Comité de gérance des antimicrobiens
Anti-Infective Stewardship Committee
Optimal antimicrobial care for our patients and our future
Thérapie antimicrobienne optimale pour nos patients et notre avenir
Réseau de santé Horizon Health Network
Réseau de santé Vitalité Health Network

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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 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

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 to80 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 Aminoglucosides Guidelines for more information