Gentamicin

General	
• Class of the drug:	Aminoglycoside antibiotics
• Synonym(s):	
• Common trade name(s) in Switzerland:	Garamycin®
• Conversion factors:	*mg/l x 2.1 = µmol/l (mean)* *µmol/l x 0.48 = mg/l*
Clinical pharmacology	
• Indications for TDM:	Individual dose adaptation, suspicion of toxicity, side effects
• Protein binding:	0 - 30% (albumin)
• Elimination half-life:	1 - 3 hours Neonates/ infants: 3 – 8 h (see remarks)
• Volume of distribution:	0.3 l/kg
• Metabolism:	
- Main metabolic pathways:	No metabolism
- Active metabolite(s)?	None
- Inhibitor or inducer of the cytochrome P450 system?	No
- Other significant pharmacokinetic interactions:	None
• Elimination of parent drug:	Renal 100%
• Typical therapeutic range:	<u>Multiple dosing</u>: Peak concentration: 6 – 10 mg/l (13 – 21 µmol/l) Trough concentration: ≤ 1 mg/l (≤ 2.1 µmol/l) <u>Once-daily dosing:</u> Trough concentration: ≤ 0.5 mg/l (≤ 1.1 µmol/l)
• Potentially toxic concentration:	<u>Multiple dosing</u>: Peak concentration: > 12 mg/l (> 25 µmol/l) Trough concentration: > 2 mg/l (> 4 µmol/l) <u>Once-daily dosing:</u> Trough concentration: > 0.5 mg/l (> 1.1 µmol/l)
Pre-analytics	
• Time to steady-state since beginning of treatment or change of posology:	Steady-state is generally achieved after 3 doses for multiple dosing

• Time for blood sampling:	Peak: one hour after beginning of infusion Trough: within 30 minutes of next dose Once-daily dosing: trough level only
• Type(s) of sample:	Serum or plasma
• Stability:	1 week at 4°C When combined therapy with penicillines and/or cephalosporines: in vitro inactivation →freeze sample
Analytics	
• Position(s) in the analysis list/Method:	8628.01 Immunological
Remarks	• Elimination is strongly dependent on renal function • Avoid gel tubes if possible, unless having confirmed that no binding occurs
References	•M*odi et al., The Lancet 352 (1998) 70* •*Grundlagen der Arzneimitteltherapie Ausgabe 2005, Documed* •*Arzneimittel Kompendium der Schweiz, Documed, 2005* •*Taylor and Diers, Abbottt: A textbook for the clinical application of therapeutic drug monitoring 1986* •*Thomson Micromedex® Healthcare series* •*Begg et al., Br J Clin Pharm 39 (1995) 597* •*Touw et al.,Ther Drug Monit 27 (2005)* 10