

Contents

Contributors *x*

Symbols and abbreviations *xi*

1	Clinical assessment of the renal patient	1
2	Acute renal failure	69
3	Chronic kidney disease	141
4	Renal replacement therapies	199
5	Hypertension	279
6	Diseases of the kidney	359
7	The kidney in systemic disease	437
8	Urinary tract obstruction	495
9	Fluids and electrolytes	519
10	Pregnancy and the kidney	565
11	Drugs and the kidney	593
12	Appendices	613

Index *649*

Clinical assessment of the renal patient

- History 2
- Physical examination 8
- The urine 12
- Proteinuria 18
- Red blood cells 20
- Cells, organisms, and casts 22
- Crystals 24
- Determining renal function 26
- Creatinine 28
- Diagnostic imaging 34
 - Ultrasound 36
 - Intravenous urography 38
 - CT 40
 - Nuclear medicine 42
 - Angiography and urology 44
- Clinical syndromes 46
 - Proteinuria 46
 - Haematuria 50
 - Chronic kidney disease 56
 - The uraemic syndrome 57
 - Other clinical syndromes 58
 - Pulmonary renal syndromes 60
 - Changes in urine volume 62
 - Pain 63
 - Tubular syndromes 64
 - Bladder outflow obstruction 66

Acute renal failure

- Definition and epidemiology 70
- Causes and classification 72
- Prevention 74
- Clinical approach to ARF 76
- Acute or chronic renal failure? 78
- Assessing ARF 80
 - The nephritic and myeloma screen 84
- Assessing ARF: imaging and histology 86
- Pre-renal ARF 88
 - Causes of pre-renal ARF 90
 - Volume replacement in pre-renal ARF 92
- Intrinsic renal ARF 94
 - Acute tubular necrosis (ATN) 96
 - Pathophysiology of ATN 98
 - Management of ARF 1: a checklist 100
 - Management of ARF 2: dangerous hyperkalaemia 102
 - Management of ARF 3: reducing total body K^+ 106
 - Management of ARF 4: pulmonary oedema 108
 - Management of ARF 5: electrolytes and acidosis 110
 - Management of ARF 6: other strategies 112
 - Management of ARF 7: nutrition 114
 - Management myths 116
- Renal replacement therapy in ARF 118
 - Prescribing acute haemodialysis (HD) 120
 - Peritoneal dialysis (PD) in ARF 122
 - The hepato-renal syndrome (HRS) 124
 - Management of HRS 126
 - Rhabdomyolysis 128
 - Management of rhabdomyolysis 130
 - Radio-contrast nephropathy (RCN) 132
 - Tumour lysis syndrome 134
- ARF in sepsis 136
 - Managing septic shock and ARF 138

Chronic kidney disease

- What is chronic kidney disease (CKD)? 142
- Pathogenesis of CKD 144
- Diagnosing CKD 146
- Progression of CKD 148
- Preventing progression: blood pressure 150
- Preventing progression: other measures 152
- Managing CKD 154
- Complications of advanced CKD 156
- Uraemia 158
- Anaemia of CKD 160
- Erythropoietin 162
- Prescribing erythropoietin 164
- Iron stores and iron therapy in CKD 166
- Renal bone disease 1 168
- Renal bone disease 2: physiology 170
- Renal bone disease 3: clinical features 172
- Renal bone disease 4: treatment 174
- Hyperphosphataemia 176
- Vitamin D analogues 178
- Calcimimetics 180
- Parathyroidectomy 182
- Calciphylaxis 184
- Cardiovascular disease in CKD 186
- Pre-transplant work-up 188
- Diet and nutrition in CKD 190
- Malnutrition in CKD 192
- Endocrine problems in CKD 194
- Palliative treatment of advanced CKD 196

Renal replacement therapy

- RRT: a brief history 200
- Introduction 202
- Haemodialysis (HD) 204
- Dialysers and membranes 208
- HD prescription 210
- Variables in the dialysis prescription 212
- Vascular access 214
- Complications of vascular access 216
- Acute HD complications 218
- Peritoneal dialysis (PD) 220
- Types of PD 222
- PD fluids 224
- Prescribing PD 226
- Peritonitis 228
- Other complications 232
- PD adequacy 234
- Ultrafiltration failure 236
- The well PD patient 238
- Basic transplantation 240
- Compatibility 242
- Pre-transplant assessment 244
- Living donor transplantation 246
- Pre-transplant management 248
- The transplant operation 250
- Post-transplant management 252
- Principles of recipient management 254
- Immunosuppression 256
- Surgical complications 258
- Graft dysfunction 260
- Acute rejection 262
- Chronic allograft nephropathy (CAN) 264
- Post-transplant infections 266
- Cytomegalovirus (CMV) 268
- BK virus nephropathy 270
- Post-transplant malignancy 272
- Expanding the donor pool 274
- Kidney-pancreas transplantation 276

Hypertension

- Hypertension facts and figures 280
- What is hypertension? 282
- Pathogenesis 284
- BP measurement 290
- Clinical assessment 292
- Classification of hypertension 294
- Treatment thresholds 296
- Hypertension and CV risk 298
- Lifestyle measures 304
- Secondary hypertension 306
- Primary hyperaldosteronism 308
- Specific causes of hyperaldosteronism 310
- Other 'hyperaldosteronism' syndromes 312
- Other causes of secondary hypertension 314
- Drug management of hypertension 316
- Drug treatment of hypertension 320
- Clinical trials in hypertension 324
- The ASCOT study 330
- Diuretics 332
- β -blockers 336
- α -blockers 338
- Calcium channel blockers 340
- ACE inhibitors (ACEI) 342
- All receptor blockers (ARB) 344
- Other antihypertensives 346
- Resistant hypertension 348
- Hypertensive urgencies and emergencies 350
- Assessing urgencies and emergencies 352
- Management of urgencies and emergencies 354
- Orthostatic hypotension 356

