

Approved: September 2017

## AMINOGLYCOSIDES DOSING AND MONITORING GUIDELINES

NB Provincial Health Authorities Anti-Infective Stewardship Committee

### EXECUTIVE SUMMARY

*for more details, consult the full guidelines*

#### ADULT EXTENDED INTERVAL DOSING OF GENTAMICIN/TOBRAMYCIN

- Use extended interval dosing whenever possible
- Contraindications
  - dialysis
  - burns exceeding 20% body surface area (BSA)
  - endocarditis (see Gentamicin Synergy Dosing)
- Initial dose and interval
  - 5-7 mg/kg IV q24h (if CrCl greater than or equal to 60 mL/min)
  - dose based on ideal body weight (IBW) or dosing weight; rounded to nearest 20 mg
  - dosing interval adjusted based on renal function
- Monitoring
  - trough levels, taken within 30 minutes before second dose
    - target less than 1 mg/L
  - random level, taken 8-12h after first dose
    - Hartford Hospital nomogram provides dosing interval for 7 mg/kg dose based on this level
  - serum creatinine (SCr) at baseline and every 2 to 3 days
  - ototoxicity

#### ADULT CONVENTIONAL DOSING OF GENTAMICIN/TOBRAMYCIN

- Initial dose and interval
  - 2 mg/kg IV x 1 loading dose, then
  - 1.5-2 mg/kg IV q8h (if CrCl equal or greater than 80 mL/min)
  - dose based on IBW or dosing weight; rounded to nearest 20 mg
  - dosing interval adjusted based on renal function
- Monitoring
  - trough and peak levels, taken within 30 minutes before and 30 to 60 minutes after 3<sup>rd</sup> dose, respectively
    - target trough less than 2 mg/L
    - target peak 6 – 10 mg/L for most infections
  - SCr at baseline and every 2 to 3 days
  - Ototoxicity



### **GENTAMICIN SYNERGISTIC DOSING FOR ENDOCARDITIS**

- Used in combination therapy for endocarditis due to certain gram-positive organisms
- Dose
  - gentamicin 1 mg/kg q8h or 3 mg/kg q24h, depending on the organism identified (if CrCl equal or greater than 80 mL/min)
  - dose based on IBW or dosing weight; rounded to nearest 20 mg
  - dosing interval adjusted based on renal function
- Monitoring
  - gentamicin trough taken within 30 minutes before the 3<sup>rd</sup> dose
  - target trough level of less than 1 mg/L

### **PEDIATRIC EXTENDED INTERVAL DOSING OF GENTAMICIN/TOBRAMYCIN**

- Contraindications
  - renal insufficiency (CrCl less than 50 mL/min)
  - dialysis
  - endocarditis (see Gentamicin Synergistic Dosing)
  - burns exceeding 20% BSA
  - altered volume of distribution (Vd)
  - meningitis
  - surgical prophylaxis
- Initial dose and interval
  - for neonates see main document
  - infants and children (1 month – up to 9 years of age): 7-9 mg/kg IV q24h
  - children 9 years of age and older: 7 mg/kg IV q24h
  - dose based on actual body weight or dosing weight; rounded to nearest 5 mg
- Monitoring
  - trough levels, taken within 30 minutes before 2<sup>nd</sup> dose
    - target less than 1 mg/L
  - SCr at baseline and every 2 to 3 days
  - ototoxicity

### **PEDIATRIC CONVENTIONAL DOSING OF GENTAMICIN/TOBRAMYCIN**

- For neonates see main document
- Initial dose and interval in infants and children
  - 2.5 mg/kg IV q8h, based on actual body weight or dosing weight; rounded to nearest 5 mg
- Monitoring
  - trough and peak levels, taken within 30 minutes before and 30 to 60 minutes after 3<sup>rd</sup> dose, respectively
    - target trough less than 2 mg/L
    - target peak 6 – 10 mg/L for most infections
  - SCr at baseline and every 2 to 3 days
  - ototoxicity

### **EXTENDED-INTERVAL TOBRAMYCIN IN CYSTIC FIBROSIS (PEDIATRIC AND ADULT)**

- Initial dose and interval
  - 10 mg/kg IV q24h (if CrCl greater than or equal to 50 mL/min)
  - dose based on IBW
  - dosing interval adjusted based on renal function
- Monitoring
  - trough levels, taken within 30 minutes before 2<sup>nd</sup> dose
    - target less than 1 mg/L
  - SCr at baseline and every 2 to 3 days
  - ototoxicity

### **GENTAMICIN/TOBRAMYCIN IN INTERMITTENT HEMODIALYSIS**

- Initial dose and interval
  - 1.5-2 mg/kg IV x 1 loading dose, then
  - 1 mg/kg IV 3 times a week, after each hemodialysis (HD) session
- Monitoring
  - trough levels
    - draw before (within 30 minutes before) HD session
    - target pre-HD level of 1.5 to 3 mg/L
  - ototoxicity

### **GENTAMICIN/TOBRAMYCIN IN PREGNANCY AND POST-PARTUM**

- Extended interval dosing
  - Data limited on extended interval dosing of AG in pregnancy; use with caution
  - More data on extended interval dosing of AG in post-partum
  - Initial dose and interval
    - 5 mg/kg IV q24h (if CrCl greater than or equal to 60 mL/min)
    - dose based on actual body weight
    - maximum 500 mg/24h prior to levels
    - dosing interval adjusted based on renal function
  - Monitoring
    - Trough levels, taken within 30 minutes before 2<sup>nd</sup> dose
      - target less than 1 mg/L
- Conventional dosing
  - Initial dose and interval
    - 2 mg/kg IV x 1 loading dose, then
    - 1.5-2 mg/kg IV q8h (if CrCl greater than or equal to 80 mL/min)
    - dose based on actual body weight
    - dosing interval adjusted based on renal function
  - Monitoring
    - target levels – refer to “Adults-Conventional Dosing of Gentamicin/Tobramycin” section

## AMIKACIN

- Refer to the Amikacin section in the full text of the Aminoglycosides Guidelines for dosing information
- For extended interval dosing of amikacin:
  - target trough level: less than 4 mg/L
  - Hartford Hospital nomogram may be used to determine appropriate dosing interval based on a random level taken 8-12h after the first dose, provided a 15 mg/kg dose was used
- For conventional dosing of amikacin, target serum concentrations:

	Desired minimal (trough) concentration (mg/L )	Desired maximum (peak) concentration (mg/L)
Moderate infections	less than 4	20-25
Severe infections	less than 2	25-30