATIENT CONDITION					
Oedema :	NO	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	TDM1900008613	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019	Therapeutic Monitoring	
Sample Type	Lab Test Order	Drug Administration Date/Time	Suggested Sampling Date/Time	Interval	
RANDOM	Paracetamol Random	09/10/2019 03:14 PM	09/10/2019 03:24 PM	10 Minutes	

Figure 3.3-15 TDM Request Form

DRUG DETAILS
New

Indication For Request

TDM Drug TDM Guidelines

Order Remarks

Clear

Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
+	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		i

SAMPLE MANAGEMENT
PROCEED TO TDM REPORTING

Sampling	Drug Name	Drug Details	Order Remarks	Drug Info	Status
Details 16	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		i	Verified

Figure 3.3-16 Sampling Details

STEP 16

Click on the **Details** fill in sample management details, sample management details pop up screen will be displayed as Figure 3.3.17

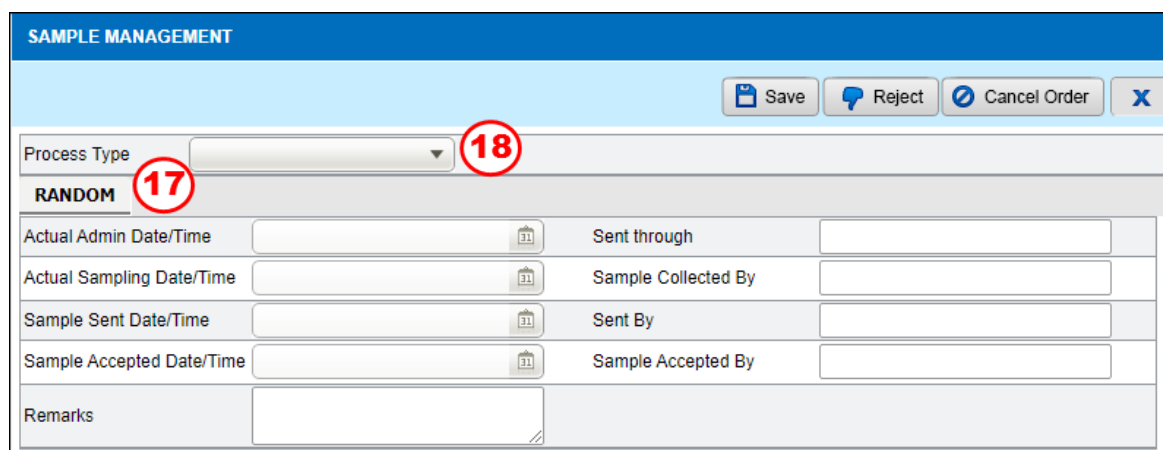


Figure 3.3-17 Sample Management

STEP 17

Enter details in these fields:

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

Note


- If have more than one sample, record will be display in the next tab.

STEP 18

Select **Process Type** from dropdown box:

- Lab Based
- Outsource
- Pharmacy Based

Note

- If Process Type is "Outsource", user needs to select which facility to send the order to under Auto complete search drop down and click on the  **Send** button.

SAMPLE MANAGEMENT

Save

Reject

Cancel Order

X

Process Type

Out Source

Send To

Send

RANDOM

Actual Admin Date/Time

Sent through

Actual Sampling Date/Time

Sample Collected By

Sample Sent Date/Time

Sent By

Sample Accepted Date/Time

Sample Accepted By

Remarks

Figure 3.3-18 Sample Management – Out Source

Search Other Facility

X

Facility Name

Search


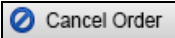
1

/ 113

[1 - 10 / 1127]

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 3.3-19 search Other Facility

- Click on the  button to reject the sampling details. User needs to place a new order.
- Click on the  button to cancel the order. User may not need to place new order.