Diseases of the kidney

- Approaching glomerular disease 360
- Histology of glomerulonephritis 362
- Acute nephritic syndrome 364
- Approaching acute nephritis 366
- General principles of management of nephritis 368
- Management of glomerulonephritis 370
- IgA nephropathy 374
- Management of IgA nephropathy 376
- Post-infectious glomerulonephritis 378
- Mesangiocapillary glomerulonephritis 380
- Hereditary nephropathies 382
- Other glomerulonephritides 384
- The nephrotic syndrome 386
- Minimal change nephropathy 390
- Membranous nephropathy (MN) 392
- Focal and segmental glomerulosclerosis 396
- Treatment of FSGS 398
- Thrombotic microangiopathies 400
- Thrombotic thrombocytopenic purpura 402
- Haemolytic-uraemic syndrome 404
- Tubulo-interstitial diseases 406
- Chronic tubulo-interstitial diseases 408
- Analgesic nephropathy 410
- Renovascular disease 412
- Management of ARAS 414
- Other renovascular diseases 416
- Adult polycystic kidney disease (APKD) 418
- Complications of APKD 420
- Other cystic kidney diseases 422
- Urinary tract infections 424
- Reflux nephropathy 430
- Nephrolithiasis 432
- Investigating recurrent stone-formers 434
- Acute renal colic 436

The kidney in systemic disease

- Diabetic nephropathy (DN) 438
- Management of diabetic nephropathy 442
- Management of ESRD in diabetes 444
- The kidney in multiple myeloma 446
- Managing myeloma kidney 448
- Renal amyloid 450
- Other non-amyloid dysproteinaemias 452
- Sickle cell nephropathy 454
- Vasculitis and renal disease 456
- ANCA-positive vasculitis 458
- Treatment of ANCA-positive vasculitis 460
- Churg–Strauss syndrome 462
- Classical polyarteritis nodosa 464
- Goodpasture's disease 466
- Lupus nephritis 468
- Management of lupus nephritis 470
- Antiphospholipid syndrome 472
- Scleroderma renal crisis 474
- Rheumatoid arthritis 476
- Sarcoidosis 478
- HIV and renal disease 480
- Hepatitis B-related renal disease 482
- Hepatitis C-related renal disease 484
- The kidney in infective endocarditis 486
- Renal tuberculosis 488
- Schistosomiasis 490
- Malaria 492

Urinary tract obstruction

- Approaching obstruction 496
- Imaging urinary tract obstruction 498
- Acute obstruction 500
- Chronic obstruction 502
- PUJ and VUJ obstruction 504
- Retroperitoneal fibrosis 506
- Investigation of a renal mass 508
- Renal cell carcinoma 510
- Urothelial tumours 512
- Benign prostatic hypertrophy (BPH) 514
- Prostate cancer 516
- Management of prostate cancer 518

Fluids and electrolytes

- Sodium: salt and water balance 520
- Hyponatraemia 522
- Management of hyponatraemia 524
- Hypernatraemia 526
- Oedema and its treatment 528
- Diuretics 530
- Potassium 532
- Hypokalaemia 534
- Bartter's, Gitelman's, and Liddle's 536
- Calcium, magnesium, and phosphorus 538
- Hypocalcaemia 540
- Hypercalcaemia 542
- Hypomagnesemia 544
- Hypermagnesemia 546
- Hypophosphataemia 548
- Hyperphosphataemia 550
- Acid-base 552
- Metabolic acidosis 554
- Renal tubular acidosis 556
- Lactic acidosis 558
- Metabolic alkalosis 560
- Mixed grills: acidosis and alkalosis 562
- Tubular rarities 564

Pregnancy and the kidney

- Renal physiology in pregnancy 566
- UTI in pregnancy 568
- Acute renal failure in pregnancy 570
- Hypertension in pregnancy 572
- Pregnancy-induced hypertension 574
- Pre-eclampsia and eclampsia 576
- Managing pre-eclampsia/eclampsia 578
- Chronic hypertension in pregnancy 580
- Pre-existing renal disease 582
- Disorders of the renal tract in pregnancy 586
- Pregnancy on dialysis 588
- Renal transplantation and pregnancy 590

Drugs and the kidney

- Prescribing in renal impairment 594
- The septic ESRD patient: drug issues 596
- Cardiac drugs in renal failure 598
- NSAIDs and the kidney 600
- Analgesia in renal failure 602
- Opioids in renal failure 604
- Poisoning and dialysis 606
- Lithium and salicylate poisoning 608
- Ethylene glycol poisoning 610

Appendices

- The glomerulus 614
- Regulation of GFR 616
- Tubular function 618
- The proximal convoluted tubule 620
- The loop of Henle 622
- Solute transport in the loop 624
- The distal tubule 626
- The collecting duct 628
- Insertion of haemodialysis catheters 630
- Renal biopsy 636
- Preparing renal patients for theatre 640
- Plasma exchange 642
- Clinical practice guidelines 644
- Useful websites 648