

6/23 Follow-up

Tasks

- ☒ Change trough to AUC in monitoring form
- ☒ Denote maintenace dose in `Post Levels` maintenance dose table
- ☐ Add "Transfer to DMC Calculator" for `New Consult` userform =/

Update summary

1. Updated Monitoring Form
 2. Updated MDTable for `New Consult`
 - Added patient context bar to the top of `maintenance table` userform
 - Separated PK paramaters into two frames
 3. Updated MDTable for `Post Levels`
 - Added percent change, triangles with colors to denote significant changes > 5% from population-based PK parameters
 - Highlighted dosing regimen in maintenance dose table if patient already has a selected regimen
 4. Updated `Post Levels` Vd user experience
 5. Updated Post Levels height and height units events
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1. Updated Monitoring Form

- Monitoring form now copies sheet from workbook and makes a new workbook (I'm trying to keep the actual excel file from containing any patient information)
 - Patient information will be stored in `db.accdb` database
 - Monitoring form with patient information will pop up with new workbook

Vancomycin Monitoring Form							
Identifiers		Characteristics		Diagnosis			
MRN: 12345 Name: Smith, Jane Location: 2W 214		Age: 41 F Ht: 157 cm Wt: 88.9 kg		Provider: Dr. John Jones Indication: Osteomyelitis Target:			
Anthropomorphics		Kidney Function		Loading Dose			
TBW: 88.9 TBW/IBW: 1.79 IBW: 49.7 BMI: 36.1 AdjBW: 65.4		SCr: 0.5 Bun: 0 CrCl: 152.8 mL/min Drugs:		Dose: 0 mg over 0 hrs Scheduled: Sat, 12/30 00:00 mg/kg 0 mg/kg			
Day of Therapy /Date	Day 1 6/23	Day 2 6/24	Day 3 6/25	Day 4 6/26	Day 5 6/27	Day 6 6/28	Day 7 6/29
Maintenance dose	1000 mg q8h						
Administration times per MAR							
Total Daily Dose (TDD)	3 g						
AUC							
Population Estimate	480						
Patient-Specific							
Levels							
Peak Level Ordered for: (date/time)	6/24 17:30						
Peak Level/Time Drawn							
Trough Level Ordered for: (date/time)	6/24 22:30						
Trough Level/Time Drawn							
Labs							
SCr (daily for adults)	0.5						
BUN (daily for adults)							
CrCl estimate (ml/min)	152.8						
WBC							
Procalcitonin							
Other nephrotoxic drugs: NSAIDs, ACE inhibitor, diuretics, pip/tazo, vasopressors, etc.							
Culture & Sensitivity results / MRSA PCR results for respiratory and sepsis indications:	Nasal MRSA PCR () Positive () Negative Date: _____						
	Blood culture organism(s): _____ () final Date: _____						
	Resp culture; organism(s): _____ () final Date: _____						
	Other: _____; organism(s): _____ () final Date: _____						
Evaluate for de-escalation		<input type="checkbox"/> MRSA PCR follow up if applicable	<input type="checkbox"/> Action on culture information if applicable				
Comments:							

- It still looks like it may need work, so any features, feedback, or design suggestions would be welcomed!

2. Overview MDTTable for New Consult.

Maintenance Dose Table

MRN: 12345
Name: Smith, Jane
Location: 2W 214

Age: 41F
Ht: 157 cm
Wt: 88.9 kg
TBW/IBW: 1.79
BMI: 36.1

SCR: 0.5 mg/dL
CrCl: 152.8 mL/min
Using AdjBW: True

Provider: Dr. John Jones
Indication: Osteomyelitis
DOT: Day 1

Maintenance Dose Table

Infusion RateGlobalRPh

* TargetAUC/MIC range 400-600

MIC0.1 - 1.0

	750mg	1000mg	1250mg	1500mg	1750mg	2000mg	
	1 hr	1 hr	1 hr	1.5 hrs	1.5 hrs	2 hrs	<input checked="" type="checkbox"/> infusion times
Q6H	480 16						mg h / L mg/dL
Q8H		480 14	600 17				mg h / L mg/dL
Q12H				490 11	570 13		mg h / L mg/dL
Q18H						450 7	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: 57.8 L
Ke: 0.1144
t1/2: 6.1 hrs
CLVanco: 6.5 L/hr
^ Using for table

PK Parameters

Patient-Specific

Vd:
Ke:
t1/2:
CLVanco:

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

* Click inside the blue box to view steps!

