

---

# Basic Urological Management

---

Sanchia S. Goonewardene • Peter Pietrzak  
David Albala

# Basic Urological Management

 Springer

Sanchia S. Goonewardene  
East of England Deanery  
Southend University Hospital  
London  
UK

Peter Pietrzak  
Southend University Hospital NHS  
Foundation Trust  
Southend  
UK

David Albala  
Associated Medical Professionals  
Syracuse  
NY  
USA

ISBN 978-3-319-98719-4      ISBN 978-3-319-98720-0 (eBook)  
<https://doi.org/10.1007/978-3-319-98720-0>

Library of Congress Control Number: 2018959561

© Springer Nature Switzerland AG 2019

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

---

## Preface

Welcome to *Basic Urological Management*. We hope you enjoy and learn from this book. The aim of this book is to not only gain knowledge but an understanding of patient pathways and what to do next for patients at different steps in each pathway. It is perfectly fine not to know something in medicine and then to go and study about a topic or area. It is how we evolve our knowledge. The key is to study it in detail and then apply that knowledge to each clinical situation.

Everyone, at some point, has been at the start of their career. As a young doctor, I often had a difficult time, with consultants who expected a CCT level of knowledge, prior to gaining a training number. A few situations in particular stood out in my mind, where a knowledge of patient pathways or what to do in each specific clinic scenario would have helped. I had been through the library of textbooks to no avail. I needed a practical book that told me what to do and when.

It was in that job that I started to write. The first thing I wrote was a list of clinical management scenarios; it would be good to be aware of those scenarios as a junior doctor. This book is written entirely from that. In the words of one of my favourite consultants, 'You have to learn to cut your teeth somewhere.' (You have to start somewhere.) Work and train hard, and treat your patients as if they were family, and you will succeed.

London, UK  
Southend, UK  
Syracuse, NY, USA

Sanchia S. Goonewardene  
Peter Pietrzak  
David Albala

---

## Acknowledgements

For my family and friends, for always supporting me in what I do.

For my team at Springer, for always giving me a chance to get published.

For Gladstone's Library, for always giving me a sanctuary in which to write.

For my mentor, anchorman and editor-in-chief, David Albala (credit for illustrations goes to him).

For my amazing crew at Southend, Peter Pietrzak, Pete Acher and Sampi Mehta.

For East of England Deanery and my TPD, Mr Oliver Wiseman (Winner of the Silver Cystoscope for Best Trainer), for always supporting me and my academic endeavours.

---

# Contents

<b>1</b>	<b>Visible Haematuria</b> .....	1
	Suggested Reading .....	5
<b>2</b>	<b>Diagnostic Pathway for Haematuria</b> .....	7
	Suggested Reading .....	10
<b>3</b>	<b>Non-Visible Haematuria</b> .....	11
	Suggested Reading .....	13
<b>4</b>	<b>Management Pathway for Bladder Tumour</b> .....	15
	Suggested Reading .....	17
<b>5</b>	<b>Elevated PSA/Abnormal DRE</b> .....	19
	Suggested Reading .....	22
<b>6</b>	<b>Diagnostic Pathway for Prostate Cancer</b> .....	23
	Suggested Reading .....	24
<b>7</b>	<b>Management Pathway for Prostate Cancer in Younger Patients</b> ....	25
	Suggested Reading .....	26
<b>8</b>	<b>Management Pathway for Older Patients with Prostate Cancer</b> ....	27
	Suggested Reading .....	27
<b>9</b>	<b>Management of TRUS Biopsy Sepsis</b> .....	29
	Suggested Reading .....	30
<b>10</b>	<b>Haematospermia</b> .....	31
	Suggested Reading .....	33
<b>11</b>	<b>Diagnostic and Management Pathway for Haematospermia</b> .....	35
	Suggested Reading .....	35
<b>12</b>	<b>Lower Urinary Tract Symptoms</b> .....	37
	Suggested Reading .....	39
<b>13</b>	<b>Diagnostic Pathway for LUTS</b> .....	41
	Suggested Reading .....	43

