Guidelines for Anti-infective Dosing in Renal Failure and Dialysis

NOTE: The dosage information in this table is based on Cockroft-Gault ***creatinine clearance*** and **not eGFR** since the majority of the published information is based on creatinine clearance.
This table is not intended to offer definitive advice and is subject to the experiences and local practice as well as advice from the renal team, the Renal Handbook and individual SPCs.

Drug	Dose in normal renal function	Mild (GFR 20 – 50ml/min)	Moderate (GFR 10 – 20ml/min)	Severe (GFR <10ml/min)	Haemodialysis	Peritoneal dialysis
ACICLOVIR oral [1,2] (SIMPLEX treatment)	200 – 400mg FIVE times a day	Dose as in normal renal function	200mg FOUR times a day	200mg TWICE a day	200mg TWICE a day Give after dialysis	200mg TWICE a day
ACICLOVIR oral [1,3] (ZOSTER treatment)	800mg FIVE times a day	Dose as in normal renal function	400 – 800mg THREE times a day	400 – 800mg TWICE a day	400 – 800mg TWICE a day Give after dialysis	400 – 800mg TWICE a day
ACICLOVIR IV [1,6]	5 – 10 mg/kg every 8 hours	5 – 10 mg/kg every 12 hours	5 – 10 mg/kg every 24 hours	2.5 – 5 mg/kg every 24 hours	2.5 – 5 mg/kg every 24 hours Give after dialysis	2.5 – 5 mg/kg every 24 hours
AMOXICILLIN PO and IV[1, 4] (avoid if penicillin allergic)	250mg – 1g THREE times a day (endocarditis: max 12g in 24 hours)	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function (endocarditis: max 6g in 24 hours)	Dose as in normal renal function Give after dialysis (endocarditis: max 6g in 24 hours)	Dose as in normal renal function (endocarditis: max 6g in 24 hours)
AMPHOTERICIN IV [1,5] (AmBisome®) (Warning: Nephrotoxic)	1 – 3 mg/kg/day (higher as unlicensed use) See individual product data sheet	***HIGHLY NEPHROTOXIC*** No reduction in dose is required but only use if medical condition is extremely severe and there is no suitable alternative			Dose as in normal renal function	Dose as in normal renal function
AMPHOTERICIN IV (Fungizone®) [1,7] (Warning: Nephrotoxic)	0.25 – 1.5 mg/kg/day See individual product data sheet	***HIGHLY NEPHROTOXIC*** No reduction in dose is required but only use if medical condition is extremely severe and there is no suitable alternative			Dose as in normal renal function	Dose as in normal renal function
AMPICILLIN [1] (Warning: Nephrotoxic) (avoid if penicillin allergic)	PO: 250mg – 1g FOUR times a day IV: 500mg – 2g every 4 – 6 hours	Dose as in normal renal function	250mg – 2g every 6 hours (monitor closely for nephrotoxicity)	250mg – 1g every 6 hours (monitor closely for nephrotoxicity)	250mg – 1g every 6 hours Give after dialysis	250mg – 1g every 6 hours
ANIDULAFUNGIN [1,29]	200mg loading dose then 100mg daily	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
AZITHROMYCIN [1]	500mg daily for 3 days	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
BENZYLPENICILLIN IV [1] (avoid if penicillin allergic)	2.4g – 14.4g daily in 4-6 divided doses	Dose as in normal renal function	600mg – 2.4g every 6 hours	600mg – 1.2g every 6 hours	600mg – 1.2g every 6 hours	600mg – 1.2g every 6 hours

Drug	Dose in normal renal function	Mild (GFR 20 – 50ml/min)	Moderate (GFR 10 – 20ml/min)	Severe (GFR <10ml/min)	Haemodialysis	Peritoneal dialysis
CASPOFUNGIN [1,8]	70mg day 1 followed by 50mg daily thereafter (70mg daily if > 80kg)	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
CEFOTAXIME [1,9]	1 – 2g every 6 – 12 hours Life-threatening up to 12g in 3-4 divided doses	Dose as in normal renal function	Dose as in normal renal function	GFR <5ml/min Reduce dose by 50% and keep the frequency the same	Reduce dose by 50% and keep the frequency the same Give after dialysis	Reduce dose by 50% and keep the frequency the same
CEFTAZIDIME[1,23] See datasheet for neutropenic patients (reference 23)	0.5 – 2g every 8 – 12 hours Severe infections: 3g every 12 hours (lower doses in elderly patients)	GFR: 31 – 50ml/min 1 – 2g every 12 hours GFR: 16 – 30ml/min 1 – 2g every 24 hours	GFR: 6 – 15ml/min 500mg – 1g every 24 hours	GFR <5ml/min 500mg – 1g every 48 hours	500mg – 1g every 24 - 48 hours Give after dialysis (2g after every HD in exceptional circumstances)	500mg – 1g every 24 hours (dialysed)
CEFTAZIDIME and AVIBACTAM [34,35] (Zavicetta®)	GFR > 50 mL/min 2g/0.5g IV infusion over 2 hours every 8 hours	GFR=31-50 mL/min 1g/0.25g IV infusion over 2 hours every 8 hours	GFR=16-30 mL/min 0.75g/0.1875g IV infusion over 2 hours every 12 hours	GFR<15mL/min 0.75g/0.1875g IV infusion over 2 hrs every 24 hrs	0.75g/0.1875g IV over 2 hours every 48 hrs, after dialysis	0.75g/0.1875g IV infusion over 2 hours every 48 hrs
CEFTRIAXONE IV[1,24]	1g daily Severe infections 2 – 4g daily	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function (Maximum 2g daily)	Dose as in normal renal function (Maximum	Dose as in normal renal function (Maximum 2g daily)
CIPROFLOXACIN oral [1, 27]	250 – 750mg TWICE a day	250 – 500mg TWICE a day	250 – 500mg every 24 hours (500mg every 12 hours in exceptional circumstances)	250 – 500mg every 24 hours (500mg every 12 hours in exceptional circumstances)	250 – 500mg every 24 hours (500mg every 12 hours in exceptional circumstances)	250 – 500mg every 24 hours (500mg every 12 hours in exceptional circumstances)
CIPROFLOXACIN IV [1, 28]	200 – 400mg TWICE a day	200 – 400mg TWICE a day	200 - 400mg every 24 hours	200 - 400mg every 24 hours	200 - 400mg every 24 hours (after dialysis)	200 - 400mg every 24 hours
CLARITHROMYCIN oral [1]	250 – 500mg TWICE a day	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
CLARITHROMYCIN IV [1]	500mg TWICE a day	Dose as in normal renal function	250 – 500mg TWICE a day	250 – 500mg TWICE a day	250 – 500mg TWICE a day	250 – 500mg TWICE a day
CLINDAMYCIN [1,10, 11]	PO:150 – 450mg FOUR times a day IV: 300mg – 1.2g FOUR times a day	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
CO-AMOXICLAV oral [1] (avoid if penicillin allergic)	375mg – 625mg THREE times a day	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
CO-AMOXICLAV IV [1] (avoid if penicillin allergic)	1.2g THREE times a day	Dose as in normal renal function	1.2g TWICE a day	1.2g TWICE a day	1.2g TWICE a day Give after dialysis	1.2g TWICE a day

Drug	Dose in normal renal function	Mild (GFR 20 – 50ml/min)	Moderate (GFR 10 – 20ml/min)	Severe (GFR <10ml/min)	Haemodialysis	Peritoneal dialysis
CO-TRIMOXAZOLE [1] oral prophylaxis	480mg – 960mg daily or 960mg alternate days	Dose as in normal renal function	480mg daily or 480mg alternate days	480mg daily or 480mg alternate days	480mg daily or 480mg alternate days	480mg daily or 480mg alternate days
CO-TRIMOXAZOLE [1] PCP treatment	120mg/kg a day in 2 – 4 divided doses (e.g. 60mg/kg TWICE a day or 30mg/kg FOUR times a day)	Dose as in normal renal function	60mg/kg TWICE a day for 3 days then 30mg/kg TWICE a day	30mg/kg TWICE a day	30mg/kg TWICE a day Give after dialysis	30mg/kg TWICE a day
DOXYCYCLINE [1,13]	200mg on day 1 then 100mg daily severe 200mg daily	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
ERTAPENEM [1]	1g daily	Dose as in normal renal function	50 – 100% of normal dose daily	50% of normal dose daily or 1g THREE times a week	50% of normal dose daily or 1g THREE times a week Give after dialysis	50% of normal dose daily
ERYTHROMYCIN [1,14]	Oral: 250 – 500mg FOUR times a day IV: 6.25 – 12.5mg/kg every SIX hours (max 4g daily)	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function (max 2g daily)	Dose as in normal renal function (max 2g daily)	Dose as in normal renal function (max 2g daily)
ETHAMBUTOL [1]	15mg/kg/day or 30mg/kg 3 times a week	Dose as in normal renal function	15mg/kg every 24 – 36 hours or 7.5 – 15mg/kg/day	15mg/kg every 48 hours or 5 – 7.5mg/kg/day	25mg/kg 3 times a week after each dialysis	15mg/kg every 48 hours or 5 – 7.5mg/kg/day
FLUCLOXACILLIN oral [1,15] (avoid if penicillin allergic)	250mg – 500mg FOUR times a day	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function (max 4g daily)	Dose as in normal renal function (max 4g daily)	Dose as in normal renal function (max 4g daily)
FLUCLOXACILLIN IV [1,16] (avoid if penicillin allergic)	250mg – 2g FOUR times a day (endocarditis 2g every 4 hours if > 85kg)	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function (max 4g daily)	Dose as in normal renal function (max 4g daily)	Dose as in normal renal function (max 4g daily)
FLUCONAZOLE [1]	50 – 400mg daily	50 – 100% of normal dose	50 – 100% of normal dose	50% of normal dose (no adjustment for single dose)	50% of normal dose daily or 100% 3 times a week after dialysis (no adjustment for single dose)	50% of dose (no adjustment for single dose)

