

## Amikacin:

**Class:** Antibiotic

**Indications:** Treatment of serious infections (bone infections, respiratory tract infections, endocarditis, and septicemia) due to organisms resistant to gentamicin and tobramycin, including *Pseudomonas*, *Proteus*, *Serratia*, and other gram-negative bacilli; documented infection of mycobacterial organisms susceptible to amikacin

**Available dosage form in the hospital:** 1000MG VIAL, 100MG/2ML VIAL, 5% GEL, 250MG/2ML VIAL, 500MG/2ML VIAL.

**Trade Names:**

**Dosage:**

-I.M., I.V.: 5-7.5 mg/kg/dose every 8 hours; **Note:** Some clinicians suggest a daily dose of 15-20 mg/kg for all patients with normal renal function. This dose is at least as efficacious with similar, if not less, toxicity than conventional dosing.

-Intrathecal/intraventricular (unlabeled route): Meningitis (susceptible gram-negative organisms): 5-50 mg/day

### \*Indication-specific dosing:

- Endophthalmitis, bacterial (unlabeled use): Intravitreal: 0.4 mg/0.1 mL NS in combination with vancomycin

-Hospital-acquired pneumonia (HAP): I.V.: 20 mg/kg/day with antipseudomonal beta-lactam or carbapenem (American Thoracic Society/ATS guidelines)

-Meningitis (susceptible gram-negative organisms):

-I.V.: 5 mg/kg every 8 hours (administered with another bactericidal drug)

-Intrathecal/intraventricular (unlabeled route): Usual dose: 30 mg/day (IDSA, 2004); Range: 5-50 mg/day (with concurrent systemic antimicrobial therapy) (Gilbert, 1986; Guardado, 2008; IDSA, 2004; Kasiakou, 2005)

-*Mycobacterium avium* complex (MAC) (unlabeled use): I.V.: Adjunct therapy (with macrolide, rifamycin, and ethambutol): 8-25 mg/kg 2-3 times weekly for first 2-3 months for severe disease (maximum single dose for age >50 years: 500 mg) (Griffith, 2007)

-*Mycobacterium fortuitum*, *M. chelonae*, or *M. abscessus*: I.V.: 10-15 mg/kg daily for at least 2 weeks with high dose ceftazidime.

### \* Renal Impairment:

Some patients may require larger or more frequent doses if serum levels document the need (ie, cystic fibrosis or febrile granulocytopenic patients).

-Cl<sub>cr</sub> ≥60 mL/minute: Administer every 8 hours

-Cl<sub>cr</sub> 40-60 mL/minute: Administer every 12 hours

-Cl<sub>cr</sub> 20-40 mL/minute: Administer every 24 hours

-Cl<sub>cr</sub> <20 mL/minute: Loading dose, then monitor levels

-Intermittent hemodialysis (IHD) (administer after hemodialysis on dialysis days): Dialyzable (20%; variable; dependent on filter, duration, and type of HD): 5-7.5 mg/kg every 48-72 hours. Follow levels. Redose when pre-HD concentration <10 mg/L; redose when post-HD concentration <6-8 mg/L (Heintz, 2009). **Note:** Dosing dependent on the assumption of 3 times/week, complete IHD sessions.

-Peritoneal dialysis (PD): Dose as Cl<sub>cr</sub> <20 mL/minute: Follow levels.

-Continuous renal replacement therapy (CRRT) (Heintz, 2009; Trotman, 2005): Drug clearance is highly dependent on the method of renal replacement, filter type, and flow rate. Appropriate dosing requires close monitoring of pharmacologic response, signs of adverse reactions due to drug accumulation, as well as drug concentrations in relation to target trough (if appropriate). The following are general recommendations only (based on dialysate flow/ultrafiltration rates of 1-2 L/hour and minimal residual renal function) and should not supersede clinical judgment:

-CVVH/CVVHD/CVVHDF: Loading dose of 10 mg/kg followed by maintenance dose of 7.5 mg/kg every 24-48 hours

**Common side effect:** Neurotoxicity, Ototoxicity (auditory), ototoxicity (vestibular)  
Nephrotoxicity

**Pregnancy Risk Factor:** D