Adult Vancomycin Dosing Guidelines

Definitions
- Total body weight (TBW)
  - Patient’s actual weight
- Ideal body weight (IBW)
  - IBW (male) = 50 kg + (2.3 x height in inches > 60 inches)
  - IBW (female) = 45 kg + (2.3 x height in inches > 60 inches)
- Adjusted body weight (AdjBW)
  - AdjBW (kg) = IBW + 0.4 (TBW – IBW)

Dosing
1. Obtain baseline serum creatinine (SCr), patient height, and patient weight
2. Estimate patient’s creatinine clearance (CrCL)

\[
\text{CrCL (mL/min)} = \frac{(140 - \text{age}) \times \text{IBW}}{\text{SCr} \times 72} \times 0.85 \text{ for females}
\]

- Instead of ideal body weight (IBW) use adjusted body weight (AdjBW) in obese patients (TBW > 30% over IBW)
- Use total body weight if less than ideal body weight
- If elderly and SCr is less than 1 mg/dL consider rounding the SCr to 1 mg/dL due to decreased muscle mass
- Formula may not accurately estimate creatinine clearance in transplant patients
3. Determine necessity of loading dose based on total body weight (TBW)
- Consider loading doses of 25-30 mg/kg if patient critically ill or high suspicion for MRSA infection
- If CrCl<20 ml/min loading doses of 20-25 mg/kg can be utilized
4. Determine maintenance dose based on total body weight (TBW)

<table>
<thead>
<tr>
<th>Creatinine Clearance</th>
<th>Vancomycin Dose</th>
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<tbody>
<tr>
<td>≥50 ml/min</td>
<td>15-20 mg/kg IV Q12h*</td>
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<tr>
<td>20-49 ml/min</td>
<td>15-20 mg/kg IV Q24h</td>
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<tr>
<td>&lt;20 ml/min</td>
<td>15-20 mg/kg IV Q48h or dose by level</td>
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<tr>
<td>Intermittent hemodialysis</td>
<td>15 mg/kg post HD</td>
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</tbody>
</table>

*Consider Q8h if patient <50 years old and CrCl>100 ml/min

Notes
- Avoid every 18 hour and every 36 hour dosing intervals as these are error–prone
- Round all doses to the nearest 250 mg
- Maximum vancomycin dose = 2g/dose; No maximum daily dose
- Patients with a dose > 3g/day have increased risk of nephrotoxicity. Signs of renal dysfunction such as increase in serum creatinine should be monitored closely

Monitoring
- Trough levels should usually be drawn approximately 30 minutes before the patient’s 4th dose after initiating therapy or following a dosage adjustment
  - Earlier levels may be necessary in worsening renal function
  - Vancomycin levels in hemodialysis patients may be obtained the morning prior to dialysis to assess necessity to redose Obtain a level after 3-4 days of therapy
- Peak levels are not recommended routinely
- Monitoring of troughs is indicated in any of the following situations
  - Expected prolonged course of therapy (>3 days)
  - Renal dysfunction or unstable renal function
  - Concomitant use of nephrotoxins
  - Obese patient
- Levels can be checked weekly in patients at target troughs with stable serum creatinine

<table>
<thead>
<tr>
<th>Target Trough</th>
<th>10-20 mcg/ml</th>
<th>15-20 mcg/ml</th>
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<tbody>
<tr>
<td>Skin and soft tissue infection</td>
<td>Bacteremia</td>
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<tr>
<td>Urinary tract infection</td>
<td>Central nervous system infection</td>
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<td></td>
<td>Deep-seated infection (ex. abscess)</td>
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<td></td>
<td>Endocarditis</td>
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<td>Pneumonia</td>
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<tr>
<td></td>
<td>Osteomyelitis</td>
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</table>

**Dose Adjustments**
- Assess timing of trough level and ensure all previous doses were given
- Assess renal function for changes in creatinine or urine output

\[
\text{Dose} = \frac{\text{Dose (new)}}{\text{Trough (goal)}}
\]

- Formula can be used if dosing interval stays the same and renal function is stable

**Hemodialysis**
- Dose adjustments based on pre-dialysis level
  - 10-15 mcg/ml- Increase dose by 250 mg
  - 15-25 mcg/ml- Redose at previous dose
  - >25 mcg/ml- Decrease dose by 250 mg or hold

Approved by P&T Committee 6/2016