---

<b>14</b>	<b>Management Pathway for LUTS-Benign Prostatic Enlargement</b> . . . . .	45
	Suggested Reading . . . . .	45
<b>15</b>	<b>Acute Urinary Retention</b> . . . . .	47
	Suggested Reading . . . . .	49
<b>16</b>	<b>Diagnostic Pathway for Acute Urinary Retention</b> . . . . .	51
	Suggested Reading . . . . .	51
<b>17</b>	<b>Management Pathway for Acute Urinary Retention</b> . . . . .	53
	Suggested Reading . . . . .	53
<b>18</b>	<b>Difficult Catheters</b> . . . . .	55
	Suggested Reading . . . . .	57
<b>19</b>	<b>Management Pathway for Difficult Catheters</b> . . . . .	59
	Suggested Reading . . . . .	59
<b>20</b>	<b>Chronic Retention</b> . . . . .	61
	Suggested Reading . . . . .	62
<b>21</b>	<b>Diagnostic Pathway for Chronic Retention</b> . . . . .	63
	Suggested Reading . . . . .	63
<b>22</b>	<b>Management Pathway for Chronic Retention</b> . . . . .	65
	Suggested Reading . . . . .	65
<b>23</b>	<b>Metastatic Spinal Cord Compression</b> . . . . .	67
	Suggested Reading . . . . .	68
<b>24</b>	<b>Diagnostic Pathway for Metastatic Spinal Cord Compression</b> . . . . .	69
	Suggested Reading . . . . .	70
<b>25</b>	<b>Management Pathway for Metastatic Spinal Cord Compression</b> . . . . .	71
	Suggested Reading . . . . .	71
<b>26</b>	<b>Urethral Strictures</b> . . . . .	73
	Suggested Reading . . . . .	74
<b>27</b>	<b>Diagnostic Pathway for Urethral Strictures</b> . . . . .	75
	Suggested Reading . . . . .	78
<b>28</b>	<b>Management of Urethral Strictures</b> . . . . .	79
	Suggested Reading . . . . .	79
<b>29</b>	<b>Nocturnal Polyuria</b> . . . . .	81
	Suggested Reading . . . . .	82
<b>30</b>	<b>Diagnostic Pathway for Nocturnal Polyuria</b> . . . . .	83
	Suggested Reading . . . . .	83
<b>31</b>	<b>Management Pathway for Nocturnal Polyuria</b> . . . . .	85
	Suggested Reading . . . . .	85

<b>32</b>	<b>Dysuria</b> .....	87
	Suggested Reading .....	89
<b>33</b>	<b>Diagnostic Pathway for Dysuria</b> .....	91
	Suggested Reading .....	91
<b>34</b>	<b>Management Pathways for Dysuria: Recurrent UTIS</b> .....	93
	Suggested Reading .....	93
<b>35</b>	<b>Sepsis</b> .....	95
	Suggested Reading .....	97
<b>36</b>	<b>Diagnostic and Management Pathway for Sepsis</b> .....	99
	Suggested Reading .....	99
<b>37</b>	<b>Acute Pyelonephritis</b> .....	101
	Suggested Reading .....	103
<b>38</b>	<b>Chronic Pyelonephritis</b> .....	105
	Suggested Reading .....	107
<b>39</b>	<b>Diagnostic Pathway for Pyelonephritis</b> .....	109
	Suggested Reading .....	110
<b>40</b>	<b>Management Pathway for Pyelonephritis</b> .....	111
	Suggested Reading .....	111
<b>41</b>	<b>Cystitis</b> .....	113
	Suggested Reading .....	115
<b>42</b>	<b>Diagnostic Pathway for Cystitis</b> .....	117
	Suggested Reading .....	117
<b>43</b>	<b>Management Pathway for Cystitis</b> .....	119
	Suggested Reading .....	119
<b>44</b>	<b>Pyonephrosis</b> .....	121
	Suggested Reading .....	123
<b>45</b>	<b>Diagnosis of Pyonephrosis</b> .....	125
	Suggested Reading .....	126
<b>46</b>	<b>Management Pathway for Pyonephrosis</b> .....	127
	Suggested Reading .....	127
<b>47</b>	<b>Perinephric Abscess</b> .....	129
	Suggested Reading .....	131
<b>48</b>	<b>Diagnostic Pathway for Perinephric Abscess</b> .....	133
	Suggested Reading .....	134
<b>49</b>	<b>Management Pathway for Perinephric Abscess</b> .....	135
	Suggested Reading .....	135



