DoseMeRx

Accurate Prediction of Vancomycin Levels to Optimize Care

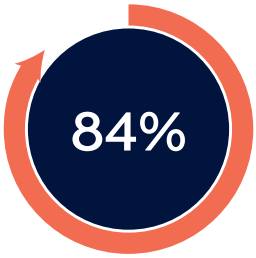
DoseMeRx Leverages Pharmacometrics for Dose Optimization of Vancomycin

DoseMeRx is unique precision dosing software that incorporates clinically validated pharmacokinetic drug models, patient characteristics, drug concentrations and genotype (if applicable and available) to guide dose optimization.

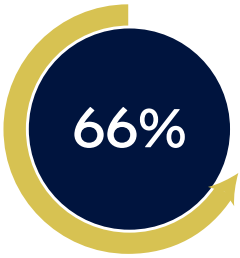
Designed exclusively to support physicians in making a rigorous, best-practice decision based on maximizing the use of readily available patient data via pathology and other sources.

DoseMeRx Supports

- Individualize doses to any therapeutic target
- Custom physician-driven dosing
- Hospital guidelines
- Drug label dosing



Indvidualized dose recommendations in target trough range



Reduction in supra-therapeutic troughs

Make use of every vancomycin concentration, including those outside of the recommended time pre-dose

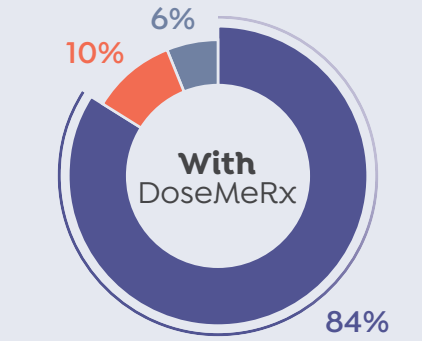
How Accurate is DoseMeRx at Predicting a Concentration?

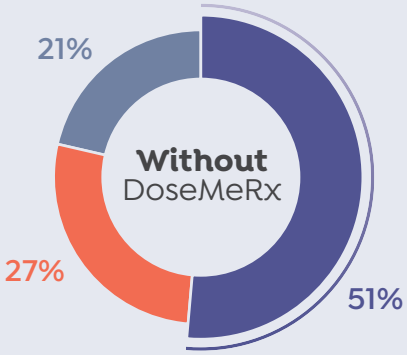
DoseMeRx can accurately predict the concentration of vancomycin levels with low error relative to the target trough range (10-20mcg/mL):

Mean Error: 1.2mcg/mL

Mean Absolute Error: 2.9mcg/mL

DoseMeRx maximizes the use of every vancomycin concentration, even those outside of the recommended time pre-dose.





Therapeutic

High (AKI Risk)

Low (ineffective)

DoseMeRx can place 84% of doses into the target range, and is significantly less likely to result in overexposure, reducing patients at risk of acute kidney injury from 27% to 10% of doses.

Without DoseMeRx, only 1 in 2 doses achieved troughs considered therapeutic by the AME guidelines[1]. Why is this proportion so low?

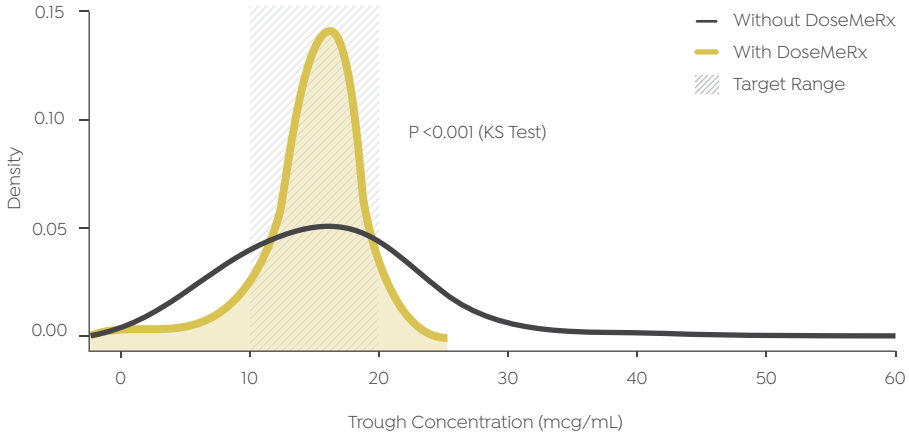
1. Only 14% of vancomycin levels were taken within AME guidelines of within 30 minutes prior to a dose. The mean time that a level was taken prior to the next dose was 320 minutes (5.3 hours). Without model-informed dosing, such as DoseMeRx, these levels are largely useless.
2. Vancomycin has high inter-individual variability. Studies show that the vancomycin dose-effect relationship is sufficiently variable that a population of patients receiving 1000mg bd can have trough levels ranging from 5.3–72.6mcg/mL[2].

