

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

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## **Pharmacy Based**

### **User Manual TDM Calculator**

<b>Version</b>	<b>: 1.1</b>
<b>Document ID</b>	<b>: PB_U. MANUAL_TDM CALCULATOR</b>

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Version No	Date of Release	Prepared By	Reviewed / Verified by	List of changes from previous Version
1.0	21/10/2016	Bairavee	Norlaileza Sidek	First submission to MOH
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Name	Role / Designation	Organization	Signature & Date
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## **Peer Review**

Version No	Reviewed / Verified By	List of changes from Previous Version
1.0	Juridah/Michelle (QA)	First submission to MOH
1.1	Juridah/Michelle (QA)	Change to latest update and screenshot version 1.5.1



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PB\_U. MANUAL\_TDM CALCULATOR-v1.1

## Table of Contents

1.0 Introduction.....	1
1.1 Overview of PhIS .....	1
1.2 Purpose and Objectives .....	1
1.3 Organized Sections.....	1
2.0 Application Standard Features.....	2
2.1 PhIS Legend.....	2
3.0 Calculator for Vancomycin .....	3
4.0 Calculator for Gentamicin .....	5
5.0 Calculator for Valproic Acid.....	8
6.0 Acronyms.....	12
7.0 Links to Clinical Modules.....	12

## 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 Login Information module and its key features and functionalities. The primary objective is to guide user through the process of completing PhIS application process.

User will understand the following activities in details:

- Calculator for Vancomycin
- Calculator for Gentamicin
- Calculator for Valproic Acid


























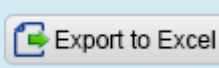
### 1.3 Organized Sections

These are the sections within this document:

- Section 1: Introduction
- Section 2: Application Standard Features
- Section 3: Calculator for Vancomycin
- Section 4: Calculator for Gentamicin
- Section 5: Calculator for Valproic Acid
- Section 6: Acronyms
- Section 7: Links to Clinical Modules