---

<b>50</b>	<b>Necrotising Fasciitis</b> .....	137
	Suggested Reading .....	139
<b>51</b>	<b>Diagnostic Pathway for Necrotising Fasciitis</b> .....	141
	Suggested Reading .....	142
<b>52</b>	<b>Management Pathway for Necrotising Fasciitis</b> .....	143
	Suggested Reading .....	143
<b>53</b>	<b>Scrotal Abscess</b> .....	145
	Suggested Reading .....	146
<b>54</b>	<b>Diagnostic Pathway for Scrotal Abscess</b> .....	147
	Suggested Reading .....	147
<b>55</b>	<b>Management Pathway for Scrotal Abscess</b> .....	149
<b>56</b>	<b>Epididymitis/Orchitis</b> .....	151
	Suggested Reading .....	153
<b>57</b>	<b>Diagnostic Pathway for Epididymo-Orchitis</b> .....	155
	Suggested Reading .....	155
<b>58</b>	<b>Management Pathway for Epididymo-Orchitis</b> .....	157
	Suggested Reading .....	157
<b>59</b>	<b>Prostatitis</b> .....	159
	Suggested Reading .....	161
<b>60</b>	<b>Diagnostic Pathway for Prostatitis</b> .....	163
	Suggested Reading .....	164
<b>61</b>	<b>Management Pathway for Prostatitis</b> .....	165
	Suggested Reading .....	165
<b>62</b>	<b>Renal/Ureteric Colic</b> .....	167
	Suggested Reading .....	169
<b>63</b>	<b>Diagnostic Pathway for Stones</b> .....	171
	Suggested Reading .....	172
<b>64</b>	<b>Management Pathway for Renal Stones</b> .....	173
	Suggested Reading .....	176
<b>65</b>	<b>Management Pathway for Ureteric Stones</b> .....	177
	Suggested Reading .....	178
<b>66</b>	<b>Ureteral Clot Colic</b> .....	179
	Suggested Reading .....	180
<b>67</b>	<b>Diagnosis of Ureteral Clot Colic</b> .....	181
	Suggested Reading .....	181
<b>68</b>	<b>Management of Ureteral Clot Colic</b> .....	183
	Suggested Reading .....	185

<b>69</b>	<b>Pelvi-Ureteric Junction Obstruction</b> .....	187
	Suggested Reading .....	189
<b>70</b>	<b>Diagnosis of PUJO</b> .....	191
	Suggested Reading .....	191
<b>71</b>	<b>Management of PUJO</b> .....	193
	Suggested Reading .....	193
<b>72</b>	<b>Hydronephrosis</b> .....	195
	Suggested Reading .....	196
<b>73</b>	<b>Diagnosis of Hydronephrosis</b> .....	197
	Suggested Reading .....	199
<b>74</b>	<b>Management of Hydronephrosis</b> .....	201
	Suggested Reading .....	203
<b>75</b>	<b>Renal Trauma</b> .....	205
	Suggested Reading .....	207
<b>76</b>	<b>Grading of Renal Trauma</b> .....	209
	Suggested Reading .....	211
<b>77</b>	<b>Diagnostic Pathway for Renal Trauma</b> .....	213
	Suggested Reading .....	213
<b>78</b>	<b>Management Pathway for Renal Trauma</b> .....	215
	Suggested Reading .....	216
<b>79</b>	<b>Ureteric Trauma</b> .....	217
	Suggested Reading .....	219
<b>80</b>	<b>Ureteric Injury Severity Scale</b> .....	221
	Suggested Reading .....	222
<b>81</b>	<b>Diagnostic Pathway for Ureteric Trauma</b> .....	223
	Suggested Reading .....	224
<b>82</b>	<b>Management of Ureteric Injury</b> .....	225
	Suggested Reading .....	226
<b>83</b>	<b>Bladder Trauma</b> .....	227
	Suggested Reading .....	229
<b>84</b>	<b>Injury Severity Scale, Bladder Trauma</b> .....	231
	Suggested Reading .....	231
<b>85</b>	<b>Diagnosis of Bladder Trauma</b> .....	233
	Suggested Reading .....	234
<b>86</b>	<b>Management of Bladder Trauma</b> .....	235
	Suggested Reading .....	236

