Initiating Vancomycin Therapy

1. If patient recently received vancomycin, review the previous regimen and patient information when determining an appropriate current regimen. Consider rounding the nomogram dose up or down based on patient specific factors that have significant impact on vancomycin distribution or clearance (e.g., pregnancy, severe trauma, ascites, extensive fluid boluses, etc.). Please reduce total daily vancomycin dose by approximately 30% when treating patients with uncompensated cirrhosis.

Monitoring within 72 hours of starting vancomycin:

1. Vancomycin levels should be unnecessary if therapy not anticipated to exceed 72 hours.
2. Do not check vancomycin concentrations within the first 72 hours except in the following situations:

<table>
<thead>
<tr>
<th>Clinical Situation</th>
<th>Monitoring Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximately 90% of patients will have vancomycin discontinued within 48-72 hours and most patients do not require levels</td>
<td>Obtain 2 vancomycin levels at steady state (e.g., around 4th dose) and calculate AUC, and adjust dose to achieve goal AUC of 400-600&lt;br&gt;• Avoid obtaining vanco level during infusion or within 1 hour after completion of infusion&lt;br&gt;• Obtain a vancomycin level and dose per level&lt;br&gt;• Monitor random levels in patients and re-dose when level &lt;15 mcg/mL</td>
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<td>Documented gram positive infection requiring vancomycin</td>
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<td>Septic shock or ECCMO</td>
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<td>Weight &gt;150 kg</td>
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<td>Significant acute changes in renal function, AKI, or CrCl &lt;25 mL/min.</td>
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3. AUC is the preferred method of vancomycin monitoring. Trough-based monitoring should not be routinely used. Goal AUC is 400-600 regardless of MIC and should not be adjusted for MICS less than or equal to 1.
Monitoring after 72 hours of starting vancomycin:

1. Use the following table to guide monitoring of vancomycin based on the patient’s clinical status:

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| Patients with stable renal function (including patients with CKD and receiving CRRT) | • Obtain 2 vancomycin levels at steady state and calculate AUC to achieve goal AUC of 400-600  
• Avoid obtaining vanco level during infusion or within 1 hour after completion of infusion  
• Document individualized trough range that corresponds to AUC of 400-600 for that patient |
| Patients on conventional dialysis | • Check pre-HD level (preferred for floor patients) or 3-hr post-HD level (preferred for ICU patients)  
• Target pre-HD levels of 15-20 mcg/mL, or post-HD level of 10-15 mcg/mL |
| Patients on peritoneal dialysis | • Obtained random level 3-5 days after vancomycin administration  
• Target level of 10-15 mcg/mL, and re-dose as necessary |
| Patients who have fluctuating fluid and/or renal status | • Use clinical judgement to determine monitoring strategy  
• It is reasonable to perform AUC or trough based monitoring. However, the instability of renal clearance or volume of distribution should be taken into account when evaluating levels and subsequent dosing. |
| Patient on IV vancomycin for post-operative prophylaxis | • Target trough goal of 10-15 mcg/mL |

2. Consider ID consult in patients with confirmed MRSA infection who do not improve on vancomycin. ID consult should be ordered for all patients with MRSA bacteremia.
3. Refer to the following table for recommendations on frequency of ordering vancomycin levels and serum creatinine:

<table>
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<tr>
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</tr>
</thead>
</table>
| Subsequent levels should be drawn every 2-7 days, and serum creatinine should be monitored at least every 48 hours during entire course of vancomycin therapy. Avoid evening and overnight levels if clinically stable | • Obtain levels every 2-3 days  
• Monitor 2 vancomycin levels to facilitate AUC calculation, when possible  
• In patients receiving one-time doses (i.e., dosing by level), monitor random levels and re-dose when level <15 mcg/mL |
| Patients with changing fluid status or renal function | • Obtain levels every 5-7 days, after initial level(s) are therapeutic  
• Once a patient is on a stable dose with an AUC between 400 and 600, monitoring of vancomycin troughs may be acceptable in patients with stable fluid status and renal function |
| Patients with stable fluid status and renal function requiring long-term therapy | • Obtain levels every 2-3 days  
• Monitor 2 vancomycin levels to facilitate AUC calculation, when possible  
• In patients receiving one-time doses (i.e., dosing by level), monitor random levels and re-dose when level <15 mcg/mL |

4. Red Man’s Syndrome is the most common vancomycin reaction, characterized by flushing, redness of the trunk and itching during or shortly after the infusion. Treatment should include prolonging the infusion time (to 3-4 hours). Could also consider diphenhydramine.

Michigan Medicine AUC Calculator:
https://www.med.umich.edu/asp/misc/UMich_PK_Calculator.xlsx

Antimicrobial Subcommittee Approval: 10/2021  
P&T Approval: 11/2021  
Revision History:  
03/21: Adjusted loading dose recommendations, added comment on cirrhosis, added post-operative prophylaxis goals  
11/21: Adjusted level timing recommendations

The recommendations in this guide are meant to serve as treatment guidelines for use at Michigan Medicine facilities. If you are an individual experiencing a medical emergency, call 911 immediately. These guidelines should not replace a provider’s professional medical advice based on clinical judgment, or be used in lieu of an Infectious Diseases consultation when necessary. As a result of ongoing research, practice guidelines may from time to time change. The authors of these guidelines have made all attempts to ensure the accuracy based on current information, however, due to ongoing research, users of these guidelines are strongly encouraged to confirm the information contained within them through an independent source.

If obtained from a source other than med.umich.edu/asp, please visit the webpage for the most up-to-date document.