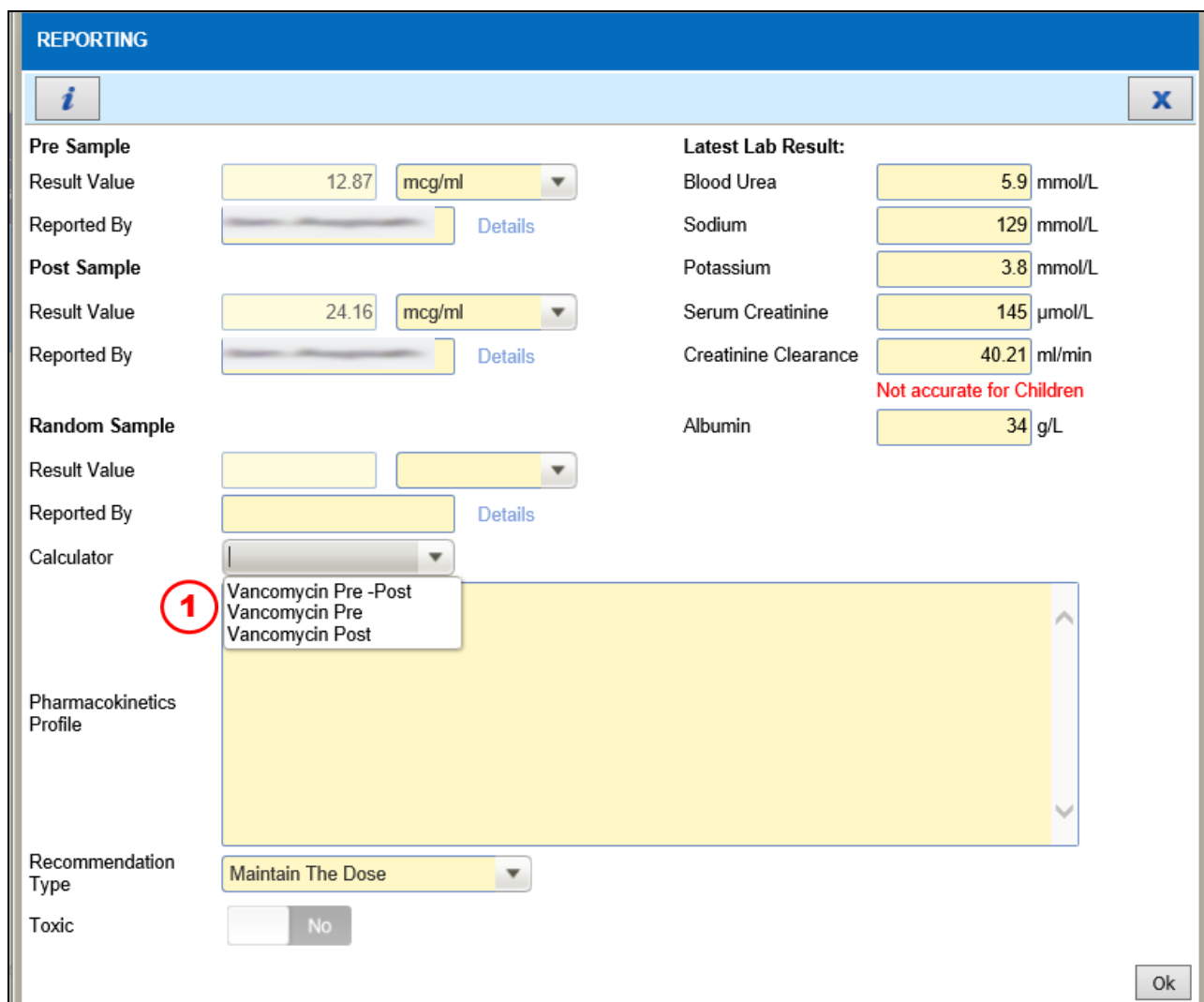
## 2.0 Application Standard Features

### 2.1 PhIS Legend

Standard Legend			
	Login to PhIS		Logout from PhIS
	Change Login Password		Reset Login Screen
	Expand Menu		Collapse Menu
	Display Home Tab		Expand Module
	Collapse Module		Close All Open Tabs
	Refresh Screen		Search Record
	Add/Create New Record		Show Help
	Print		Mandatory Field
	Calendar Icon		Search Icon
	Close Window		Radio Button
	Checkbox		Edit Record
	Cancel		Delete Record
	Save		Export and Open Report in Excel Format

### 3.0 Calculator for Vancomycin

To view the calculator in the system, perform the steps below:



**REPORTING**

**Pre Sample**  
 Result Value: 12.87 mcg/ml  
 Reported By: [Name] Details

**Post Sample**  
 Result Value: 24.16 mcg/ml  
 Reported By: [Name] Details

**Random Sample**  
 Result Value: [ ] [ ]  
 Reported By: [ ] Details  
 Calculator: [ ]

**Latest Lab Result:**  
 Blood Urea: 5.9 mmol/L  
 Sodium: 129 mmol/L  
 Potassium: 3.8 mmol/L  
 Serum Creatinine: 145 µmol/L  
 Creatinine Clearance: 40.21 ml/min  
 Albumin: 34 g/L  
 Not accurate for Children

**Pharmacokinetics Profile**

**Recommendation Type**  
 Maintain The Dose

**Toxic**  
 No

**Calculator Options:**  
 1. Vancomycin Pre -Post  
 Vancomycin Pre  
 Vancomycin Post

Ok

Figure 3.0-1 Pre Calculator for Vancomycin Detail

#### STEP 1

Select calculator from dropdown box example:

- Vancomycin in Pre
- Vancomycin in Post
- Vancomycin in Pre-Post

#### Note

- Choose the calculator and fill the result in the box as per Figure 3.0-1. Sample Details consists of:
  - Pre calculator for vancomycin
  - Dose medication in mg
  - Interval Time
  - Pre level result concentration
  - Serum Creatinine
  - Vd

- After save the calculator, the result will appear at the Pharmacokinetics Profile box
- Calculator is optional only
- User can direct type at the Pharmacokinetics Profile box without using the calculator as per Figure 3.0-1

**CALCULATOR FOR VANCOMYCIN PRE**

Body Weight  Body Weight  kg  
Dose  mg Total Dose  mg/day  
Interval(T)  hour

Pre level result concentration  mcg/ml  
Serum Creatinine  umol/L  
Vd  L/kg

Creininine Clearance  ml/min  
pKe  hr-1  
Cl  ml/min t1/2  hour  
Expected Cmax  mcg/ml Expected Cmin  mcg/ml

Note : Normal = 0.7, Dehydrated = < 0.50, Fluid Overload = > 1 (Edema, Ascites, over hydration)

Figure 3.0-2 Pre Calculator for Vancomycin Detail

**CALCULATOR FOR VANCOMYCIN POST**

Body Weight  Body Weight  kg  
Dose  mg Total Dose  mg/day  
Interval(T)  hour

Sampling Time  
Duration between time after complete infusion and post sampling(t)  hour