---

<b>87</b>	<b>Urethral Trauma</b> . . . . .	237
	Suggested Reading . . . . .	240
<b>88</b>	<b>Urethral Injury Severity Scoring</b> . . . . .	241
	Suggested Reading . . . . .	242
<b>89</b>	<b>Diagnosis of Urethral Trauma</b> . . . . .	243
	Suggested Reading . . . . .	243
<b>90</b>	<b>Management Urethral Trauma</b> . . . . .	245
	Suggested Reading . . . . .	245
<b>91</b>	<b>Testicular Trauma</b> . . . . .	247
	Suggested Reading . . . . .	249
<b>92</b>	<b>Testicular Trauma Injury Scale</b> . . . . .	251
	Suggested Reading . . . . .	251
<b>93</b>	<b>Diagnosis of Testicular Trauma</b> . . . . .	253
	Suggested Reading . . . . .	253
<b>94</b>	<b>Management of Testicular Trauma</b> . . . . .	255
	Suggested Reading . . . . .	256
<b>95</b>	<b>Overactive Bladder</b> . . . . .	257
	Suggested Reading . . . . .	259
<b>96</b>	<b>Diagnosis of Overactive Bladder</b> . . . . .	261
	Suggested Reading . . . . .	261
<b>97</b>	<b>Management of Overactive Bladder</b> . . . . .	263
	Suggested Reading . . . . .	263
<b>98</b>	<b>Urinary Incontinence</b> . . . . .	265
	Suggested Reading . . . . .	267
<b>99</b>	<b>Diagnosis of Incontinence</b> . . . . .	269
	Suggested Reading . . . . .	269
<b>100</b>	<b>Management of Incontinence</b> . . . . .	271
	Suggested Reading . . . . .	271
<b>101</b>	<b>Priapism</b> . . . . .	273
	Suggested Reading . . . . .	275
<b>102</b>	<b>Diagnosis of Priapism</b> . . . . .	277
	Suggested Reading . . . . .	277
<b>103</b>	<b>Management of Priapism</b> . . . . .	279
	Suggested Reading . . . . .	279

---

<b>104 Penile Fracture</b> .....	281
Suggested Reading .....	283
<b>105 Diagnosis of Penile Fracture</b> .....	285
Suggested Reading .....	286
<b>106 Management of Penile Fracture</b> .....	287
Suggested Reading .....	288
<b>107 Phimosis</b> .....	289
Suggested Reading .....	291
<b>108 Diagnosis and Management of Phimosis</b> .....	293
Suggested Reading .....	293
<b>109 Paraphimosis</b> .....	295
Suggested Reading .....	297
<b>110 Management of Paraphimosis</b> .....	299
Suggested Reading .....	300
<b>111 Erectile Dysfunction</b> .....	301
Suggested Reading .....	303
<b>112 Diagnosis and Management of ED</b> .....	305
Suggested Reading .....	305
<b>113 Penile Cancer</b> .....	307
Suggested Reading .....	310
<b>114 Diagnosis of Penile Cancer</b> .....	311
Suggested Reading .....	311
<b>115 Management of Penile Cancer</b> .....	313
Suggested Reading .....	314
<b>116 A Renal Mass</b> .....	315
Suggested Reading .....	320
<b>117 Management Pathway for Renal Mass</b> .....	321
Suggested Reading .....	323
<b>118 A Painful Scrotum</b> .....	325
Suggested Reading .....	327
<b>119 Diagnostic Pathway: A Painful Scrotum</b> .....	329
Suggested Reading .....	330
<b>120 Management Pathway: A Painful Scrotum</b> .....	331
Suggested Reading .....	331

---

<b>121 Scrotal Lesions</b> . . . . .	333
Suggested Reading . . . . .	335
<b>122 Diagnostic and Management Pathways: Scrotal Lesions</b> . . . . .	337
Suggested Reading . . . . .	337
<b>Index</b> . . . . .	339

