DoseMe Rx™
A TRHC Solution

Vancomycin AUC Conversion Toolkit

Welcome

Note from our Director of Clinical Pharmacy Dr Kristi Kuper

Thank you for your interest in our Vancomycin Area Under the Curve (AUC) Conversion Toolkit. The documents in this kit are a concise resource for hospitals and health systems that are working on transitioning from trough-based to AUC-based dosing of vancomycin as recommended in the 2020 vancomycin therapeutic monitoring guidelines. These consensus guidelines specifically focus on vancomycin monitoring in adult, pediatric, and neonatal patients with suspected or definitive serious MRSA infections. The most substantial change in the 2020 guidelines is a recommendation to cease dosing vancomycin based on trough levels. The experts recommend to dose based on AUC with a preference to monitor therapy using Bayesian software programs that have richly sampled vancomycin data.

This toolkit includes resources to help you prepare you for the transition to AUC dosing, including:

- Helpful refresher of pharmacokinetic terms
- Checklist of activities you can do to prepare for the changes
- How to prepare physicians for the change to AUC
- Bayesian dosing and Vancomycin AUC Continuing Education Programs
- Research evaluating AUC-based dosing strategies
- Next steps to evaluate Bayesian dosing and DoseMeRx

We hope that you will find this toolkit helpful and informative and we welcome your feedback.

Kind regards,

Kristi Kuper, PharmD, BCPS
Director of Clinical Pharmacy

Pharmacokinetics and AUC Refresher

There are a number of pharmacokinetics terms that are commonly used in the 2020 vancomycin guidelines when describing the dosing and monitoring of vancomycin. Understanding these terms is important as you transition to dosing via AUC.

Commonly Used Pharmacokinetics Terms

AUC: Area Under the Curve is defined as the "total exposure to the drug" within a certain window of time. It is a reflection of both the dose of the drug and the rate in which the drug is cleared from the body. Historically, AUC was calculated using multiple drug levels but now it can be estimated using fewer levels.

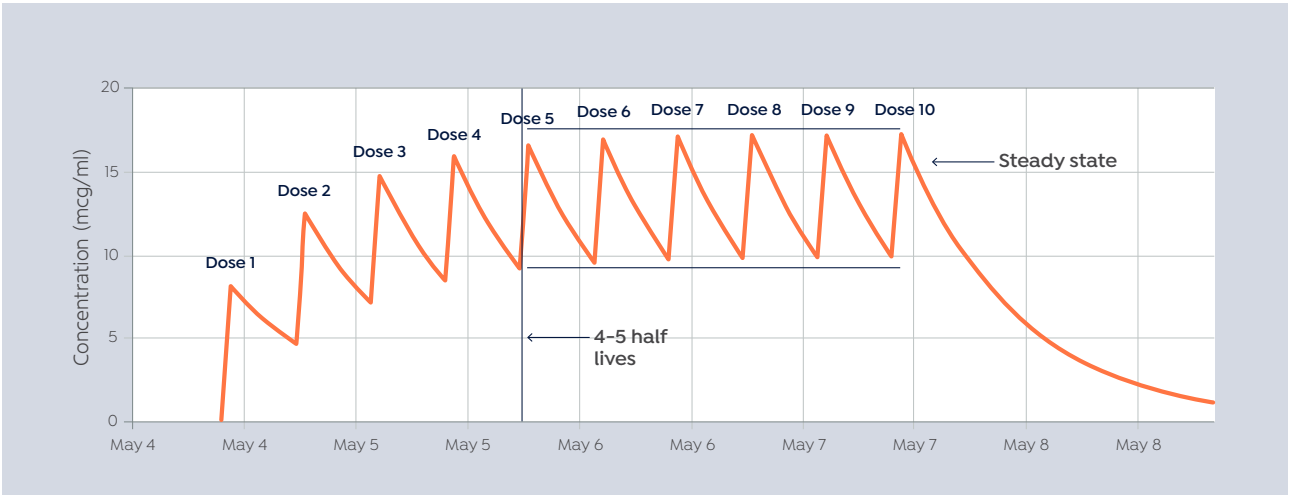
Cmax: The peak concentration of drug.

Cmin: The trough concentration of drug.

Half-life ($t_{1/2}$): The time needed for half of the amount of drug present in the body to be removed. The half-life will be different for each drug depending on how fast it's eliminated from the body.

Steady-state: When the rate of drug intake matches drug elimination, i.e. a consistent amount of the target drug in the bloodstream remains even though dosing continues. The amount of time it takes to reach steady state varies by drug and patient but occurs between 4 and 5 half lives. Visually this is represented when two or more consecutive peak and subsequent trough concentrations are equivalent.

