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
  - serum creatinine (SCr) at baseline and every 2 to 3 days
  - ototoxicity

#### CLINICAL PEARLS
- Use care when selecting the dosing interval in patients that are older and/or with multiple co-morbidities (e.g. diabetes, heart failure, etc.) or where estimated creatinine clearance would be expected to be an overestimate (e.g. low muscle mass in an elderly patient, dysmobility, paraplegia, etc.)
- The provided ranges for estimated creatinine clearance are only intended to be a guide for the selection of an empiric dosing interval and should not be used in isolation without considering patient and infection-related factors – especially when estimated creatinine clearance approaches the either end of the range.

#### 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 second 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 3rd 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 2nd 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 3rd 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 2nd 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 2nd 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 more information