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:

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

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)

\[ \text{ODW} = \text{IBW} + 0.4 (\text{Actual Body Weight} - \text{IBW}) \]

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 2\textsuperscript{nd} 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: