

Aminoglycoside Dosing: Synergy for Endocarditis

Calculate dosing weight (DW)

- **DW=Actual body weight (ABW) if patient less than 120% of IBW**
- **DW=Ideal body weight (IBW) + 0.4 (ABW-IBW) if patient greater than 120% of IBW**

Determine pathogen and calculate dose:

- **Enterococcus spp: 1mg/kg X DW (kg) [maximum three times daily]**
- **Staphylococcus spp: 1mg/kg x DW [maximum three times daily]**
- **Streptococcus spp: 3mg/kg/day X DW (kg) [maximum once daily]**

Estimate aminoglycoside clearance (AgCl):

- GFR approximates aminoglycoside clearance, therefore MDRD clearance posted in EPIC is a reasonable estimate of aminoglycoside clearance. Prior to utilizing MDRD, the result should be assessed to ensure that it is consistent with the patient's clinical status (e.g. accuracy is suspect in patients not producing creatinine at normal rate and MDRD results are not relevant for dialysis patients).

Estimate the aminoglycoside half-life:

- **$T_{1/2} \text{ (hrs)} = (0.693 \times V_d \text{ (L)}) / (\text{AgCl (ml/min)} \times 0.06)$**

Calculate dosing interval (DI)

- **Enterococcus spp or staphylococcus spp**
 - **DI= $T_{1/2} \times 2$ (rounds to 8, 12, or 24 hours)**
- **Streptococcus spp**
 - **DI= $T_{1/2} \times 4$ (round to an interval EQUAL to or GREATER THAN 24 hours)**

Aminoglycoside serum concentrations and renal function monitoring

- Peak and trough aminoglycoside serum concentration should be drawn around the 3rd dose of the regimen. Dosing interval should be adjusted as above based on t_{1/2} calculated from serum concentrations. Subsequent levels are not necessary as long as renal function remains stable. Serum creatinine should be assessed at least thrice weekly while patient receiving aminoglycoside therapy.

Ototoxicity monitoring

- Patients who are schedule to receive more than 2 weeks of aminoglycoside therapy should have a baseline audiogram done. Patients should be monitored for early sign of cochlear toxicity (tinnitus or high frequency hearing loss) and vestibular toxicity (intractable headache or dizziness). If symptoms occur, discontinuation of aminoglycoside therapy should be strongly considered if clinically possible as continued therapy will cause irreversible damage.

Duration of therapy

- **Duration of therapy for endocarditis is pathogen and heart valve specific. Refer to the endocarditis guidelines or the ID pharmacist for more information.**