Visual representation of steady state



MIC: The minimum inhibitory concentration (MIC) is the minimum amount of the antimicrobial drug needed to inhibit the visible growth of bacteria. There are different values for MIC depending on what type of antibacterial drug you use and how resistant a bacteria is to a specific antimicrobial drug. For example, a MIC=1 mg/L indicates that the visible growth of bacteria is inhibited by 1 mg/L of the drug. There are a number of ways that MIC can be measured, but the gold standard is using a technique called broth microdilution (BMD). Within the vancomycin guidelines (Rybak, et al. 2020) they mention that the target pharmacodynamic parameter to achieve is an AUC/MIC ratio (based on BMD) of 400-600. However, they go on to say that if the AUC is less than 1 mg/L per BMD that the dose does not need to be reduced.

Calculating AUC

All of these concepts permit the calculating of AUC by using non-Bayesian methods, usually by using a set of formulas. Unfortunately, as one might expect, this is a rather lengthy process. A publication by Meng et al.(2019) developed and implemented an abbreviated calculation version that still had 15 separate steps with multiple drug levels!

Problematically, however, most manual-calculation methods assume that the patient is already at steady-state. This has the consequence whereby if calculating dose adjustments manually, levels cannot be taken to permit this to be done until day 3 of therapy at the earliest. Even more problematically, the guidelines recommend that "targeted AUC exposures be achieved early within the course of therapy, preferably within the first 24 to 48 hours".

One of the major benefits of Bayesian dosing indicated by the revised guidelines is Bayesian dosing "doesn't require steady-state vancomycin concentrations to allow early assessment of AUC target attainment".

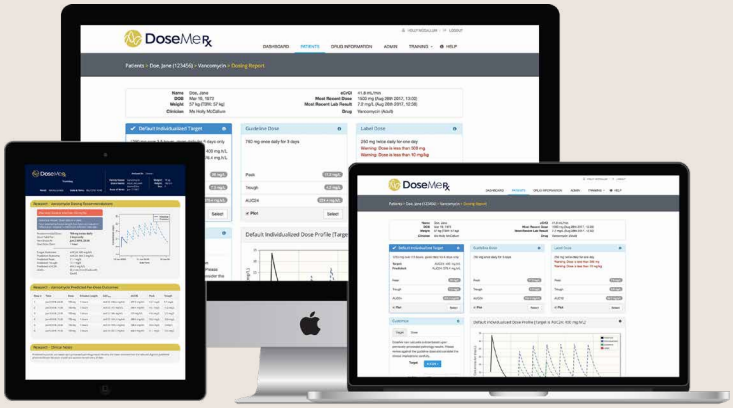
In other words, if you use Bayesian dosing, you can take a single level after the first dose is administered, and dose adjust immediately. While this method requires software, it is obviously much faster to calculate than the 15-step 'abbreviated' method, and quicker to adjust for the patient.

Bayesian dosing is also noted to be effective from a single level, although multiple levels (one shortly after the end of infusion, and one at the end of the dosing interval) is a preferred option if possible.

The Impact of AUC on Vancomycin Dosing

Moving away from a single lab-reported number in a range (trough) to using a calculated number (AUC) instead may appear somewhat challenging at first glance. That said, the guidelines do provide for flexibility – for example, noting that while two levels on a single dose are optimal, using Bayesian software permits the use of a single trough level.

Additionally, when utilizing Bayesian dosing for AUC calculations, it offers flexibility with the timing of the lab draw since it can utilize levels that are obtained at any time during the dosing interval.



From Trough to AUC: Change Management Tips

PREPARING FOR THE CONVERSION TO AUC FOR VANCOMYCIN DOSING

Build a Foundation

It is important to begin discussing the guideline changes with your teams, including nursing, pharmacy, and the medical staff.

Basic definitions

Many of our partners found it helpful to review the basics of pharmacokinetics and pharmacodynamics with their teams, such as half-life, volume of distribution, and AUC. DoseMeRx provides a vancomycin pharmacokinetics refresher that is a helpful resource for pharmacy staff and clinicians.

Clinical rationale

The new guidelines recommend a Bayesian-derived AUC/MIC_{BMD}* ratio of 400 to 600 (assuming a vancomycin MIC_{BMD} of 1 mg/L). Prescribers may not be fully aware of the literature highlighting the therapeutic benefit of shifting away from dosing based on a trough level and towards calculation of an AUC to help guide dosing decisions.

*BMD = Broth microdilution

Education

DoseMeRx customers have recognized that interdisciplinary education on AUC-based dosing is needed and is a critical component of a successful transition.

