Once Daily Amikacin Administration and Monitoring Protocol

Amikacin is a restricted antibiotic and approval from a Consultant Microbiologist is required prior to prescribing. Review sensitivities before prescribing.

Amikacin exhibits a concentration-dependent bactericidal activity and a post-antibiotic effect: administration of a large, once-daily dose could therefore maximize the rate of bacterial killing, with the post-antibiotic effect preventing re-growth of bacteria. The incidence of aminoglycoside-related nephrotoxicity may be reduced by using once-daily administration in place of conventional dosage regimens.

Exclusions and cautions for Once Daily Amikacin

Excluded patient groups:

- pregnant and post-partum
- enterococcal endocarditis
- ascites
- major burns (>20%)

Renal impairment: if creatinine clearance* <60mL/min, discuss with Microbiology or Medicines Information.
Use with caution if patient > 65 years old.
Caution when used with other nephrotoxic drugs e.g. furosemide.

*__Creatinine clearance (CrCl) calculation:__

$$CrCl = \frac{F \times (140-age) \times weight(kg)}{Serum\ creatinine(\mu moles/L)}$$

Where F=1.23 (males) or 1.04 (females)

If prolonged treatment (> 48hrs) is anticipated, baseline audiometry should be measured and the prescription reviewed **DAILY**.

Amikacin has a maximum lifetime cumulative dose of 15 grams: ototoxicity may result if this is exceeded.

Consult Microbiology regarding treatment beyond the maximum cumulative dose.

Dosage and administration

15mg/kg ONCE DAILY (use Actual Body Weight, unless obese**), up to a maximum dose of 1.5g/day.

****Dosage in obesity**

If patients are >120% of their Ideal Body Weight (IBW), dosage must be calculated using the Obese Dosing Weight (ODW)

ODW = IBW + 0.4 (Actual Body Weight - IBW)

NB: IBW (kg) = 50 + (2.3 x inches over 5 feet) in males
= 45.5 + (2.3 x inches over 5 feet) in females

The daily dose should be given over 60 minutes in 100mL sodium chloride 0.9% or glucose 5%.

Maximum cumulative (lifetime) dose = 15 g

In patients with renal impairment, determine the dose and dosing interval using the following guide:

CrCl > 90 ml/min = 15mg/kg every 24 hours
CrCl 70 – 89 ml/min = 12mg/kg every 24 hours
CrCl 50 – 69 ml/min = 7.5mg/kg every 24 hours
CrCl 30 – 49 ml/min = 4mg/kg every 24 hours

CrCl 20 – 29 ml/min = 7.5mg/kg every 48 hours
CrCl 10 – 19 ml/min = 4mg/kg every 48 hours
CrCl <10 ml/min = 3mg/kg every 48 hours

Monitoring

Trough Levels are taken immediately prior to the 2nd dose:

- **If trough level < 5 mg/l**, prescribe next dose if required. Thereafter, monitor amikacin level and U&Es twice weekly. If serum creatinine rises by more than 45 µmoles/l stop amikacin and discuss with Microbiology.
- **If trough level > 5 mg/l**, omit next dose and take another level 12hrs later. Do not administer more amikacin until level falls below 5 mg/l.
  Contact Microbiology for advice on revising dosage regime.
- For serum level monitoring in long-term treatment of multi-drug resistant TB, discuss with Microbiology.
- If > 48hrs treatment is anticipated, baseline audiometry should be measured and kept under review. Additionally, monitor the cumulative dose (maximum is 15 grams).
- Amikacin levels can be processed daily (including weekends) but not out of hours.

Further Advice

Microbiology GRH = ☎ext. 5052
Microbiology CGH = ☎ext. 4430

Medicines Information GRH = ☎ext. 6108
Medicines Information GRH = ☎ext. 3030

Selected references:

Barza et al (1996) BMJ 312:338-345
Freeman et al (1997) J. Antimicrob. Chemother. 39:677-686
Marik et al (1991) J. Antimicrob. Chemother. 28:753-764