Serum level  
Post level result concentration  mcg/ml  
Creatinine Clearance  ml/min  
Serum Creatinine  umol/L

☐ To calculate expected Cmin and Cmax based on new suggested dose  
New suggested dose  mg  
New Interval  hour  
Expected Cmax  mcg/ml Expected Cmin  mcg/ml

☐ To calculate new dose and Cmin based on desired Cmax  
Desired Cmax  mcg/ml  
Desired Interval  hour  
Expected Cmin  mcg/ml New Dose  mg

pKe  hr-1  
Vd  L/kg  
Cl  ml/min t1/2  hour  
Cmax  mcg/ml Cmin  mcg/ml

Figure 3.0-3 Post Calculator for Vancomycin Detail

**CALCULATOR FOR VANCOMYCIN PRE & POST**

Body Weight  Body Weight  kg  
Dose  mg Total Dose  mg/day  
Interval(T)  hour

Sampling Time  
Duration between time after complete infusion and post sampling(t)  hour  
Duration between completion time of pre and post sampling (t2-t1)  hour

Serum level  
Pre level result concentration  mcg/ml  
Post level result concentration  mcg/ml  
Serum Creatinine  umol/L

☐ To calculate Vd, Ke and t1/2  
Ke  hr-1  
Vd  L/kg  
Cl  ml/min t1/2  hour  
Cmax  mcg/ml Cmin  mcg/ml

☐ To calculate Area Under Curve (AUC) Over 24hrs  
Vd  L/kg  
MIC  mg/L  
AUC   
Note MIC = 2mg/L AUC > 400

☐ To calculate expected Cmin and Cmax based on new suggested dose  
New suggested dose  mg  
Every Hour  hour  
Expected Cmax  mcg/ml Expected Cmin  mcg/ml

☐ To calculate expected Cmin and Cmax if Vd varies  
Vd  L/kg  
Expected Cmax  mcg/ml  
Expected Cmin  mcg/ml

☐ To calculate new dose and Cmin based on desired Cmax  
Desired Cmax  mcg/ml  
Desired Interval  hour  
Expected Cmin  mcg/ml New Dose  mg