Assistant Professor Luigi Brunetti, PharmD, MPH Clinical Pharmacist at Robert Wood Johnson University Hospital Somerset, discusses strategies for incorporating AUC-based dosing approaches into clinical workflow in this CE accredited course: Optimizing Vancomycin Therapy: Transitioning from trough based to AUC/MIC based dosing.

Dr. Brunetti advocates for engaging the appropriate partners in the conversation including not only pharmacy, but also physicians (including infectious diseases), laboratory staff, and nursing. Soliciting input from each group will help to identify the topics that need additional education and will help pharmacy to customize training and education for each of these audiences. In addition, it is important to have conversations with these groups to understand the changes to your pharmacy workflow in order to adjust to dosing and monitoring based on AUC.

Learn about the Benefits

AKI: Reductions in Occurrence

Multiple clinical studies have shown that AUC-based vancomycin therapy can reduce the occurrence of vancomycin associated acute kidney injury (AKI). Vancomycin-associated AKI is commonly defined as

1) an increase in serum creatinine of ≥0.5 mg/dL
2) a 50% increase from baseline in consecutive daily readings or
3) a decrease in calculated creatinine clearance of 50% from baseline on two consecutive days in the absence of an alternative explanation
4) Newer studies suggest that a more sensitive threshold of an increase in serum creatinine ≥0.3 mg/dL over a 48-hour period may be an indicator of AKI

There are multiple publications that provide an excellent review of vancomycin associated AKI.

Vancomycin area under the curve and acute kidney injury: A meta-analysis.
(Aljefri DM, et all, 2019) | Download Paper

Making the change to area under the curve-based vancomycin dosing
(Heil et al., 2018) | Download Paper

Vancomycin and the risk of AKI: a systematic review and meta-analysis
(Ray et al., 2016) | Download Paper

Systematic review and meta-analysis of vancomycin-induced nephrotoxicity associated with dosing schedules that maintain troughs between 15 and 20 milligrams per liter
(van Hal et al, 2012) | Download Paper

Calculating AUC using Bayesian Dosing

The monitoring of AUC through the use of Bayesian software programs, such as DoseMeRx, is the preferred approach as stated in the guidelines. While two levels, a post infusion peak and a trough, are the generally preferred method, with Bayesian dosing using DoseMeRx, a single level can be appropriately used.

> Bayesian dosing tools like DoseMeRx can make mathematical accommodations if the level is not drawn at an exact time, preventing a wasted blood draw.

Read Independent Research

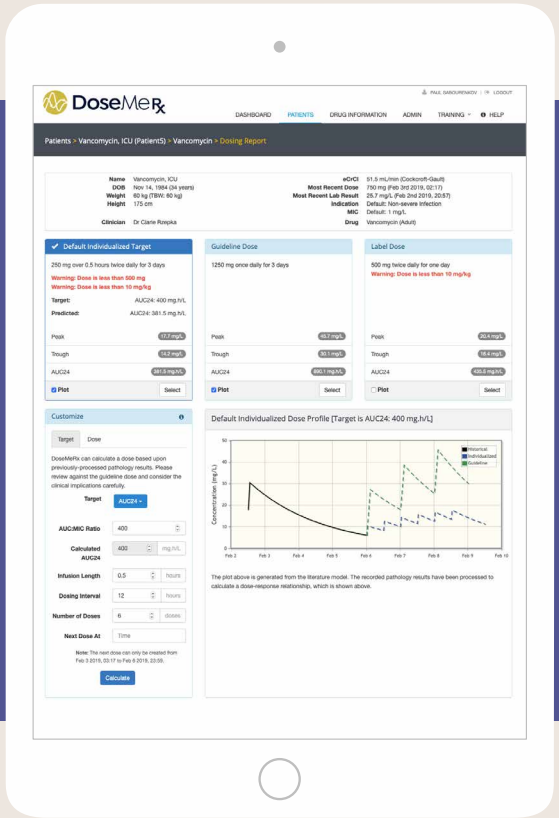
AUC-based Monitoring of Vancomycin Literature Review

We have compiled a list of independent research related to AUC-based monitoring of vancomycin shown to enhance patient outcomes, reduce adverse drug events, and lower healthcare costs. This research also highlights some of the challenges associated with the implementation of an AUC-based approach and evidence supporting the relationship between AUC:MIC and clinical outcomes – read now.

Review Bayesian Dosing and DoseMeRx

It's important to review Bayesian dosing and understand how a Bayesian dosing software, such as DoseMeRx, can support your vancomycin monitoring program. There is a preference given in the guidelines towards monitoring AUC using Bayesian software. By using a program that is supported by richly sampled vancomycin data (referred to as Bayesian prior), the pharmacist or other individual responsible for monitoring vancomycin can utilize the Bayesian dosing software to calculate doses designed to achieve the targeted AUC range.