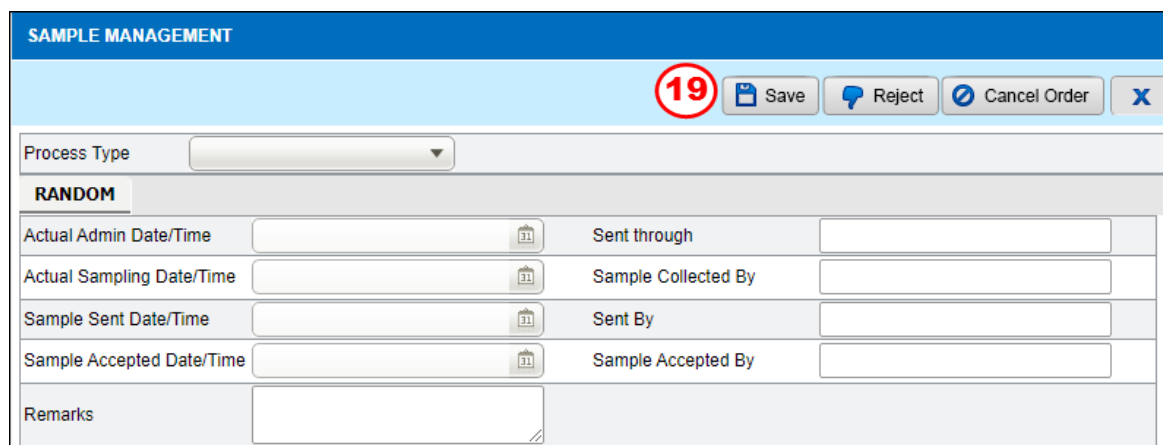



Figure 3.3-20 Save Sample Management

STEP 19

Click on the  Save button to save record

Note

- Click on the  Yes button to save the record.
- Order Status changed to “Sample Accepted” as Figure 3.3-22

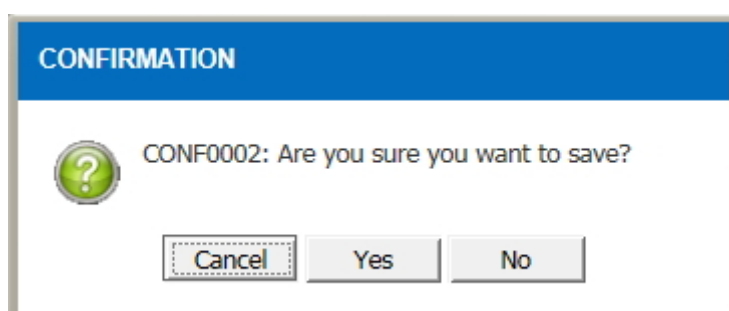


Figure 3.3-21 Confirmation Alert Message

DRUG DETAILS
New

Indication For Request
TDM Drug
Order Remarks
Clear

Add Sample	Drug Name	Drug Details	Order Remarks	Drug Info
	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019		

SAMPLE MANAGEMENT
20
PROCEED TO TDM REPORTING

Sampling	Drug Name	Drug Details	Order Remarks	Drug Info	Status
Details	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019			Sample Accepted

Figure 3.3-22 Proceed to Reporting

STEP 20

Select the PROCEED TO TDM REPORTING to perform the TDM reporting.

Note

- Click on the Yes button to proceed to the TDM reporting and screen will be displayed as Figure 3.3-24

CONFIRMATION

CONF0152: Are you sure you want to proceed to TDM reporting?

Yes
No

Figure 3.3-23 Confirmation Alert Message

REPORTING

i
X

Pre Sample		Latest Lab Result:	
Result Value	<input style="width: 150px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 150px;" type="text"/>
Reported By	<input style="width: 150px;" type="text"/>	Details	Blood Urea
			mmol/L
Post Sample			
Result Value	<input style="width: 150px;" type="text"/>	<input style="width: 50px;" type="text"/>	Sodium
Reported By	<input style="width: 150px;" type="text"/>	Details	mmol/L
			Potassium
			mmol/L
			Serum Creatinine
			μmol/L
			Creatinine Clearance
			ml/min
			Not accurate for Children
Random Sample			
Result Value	<input style="width: 150px;" type="text"/>	<input style="width: 50px;" type="text"/>	Albumin
Reported By	<input style="width: 150px;" type="text"/>	Details	g/L
Calculator	<input style="width: 150px;" type="text"/>	<input style="width: 50px;" type="text"/>	
<div style="border: 1px solid #ccc; padding: 5px; min-height: 80px;"> 24 </div>			
Pharmacokinetics Profile			
Recommendation Type	<input style="width: 150px;" type="text"/>	<input style="width: 50px;" type="text"/>	
Toxic	<input type="checkbox"/> No	<input type="checkbox"/>	
			Ok

Figure 3.3-26 Reporting Detail

DETAILS

i
X

Reference Range	:	0.8 - 2.0 ng/ml AF : 1.0 - 2.5 ng/ml
Sample Collected Date/Time	:	28/05/2019 05:23
Actual Drug Admin Date/Time	:	28/05/2019 05:23
Out Source	:	NO

Figure 3.3-27 Sample Details

STEP 22

Enter sample details as below:

- Result Value
- Resulted By

Note

Click on [Details](#) hyperlink to view sample details. Sample Details consists of:

- Reference Range
- Sample Collected Date/Time
- Actual Drug Admin Date/Time
- Outsource

STEP 23

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

STEP 24

Enter **Pharmacokinetics Profile**

Notes

Pharmacokinetics Profile field will display data entered from the TDM calculator and also can be edited.

