

11/18 Follow-Up

Updates

- ✓ Removed UTI, Skin, Enterococcal, Staph Epi from **Exclusions** on **LandingPage**
- ✓ Added 3rd dose option to **Labs/Levels** tab in **NewConsult**
- ✓ Tried to fix bug when changing **Load Dose** or **Maintenance Dose**
- ✓ Fixed a bug when trying to go straight to Post Levels and using a 1st dose strategy

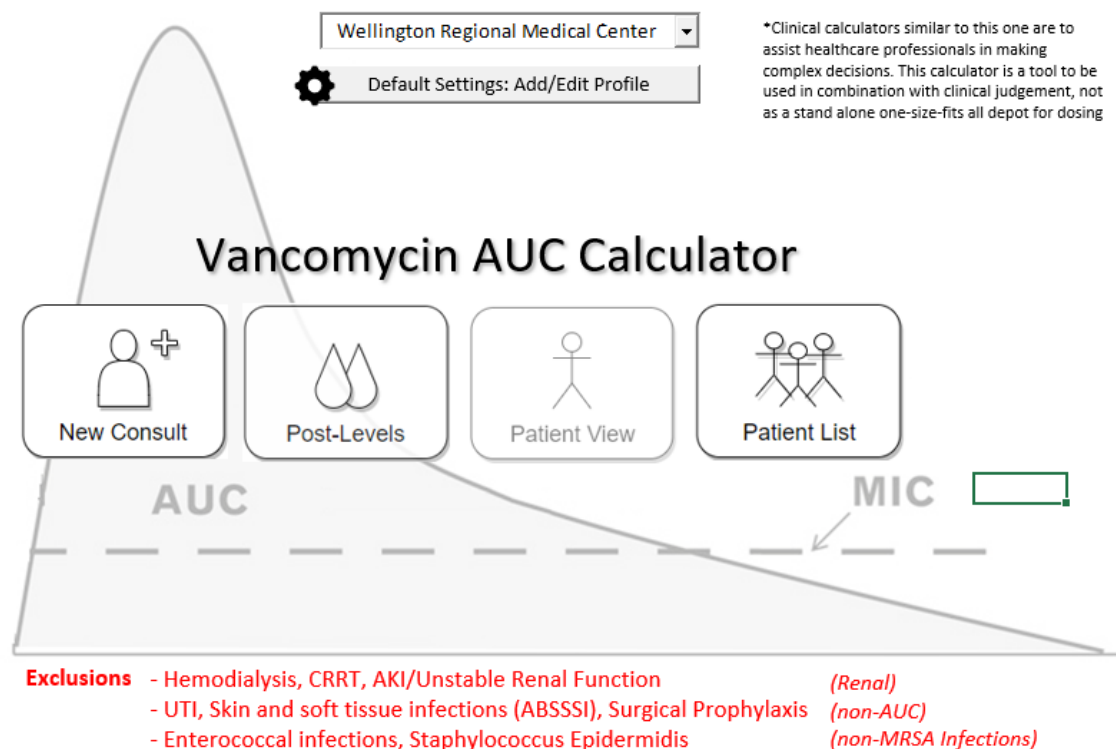
- current calculator version **1.14.1**

Details and Screenshots of updates

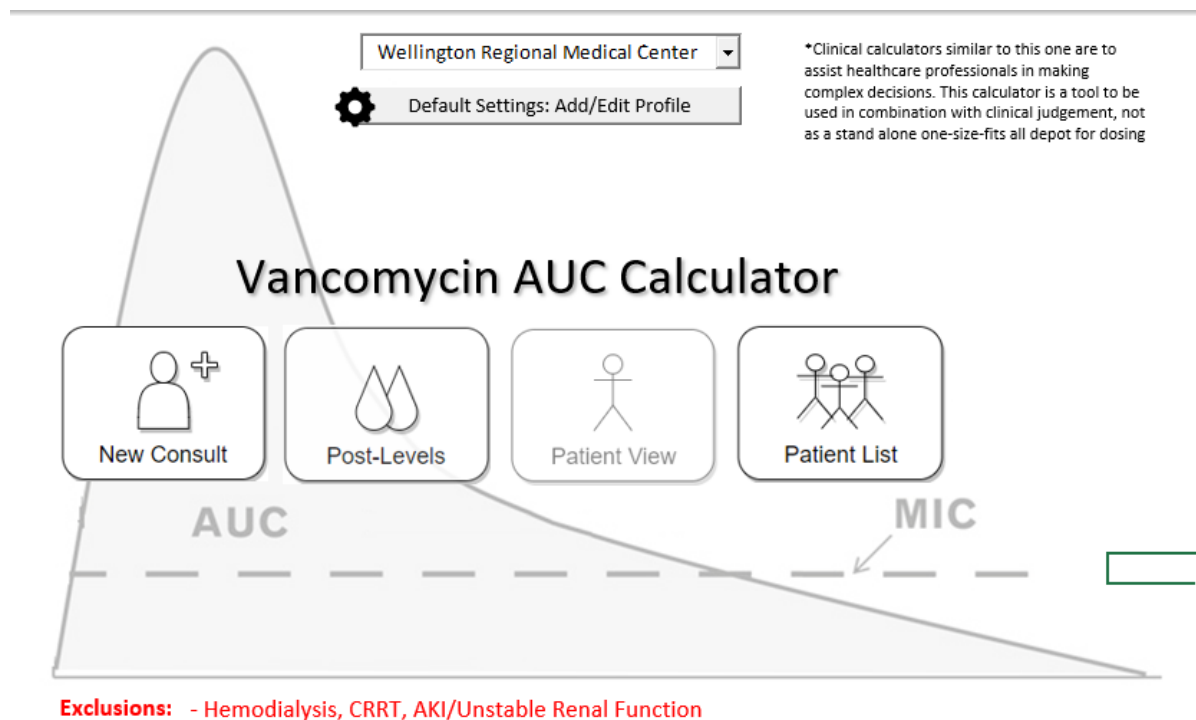
1.) ✓ Removed UTI, Skin, Enterococcal, Staph Epi from **Exclusions** on **LandingPage**

could remove the UTI, Skin, Enterococcal, Staph epi from the EXCLUSION main page since we are expanding access to all of those within the calculator?

Before:

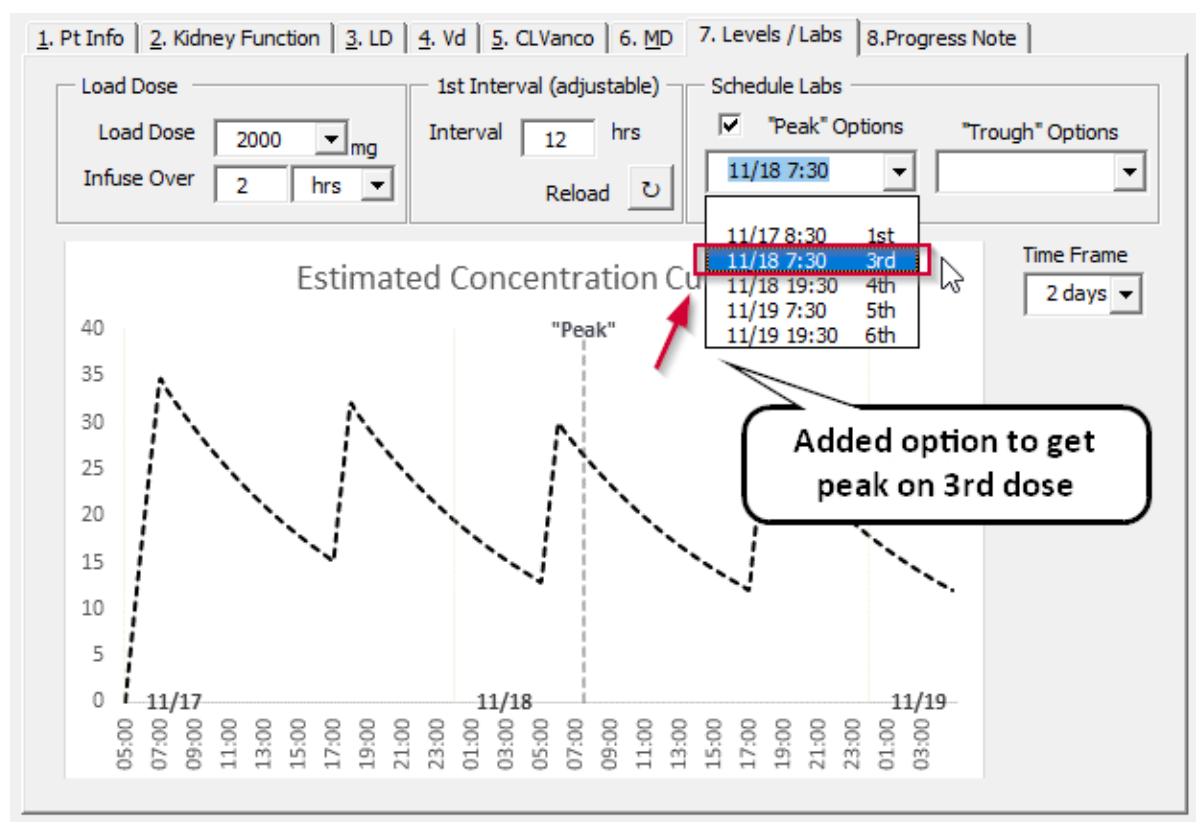