Drug	Dose in normal renal function	Mild (GFR 20 – 50ml/min)	Moderate (GFR 10 – 20ml/min)	Severe (GFR <10ml/min)	Haemodialysis	Peritoneal dialysis
FUSIDIC ACID [1,17,18] (Sodium fusidate)	Tablets: 500mg – 1g THREE times a day Suspension: 750mg THREE times a day	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
GENTAMICIN IV [1] Note: weight is based on ideal body weight and not actual body weight (Warning: Nephrotoxic)	See Trust Protocol ONCE DAILY GENTAMICIN IV PROTOCOL for ADULTS Calculating IBW: Gentamicin dosing in obese patients				See protocol http://intranet.rde.local/intranet/documents/340/12939/systemic%20infections%202015.pdf	2mg/kg stat then re-dose 1mg/kg when level is <2 (IP – see local policy)
IMIPENEM/CILASTATIN[1,19] (Primaxin)	250mg – 1g every 6 – 8 hours	500mg every 6 - 8hours	250 - 500mg every 12 hours	250 – 500mg every 12 hours If GFR < 5ml/min avoid unless HD is started within 48 hours	250 – 500mg every 12 hours Give after dialysis	250 – 500mg every 12 hours
ISONIAZID [1]	PO: 300mg daily IV: 200 – 300mg daily	Dose as in normal renal function	Dose as in normal renal function	200 – 300mg daily	200 – 300mg daily Give after dialysis	200 – 300mg daily
ITRACONAZOLE PO [1]	100–200 mg every 8–24 hours according to indication	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
ITRACONAZOLE IV [1] A required component of intravenous formulation, is eliminated through glomerular filtration. Therefore, in patients with creatinine clearance < 30 mL/min the use of Iitraconazole IV is contra-indicated	200 mg every 12-24 hours	GFR 30 – 50ml/min Use with caution GFR < 30ml/min Avoid	Avoid	Avoid	Avoid	Avoid
LEVOFLOXACIN [1, 12] (dose and frequency depend on indication)	250mg daily	250mg stat then 125mg daily	250mg stat then 125mg alternate days	250mg stat then 125mg alternate days	250mg stat then 125mg alternate days	250mg stat then 125mg alternate days
	500mg daily	500mg stat then 250mg daily	500mg stat then 125mg daily	500mg stat then 125mg daily	500mg stat then 125mg daily	500mg stat then 125mg daily
	500mg twice a day	500mg stat then 250mg twice a day	500mg stat then 125mg twice a day	500mg stat then 125mg once a day	500mg stat then 125mg once a day	500mg stat then 125mg once a day
LINEZOLID [1,20]	600mg TWICE a day	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function (use with caution – may accumulate)	Dose as in normal renal function Give after dialysis	Dose as in normal renal function