STEP 25

Select **Recommendation Type** from dropdown box:

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

Notes


Recommendation Type will be copied and displayed in Pharmacist Notes.

STEP 26

Select **Toxic**:


- Yes
- No

STEP 27

Click on the  button to proceed with TDM reporting process

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.



CLINICAL PHARMACOKINETICS SERVICES
Therapeutic Drug Monitoring (TDM) Report
HOSPITAL KUALA LUMPUR

Report No: RPT0000008078

PATIENT DETAILS

Name : [REDACTED] MRN NO : HKL000016 IC : [REDACTED]
 Age : 64 Years 19 Days Sex : Female Race :
 Weight : 55 Kg Height : 163 Cm Ward/Unit : Farmasi Klinik Pakar

No	TDM No	Drug Name	Drug Details	Indication Request	Recommendation Type	Recommendation Accepted	Toxic
1	TDM1900008613	Paracetamol 500 mg Tablet	1000mg, TDS PRN, Oral Tablet, Oral, 09/10/2019 (10 Days), Start Date : 09/10/2019 End Date : 19/10/2019	Therapeutic Monitoring	Maintain The Dose	Yes	No

Sampling Id	Sample Type	Actual Sampling Date Time	Actual Drug Admin Date Time	Result Value	Therapeutic Range
HKL/SM/0000009304	RANDOM	09/10/2019 04:35 PM	09/10/2019 04:34 PM	10 mcg/ml	At least 4 hours post ingestion

Pharmacist Note: TDM1900008613 - Paracetamol 500 mg Tablet - Maintain The Dose
 Result Value :-
 Random :10 mcg/ml

Printed Date : 09/10/2019 Printed By : [REDACTED] Unit Name : Farmasi Logistik Source : PhIS
 Page 1 of 1

Figure 3.3-29 TDM Report

3.4 External TDM

3.4.1 External TDM Online

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.

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 3.4.1-1 External Notification

STEP 1

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

OUTSOURCE LISTING							
[1 - 2 / 2]							
<input type="checkbox"/>	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 3.4.1-2 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 3.4.1-2

OUTSOURCE LISTING							
[1 - 2 / 2]							
<input type="checkbox"/>	Hosp/Clinic	Mrn No	Patient Name	Patient ID	TDM Drug	Sample Type	Date/Time
<input type="checkbox"/>	Hospital Pakar Sultanah Fatimah, Muar	HPSF00007006	[Redacted]	910801126176	carBAMAZepine 200mg Tablet	RANDOM	22/07/2014 13:26
<input checked="" type="checkbox"/>	Hospital Pakar Sultanah Fatimah, Muar	HPSF00017231	[Redacted]	790719015422	Sodium Valproate 200 mg Tablet	PRE	22/09/2014 15:48

Figure 3.4.1-3 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.