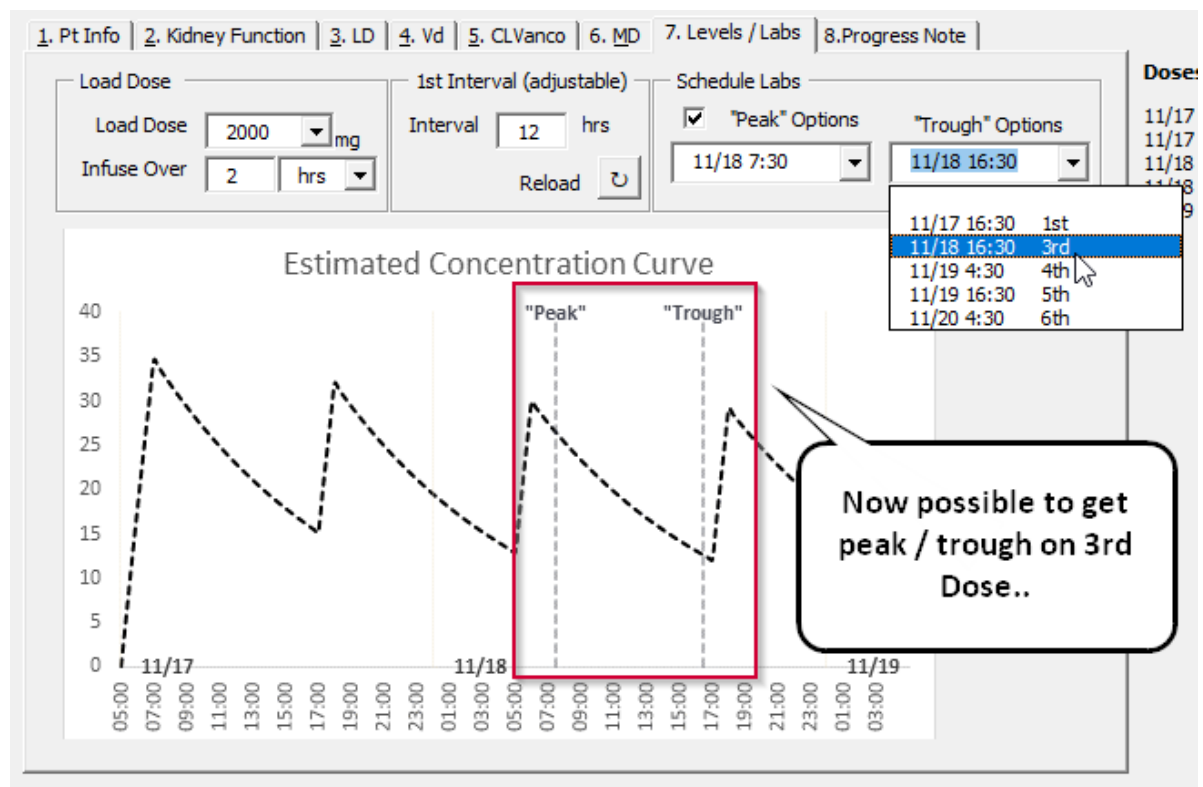
After:



2.) ☒ Added 3rd dose option to Labs/Levels tab in NewConsult

Could you add the 3rd dose option below that Robin is talking about?





3.) ☒ Tried to fix bug when changing Load Dose or Maintenance Dose

1. Pt Info | 2. Kidney Function | 3. LD | 4. Vd | 5. CLVanco | 6. MD | 7. Levels / Labs | 8. Progress Note

Data Input: Patient's weight: 80 kg
Dosing: 20 mg/kg
Max Dose: 2,000 mg
No Load Calculate Load

Revise / Manually Enter Load Dose: Load Dose: 1500 mg
Infuse Over: 1.5 hrs
Schedule at: Mon, 11/16 at 10:00 am
11/16 10:00

Table 1. ASHP / IDSA Recommendations

Serious MRSA Infections: 20-35 mg/kg ABW*
Critically ill: 25-35 mg/kg#
Obese (BMI > 30): 20-25 mg/kg+
HD: 20-25 mg/kg+
CRRT: 20-25 mg/kg+
Pediatrics (Obese): 20 mg/kg
Pediatrics: no loading dose

* considers in treatment of serious MRSA infections

Both changing the loading dose scheduled date/time at both places was not working as expected. Updated code and seems to be working now!

Accept "1500 mg" as load dose

LOAD DOSE: 1500 mg over 1.5 hrs on Mon, 11/16 at 16:00

Cancel << Back Next >> Save

"Test, 2" last saved Mon, 11/16 03:11 pm

Microsoft Visual Basic

Run-time error '438':
Object doesn't support this property or method

Continue End Debug Help

1 edit

1. Pt Info | 2. Kidney Function | 3. LD

Edit Dose

Load Dose

Dose: 2000 mg Infusion rate: 1000 mg/hr
 Infusion time: 2 hrs

☐ No Load

Scheduled: Tue, 11/17 at 12:00 pm
 Administered: MM/DD HH:MM

11/17 1000

Save

2 Tue, 11/17 at 12:00 pm

3 LOAD DOSE: 2000 mg over 2 hrs on Tue, 11/17 at 12:00

edit

Save

After updating either Date or Time in "Edit Dose" userform, #2 and #3 should update accordingly.

1. Pt Info | 2. Kidney Function | 3. LD | 4. Vd | 5. CLVanco | 6. MD | 7. Levels / Labs | 8. Progress Note

Data Input

Patient's weight: 81.9 kg
 Dosing: 25 mg/kg
 Max Dose: 2,000 mg

No Load Calculate Load

Revise / Manually Enter Load Dose

Load Dose: 2000 mg
 Infuse Over: 2 hrs

1 Tue, 11/17 at 10:00 am
 Schedule at: 11/17 10:00

Table 1. ASHP / IDSA Recommendations

Serious MRSA Infections: 20-35 mg/kg ABW*
 Critically ill: 25-35 mg/kg#
 Obese (BMI > 30): 20-25 mg/kg+
 HD: 20-25 mg/kg+
 CRRT: 20-25 mg/kg+
 Pediatrics (Obese): 20 mg/kg
 Pediatrics: no loading dose

Rounded Dose: 2000 mg

Accept "2000 mg" as load dose

2 LOAD DOSE: 2000 mg over 2 hrs on Tue, 11/17 at 10:00

edit

Cancel << Back Next >> Save

After clicking save, both sections are now updated from "12:00" to "10:00" scheduled time!