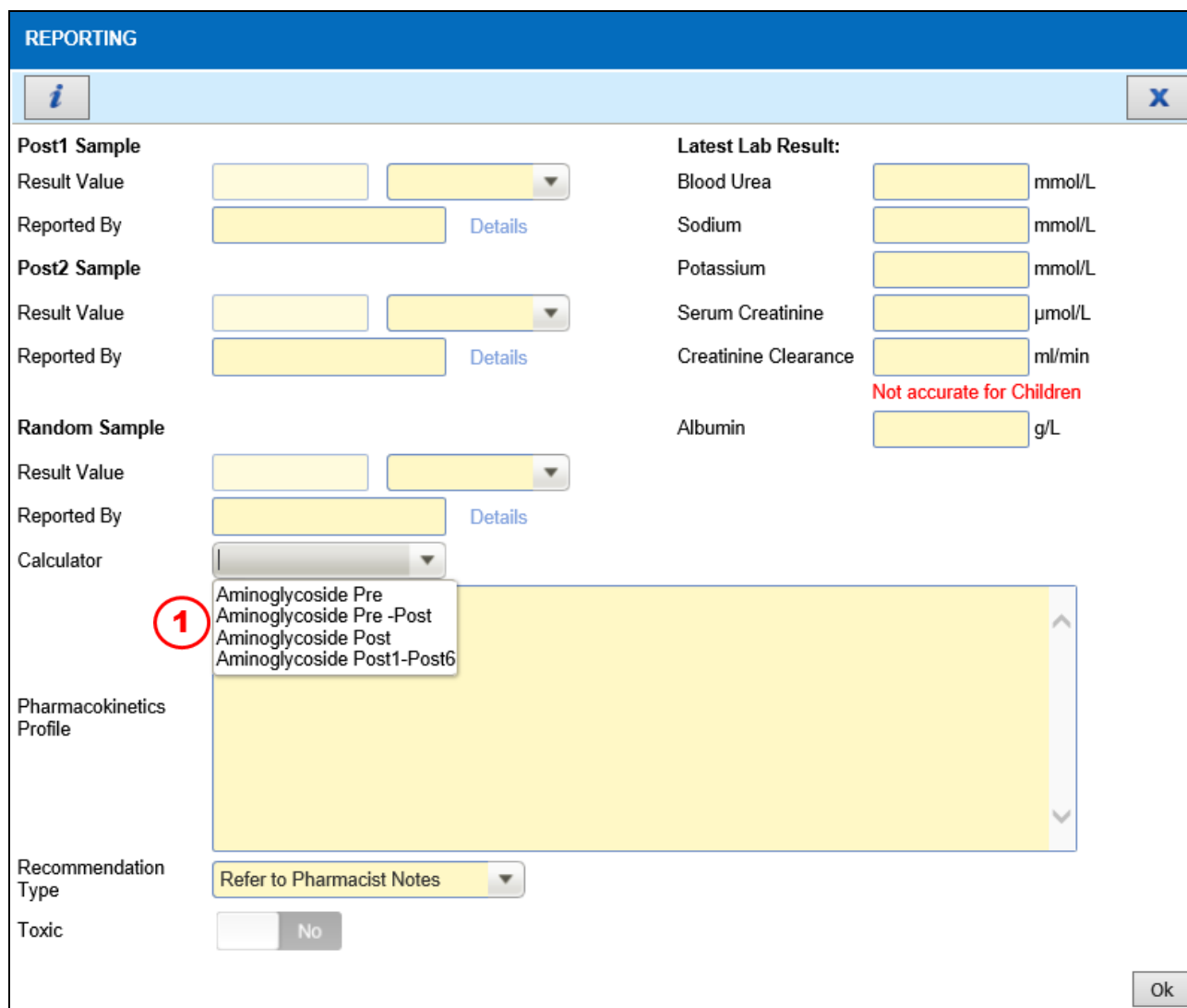
Creininine Clearance  ml/min

Figure 3.0-4 Pre & Post Calculator for Vancomycin Detail



## 4.0 Calculator for Gentamicin

To view the calculator in the system, perform the steps below:



**REPORTING**

**Post1 Sample**  
 Result Value:    
 Reported By:  Details

**Post2 Sample**  
 Result Value:    
 Reported By:  Details

**Random Sample**  
 Result Value:    
 Reported By:  Details

**Calculator**  
 1  Aminoglycoside Pre  
 Aminoglycoside Pre -Post  
 Aminoglycoside Post  
 Aminoglycoside Post1-Post6

**Pharmacokinetics Profile**

**Recommendation Type**  
 Refer to Pharmacist Notes

**Toxic**  
 No

**Latest Lab Result:**  
 Blood Urea:  mmol/L  
 Sodium:  mmol/L  
 Potassium:  mmol/L  
 Serum Creatinine:  µmol/L  
 Creatinine Clearance:  ml/min  
 Albumin:  g/L  
 Not accurate for Children

Ok

Figure 4.0-1 Calculator for Gentamicin

### STEP 1

Select calculator from dropdown box example:

- Aminoglycoside Pre-Post
- Aminoglycoside Pre
- Aminoglycoside Post
- Aminoglycoside Post 1- Post 6

### Note

- Choose the calculator and fill the result in the box as per Figure 4.0-1. Sample Details consists of:
  - Aminoglycoside Pre-Post calculator for Gentamicin
  - Dose medication in mg
  - Interval Time
  - Sampling time
  - Serum Level
  - Vd, Ke and t1/2

**CALCULATOR FOR AMINOGLYCOSIDE PRE POST**

Body Weight Actual 67 kg  
Dose  mg  
Interval(T)  hour  
Total Dose  mg/daily

*Note : mcg/ml = mg/L*

**Sampling Time**  
Duration between time after complete infusion and post sampling(t)  hour  
Duration between completion time of pre and post sampling (t2-t1)  hour

**Serum level**  
Pre level result concentration  mcg/ml  
Post level result concentration  mcg/ml  
Serum Creatinine  umol/L  
Creatinine Clearance  ml/min

☐ To calculate Vd , Ke and t1/2  
Ke  hr-1  
Vd  L/Kg  
t1/2  hour  
Cmax  mcg/ml Cmin  mcg/ml

☐ To calculate expected Cmin and Cmax based on new suggested dose  
New suggested dose  mg  
New Interval  hour  
Expected Cmax  mcg/ml Expected Cmin  mcg/ml

☐ To calculate new dose and Cmin based on desired Cmax  
Desired Cmax  mcg/ml  
Desired Interval  hour  
Expected Cmin  mcg/ml New Dose  mg

**Figure 4.0-2 Calculator for Aminoglycoside Pre-Post Detail**

**CALCULATOR FOR AMINOGLYCOSIDE PRE**

Body Weight Actual 67 kg  
Dose  mg  
Interval(T)  hour  
Total Dose  mg/daily

**Sampling Time**  
Pre level result concentration  hour  
Serum Creatinine  umol/L  
Vd  L/Kg  
Creatinine Clearance  ml/min  
pKa  hr-1  
t1/2  hour  
Expected Cmax  mcg/ml Expected Cmin  mcg/ml