2a. Added patient context to top of userform

Maintenance Dose Table

MRN: 56789
Name: Test, Patient1
Location: Med/Surg

Age: 59 M
Ht: 180.3 cm
Wt: 63.3 kg
TBW/IBW: 0.84
BMI: 19.5

SCr: 0.8 mg/dL
CrCl: 89 mL/min

Indication: Sepsis (Unknown Source)
DOT: Day 1 (~13 min)

2b. Separated PK parameters into two frames

- highlighted the pk parameters, population-based or patient-specific that are being used for the table
- added label saying *^ using for table*

MIC 0.1 - 1.0

PK Parameters

Population-based

Vd: 41.1 L
Ke: 0.0948
t1/2: 7.3 hrs
CLVanco: 3.9 L/hr
^ Using for table

PK Parameters

Patient-Specific

Vd:
Ke:
t1/2:
CLVanco:

3. Overview MDTable for Post Levels.

Maintenance Dose Table

MRN: 123456
Name: Dean, Jimmy
Location: ICU 314

Age: 72 M
Ht: 180.3 cm
Wt: 102.3 kg
TBW/IBW: 1.36
BMI: 31.5

SCr: 1.3 mg/dL
CrCl: 62.6 mL/min
Using AdjBW: True
NephroToxic Drugs: Zosyn

Indication: Pneumonia
DOT: Day 1 (1 hrs in)

Maintenance Dose Table

Infusion Rate

GlobalRPh

* Target

AUC/MIC range 400-600

MIC

0.1 - 1.0

750mg

1000mg

1250mg

1500mg

1750mg

2000mg

1 hr

1 hr

1 hr

1.5 hrs

1.5 hrs

2 hrs

infusion times

☒

Q6H			490 15 5 g				mg h / L mg/dL
Q8H				460 12	540 14 5.2 g		mg h / L mg/dL
Q12H	150 3					420 8	mg h / L mg/dL
Q18H							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.

** Total daily doses > 4.5 g have been correlated with a higher incidence of AKI

PK Parameters

Population-based

Vd: 66.5 L

Ke: 0.0572

t1/2: 12.1 hrs

CLVanco: 3.8 L/hr

PK Parameters

Patient-Specific

Vd: 74.4 L ▲ 10.7%

Ke: 0.1459 ▲ 60.8%

t1/2: 4.7 hrs ▼ -155%

CLVanco: 10.9 L/hr ▲ 65%

▲ 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

* Click inside the blue box to view steps!

3a. Added percent change, triangles with colors to denote significant changes > 5% from population-based PK parameters

PK Parameters	
Patient-Specific	
Vd: 74.4 L	▲ 10.7%
Ke: 0.1459	▲ 60.8%
t1/2: 4.7 hrs	▼ -155%
CLVanco: 10.9 L/hr	▲ 65%
^ Using for table	

3b. If there is a maintenance dose or dosing regimen already selected, that option will be highlighted in dosing table

		750mg	1000mg	1250mg	1500mg	1750mg
		1 hr	1 hr	1 hr	1.5 hrs	1.5 hrs
Q6H	Q6H	480 16				
	Q8H		480 14	600 17		
	Q12H				490 11	570 13

4. Updated Post Levels user experience

Feedback:
Is there a way to make the user pick 1st Dose versus Steady State or default to Steady State?
I think I forget to go through and pick through that option and almost made a major med error today.

- Pharmacist is now greeted to an empty tab where you first have select which strategy you are using for dosing.

1. Pt Info | 2. Ke, t1/2 | 3. Vd | 4. Dose Table | 5. Progress Note | Equations Used

Levels Strategy:

1st Dose: Peak and Trough

SS: Peak and Trough

Vd: Patient-Specific

Vd:

Transfer Data to DMC Calculator

- After selecting, the relevant equation and information will be presented to the pharmacist.

1. Pt Info | 2. Ke, t1/2 | 3. Vd | 4. Dose Table | 5. Progress Note | Equations Used

Levels Strategy:

1st Dose: Peak and Trough

1st Dose

Dose

mg

Infusion time

hrs

Dose Date/Time

click here

First Dose

Maintenance Dose

Calculate Vd

Equation Used:

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


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

- Added an option radio buttons to designate if the first dose was a Load Dose or Maintenance Dose

Levels Strategy: 1st Dose: Peak and Trough ▼

1st Dose

Dose mg Infusion time hrs Dose Date/Time  [*click here*](#)

☒ Load Dose ☐ Maintenance Dose

- Updates information about the patients doses accordingly

```

If PostLevels.obLoadDose.value = True Then
    pt.ld.dose.strength = dose
    pt.ld.dose.infusionTime = Tinf
Elseif PostLevels.obMD.value = True Then
    pt.md.dose.strength = dose
    pt.md.dose.infusionTime = Tinf
End If

```


5. Updated Post Levels height and height units events

Feedback:
I think that the height isn't being saved?
When I try to reload the patient, there's a blank space on the height.

3. Patient Characteristics

Age

66

years

Height

cm

Weight

85.3

kg

Gender

Male

- When looking back at the code, I had a comment that I needed to rewrite the logic for that section of the calculator! =/

' Need to rewrite tbHeight_afterUpdate() and cmbHeight_afterUpdate() here for PostLevels

- Rewrote the two events for Post Levels section.