4.) ☒ Fixed a bug when trying to go straight to Post Levels and using a 1st dose strategy

Hi Kurt!

I was just talking with Robin on some issues that have come up in training staff and in converting some of our patients from existing trough based dosing.

One thing I have been able to do on existing patients who are already at steady state and being converted to AUC (which is likely to only occur in the beginning of the conversion to AUC dosing), is to just enter the New patient data in the "post levels" portion and go from there. This appears to work for the SS patients as you enter a frequency (tau) when entering the SS levels and dose info.

When I was talking to Robin, we were thinking about a scenario where an overnight RPh starts a patient and then a dosing RPh comes in the next day and wants to get a 1st dose level – I was thinking she would be able to use the same strategy and bypass the "consult" since the load and initial levels were already done. However, it looks like since we're getting the error below, it's requiring that initial frequency from the consult to calculate the TDD.

Here was the bug that was screenshotted:

Maintenance Dose Table

Infusion Rate: * Target: MIC:

	500mg	750mg	1000mg	1250mg	1500mg	1750mg	2000mg
	0.5 hrs	0.8 hrs	1 hr	1.2 hrs	1.5 hrs	1.8 hrs	2 hrs
Q6H							
Q8H							
Q12H							
Q18H	410 9						
Q24H		460 8					
Q36H			410 4	520 5			
Q48H					470 2	560 3	

* AUC calculations are estimated and rounded to nearest 10's.

PK Parameters

Population-based

Vd: 0 L
Ke: 0
t1/2: 0 hrs
CLVanco: 0 L/hr

PK Parameters

Patient-Specific

Microsoft Excel

Oops, the calculator tried to divide by 0.
Problem Variable: tau
Source: cls_MD
Function: TDD()

Options

☒ Estimated trough
☐ Total Daily Dose (TDD)
☐ dosing in mg/kg

☐ Show all values

[View AUC Calculation Steps](#)

Exit

Recreated tried to fix the error when going straight to post levels, doing a 1st dose strategy.

When starting, here's an example Post Dose levels I inputted:

1.) *Ke / t1/2 tab*

- **Level 1: 34.8**, 11/17 09:30

- **Level 2: *10.12***, 11/17 17:30

The screenshot shows a software interface with a tabbed menu at the top: 1. Pt Info, 2. Ke, t1/2 (selected), 3. Vd, 4. Dose Table, 5. Progress Note, and Equations Used.

The main area is titled "Level(s)" and contains two input sections:

- 1st post-dose level:** A text box with "34.8" followed by "mg/L". To its right is a calendar icon and the text "Level 1 Date/Time" with the value "11/17 09:30".
- 2nd post-dose level:** A text box with "10.12" followed by "mg/L". To its right is a calendar icon and the text "Level 2 Date/Time" with the value "11/17 17:30".

Below these inputs is a button labeled "Calculate Ke, t1/2".

To the right of the input section is a box titled "Ke, t1/2: Patient-Specific" containing the results: "Ke: 0.1544" and "t1/2: 4.5 hrs".

Below that is a "Half-life check" box with a table:

t2 - t1	half-life
8	4.5

A green checkmark icon is at the bottom right of the table. Below the table, a green message states: "Levels were drawn greater (>) than one (1) half-life apart."