*Note : Normal = 0.25, Dehydrated = < 0.20, Fluid Overload = > 0.30 (Edema, Ascites, over hydration)*

**Figure 4.0-3 Calculator for Aminoglycoside Pre Detail**

**CALCULATOR FOR AMINOGLYCOSIDE POST**

Body Weight Actual 67 kg  
Dose  mg  
Interval(T)  hour  
Total Dose  mg/daily

**Sampling Time**  
Duration between time after complete infusion and post sampling(t)  hour

**Serum level**  
Post level result concentration  mcg/ml  
Creatinine Clearance  ml/min  
Serum Creatinine  umol/L

☐ To calculate Vd , Ke and t1/2  
Vd  L/Kg  
pKa  hr-1  
t1/2  hour  
Cmax  mcg/ml Cmin  mcg/ml

☐ To calculate expected Cmin and Cmax based on new suggested dose  
New suggested dose  mg  
New Interval  hour  
Expected Cmax  mcg/ml Expected Cmin  mcg/ml

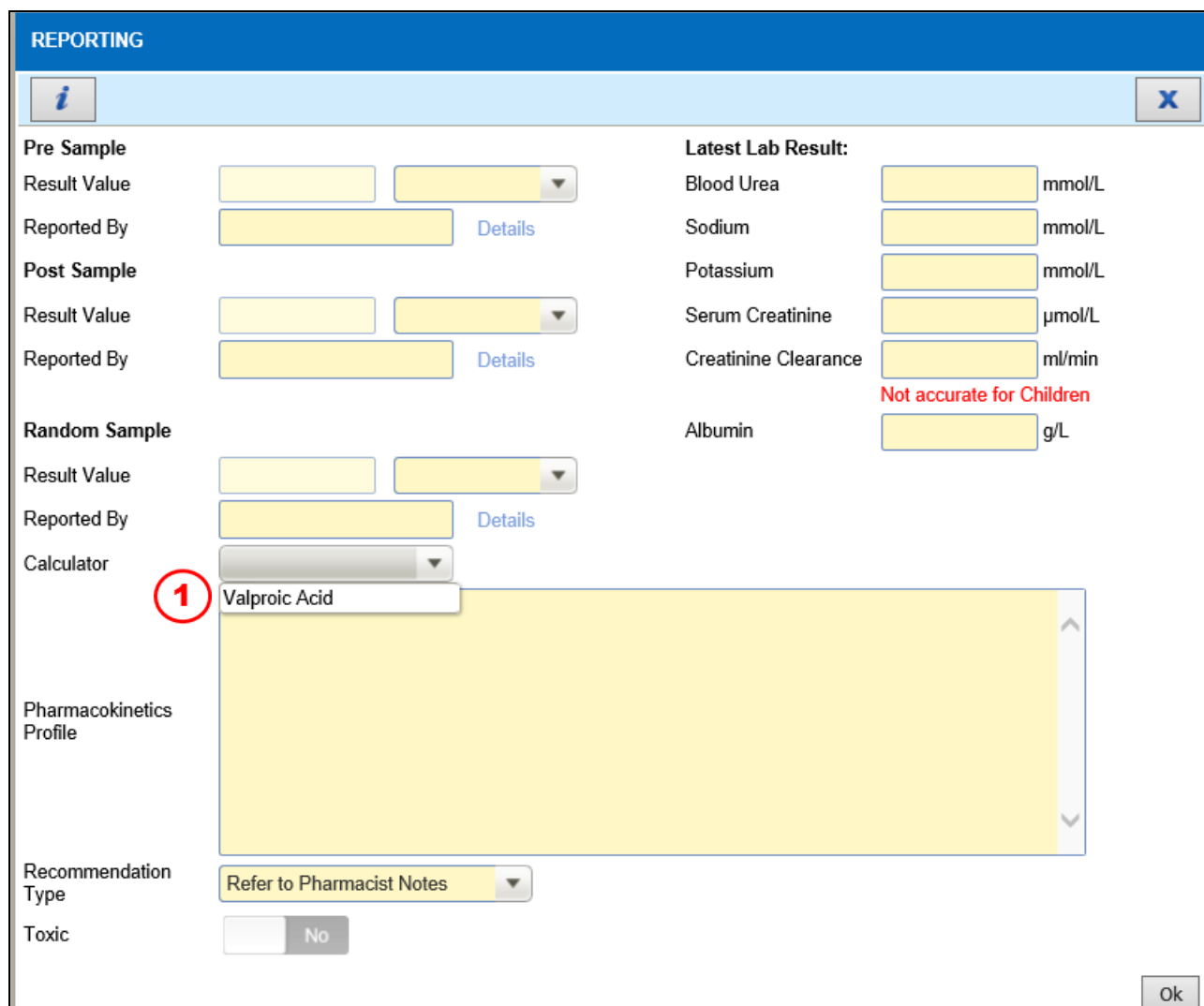
☐ To calculate new dose and Cmin based on desired Cmax  
Desired Cmax  mcg/ml  
Desired Interval  hour  
Expected Cmin  mcg/ml New Dose  mg