Depending on your hospital's patient population, another advantage of considering DoseMeRx is that it can accommodate multiple vancomycin models. This can assist you across adult (including obese and hemodialysis sub populations), pediatric and neonatal patients.



DoseMeRx is a unique, easy-to-use decision support software used by hundreds of clinicians around the world to support the dosing for thousands of patients. The platform leverages clinically validated pharmacokinetic drug models, patient characteristics and drug concentrations to guide dose optimization of vancomycin.

TRY FREE TODAY

How to Communicate the Changes to Your Prescribers

Take the Opportunity to Steward Vancomycin with Release of 2020 Vancomycin Dosing Guidelines

Kavita Trivedi, MD
Infectious Disease/ Emergency Department Physician

The 2020 vancomycin monitoring guidelines were released in March during the COVID-19 pandemic response and therefore under the radar of many physicians.

They recommend a shift away from vancomycin trough levels to Area Under the Curve (AUC), in relation to the minimum inhibitory concentration (MIC) in adults, pediatrics, and neonates.

This dosing approach is recommended for patients with serious infections due to Methicillin-resistant *Staphylococcus aureus* (MRSA).

There are a number of studies demonstrating the clinical impact associated with inappropriate vancomycin dosing in many patients with MRSA infections utilizing trough levels alone, particularly ICU patients with renal insufficiency and obesity.

When vancomycin levels are suboptimal, treatment failures can occur due to isolates that have intermediate susceptibility to vancomycin or isolates that are resistant to vancomycin.

When dosing is too high, patients risk vancomycin-induced nephrotoxicity, which ranges from 5 to 43% with a relative risk of 2.45 (95% Confidence Interval: 1.69-3.55) based on clinical studies.

Vancomycin dosing based on AUC:MIC is now recommended as the optimal dosing and monitoring method for the treatment of serious MRSA infections.

Dosing by AUC:MIC (as determined by broth microdilution) with a goal of 400-600 mg-hr/L should keep vancomycin concentration at therapeutic levels needed to achieve a clinical response, but below levels that might increase the risk of nephrotoxicity.

Methods of Calculating AUC:MIC

Bayesian Dosing Approach

Methods of calculating AUC include an equation-based methodology or a Bayesian approach, which utilizes population data to calculate a patient's pharmacokinetics.

The Bayesian method, available through commercially available software programs, allows for precision dosing by creating an individualized, dynamic model of dosing vancomycin for every patient that can be updated over time as more patient specific information (e.g. vancomycin levels, serum creatinine) is received.

According to the 2020 vancomycin dosing guidelines, the preferred approach to monitoring AUC is through these programs. This recommendation was given an A-III GRADE. Bayesian software programs (such as DoseMeRx) can utilize drug levels obtained earlier in therapy (e.g. 24-48 hours) because it is not required that a patient's vancomycin levels be stable, otherwise known as "steady state". One recent study documented the transition from conventional trough-based vancomycin dosing to dosing AUC based dosing (targeting an AUC of at least 400) at four adult hospitals. A Bayesian analysis of a subgroup of AUC and trough guided patients in this study indicated that vancomycin exposure was significantly higher in the trough guided dosing group. The authors concluded that AUC-guided dosing resulted in lower daily vancomycin doses and lower trough and AUC values. From a safety standpoint, AUC-guided dosing of vancomycin was associated with reduced nephrotoxicity, which appeared to be a result of reduced vancomycin exposure.

First Order Kinetic Calculations

Another method that can be utilized to calculate AUC is by using first order kinetic calculations. Practically speaking, to make patient-specific adjustments to the vancomycin dose, two vancomycin levels within the same dosing interval are needed.

Unlike Bayesian dosing, this methodology requires patients to be at steady state when the levels are drawn.

The first level is obtained 1-2 hours after the end of the infusion (the peak) and the second level should be obtained prior to the next dose. With this information, a calculation can be made to adjust subsequent doses of vancomycin. Monitoring is recommended for patients with serious MRSA infections, but also all patients at high risk for nephrotoxicity (e.g., critically ill patients receiving concurrent nephrotoxic therapy), patients with unstable renal function, and those receiving prolonged courses of therapy (> 3 to 5 days).

Frequency of monitoring is based on clinical judgment but general recommendations are outlined:

- Early monitoring when doses exceed 2-3 grams per day in pediatric patients
- Close monitoring in pediatric patients with poor or augmented renal function
- Daily monitoring in hemodynamically unstable adults
- Weekly monitoring in hemodynamically stable adults

How can you prepare physicians for the conversion to AUC for vancomycin?

