Resources for renal workshop

Co-amoxiclav BNF/RHB

With intravenous use in adults:

Co-amoxiclav injection (expressed as co-amoxiclav): if eGFR 10–30 mL/minute/1.73 m^2, 1.2 g initially, then 600 mg every 12 hours; if eGFR less than 10 mL/minute/1.73 m^2, 1.2 g initially, then 600 mg every 24 hours.

Dose in renal impairment GFR (mL/min)	
30–50	Dose as in normal renal function.
10–30	IV: 1.2 g every 12 hours. Oral: Dose as in normal renal function.
<10	IV: 1.2 g stat followed by 600 mg every 8 hours or 1.2 g every 12 hours. Oral: Dose as in normal renal function.

Apixaban BNF/RHB

Dose adjustments

See Prescribing in renal impairment.

When used for *prophylaxis of stroke and systemic embolism in non-valvular atrial fibrillation*, manufacturer advises reduce dose to 2.5 mg twice daily if serum-creatinine 133 micromol/litre and over is associated with age 80 years and over or body-weight 60 kg or less; reduce dose to 2.5 mg twice daily if creatinine clearance 15–29 mL/minute.

Dose in renal impairment GFR (mL/min)	
30–50	Dose as in normal renal function. Use with caution.
15–30	Dose as in normal renal function. Use with caution. AF: 2.5 mg twice daily.
<15	Use with caution. AF: 2.5 mg twice daily. See 'Other information'.

Metformin BNF/RHB

In adults:

Manufacturer advises avoid if eGFR is less than 30 mL/minute/1.73 m^2.

Dose in renal impairment GFR (mL/min)	
45–59	25–50% of dose. Maximum: 2000 mg in 2–3 divided doses.
10–45	25% of dose. See 'Other information'.
<10	Avoid. See 'Other information'.

Other information

- Doses in renal impairment are from *Drug Prescribing in Renal Failure*, 5th edition by Aronoff *et al.*
- Lactic acidosis is a rare but serious metabolic complication that can occur due to metformin accumulation. Reported cases have occurred primarily in diabetic patients with significant renal impairment.
- Contraindicated by manufacturer if GFR<30 mL/min. In GFR=30–44 mL/min, maximum daily dose is 1000 mg.
- A recent paper debates how safe metformin is in renal disease and suggests it can be used in patients with GFR>30 mL/min with careful monitoring and query the data which says it commonly causes lactic acidosis. (Herrington WG, Levy JB. Metformin: effective and safe in renal disease? *Int Urol Nephrol.* 2008; **40**(2): 411–7.)

Aspirin SPC/RHB

4.3 Contraindications

- Severe renal impairment.

Dose in renal impairment GFR (mL/min)	
20–50	Dose as in normal renal function. See 'Other information'.
10–20	Dose as in normal renal function. See 'Other information'.
<10	Dose as in normal renal function. See 'Other information'.

Dose in patients undergoing renal replacement therapies	
APD/CAPD	Dialysed. Dose as in normal renal function.
HD	Dialysed. Dose as in normal renal function.
HDF/High flux	Dialysed. Dose as in normal renal function.
CAV/VVHD	Dialysed. Dose as in normal renal function.

Ramipril SPC/RHB

4.2 Posology and method of administration

Special populations

Patients with renal impairment

- In haemodialysed hypertensive patients: ramipril is slightly dialysable; the initial dose is 1.25 mg/day and the maximal daily dose is 5 mg; the medicinal product should be administered few hours after haemodialysis is performed.

Dose in renal impairment GFR (mL/min)	
20–50	Dose as in normal renal function.
10–20	Initial dose 1.25 mg daily and increase according to response.
<10	Initial dose 1.25 mg daily and increase according to response.

Dose in patients undergoing renal replacement therapies	
APD/CAPD	Unknown dialysability. Dose as in GFR<10 mL/min.
HD	Not dialysed. Dose as in GFR<10 mL/min.
HDF/High flux	Dialysed. Dose as in GFR<10 mL/min.
CAV/VVHD	Dialysed. Dose as in GFR=10–20 mL/min.

Bendroflumethiazide SPC/RHB

4.3 Contraindications

Bendroflumethiazide tablets are contraindicated in patients with known hypersensitivity to thiazides; hypercalcaemia, hyponatraemia, refractory hypokalaemia, severe renal and hepatic insufficiency, symptomatic hyperuricaemia and Addison's disease.

4.4 Special warnings and precautions for use

Mild or moderate hepatic or renal impairment

Use with caution in renal impairment (severe renal insufficiency is a contraindication to use, see 4.3). Renal function should be monitored during bendroflumethiazide therapy. Thiazides can cause electrolyte imbalance which is more severe in patients with hepatic and renal impairment and in those receiving higher or prolonged doses.

Dose in renal impairment GFR (mL/min)	
30–50	Dose as in normal renal function.
10–30	Dose as in normal renal function.
<10	Unlikely to work.

Dose in patients undergoing renal replacement therapies	
APD/CAPD	Unlikely to be dialysed. Unlikely to work.
HD	Not dialysed. Unlikely to work.
HDF/High flux	Unknown dialysability. Unlikely to work.
CAV/VVHD	Probably not dialysed. Unlikely to work.

Atorvastatin SPC/RHB

4.2 Posology and method of administration

Renal impairment

No adjustment of dose is required (see section 4.4).

Dose in renal impairment GFR (mL/min)	
20–50	Dose as in normal renal function.
10–20	Dose as in normal renal function.
<10	Dose as in normal renal function.

Dose in patients undergoing renal replacement therapies	
APD/CAPD	Not dialysed. Dose as in normal renal function.
HD	Not dialysed. Dose as in normal renal function.
HDF/High flux	Unknown dialysability. Dose as in normal renal function.
CAV/VVHD	Not dialysed. Dose as in normal renal function.

Bisoprolol SPC/RHB

4.2 Posology and method of administration

Renal impairment

In patients with severe renal impairment (creatinine clearance < 20 ml/min) the dose should not exceed 10 mg once daily. This dosage may eventually be divided into halves.

Dose in renal impairment GFR (mL/min)	
20–50	Dose as in normal renal function.
10–20	Dose as in normal renal function.
<10	Dose as in normal renal function.

Dose in patients undergoing renal replacement therapies	
APD/CAPD	Not dialysed. Dose as in normal renal function.
HD	Not dialysed. Dose as in normal renal function.
HDF/High flux	Unknown dialysability. Dose as in normal renal function.
CAV/VVHD	Unknown dialysability. Dose as in normal renal function.