**Figure 4.0-4 Calculator for Aminoglycoside Post Detail**



## 5.0 Calculator for Valproic Acid

To view the calculator in the system, perform the steps below:



**REPORTING**

**Pre Sample**

Result Value

Reported By  [Details](#)

**Post Sample**

Result Value

Reported By  [Details](#)

**Random Sample**

Result Value

Reported By  [Details](#)

Calculator  **1** Valproic Acid

**Latest Lab Result:**

Blood Urea  mmol/L

Sodium  mmol/L

Potassium  mmol/L

Serum Creatinine  µmol/L

Creatinine Clearance  ml/min

Albumin  g/L

**Pharmacokinetics Profile**

Recommendation Type  Refer to Pharmacist Notes

Toxic  No

**Ok**

Figure 5.0-1 Calculator for Valproic Acid

### STEP 1

Select calculator from dropdown box example:

- Valproic Acid

### Note

- Choose the calculator and fill the result in the box as per Figure 4.0-1. Sample Details consists of:
  - Valproic Acid calculator
  - Dose medication in mg
  - Interval Time
  - Choose between monotherapy or phototherapy
  - Vd, Ke and t<sub>1/2</sub>

**CALCULATOR FOR VALPROIC ACID**

Body Weight:   kg  
 Dose:  mg  
 Interval(T):  hour  
 Total Dose:  mg/day

Select Calculator:

☐ Monotherapy ☒ Polytherapy  
 Note: single or combination therapies of different enzyme activities.

Cp measured:  mcg/ml  
 Note: mcg/ml = mg/L

Clearance CP measured:  L/day  
 L/hr

☐ To calculate Vd, Ke and t1/2 based on CI

CI:  L/hr  
 Constant Vd:  L/kg  
 Note: 0.1 - 0.5 L/kg  
 Vd:  L/kg  
 Ke:  hr<sup>-1</sup> t1/2:  hour

☐ To calculate New Maintenance Dose (NMD) based on CI, Cp measured and Cp desired

Cp desired:  mcg/ml  
 Note: mcg/ml = mg/L  
 CI:  L/day  
 New Dose:  mg/day

Constant CI:  ml/kg/hr  
 Note: Adult=8 ml/kg/hr Children (< 12years 11month) = 13 ml/kg/hr

Clearance (Population):  L/day  
 L/hr

☐ To calculate Cpss level based on current dose and CI

CI:  L/hr  
 Cpss:  mcg/ml  
 Note: mcg/ml = mg/L

☐ To calculate Expected Cp based on CI and New Suggested Dose(NSD)

CI:  L/day  
 NSD:  mg/day  
 Expected Cp:  mcg/ml  
 Note: mcg/ml = mg/L

Figure 5.0-2 Calculator for Valproic Acid Detail

**CALCULATOR FOR THEOPHYLLINE**

Body Weight:   kg  
 Dose:  mg  
 Interval(T):  hour  
 Theophylline Monohydrate = 0.21 Theophylline = 1

Select Calculator:

☐ Oral ☒ IV

Cp Measured:  mcg/ml  
 Note: mcg/ml = mg/L

☐ To calculate Clearance based on patient's factor(s)

Factor Q:   
 Note: For multiple factors, Q = Q1 x Q2 x Q3  
 Clearance Cp Measured:  L/hr  
 Clearance(pop):  L/hr

☐ To calculate Vd based on patient's factor(s)