Educate Your Physicians

- It is important that all clinicians in your institution understand **why and when this switch in dosing strategy** will take place and to ensure that your pharmacists have been trained on this pharmacokinetic dosing strategy.
- Clinicians must expect **vancomycin levels to be drawn more frequently in the first 24-48 hours** of hospitalization to adjust the second dose of treatment.
- It will be especially important for **Emergency Department clinicians, intensivists and hospitalists** to understand this transition is happening, so they can facilitate vancomycin draws in the first 24-48 hours of hospitalization.
- Clinicians should not be concerned when vancomycin levels **are lower than what is typically observed with trough based dosing.** It is not uncommon to see patients with a lower trough level who are still in the therapeutic AUC:MIC range.

- If not already in place at your institution, **all clinicians should be in touch with pharmacists** regarding all patients receiving vancomycin. Consider having discussions with your pharmacy team if the volume status or clearance of a patient changes significantly, perhaps requiring a recalculation of their vancomycin dosing.

Involve the Entire Care Team

- **Nurses:** Not only do physicians and other prescribers need to be educated about this new dosing strategy, but nurses must also be made aware so they understand they are no longer drawing trough levels but rather providing therapeutic drug monitoring that is less reliant on timing and frequency.
- **Laboratory Staff:** It is important to make laboratory staff and phlebotomists aware of these changes as it will change the practice of obtaining levels. For first order kinetics, there will be a need for more labs since two levels will have to be drawn for each AUC calculation. It is important that anyone drawing the vancomycin level document the exact time the level is being drawn as well as the dose of vancomycin at the time, in order for the AUC:MIC to be calculated accurately. For hospitals utilizing Bayesian dosing, the practice will be different since in many cases they can obtain a single level and the level can be obtained at any point in the dosing interval so the accuracy of timing is less relevant. Preparing hospital staff in advance of these changes will prevent confusion when an inpatient requires vancomycin.

Review Patient Discharge Policies

- In order to ensure discharge and transitions of care are smooth for patients on vancomycin, it is important to find out how accepting facilities in your region such as subacute skilled nursing facilities, long-term acute care hospitals, and infusion centers are managing the guideline change.
- If there is advanced communication and preparation, it will save time at discharge and help facilitate discharge to one of these facilities or centers.
- The patient may be stable at discharge such that additional AUC:MIC do not have to be calculated.
- It is important to enable the discharge team to spend adequate time outlining discharge dosing for vancomycin in order to ensure successful discharge. If patients are transitioning to home health, it is probably not reasonable to expect that home health agencies will be able to dose to AUC; the hospital pharmacy may give instructions to home health on monitoring weekly levels and dosing accordingly.

Hospital antibiotic stewardship programs should take this opportunity to focus on strategies to improve the use of this important Gram-positive agent and not reflexively place all critically ill patients on vancomycin for methicillin-resistant *Staphylococcus aureus* treatment.

Antibiotic Stewardship Committees should dedicate time to educating themselves on this change and how it applies to their own institution, but then also develop a dedicated education strategy targeting hospital clinicians.

Antibiotic stewards can assist the change management process by helping to educate prescribers on the new dosing protocols.

Stewards can also emphasize the opportunity to improve the hospital's utilization of vancomycin.

Summary

These are some activities physicians and pharmacists can engage in now to prepare for the vancomycin dosing change:

- **Educate clinicians** focusing on Emergency Department physicians, intensivists, hospitalists and house staff on this change in practice
- **Discuss with pharmacy** what their strategy will be once the new dosing guidelines are released and whether clinical pharmacists have been adequately in serviced on how to calculate the AUC:MIC
- **Educate hospital staff** including nurses and laboratory personnel emphasizing the draws in the first 24-48 hours of hospitalization and when there is a significant change in renal function or volumic status of the patient
- **Discuss with regional accepting facilities and infusion centers** how they are handling the change in guideline and agree on an approach to facilitate smooth transitions
- **Ensure the hospital antibiotic stewardship program** highlights vancomycin stewardship during this transition

It is critical to work with your teams closely to determine who can assist or carry out any of the tasks above, based on their comfort level with interacting with clinicians and regional facilities.

> In antibiotic stewardship, we are rarely given an opportunity to improve use of an antibiotic across all US hospitals at once. Let's take this opportunity to steward one of our most valuable therapeutic options – when hospitals will be re-evaluating their dosing strategy for vancomycin.

"It's a straight-forward way to implement AUC-based decision making in vancomycin dosing whilst at the same time minimizing the number of levels needed. It's a win, win... DoseMeRx solves my need."

