

Aminoglycoside Treatment in Dialysis Patients

Determine patient's dosing weight

Use ideal body weight (IBW) unless total body weight (TBW) is less. Non-obese is defined as TBW < 30% over ideal body weight

IBW (males) = 50 kg + (2.3 x height in inches > 60 inches)

IBW (females) = 45 kg + (2.3 x height in inches > 60 inches)

In obese patients adjust IBW:

ABW (kg) = IBW + 0.4 (TBW – IBW)

Select appropriate loading and maintenance doses

(round dose to nearest 10 mg for gentamicin/tobramycin)

Loading dose **is needed** in life-threatening infection (2.5 mg/kg X 1)

Drug	Dose and frequency in dialysis patients		
	Hemodialysis (dose POST dialysis)	Peritoneal dialysis (every 48h)*	CRRT (every 24h)
Gentamicin			
Serious infection	1.5 to 2 mg/kg	1.5 to 2 mg/kg	1.5 to 2 mg/kg
UTI	1 mg/kg	1 mg/kg	1 mg/kg
Synergy	1 mg/kg	1 mg/kg	1 mg/kg
Tobramycin			
UTI	1.5 to 2 mg/kg	1.5 to 2 mg/kg	1.5 to 2 mg/kg
Amikacin	7.5 mg/kg	7.5 mg/kg	7.5 mg/kg

* In CAPD patients with peritonitis; IF ANURIC (LESS THAN 100 cc/d); GENTAMICIN 0.6 mg/kg per bag per day after LD. (given in one dwell IP), AMIKACIN 2 mg/kg per bag per day (only in the first bag of the day)
It is not recommended to use it in PD patients who make URINE i.e > 100 cc/day, unless sensitive **ONLY** to Aminoglycoside.

Serum concentration monitoring

Aminoglycosides have a prolonged half-life in renal impaired patients up to 30-60 hrs in HD patients (≈40 hrs off HD, 2.5 hrs on HD)

≈30-50% of the dose is cleared through hemodialysis

Obtain levels with the 2nd dose after initiation of therapy or after dose adjustment.

Obtain levels of Aminoglycoside

Peak (2-3 h post-dose; 3 hrs for significant fluid overload), trough pre-hemodialysis serum concentrations

Recheck only peak levels every 4 days to ensure levels remain low in HD patients.

Recheck only trough levels every days to ensure levels remain low in PD patients.

Indication/Site of infection	Desired concentrations (mcg/mL) in HD patients			
	Gentamicin/Tobramycin		Amikacin	
	Peak	Trough	Peak	Trough
Uncomplicated lower UTI, synergy in gram (+) infections*	3-5	<1	20-25	5-10
Gram (-) sepsis, other serious gram (-) infections	7-8	≈2-3	20-30	10
Gram (-) pneumonia	7-8	≈2-3	25-30	10

*TDM is not required when used for synergy or UTI for a short course