Customer Insights

DoseMe

A Step-by-Step Guide to Developing a Best Practice Protocol for Bayesian-Guided Vancomycin Dosing.

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The Five Phases of Protocol Development

Preparing for each of these phases will ensure a smooth implementation of your Bayesian dosing protocol.

1. Review the 2020 vancomycin dosing **guidelines** and clinical data
2. Develop a decision pathway for evaluating vancomycin orders
3. Determine loading dose and maintenance dose recommendations
4. Define how vancomycin levels will be drawn
5. Prepare an Electronic Health Record (EHR) downtime procedure, if site is fully integrated

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This guide was developed based on the experiences of Dr. Shivani Patel from Memorial Hermann Health System, a Cerner integrated DoseMeRx customer.

To learn more, watch our Do's and Don'ts of Bayesian Dosing webinar.

Step 1

Review Guidelines and Clinical Data

Leverage the ASHP/IDSA/PIDS/SIDP vancomycin **guidelines** to provide rationale for implementing Bayesian dosing to calculate AUC. Then engage your medical staff to determine what your exclusion criteria will be – this can be flexible to fit the needs of your staff and goals of your institution.

Memorial Hermann Health System's goal was to maximize the number of patients that could be dosed to AUC24 with DoseMeRx. To meet this goal, the patient exclusion criteria for those that would be dosed via trough and/or outside of DoseMeRx was kept intentionally short. The exclusion list included:

- Unstable renal function (defined as a serum creatinine of >6 mg/dL)
- Select central nervous system (CNS) infections
- Continuous Renal Replacement Therapy (CRRT)
- Peritoneal dialysis (PD)

Once you have defined your exclusion criteria, you're ready to begin building your protocol. Remember, this will be an interdisciplinary collaboration over several months. It will help to get support from other departments and keep them engaged throughout this process:

- Physicians (typically ID)
- ID and clinical pharmacists
- Nursing
- Laboratory/Phlebotomy
- Information Technology

Step 2

Develop a Decision Pathway for Evaluating Vancomycin Orders

Tip: If you are a fully integrated site, make sure your protocol development and work efforts are done in parallel with your IT department to keep on the same timeline.

There are three different ways to structure your protocol so you will need to decide which approach will work best for your institution.

- **Renal function based:** the pathway decision is based on different renal function thresholds
- **Disease state based:** the pathway decision is based on the infection that is being treated
- **DoseMeRx model based:** utilize the one compartment model as the "workhorse" adult vancomycin model and then use the other models for specific patient populations

Step 3

Determine Loading Dose and Maintenance Dose Recommendations

Memorial Hermann Health System decided to dose with a goal AUC24 of 400 to 600 mg.h/L with only a few exceptions. Their default target in DoseMeRx was set at 450 mg.h/L which consistently produced vancomycin dosing recommendations that kept the patients in their targeted range. In addition, they utilized loading doses in select patients.

Figure 1: AUC24 and Trough Targets by Disease Type

AUC 400-600 mg.h/L
(default target set at 450 mg.h/L)

All indications unless part of the exception groups below

Trough based dosing
(10-20 mcg/mL)

- Continuous Renal Replacement Therapy (CRRT)
- Peritonal Dialysis (PD)

Level based dosing
(<20 mcg/mL)