---

# Abbreviations

AAA	Abdominal aortic aneurysm
AAST	American Association for the Surgery of Trauma
ADH	Antidiuretic hormone
A+E	Accident and emergency
AMH	Asymptomatic microhematuria
ATLS	Advanced Trauma Life Support
AUA	American Urological Association
AVM	Arteriovenous malformation
BCG	Bacillus Calmette-Guerin
BD	Twice daily
BP	Blood pressure
BPH	Benign prostatic hypertrophy
BXO	Balanitis xerotica obliterans
CCF	Congestive cardiac failure
CIS	Carcinoma in situ
CT	KUB Computed tomography of kidneys, ureters and bladder
CT IVU	Computed tomography intravenous urogram
CKD	Chronic kidney disease
Cr	Creatinine
CXR	Chest radiograph
CXM	Crossmatch
DRE	Digital rectal examination
DM	Diabetes mellitus
DI	Diabetes insipidus
EAU	European Association of Urology
ED	Erectile dysfunction
EGFR	Estimated glomerular filtration rate
ESWL	Extracorporeal shockwave lithotripsy
FFP	Fresh frozen plasma
FBC	Full blood count
Fr	French
FSH	Follicle-stimulating hormone
GA	General anaesthesia
G+S	Group and save

---

GU	Genitourinary
HB	Haemoglobin
HD	Haemodynamically
HOLEP	Holmium Laser Enucleation of the Prostate
HPCR	High-pressure chronic retention
HPV	Human papillomavirus
ICIQ-SF	International Consultation on Incontinence Questionnaire – Short Form
IEEF	International Index of Erectile Function
ISC	Intermittent self-catheterisation
IVC	Inferior vena cava
IVI	Intravenous infusion
IV	Intravenous
IVU	Intravenous urogram
IPSS	International Prostate Symptom Score
LA	Local anaesthesia
LFTs	Liver function tests
LH	Luteinising hormone
LHRH	Luteinising hormone-releasing hormone
LPCR	Low-pressure chronic retention
LTC	Long-term catheter
LUTS	Lower urinary tract symptoms
MAG 3	Nuclear Medicine MAG 3 Renogram
MC+S	Microscopy, culture and sensitivity
MDT	Multidisciplinary team meeting
MAG	Mercaptoacetyltriglycine
MIBC	Muscle-invasive bladder cancer
MRI	Magnetic resonance imaging
MS	Multiple sclerosis
NBM	Nil by Mouth
NICE	National Institute for Clinical Excellence
NMIBC	Non-muscle-invasive bladder cancer
Na	Sodium
NSAIDs	Nonsteroidal anti-inflammatory drug
NVH	Non-visible haematuria
OAB	Overactive bladder
Obs	Observations
OD	Once daily
OPA	Outpatient appointment
OPD	Outpatient department
PIRADS	Prostate Image Reporting and Data System
PPI	Proton-pump inhibitor
PSA	Prostate-specific antigen
PCNL	Percutaneous nephrolithotomy
PUJO	Pelviureteric junction obstruction

---

PV	Per vaginum
PVR	Post-void residual
Pt	Patient
Qmax	Maximum flow rate
RCC	Renal cell carcinoma
RESP	Rate Respiratory rate
Sats	Saturation
SCC	Squamous cell carcinoma
SHBG	Sex hormone-binding globulin
SHIM	Sexual Health Inventory for Men
SIRS	Systemic inflammatory response syndrome
SIADH	Syndrome of inappropriate antidiuretic hormone secretion
SPC	Suprapubic
STIs	Sexually transmitted infection
T stage	Tumour staging for cancer
TIS	Tumour in situ
TED	Thromboembolic device
TB	Tuberculosis
TCC	Transitional cell carcinoma
TFTs	Thyroid function tests
TURBT	Transurethral resection of the bladder tumour
TURP	Transurethral resection of the prostate
TOT	Transobturator tape
TVT	Transvaginal tape
TWOC	Trial without catheter
U+Es	Urea and electrolytes
USS	Ultrasound scan
USS KUB	Ultrasound scan of kidneys, ureters and bladder
UTI	Urinary tract infection
UV	Ultraviolet
VUR	Vesicoureteric reflux
WCC	White cell count