William L. Musick PharmD, BCIDP
Clinical Specialist in Infectious Diseases,
Houston Methodist Hospital

Continuing Education Accredited Courses

Many of our customers have recognized that interdisciplinary education about AUC-based dosing is needed and is a critical component of a successful transition.

To assist with education, we offer two free continuing education courses, one on AUC-based dosing approach and one on the science behind Bayesian Dosing. Individuals from your teams can enroll in these online, self-paced courses via the Tabula Rasa HealthCare University. These programs are approved for Pharmacy CE, Category 1 CME, and Certified Nursing Education Credit.

Optimizing Vancomycin Therapy: Transitioning from Trough Based To AUC/MIC Based Dosing

In this course, Luigi Brunetti, PharmD, MPH, Associate Professor of Pharmacy at Ernest Mario School of Pharmacy and Clinical Pharmacist at Robert Wood Johnson University Hospital Somerset discusses strategies for incorporating AUC-based dosing approaches into clinical workflow.

There are three key learning objectives in this course:

1. Summarize key dosing changes in the vancomycin clinical practice guidelines and the evidence supporting AUC-based dosing
2. Apply AUC-based vancomycin dosing strategies using Bayesian dosing software using patient case examples
3. Discuss strategies for incorporating AUC-based dosing approaches into clinical workflow

REGISTER NOW

Bayesian Dosing: Hitting the Bullseye - Antimicrobials Targets and Practical Dosing Methods

Robert McLeay, PhD provides a review of the interaction between population pharmacokinetic models and individual patient data in Bayesian dosing as a basis to reach the three learning objectives for this course:

1. Discuss pharmacokinetic dosing targets based on drug mechanism of action
2. Compare different dosing methods to reach a target concentration or area under the curve (AUC)
3. Summarize when Bayesian dosing is an appropriate method to individualize patient pharmacotherapy

REGISTER NOW

We encourage your teams to enroll in these two CE Accredited courses to further your knowledge of AUC-based dosing and the science behind Bayesian dosing.

The Ultimate List of Vancomycin AUC Resources & Literature

This AUC-focused vancomycin literature review summarizes research evaluating AUC-based dosing strategies shown to enhance patient outcomes, reduce adverse drug events and lower healthcare costs. It is intended to serve as a reference point for pharmacists looking for trustworthy and credible literature on this topic.

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
Published 19 March 2020 Download Paper

Clinical Effectiveness of AUC Vancomycin Dosing

Research articles regarding enhanced outcomes associated with AUC-based monitoring of vancomycin.

DoseMeRx increases the proportion of vancomycin patients achieving target AUC24 and the percentage in target therapeutic range
Authors: Luqman Vali, David R Jenkins, Rakesh Vaja, Hussain Mulla | Download Paper

Impact of source of infection and vancomycin AUC0-24/MICBMD targets on treatment failure in patients with methicillin-resistant Staphylococcus aureus bacteraemia.
Authors: Ghosh N, Chavada R, Maley M, van Hal SJ.
Download Paper

Are vancomycin trough concentrations adequate for optimal dosing?
Authors: Neely MN, Youn G, Jones B, et al.
Download Paper

DoseMeRx (Bayesian estimation) accurately identifies patients at risk of AKI from just one assay
Authors: Chavada R, Ghosh N, Sandaradura I, Maley M, Van Hal SJ. | Download Paper

Are vancomycin trough concentrations of 15 to 20 mg/L associated with increased attainment of an AUC/MIC ≥ 400 in patients with presumed MRSA infection?
Authors: Hale CM, Seabury RW, Steele JM, Darko W, Miller CD. | Download Paper

Association between the AUC0-24/MIC ratio of vancomycin and its clinical effectiveness: a systematic review and meta-analysis.
Authors: Men P, Li HB, Zhai SD, Zhao RS.
Download Paper

Pharmacodynamics of vancomycin and other antimicrobials in patients with Staphylococcus aureus lower respiratory tract infections.
Authors: Moise-Broder PA, Forrest A, Birmingham MC, Schentag JJ. | Download Paper

Examining the relationship between vancomycin area under the concentration time curve and serum trough levels in adults with presumed or documented Staphylococcal infections.
Authors: Clark L, Skrupky LP, Servais R, Brummitt CF, Dilworth TJ. | Download Paper

Vancomycin AUC/MIC ratio and 30-day mortality in patients with Staphylococcus aureus bacteremia.
Authors: Holmes NE, Turnidge JD, Munckhof WJ, et al.
Download Paper