Reduce the risk of vancomycin nephrotoxicity with DoseMeRx

Nephrotoxicity is a major concern for vancomycin dosing, and a significant adverse event [3].
The literature supports precision dosing using decision support software like DoseMeRx as an effective approach to optimizing vancomycin dosing [4].

DoseMeRx consistently and more accurately can calculate a dose to place a patient in the therapeutic range. The accuracy of DoseMeRx allows physicians to significantly decrease the proportion of vancomycin doses with supra-therapeutic troughs from 3/10 to 1/10.

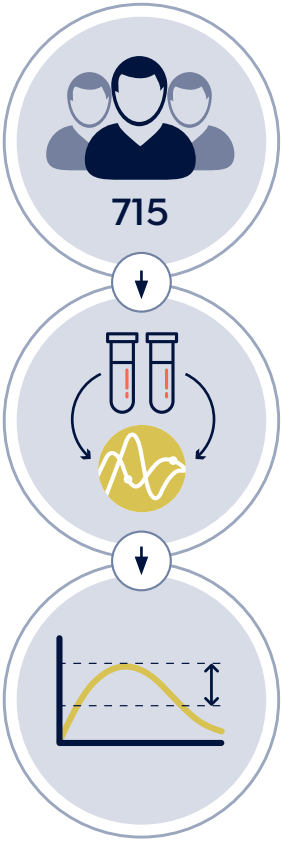
The proportion of patients at risk for vancomycin-induced nephrotoxicity risk can be significantly reduced with precision dosing.



Vancomycin Dosing and Monitoring

Vancomycin has a narrow therapeutic range, with clinical practice targeting a therapeutic trough of 15-20mcg/mL. Toxicity of vancomycin is exposure-dependent, with high trough concentrations shown to significantly increase risk of nephrotoxicity[5,6]. Accurately reaching therapeutic targets is critical to effective treatment and minimization of antimicrobial resistance[7].

DoseMeRx allows calculation of both trough or AUC24.



The Evaluation

Data

- 715 patients receiving vancomycin
- Dosed prior to DoseMeRx introduction at two large teaching hospitals
- Physicians targeted troughs of 10-20mcg/mL

Method

- We selected 57 courses with multiple assay levels
- Data was input into DoseMeRx, excluding the final assay concentration
- We measured how accurately DoseMeRx predicted each withheld assay result

Outcomes Measured

- DoseMeRx's accuracy and bias of predicting the next assay level
- Proportional accuracy to determine how often DoseMeRx calculates a dose precisely enough to place patients in the therapeutic range

References

1. Rybak MJ *et al*. Pharmacotherapy. 2009 Nov;29(11):1275-9.
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3. Filippone EJ, *et al*. Clin Pharmacol Ther. 2017 May 5. doi: 10.1002/cpt.726
4. Pea F *et al*. Int J Antimicrob Agents. 2002 Nov;20(5):326-32.
5. Bosso JA *et al*. Antimicrob Agents Chemother. 2011 Dec;55(12):5475-9. doi: 10.1128/AAC.00168-11.
6. Suzuki Y *et al*. Chemotherapy. 2012; 58(4):308-12.
7. Ye, Zhi-Kang *et al*. " PLoS ONE9.6 (2014): e99044.

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