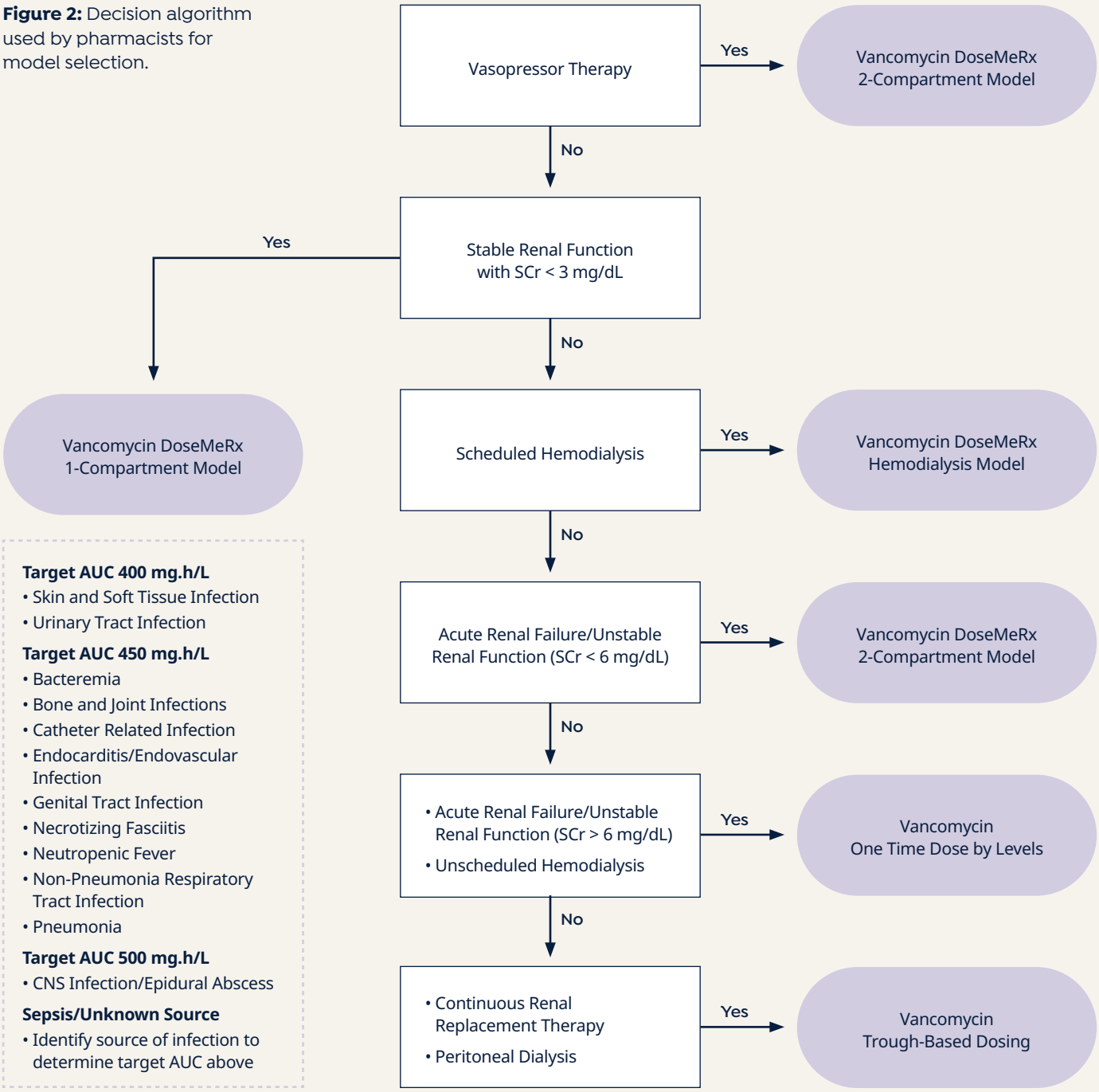
Unstable renal function with a SCr of >6 mg/dL

Decision Tree

Building a decision tree can help pharmacists navigate DoseMeRx in terms of what level to choose, what the AUC goal is, and how to monitor.

This decision tree from Memorial Hermann Health System provides guidance for which model in DoseMeRx to select as they move their way through the algorithm.

Figure 2: Decision algorithm used by pharmacists for model selection.



Step 4

Define How Vancomycin Levels will be Drawn

One of the most common questions that comes up when transitioning to Bayesian dosing is related to how and when to get vancomycin levels. With Bayesian dosing, there is no longer an attachment to drawing a level at a specific time. Memorial Hermann Health System took a unique approach by obtaining levels at the same time that morning labs were drawn. However, there were some exceptions, and in some patients a second level is drawn.

Your protocol should be clear about:

- when the first level should be obtained,
- when to get two levels, and
- how frequently levels should be redrawn throughout the course of therapy based on indication and renal function.

Step 5

Prepare an EHR Downtime Procedure

If you are a fully **integrated** site, like Memorial Hermann Health System, it's important to put a plan in place when the EHR is down. Train staff to handle this situation, both when it comes to initial dosing recommendations and maintenance doses. When the EHR is back up and the patient's course information has been updated, the patient data will repopulate from the EHR and then dosing calculations can resume.

Moving Beyond Implementation

Your protocol should be considered a "living document." Just like any process, it should be reevaluated and refined as improvement opportunities are identified. The staff and day-to-day users of DoseMeRx are great resources for soliciting feedback.

Here are a few examples of times your protocol should be adjusted or updated:

- A post-training educational deficit has been identified
- Clarity is needed for directions to staff
- To incorporate feedback from staff

Ready to see how seamlessly DoseMeRx integrates into your workday?

Get in touch for a live demo.

Get started

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