Vancomycin trough concentration as a predictor of clinical outcomes in patients with Staphylococcus aureus bacteremia: a meta-analysis of observational studies.
Authors: Prybylski JP. | Download Paper

Making the change to area under the curve-based vancomycin dosing.
Authors: Heil EL, Claeys KC, et al | Download Paper

Vancomycin AUC/MIC ratio and 30-day mortality in patients with Staphylococcus aureus bacteremia.
Authors: Holmes NE, Turnidge JD, Munckhof WJ, et al.
Download Paper

Vancomycin trough concentration as a predictor of clinical outcomes in patients with Staphylococcus aureus bacteremia: a meta-analysis of observational studies.
Authors: Prybylski JP. | Download Paper

Increased proportion of pediatric patients in therapeutic range/AUC

Improved vancomycin dosing in children using area under the curve exposure.
Authors: Le J, Bradley JS, Murray W, et al.
Download Paper

Early Bayesian dose adjustment of vancomycin continuous infusion in children: a randomized controlled trial.
Authors: Berthaud R, Benaboud S, Hirt D, et al.
Download Paper

Optimal vancomycin dosing in obesity

Pharmacodynamics of vancomycin and other antimicrobials in patients with Staphylococcus aureus lower respiratory tract infections.
Authors: Moise-Broder PA, Forrest A, Birmingham MC, Schentag JJ. | Download Paper

Population pharmacokinetics of vancomycin in obesity: finding the optimal dose for (morbidly) obese individuals.
Authors: Smit C, Wasmann RE, Goulooze SC, et al.
Download Paper

An AUC target simulation for vancomycin in patients with class III obesity.
Authors: Langton MM, Ahern JW, MacDougall J.
Download Paper

AUC-based monitoring results in fewer dose adjustments

The impact of AUC-based monitoring on pharmacist-directed vancomycin dose adjustments in complicated methicillin-resistant Staphylococcus aureus infection.
Authors: Stoessel AM, Hale CM, Seabury RW, Miller CD, Steele JM. | Download Paper

Examining the relationship between vancomycin area under the concentration time curve and serum trough levels in adults with presumed or documented Staphylococcal infections.
Authors: Clark L, Skrupky LP, Servais R, Brummitt CF, Dilworth TJ. | Download Paper

Pharmacokinetic modelling for vancomycin

Vancomycin pharmacokinetics throughout life: results from a pooled population analysis and evaluation of current dosing recommendations.
Authors: Colin PJ, Allegaert K, Thomson AH, Touw DJ, Dolton M, de Hoog M, et al. | Download Paper

Towards precision dosing of vancomycin: a systematic evaluation of pharmacometric models for Bayesian forecasting.
Authors: Broeker A, Nardecchia M, Klinker KP, Derendorf H, Day RO, Marriott DJ, et al.
Download Paper

Vancomycin: we can't get there from here.
Authors: Patel N, Pai MP, Rodvold KA, Lomaestro B, Drusano GL, Lodise TP. | Download Paper

Comparison of the area-under-the-curve for vancomycin estimated using compartmental and non-compartmental methods in adult patients with normal renal function.
Authors: Shingde RV, Graham GG, Reuter SE, Carland JE, Day RO, Stocker SL. | Download Paper

The dosing and monitoring of vancomycin: what is the best way forward?
Authors: Drennan PG, Begg EJ, Gardiner SJ, Kirkpatrick CMJ, Chambers ST. | Download Paper

Reduce adverse events

Research articles regarding the decreased risk of nephrotoxicity associated with AUC-based monitoring of vancomycin.

Vancomycin area under the curve and acute kidney injury: a meta-analysis.
Authors: Aljefri DM, Avedissian SN, Rhodes NJ, Postelnick MJ, Nguyen K, Scheetz MH.
Download Paper

The impact of vancomycin area under the concentration-time curve-guided dosing on vancomycin-associated nephrotoxicity: a quasi-experiment.
Authors: Finch NA, Zasowski EJ, Murray KP, et al.
Download Paper

Navigating the Muddy Waters of Vancomycin Nephrotoxicity.
Authors: Barreto, EF, et al. | Download Paper

Reduce costs

AUC-based vancomycin dosing has the potential for substantial cost savings due to associations with decreased nephrotoxicity, reduced per-patient blood sampling and decreased length of therapy.

AUC24 Vancomycin Bayesian-based dosing: Increasing Therapeutic Target Attainment with Decreased Monitoring Costs
Authors: Sabourenkov P, McLeay R.
Download Paper

Prospective trial on the use of trough concentration versus area under the curve to determine therapeutic vancomycin dosing.
Authors: Neely MN, Kato L, Youn G, et al.
Download Paper

Implementation

Research articles regarding the implementation of AUC-based monitoring of vancomycin.