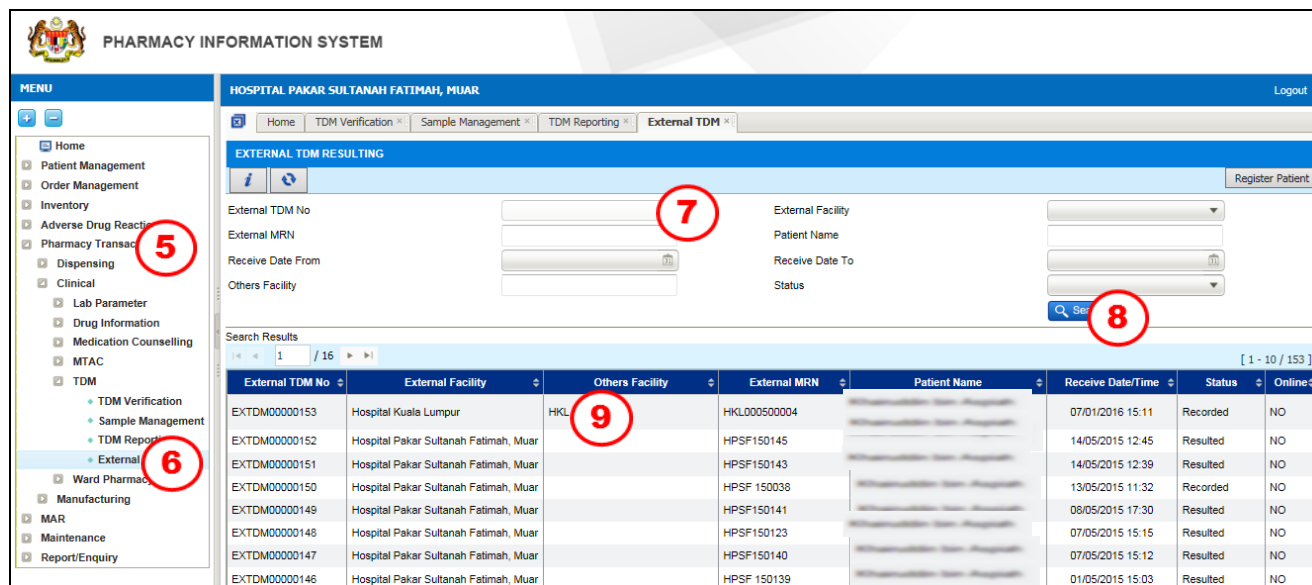


Figure 3.4.1-4 External TDM Listing Page

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

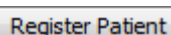
STEP 8

Click on the  button to search for patient records

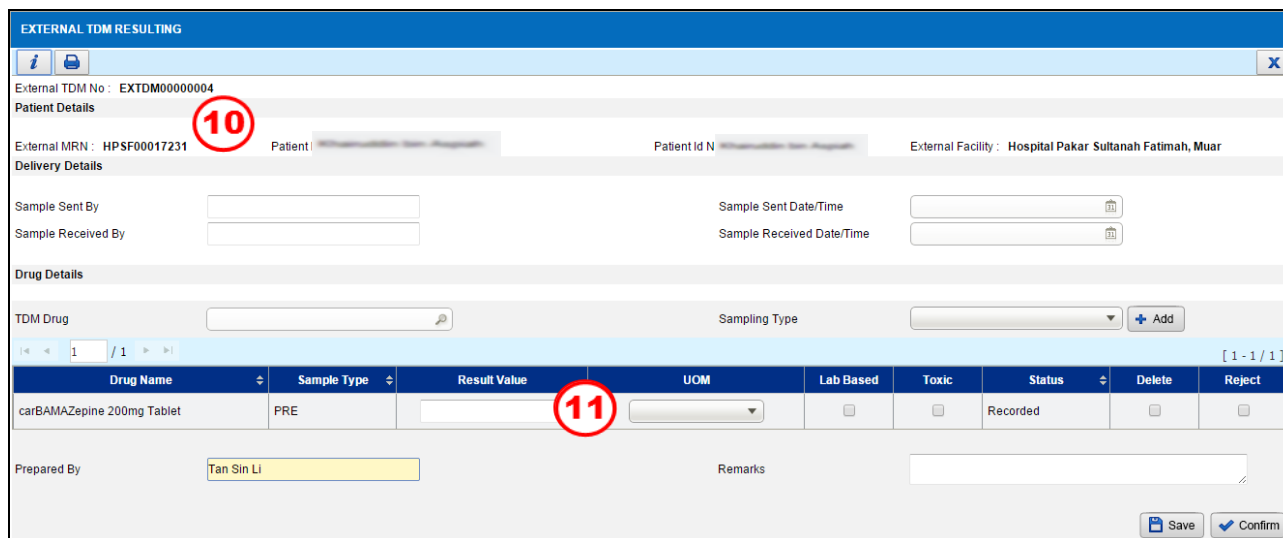
STEP 9

Double-click on the selected patient and External TDM Resulting screen will be displayed as per Figure 3.4.1-5

Note



button is for offline External TDM (refer to [section 3.4.2 External TDM Offline](#))



EXTERNAL TDM RESULTING

External TDM No : EXTDM00000004

Patient Details

External MRN : HPSF00017231 Patient: [Redacted] Patient Id N: [Redacted] External Facility : Hospital Pakar Sultanah Fatimah, Muar

Delivery Details

Sample Sent By: [Text Box] Sample Sent Date/Time: [Text Box]

Sample Received By: [Text Box] Sample Received Date/Time: [Text Box]

Drug Details

TDM Drug: [Text Box] Sampling Type: [Dropdown] + Add

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

Prepared By: Tan Sin Li Remarks: [Text Box]

Save Confirm

Figure 3.4.1-5 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.