Factor Vd:   
 Note: Adult = 0.8 Premature = 0.7  
 Vd (pop):  L

**Note: Qs**

Smoking History	1.6	Phenobarbitalone	1.3
Cystic Fibrosis	1.5	Phenytoin	1.6
Severe COPD	0.8	Rifampicin	1.3
Acute Pulmonary Edema	0.5	Erythromycin	0.75
Hepatic Cirrhosis	0.5	Ciprofloxacin	0.7
Acute Pulmonary Edema	0.5	Cimetidine	0.6
Acute Viral Illness	0.5	Propanolol	0.6
Chronic Heart Failure	0.4	Influenza Vaccine	0.5
None	1	Elderly > 70 y.o.	0.8

☐ To calculate Ke and t1/2 based on CI

CI:  L/hr  
 Ke:  hr<sup>-1</sup>  
 t1/2:  hour

☐ To calculate Loading Dose (LD) based on Cp desired and Vd

Cp desired:  mcg/ml  
 Note: mcg/ml = mg/L  
 Vd:  L  
 LD:  mg

☐ To calculate New Maintenance Dose (NMD) based on Cp desired and CI

Cp desired:  mcg/ml  
 Note: mcg/ml = mg/L  
 CI:  L/hr  
 T:  hr  
 New Dose:  mg every  hr

☐ To calculate Cpss level based on current dose and CI

CI:  L/hr  
 Cpss:  mcg/ml  
 Note: mcg/ml = mg/L

☐ To calculate Incremental Loading Dose (ILD) if level is SUB-therapeutic based on Cp desired and Vd

Cp desired:  mcg/ml  
 Note: mcg/ml = mg/L  
 Vd:  L  
 ILD:  mg

☐ To calculate New Dose (Ko) based on Cp and CI when convert Oral to IV Aminophylline

Cp:  mcg/ml  
 Note: mcg/ml = mg/L  
 CI:  L/hr  
 Ko(IV):  mg/hr

Figure 5.0-3 Calculator for Theophylline for Drug Aminophylline

**CALCULATOR FOR CARBAMAZEPINE**

Body Weight:   kg  
Dose:  mg  
Interval(T):  Hr  
Total Dose:  mg/day

Select Calculator :

Monotherapy ☐ Polytherapy ☒

Note: single or combination therapies of different enzyme activities.

Cp Measured:  mcg/ml  
Note: mcg/ml = mg/L

Clearance CP measured:  L/day  
=  L/hr

Clearance (Population):  L/day  
=  L/hr

☐ To calculate Vd, Ke and t1/2

CI:  L/hr  
Vd:  L/hr  
Ke:  hr<sup>-1</sup>  
t1/2:  hour

☐ To calculate Cpss level based on current dose and CI

CI:  L/hr  
Note: mcg/ml = mg/L  
Cpss:  mcg/ml

☐ To calculate New Maintenance Dose (NMD) based on Cp measured dan Cp desired

Cp Desired:  mg/L  
Note: mcg/ml = mg/L  
CI:  L/day  
New Dose:  mg/day

☐ To calculate Expected Cp based on New Suggested Dose

CI:  L/day  
Note: mcg/ml = mg/L  
Suggested dose:  mg/day  
Expected Cp:  mg/L

**Figure 5.0-4 Calculator for Carbamazepine for Drug Carbamazepine**

**CALCULATOR FOR DIGOXIN**

Body Weight:   kg  
Total Dose:  mg/day  
Serum Creatinine:  umol/L  
F:   
Note: Tablet = 0.7; Elvir = 0.8; Soft Gelatin capsule / Injection = 1

Creatinine Clearance:  ml/min

Select Patient's Condition

Without CHF and not renally impaired ☒ Without CHF and renally impaired ☐ With CHF and not renally impaired ☐ With CHF and renally impaired ☐

Cp measured:  ng/ml  
Note: mcg/ml = mg/L = 10<sup>-3</sup> mcg/ml = 10<sup>-3</sup> mg/L

☐ To calculate CI based on Patient's Factor(s)

Factor CI:   
Note: None = 1 Quinidine = 0.5 Amiodarone = 0.50 Verapamil = 0.75 Clinically hypothyroid = 0.7 Clinically hyperthyroid = 1.3  
Clearance CP measured:  L/day  
Clearance (Population):  L/day

☐ To calculate Vd based on Patient's Factor(s)

Factor Vd:   
Note: None = 1 Quinidine = 0.7 Clinically hypothyroid = 0.7 Clinically hyperthyroid = 1.3  
Vd (pop):  L

☐ To calculate Ke and t1/2 based on CI

CI:  L/day  
Ke:  hr<sup>-1</sup>  
t1/2:  hour

☐ To calculate Cpss level based on current dose and CI

CI:  L/day  
Cpss:  mg/L  
=  ng/ml

☐ To calculate Expected Cp based on CI and New Suggested Dose(NSD)

