Aminoglycoside Dosing

Suspected or documented gram-negative infections

Target peak level after 1st dose

- **Gentamicin and tobramycin- 20-30mg/L**
- **Amikacin 40-60mg/L**

Calculate dosing weight (DW)

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

Calculate and administer initial dose:

- **Gentamicin and tobramycin**
  - **Systemic infection other than pneumonia: 7mg/kg x DW (kg)**
  - **Pneumonia: 10mg/kg x DW (kg)**
- **Amikacin**
  - **Systemic infection other than pneumonia 15mg/kg x DW (kg)**
  - **Pneumonia 20mg/kg x DW (kg)**

Estimate volume of distribution of aminoglycoside:

- **Vd for septic, non ICU patient=0.3-0.4 L/kg x DW (kg)**
- **Vd for septic ICU patient=0.4-0.5 L/kg x DW (kg)**

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 is is consistent with the patients clinical status (i.e. accuracy is suspect in patient not producing creatinine at a normal rate and MDRD results are not relevant for dialysis patients)

Estimate the aminoglycoside half-life:

- **T(1/2 hours)= (0.693 x Vd (L))/(AgCl (mL/min) x 0.06)**

Order aminoglycoside serum concentrations:

- Two serum concentrations should be ordered
  - 2 to 4 hours after the dose
  - At least on estimated T1/2 after the first concentration

Determine need to continuation of aminoglycoside therapy

- Cultures pending in clinically unstable patients
- Isolation of resistance gram negative organism thought to be causing infection

If aminoglycoside therapy meets criteria for continuation:

- Calculate aminoglycoside T1/2 using measured serum concentrations
- Administer subsequent doses at an interval of at least 6 times the half-life, with the **shortest dosing interval being 24 hours**

Assess patient daily for need to continue aminoglycoside

- Discontinue therapy as soon as clinically feasible to minimize the risk of aminoglycoside induce nephrotoxicity and ototoxicity. Most aminoglycoside regimen should be discontinued within 72 hours

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