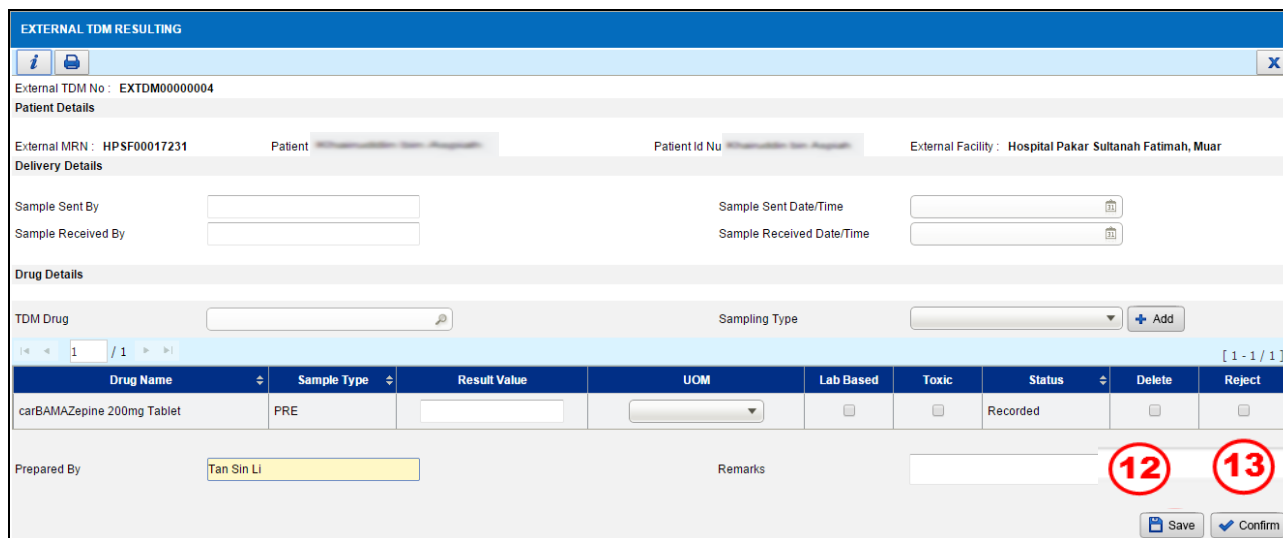




Figure 3.4.1-6 External TDM Resulting

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 3.3 Therapeutic Drug Monitoring \(TDM\) Order](#))