Vancomycin area under the curve dosing and monitoring at an academic medical center: transition strategies and lessons learned.
Authors: Gregory ER, Burgess DR, Cotner SE, et al.
Download Paper

Readiness to implement vancomycin monitoring based on area under the concentration-time curve: a cross-sectional survey of a national health consortium.
Authors: Kufel WD, Seabury RW, Mogle BT, Beccari MV, Probst LA, Steele JM. | Download Paper

Conversion from vancomycin trough concentration-guided dosing to area under the curve-guided dosing using two sample measurements in adults: implementation at an academic medical center.
Authors: Meng L, Wong T, Huang S, et al.
Download Paper

DoseMeRx™
A TRHC Solution

The Easiest Way to Implement AUC

Save time, optimize your workflow and patient outcomes

DoseMeRx uses Bayesian dosing to calculate a precise dose to achieve your clinical target. Take a look at what you can achieve with DoseMeRx.

Simple and Easy to Use	Flexible Timing of Drug Levels	Decrease Clinical Variation
Instant access to the web-based solution	Just one drug level required to calculate an AUC	Data-driven approach to dose optimization
Patient data automatically loaded in integrated solutions	Drug levels can be taken at any time	Increased proportion of patients in therapeutic range
Calculate an area under the curve (AUC) dose recommendation in seconds	Halve the number of assays required	Decreases mortality, risk, and adverse drug events

DoseMeRx is simple to use and easy to access, anytime and on every device.

The DoseMeRx solution is available in various configurations. The web-based solution of DoseMeRx is available online, for your convenience. Interested in an integrated solution? DoseMeRx runs seamlessly in all major EHR systems and the VigiLanz Clinical Surveillance Platform.

Cerner Epic VigiLanz

Infectious Disease Connect ilúm Insight Sentri7®

Why DoseMeRx?

Tabula Rasa HealthCare Science and Expertise

Tabula Rasa HealthCare technology focuses on preventing adverse drug events to enable healthcare organizations to optimize performance. With DoseMeRx, you have access to the leading minds in both scientific and applied precision pharmacotherapy dedicated to optimizing the use of medications.

24/7, 365 Support

With offices in the United States and Australia we offer round the clock support. No matter the time – day or night, we're here to help! Someone from our dedicated customer experience team will always be available to help.

Experienced & Trusted

Healthcare providers around the globe trust DoseMeRx. Over 2,700 pharmacists, across more than 250 locations world-wide, rely on DoseMeRx to optimize the vancomycin dosing for thousands of patients.

Safe & Secure

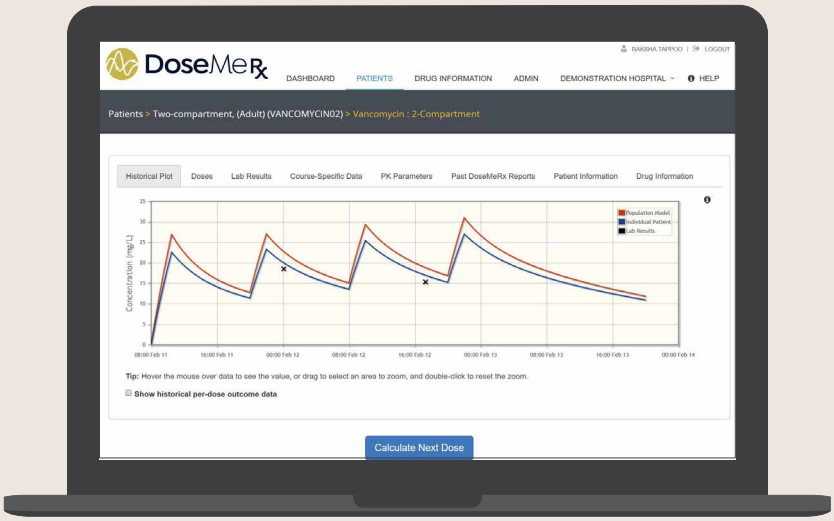
We have a team of experts monitoring DoseMeRx and developing it in accordance with stringent medical device and software guidelines. Our platform is fully-HIPAA compliant so you can rest assure your data is always safe with us.

Easy-to-use

Leave the spreadsheets and complicated software behind you! It'll take you just seconds to do complex calculations using DoseMeRx.

Simple to learn

Learning DoseMeRx is easy and takes just seconds! With training and support offered on all of our plans, you and your team can be up and running in minutes.



Ready to calculate AUC in seconds?

Get in touch to start your free DoseMeRx trial.

TRY FREE TODAY

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doseme-rx.com

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A TRHC Solution