Drug	Dose in normal renal function	Mild (GFR 20 – 50ml/min)	Moderate (GFR 10 – 20ml/min)	Severe (GFR <10ml/min)	Haemodialysis	Peritoneal dialysis
MEROPENEM [1,25]	500mg – 1g every 8 hours (certain indications up to 2g every 8 hours)	500mg – 2g every 12 hours	500mg - 1g every 12 hours or 500mg every 8 hours	500mg – 1g daily	500mg – 1g daily or 1 – 2g three times a WEEK post dialysis	500mg – 1g daily
METRONIDAZOLE [1,21]	Oral: 200 – 400mg every 8 – 12 hours IV: 500mg every 8 hours PR: 1g every 8 – 12 hours	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function Give after dialysis	Dose as in normal renal function
NITROFURANTOIN [1, 30]	50 – 100mg every 6 hours prophylaxis: 50 – 100mg at night	Contraindicated if eGFR < 45 ml/min/1.73m2 but a short course (3 to 7 days) may be used with caution in certain patients with an eGFR of 30 to 44 ml/min/1.73m2	Contraindicated	Contraindicated	Contraindicated	Contraindicated
OFLOXACIN[1]	200 – 400mg daily (can be increased to 400mg twice daily)	200 – 400mg once daily	200 – 400mg once daily	100 - 200mg once daily	100 -200mg once daily Give after dialysis	100 - 200mg once daily
PENICILLIN V [1] (Phenoxymethylpenicillin) (avoid if penicillin allergic)	500mg – 1g every 6 hours	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function
PIPERACILLIN/ TAZOBACTAM (Tazocin®) [1,22] (avoid if penicillin allergic)	4.5g every 6 – 8 hours	4.5g every 8 hours	4.5g every 12 hours	4.5g every 12 hours	4.5g every 12 hours. Dialysed – give after dialysis	4.5g every 12 hours
PIVMECILLINAM [36] Acute UTI	400mg loading, then 200mg TDS for 3 days	400mg loading, then 200mg TDS for 3 days	400mg loading, then 200mg TDS for 3 days	400mg loading, then 200mg TDS for 3 days	400mg loading, then 200mg TDS for 3 days	400mg loading, then 200mg TDS for 3 days
PYRAZINAMIDE [1]	<50Kg:1.5g per day or 2g three times a week >50Kg: 2g per day or 2.5 g three times a week	Dose as in normal renal function	Dose as in normal renal function	50 – 100% of dose	50 – 100% of dose daily or 25 – 30mg/kg 3 times a week post-dialysis	50 – 100% of dose
RIFABUTIN [1]	150 – 600mg daily	Dose as in normal renal function	50% of normal dose (max 300mg daily)	50% of normal dose (max 300mg daily)	50% of normal dose (max 300mg daily)	50% of normal dose (max 300mg daily)

Drug	Dose in normal renal function	Mild (GFR 20 – 50ml/min)	Moderate (GFR 10 – 20ml/min)	Severe (GFR <10ml/min)	Haemodialysis	Peritoneal dialysis
RIFAMPICIN [1]	300 – 600mg twice a day	Dose as in normal renal function	Dose as in normal renal function	50 – 100% of normal dose	50 – 100% of normal dose	50 – 100% of normal dose
TEICOPLANIN [1, 31]	400mg every 12 hours for 3 doses then 200 – 400mg daily (up to 12mg/kg/day in life threatening infections)	GFR < 60ml/min Dose as in normal renal function, then reduce dose after 4th day to 200 mg daily or 400 mg every 48 hours. GFR <40ml/min Dose as in normal renal function, then reduce dose after 4th day to 30% of the dose daily or 400 mg every 72 hours.	Dose as in normal renal function, then reduce dose after 4th day to 30% of the dose daily or 400 mg every 72 hours.	Dose as in normal renal function, then reduce dose after 4th day to 30% of the dose daily or 400 mg every 72 hours.	Dose as in normal renal function, then reduce dose after 4th day to 30% of the dose daily or 400 mg every 72 hours.	Dose as in normal renal function, then reduce dose after 4th day to 30% of the dose daily or 400 mg every 72 hours.
TEMOCILLIN[32]	1-2 gram every 12 hours	GFR > 60mL/min 1-2gram every 12 hours	GFR = 30-60mL/min 1g every 12 hours	GFR < 30mL/min but > 10mL/min 1 gram every 24 hours GFR < 10mL/min 1g every 48 hours or 500mg every 24 hours	At end of HD 1g every 48 hours or 500mg every 24 hours NB) IM route should be avoided (**IV only**)	IM 1g every 48 hours
TICARCILLIN/ CLAVULANIC ACID [1,26] (Timentin®) (avoid if penicillin allergic)	3.2g every 6 – 8 hours (every 4 hours if severe infection)	GFR 30 - 50ml/min: 3.2g every 8 hours	GFR 10 – 30ml/min: 1.6g every 8 hours	1.6g every 12 hours	1.6g every 12 hours Give after dialysis	1.6g every 12 hours
TRIMETHOPRIM [1] (can increase serum creatinine)	200mg every 12 hours	Dose as in normal renal function	Dose as in normal renal function	50 – 100% of normal dose*	50 – 100% of normal dose *	50 – 100% of normal dose *
VANCOMYCIN IV [1] (Warning: Nephrotoxic)	1 – 1.5g every 12 hours	0.5 – 1g every 12 – 24 hours	1g then re-dose when level < 10	1g then re-dose when level < 10	See line sepsis protocol http://intranet.rde.local/intranet/documents/340/12939/systemic%20infections%202015.pdf	1g then re-dose when level < 10 (IP – see local policy)
VANCOMYCIN PO [1]	125 – 500mg every 6 hours	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function	Dose as in normal renal function

* Reduce the dose by 50% if nausea and vomiting occurs.

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