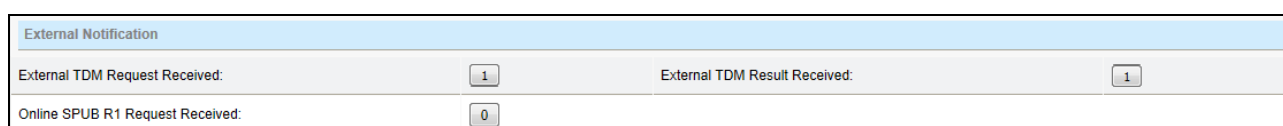
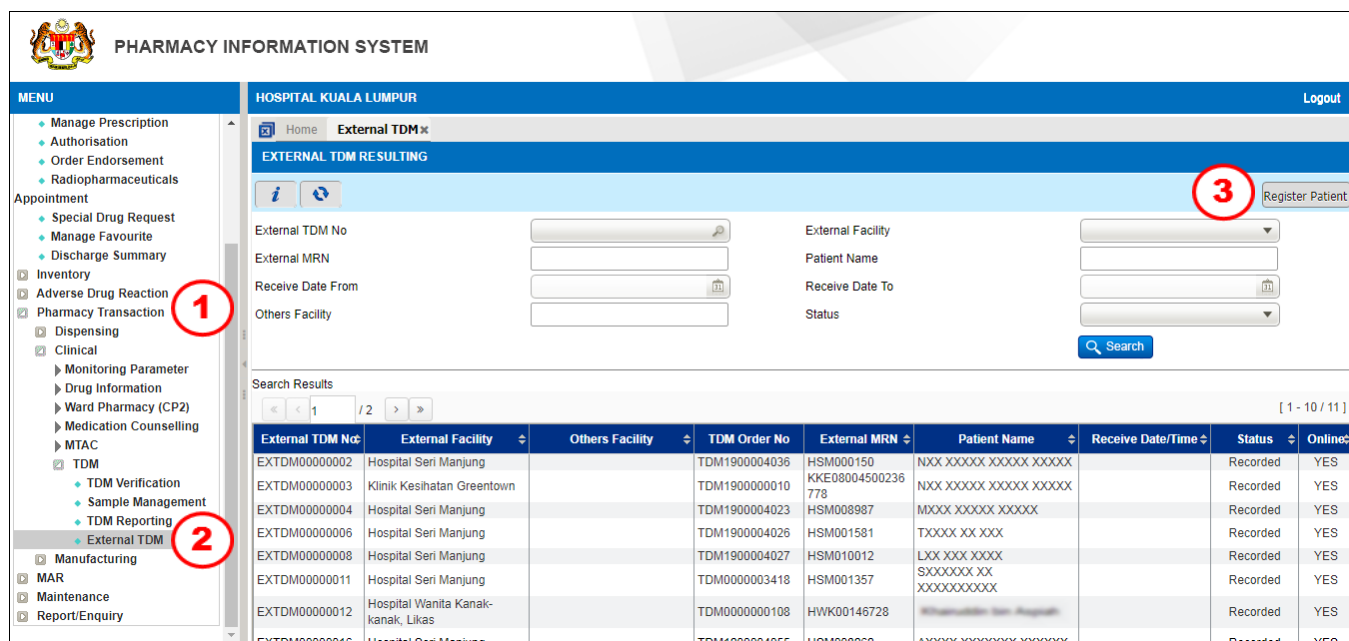


Figure 3.4.1-7 External Notification

OUTSOURCE LISTING									
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 3.4.1-8 Outsource Listing

3.4.2 External TDM Offline



PHARMACY INFORMATION SYSTEM

HOSPITAL KUALA LUMPUR Logout

Home External TDM*

EXTERNAL TDM RESULTING

Register Patient

External TDM No: [Text Box] External Facility: [Dropdown]

External MRN: [Text Box] Patient Name: [Text Box]

Receive Date From: [Text Box] Receive Date To: [Text Box]

Others Facility: [Text Box] Status: [Dropdown]

Search

Search Results [1 - 10 / 11]

External TDM No	External Facility	Others Facility	TDM Order No	External MRN	Patient Name	Receive Date/Time	Status	Online
EXTDM00000002	Hospital Seri Manjung		TDM1900004036	HSM000150	NXX XXXXX XXXXX XXXXX		Recorded	YES
EXTDM00000003	Klinik Kesihatan Greentown		TDM1900000010	KKE08004500236778	NXX XXXXX XXXXX XXXXX		Recorded	YES
EXTDM00000004	Hospital Seri Manjung		TDM1900004023	HSM008987	MXXX XXXXX XXXXX		Recorded	YES
EXTDM00000006	Hospital Seri Manjung		TDM1900004026	HSM001581	TXXX XX XXX		Recorded	YES
EXTDM00000008	Hospital Seri Manjung		TDM1900004027	HSM010012	LXX XXX XXX		Recorded	YES
EXTDM00000011	Hospital Seri Manjung		TDM0000003418	HSM001357	SXXXXX XX XXXXXXXXXX		Recorded	YES
EXTDM00000012	Hospital Wanita Kanak-kanak, Likas		TDM0000000108	HWK00146728	XXXXXXXXXX		Recorded	YES
EXTDM00000016	Hospital Seri Manjung		TDM1900004055	HSM008989	AVXXX XXXXXX XXXXX		Recorded	YES

Figure 3.4.2-1 External TDM Listing Page

External TDM module is for user to record external TDM resulting (Outsource) via online and offline. It is recorded offline if one of the facility used PhIS to perform TDM processes.