CI:  L/day  
New Suggested dose:  mg/day  
Expected Cp:  mg/L =  ng/ml

☐ To calculate Loading Dose(LD) based on Vd and Cp desired

Cp Desired:  ng/ml  
LD:  mg/day

☐ To calculate New Maintenance Dose(NMD) based on CI and Cp desired

CI:  L/day  
Cp Desired:  ng/ml  
New Dose:  mg/day

**Figure 5.0-5 Calculator for Digoxin for Drug Digoxin**

**CALCULATOR FOR PHENOBARBITONE**

Body Weight:   kg

Interval(T):  hour

S:

Note: Oral / IV = 1

Dose:  mg

Total Dose:  mg/day

---

Cp measured:  mcg/ml

Note: mcg/ml = mg/L

Clearance CP measured:  L/day

=  L/hr

☐ To calculate Vd, Ke and t1/2 based on CI

CI:  L/hr

Constant Vd:  L/kg

Note: Adult = 0.6 L/kg, Neonate = 0.8 - 1 L/kg

Vd:  L

Ke:  hr<sup>-1</sup> t1/2:  hour

☐ To calculate New Maintenance Dose (NMD) based on CI, Cp measured and Cp desired

Cp desired:  mcg/ml

Note: mcg/ml = mg/L

CI:  L/day

New Dose:  mg/day

Constant CI:  ml/kg/hr

Note: Adult = 4 ml/kg/hr Children (≤ 12years 11month) = 6 ml/kg/hr Neonate = 4 ml/kg/hr

Clearance (Population):  L/day

=  L/hr

☐ To calculate C<sub>ps</sub> level based on current dose and CI

CI:  L/hr

C<sub>ps</sub>:  mcg/ml

Note: mcg/ml = mg/L

☐ To calculate Expected Cp based on CI and New Suggested Dose(NSD)

CI:  L/day

NSD:  mg/day

Expected Cp:  mcg/ml

Note: mcg/ml = mg/L

**Figure 5.0-6 Calculator for Phenobarbitone for Drug Phenobarbitone**

**CALCULATOR FOR PHENYTOIN**

Body Weight:   kg

Total Dose:  mg/day

Albumin:  g/L

Note: g/dL = 10<sup>-1</sup> g/L

Km:  mg/L

Note: Adult = 4, Children = 7

S:

Note: Capsule/Injection=0.50, Suspension/Tablet=1

Select Patients Condition

☒ Without Hypoalbuminemia ☐ Hypoalbuminemia ☐ Hypoalbuminemia with ESRF

Cp measured:  mcg/ml

Note: mcg/ml = mg/L

V<sub>max</sub> (Measured):  mg/day

☐ To calculate V<sub>max</sub> (population)

Constant V<sub>max</sub>:  mg/kg/day

Note: Adult = 5-15 mg/kg/day, 6mo-5yrs = 10-15 mg/kg/day, 7yrs-15yrs = 5-10 mg/kg/day

V<sub>max</sub> (pop):  mg/day

☐ To calculate C<sub>ps</sub> level based on V<sub>max</sub>

V<sub>max</sub>:  mg/day

C<sub>ps</sub>:  mcg/ml

Note: mcg/ml = mg/L

☐ To calculate Incremental Loading Dose (ILD) based on Cp desired and Cp measured

Cp Desired:  mcg/ml

Note: mcg/ml = mg/L

ILD:  mg

☐ To calculate therapy without period (T) when level is toxic

V<sub>max</sub>:  mg/day

Note: mcg/ml = mg/L

Cp Desired:  mcg/ml

T:  day

☐ To calculate Vd, Ke, t1/2 and CI based on V<sub>max</sub>

Constant Vd:  L/kg

Note: Adult: 0.55-0.74 L/kg, Children: 0.7-1.0 L/kg

V<sub>max</sub>:  mg/day

Vd:  L

CI:  L/hr

Ke:  hr<sup>-1</sup> t1/2:  hour

☐ To calculate Loading Dose (LD) based on Cp desired

Cp Desired:  mcg/ml

Note: mcg/ml = mg/L

LD:  mg

☐ To calculate New Maintenance Dose (NMD) based on V<sub>max</sub> and Cp desired

V<sub>max</sub>:  mg/day

Note: mcg/ml = mg/L

Cp Desired:  mcg/ml

New Dose:  mg/day

**Figure 5.0-7 Calculator for Phenytoin for Drug Phenytoin**

## 6.0 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

## 7.0 Links to Clinical Modules

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