Galway: GAPP - Galway Antimicrobial Prescribing Policy / Guidelines (GAPP): Amikacin Dosing & Monitoring

Amikacin Dosing & Monitoring

1. **Reserve antimicrobial** : Effective **use of amikacin is complex** and **should be discussed with Microbiology or Infectious Diseases.** The following is provided for guidance.
2. In general, treatment should be **reviewed within 24 hours,** and **daily** thereafter by **consultant/specialist registrar.** Courses should **not** usually exceed **3 days.** The recommended **maximum daily dose is 1.5g; the maximum cumulative dose should not exceed 15g per treatment course.**
3. In **multi-drug resistant TB** (on Infectious Diseases or Respiratory or Microbiology advice), see IV guideline on MedinfoGalway for dosing and monitoring guidance.
4. **Once daily dosing** of amikacin is recommended for most patients. Discuss patients with renal impairment with creatnine clearance less than 30ml/minute with Microbiology or Infectious Diseases
5. Amikacin is potentially nephrotoxic & ototoxic; **monitor amikacin levels closely.**
6. **Prolonged duration** of treatment and **co-administration of nephrotoxins** (e.g. diuretics, NSAIDs, vancomycin) increases risk of toxicity and should be **avoided** where possible.
7. The responsible clinical team must **check** reported amikacin levels regularly and adjust dosing if required. The laboratory does **NOT** alert teams of out of range results. Levels must arrive in the microbiology laboratory by 11am Monday to Friday and by 10am Saturday (not processed on Sunday) to be analysed on the day of receipt.
8. **Do NOT hold** dose while waiting for level to be reported, in a patient **less than 65 years with good renal function** (creatinine clearance greater than 80ml/minute) and with good urine output.
9. However, in a patient **over 65 years, or with abnormal renal function** (creatinine clearance less than 80ml/minute), it is generally preferable to **await the result** of the first amikacin level (i.e. before the second dose) before giving the next dose. If the level is less than 5 mg/L and renal function is stable it is **not** necessary to routinely hold subsequent doses pending levels.

Table 1: Once Daily Amikacin Dosing Guidelines (Except TB)

Step 1	Cautions/ Discuss with Micro or ID or Pharmacy	**Cautions:** Age ≥65, renal impairment (CrCl <80ml/min), obesity (use adjusted dosing weight), other nephrotoxins Patients with severe renal impairment (CrCl <30ml/min) **should be discussed with Microbiology or Infectious Diseases** **TB:** See IV guideline on MedinfoGalway for guidance on dosing & monitoring in TB patients
Step 2	Calculate patient's ideal body weight (IBW): Height required	**Ideal Body Weight (IBW) (kg) =** *Male: 50kg + (2.3 x inches over 5 feet)* ***OR*** *50kg + (0.9 x cm over 152cm)* *Female: 45.5kg + (2.3 x inches over 5 feet)* ***OR*** *45.5kg + (0.9 x cm over 152cm)*
Step 3	Dosing Weight/ Obesity Adjustment: Weight required	**Obesity adjustment** : **Obese patient:** If actual body weight exceeds IBW by ≥20%, calculate Adjusted Dosing Weight: *Adjusted Dosing Weight (kg) =* *Ideal Body Weight + 0.4 x (Actual Body Weight – Ideal Body Weight)* **Non-obese patient:** Use actual body weight to dose amikacin.
Step 4	Estimate renal function: Patient age, weight, height, & serum creatinine required	Must use creatinine clearance (**not** eGFR) to dose amikacin. Calculate the patient's estimated creatinine clearance using Cockcroft & Gault equation. Neither creatinine clearance nor eGFR provide a perfect marker of renal function, particularly if rapidly changing renal function.
Step 5	**Select a dose** based on renal function and weight. If obese use **Adjusted Dosing Weight;** If non-obese use **Actual Body Weight** (See Step 3).	

CrCl (ml/min)	Dose: round to nearest 50mg	
Greater than 80	15mg per kg IV (up to a max of 1.5g)	every 24 hours
60 to 79	12mg per kg IV (up to a max of 1.5g)	every 24 hours
40 to 59	7.5mg per kg IV (up to a max of 1.5g)	every 24 hours
30 to 39	4mg per kg IV (up to a max of 1.5g)	every 24 hours
less than 30	Avoid if possible. If essential, give 3 to 4mg per kg IV (up to a max of 320mg), one dose only	Check level at 24 hours, discuss need for second dose with Micro/ID
Intermittent haemodialysis: 5mg/kg (up to a max of 400mg) with each dialysis. Give dose post-dialysis.		