STEP 1

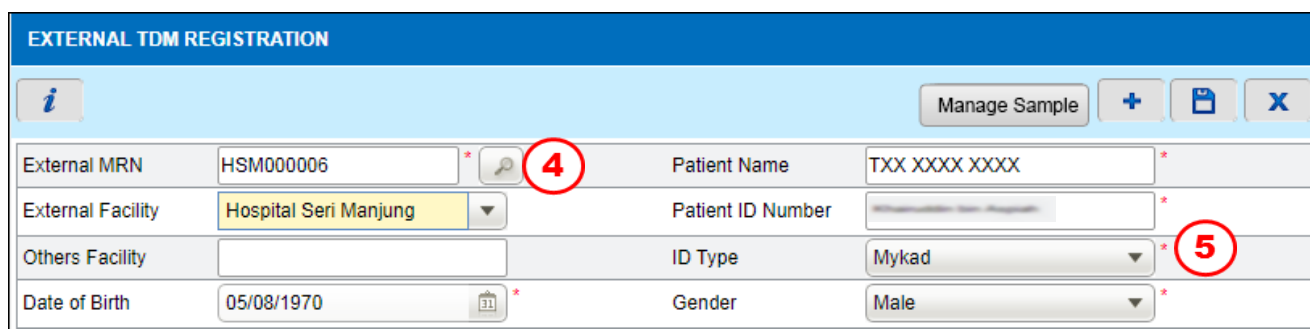
Click on 'Pharmacy Transaction' menu follow by 'Clinical' sub-menu

STEP 2

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

STEP 3

Click on the **Register Patient** button to register external patient



EXTERNAL TDM REGISTRATION

Manage Sample + [Icon] X

External MRN: HSM000006 * [Icon] 4 Patient Name: TXX XXXX XXXX *

External Facility: Hospital Seri Manjung Patient ID Number: [Text Box] *

Others Facility: [Text Box] ID Type: Mykad * 5

Date of Birth: 05/08/1970 * Gender: Male *

Figure 3.4.2-2 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)
f. 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 3.4.2-3

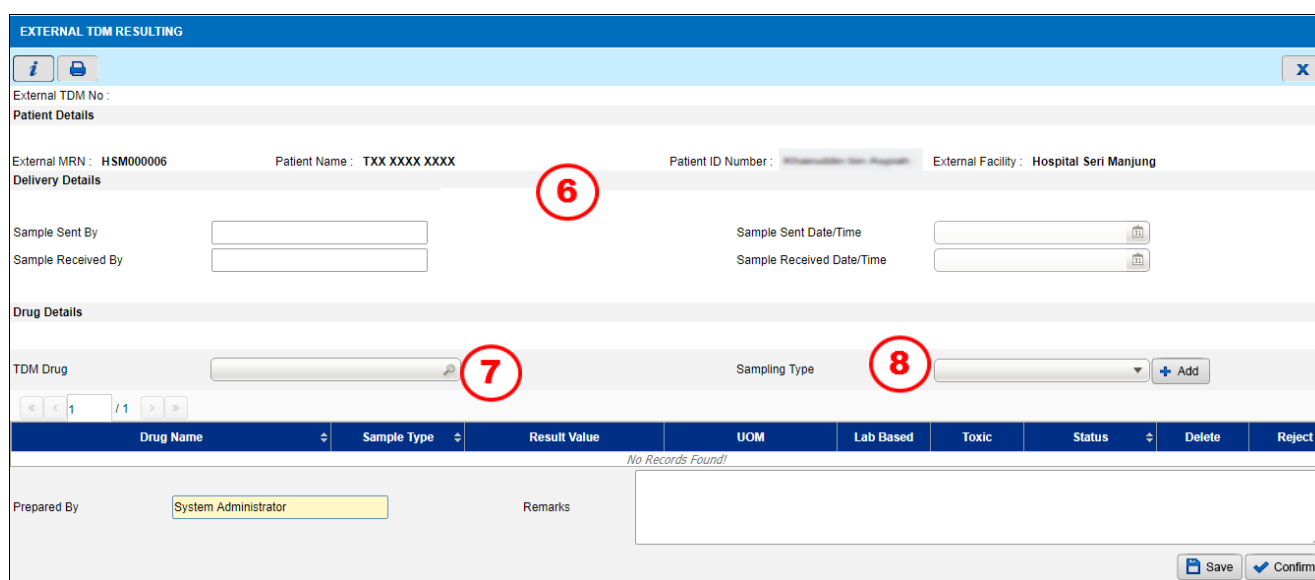


Figure 3.4.2-3 External TDM Resulting

STEP 6

Enter **Delivery Details** as below:

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

STEP 7

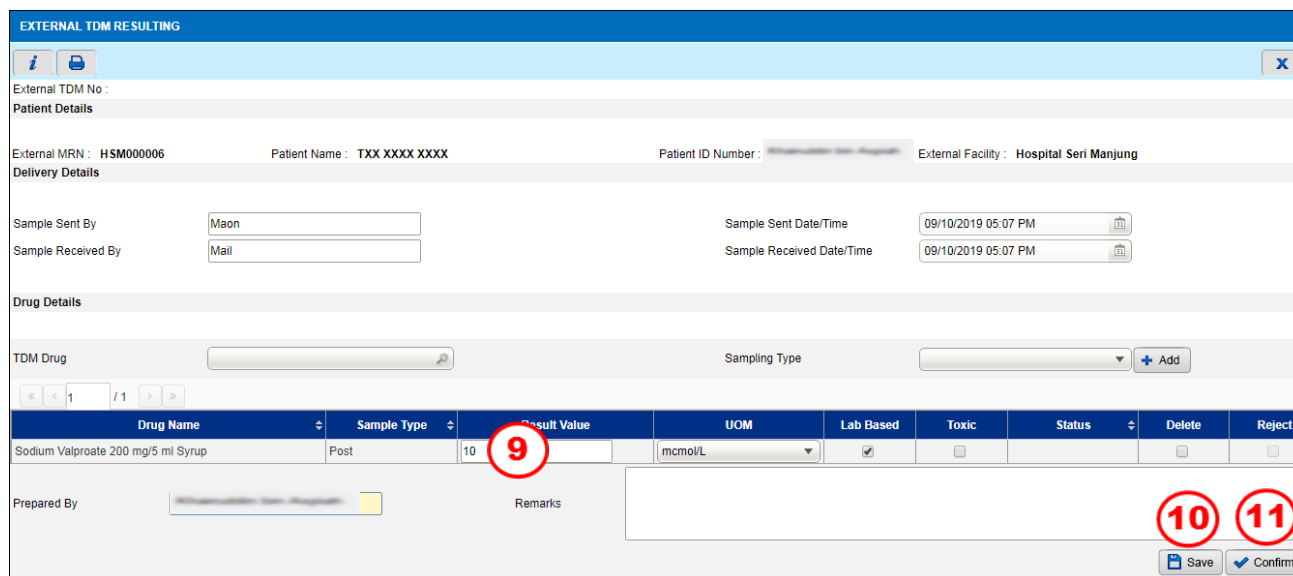
Click on the **TDM Drug**  button to search for drug

STEP 8

Select **Sampling Type** from dropdown box:

- POST 1
- POST 2
- Pre
- Post
- Random

and click on the  button to add the information



EXTERNAL TDM RESULTING

External TDM No :
Patient Details

External MRN : HSM000006 Patient Name : TXX XXXX XXXX Patient ID Number : External Facility : Hospital Seri Manjung

Delivery Details

Sample Sent By : Maon Sample Sent Date/Time : 09/10/2019 05:07 PM
Sample Received By : Mail Sample Received Date/Time : 09/10/2019 05:07 PM

Drug Details

TDM Drug : Sampling Type : + Add

Drug Name	Sample Type	Result Value	UOM	Lab Based	Toxic	Status	Delete	Reject
Sodium Valproate 200 mg/5 ml Syrup	Post	10	mcmol/L	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Prepared By : Remarks :

Save Confirm

Figure 3.4.2-4 External TDM Resulting

STEP 9


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

- mcg/ml
- mcmol/L
- mg/dL
- mmol/L
- ng/ml
- nmol/L


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

4.0 Acronyms

Abbreviation	Definition
PhIS	Pharmacy Information System
CPS	Clinical Pharmacy System
MOH	Ministry Of Health
TDM	Therapeutic Drug Monitoring

5.0 Links to Clinical Modules

No	Module	PDF Links	No	Module	PDF Links
1	Inpatient	Click Here	12	CDR Dispensing	Click Here
2	CDR Order	Click Here	13	Methadone Dispensing	Click Here
3	TDM Order	Click Here	14	PN Dispensing	Click Here
4	PN Order	Click Here	15	Order Management	Click Here
5	IV Order	Click Here	16	Patient Management	Click Here
6	Prepacking	Click Here	17	Radiopharmaceuticals	Click Here
7	Galenical	Click Here	18	Outpatient	Click Here
8	MTAC	Click Here	19	Special Drug Request	Click Here
9	ADR & DAC	Click Here	20	MAR	Click Here
10	Medication Counselling	Click Here	21	DICE	Click Here
11	Ward Pharmacy	Click Here	22		