At the bottom of the interface, under the heading "Equation Used:", is the formula:

$$K_e = \frac{\ln(C_1/C_2)}{\Delta t}$$

Below the formula, it says "where:" followed by definitions:

- K_e = elimination-rate constant
- C_1 = measured peak concentration ~1 hour after infusion
- C_2 = measured trough concentration ~30 min before next dose
- Δt = difference in time between lab samples in hrs

2.) *Vd tab*

- **First Dose:** 2,000mg load dose over 2 hrs

- **Date/Time:** 11/17 06:00

Levels Strategy: 1st Dose: Peak and Trough

1st Dose

Dose: 2000 mg Infusion time: 2 hrs Dose Date/Time: 11/17 06:00

- ☒ Load Dose
☐ Maintenance Dose

Calculate Vd

Vd: Patient-Specific

Vd: 39.2 L

Equation Used:

$$V_d = \frac{(1 - e^{-K_e \cdot T_{inf}}) \text{Dose}}{K_e \cdot C_{peak,1} \cdot T_{inf}} \cdot e^{-K_e \cdot t'}$$

where:

$C_{peak,1}$ = measured peak concentration ~1 hour after infusion

Dose = 1st dose

T_{inf} = infusion time in hrs

t' = time between end of infusion and collection of blood sample

K_e = elimination constant

V_d = Volume of distribution

Transfer Data to DMC Calculator

Maintenance Dose Table

Infusion Rate: GlobalRPh

* Target: AUC/MIC range 400-600

MIC: 0.1 - 1.0

	500mg	750mg	1000mg	1250mg	1500mg	1750mg	2000mg	
	0.5 hrs	1 hr	1 hr	1 hr	1.5 hrs	1.5 hrs	2 hrs	infusion times
Q6H		530 16						mg h / L mg/dL
Q8H		400 10	530 13					mg h / L mg/dL
Q12H				440 7	550 10			mg h / L mg/dL
Q18H						430 4	510 5	mg h / L mg/dL
Q24H								mg h / L mg/dL
Q36H								mg h / L mg/dL
Q48H								mg h / L mg/dL

* AUC calculations are estimated and rounded to nearest 10's.

PK Parameters

Population-based

Vd: 0 L

K_e : 0

$t_{1/2}$: 0 hrs

CLVanco: 0 L/hr



PK Parameters

Patient-Specific

Vd: 39.2 L

K_e : 0.1544

$t_{1/2}$: 4.5 hrs

CLVanco: 6.1 L/hr

^ Using for table

Legend

AUC/MIC
trough
TDD
dosing

Options

☒ Estimated trough

☐ Total Daily Dose (TDD)

☐ dosing in mg/kg

☐ Show all values

*View AUC Calculation Steps

Exit

* Target AUC/MIC range 400-600 MIC 0.1 - 1.0 Start Date/Time 11/17 06:00

Progress Note

Update
Progress Note

- Vd: 39.2 L
- CLVanco: 6.1 L/hr

AUC Calculation

New Regimen: 1250 mg over 1 hr
-- TDD: 2.5 g
-- AUC: 440

*TDD = total daily dose

*AUC = calculated using patient-specific PK parameters, assuming MIC of 1

Plan

Based on Patient-Specific PK parameters, adjusted regimen to:

- Maintenance Dose: 1250 mg q12h
--Estimated AUC24/MIC: 440*
--Estimated trough: 7 mg/dL

Thank you for the consult.

*Rybak MJ, Le J, Lodise TP, et al. Therapeutic monitoring of vancomycin for serious methicillin-resistant Staphylococcus aureus infections: A revised consensus guideline and review by the American Society of Health-System Pharmacists, the Infectious Diseases Society of America, the Pediatric Infectious Diseases Society, and the Society of Infectious Diseases Pharmacists. American journal of health-system pharmacy: AJHP : official journal of the American Society of Health-System Pharmacists. https://www.ncbi.nlm.nih.gov/pubmed/32191793. Published May 19, 2020.]

Cancel

<< Back

Next >>

Save

NEW MAINTENANCE DOSE

1250 mg over 1 hr every 12 hrs