

Contents

<i>Contributors</i>	xiii
<i>Foreword</i>	xvii
<i>Acknowledgments</i>	xix
Chapter 1 Introduction <i>Werner Zimmerli</i>	1
Chapter 2 Microbiology of Bone and Joint Infections <i>Seong Yeol Ryu and Robin Patel</i>	5
Microorganisms in Osteomyelitis	5
Microorganisms in Implant-Associated Bone and Joint Infection	7
Microorganisms in Native Joint Arthritis	10
Diagnostic Approach in Osteomyelitis	11
Diagnostic Approach in Foreign Body-Associated Infection	12
Diagnostic Approach in Native Joint Infection	15
Novel Diagnostic Procedures	17
Acknowledgment	17
References	17
Chapter 3 Pharmacokinetics and Pharmacodynamics of Antibiotics in Bone <i>Cornelia B. Landersdorfer, Jürgen B. Bulitta, and Fritz Sörgel</i>	21
Pharmacokinetics	21
Bone Sample Preparation and Analysis	22
Pharmacokinetic Sampling and Data Analysis	23
Penetration of Antibiotics into Bone	24
Pharmacodynamics and Monte Carlo Simulations	31
Conclusions	34
Key Points	34
References	35

Chapter 4 Preclinical Models of Infection in Bone and Joint Surgery	39
<i>Lorenzo Calabro, R. Geoff Richards, and T. Fintan Moriarty</i>	
Introduction	39
Influence of Species in Preclinical Models of Bone and Joint Infection	40
Overview of Animal Models	42
Direct Inoculation with Minimal Trauma	42
Animal Osteomyelitis Models Incorporating Trauma	46
Hematogenous Models	47
Future Directions	48
Conclusion	49
Key Points	49
References	49
Chapter 5 Native Joint Arthritis in Children	55
<i>Pablo Yagupsky</i>	
Introduction	55
Epidemiology	55
Microbiology	56
Pathogenesis	61
Clinical Presentation	62
Laboratory Investigation	63
Imaging Studies	66
Differential Diagnosis	66
Treatment	67
Prognosis	71
Key Points	72
References	72
Chapter 6 Native Joint Arthritis	77
<i>Ilker Uçkay, Mohamed Al-Mayahi, Domizio Suvà, Daniel Lew, and Pierre Vaudaux</i>	
Introduction	77
Pathogenesis, Epidemiology, and Microbiology	77
Diagnosis	79
Treatment	81
Outcome of Native Joint Septic Arthritis	87
Key Points	88
Acknowledgments	88
References	88
Chapter 7 Septic Arthritis of Axial Joints	93
<i>Werner Zimmerli</i>	
Septic Arthritis of the Sternoclavicular Joint	93
Key Points	98
Septic Arthritis of the Symphysis Pubis	98
Key Points	103
Septic Arthritis of the Sacroiliac Joint	103
Key Points	107
References	107

Chapter 8 Periprosthetic Joint Infection: General Aspects	113
<i>Werner Zimmerli</i>	
Introduction	113
Definition	114
Classification	115
Pathogenesis	115
Diagnostic Algorithm	118
Laboratory Investigation	119
Therapeutic Management	121
Prophylaxis	122
Errors in the Management of PJI	123
Key Points	124
References	124
Chapter 9 Periprosthetic Joint Infection after Total Hip and Knee Arthroplasty	131
<i>Werner Zimmerli and Martin Clauss</i>	
Introduction	131
Risk Factors	131
Microbiology	132
Clinical Features	133
Laboratory Investigation	133
Imaging Procedures	134
Management	135
Instructive Cases	142
References	146
Chapter 10 Periprosthetic Joint Infection after Shoulder Arthroplasty	151
<i>Parham Sendi, Beat K. Moor, and Matthias A. Zumstein</i>	
Introduction	151
Risk Factors	151
Microbiology	153
Pathogenesis	154
Clinical Features	154
Laboratory Investigation	155
Imaging Procedures	157
Management	158
Instructive Cases	162
References	163
Chapter 11 Periprosthetic Joint Infection after Elbow Arthroplasty	167
<i>Yvonne Achermann and Michael C. Glanzmann</i>	
Introduction	167
Microbiology	168
Clinical Features	168
Diagnostic Procedures	169
Instructive Cases	176
References	179

Chapter 12 Periprosthetic Joint Infection after Ankle Arthroplasty	183
<i>Parham Sendi, Bernhard Kessler, and Markus Knupp</i>	
Introduction	183
History of Total Ankle Arthroplasty	184
Risk Factors	185
Microbiology	186
Management	189
Instructive Cases	192
References	194
Chapter 13 Osteomyelitis: Classification	197
<i>Werner Zimmerli</i>	
Classification According to Pathogenesis	197
Classification According to the Duration of Infection	199
Classification According to the Localization	200
Classification According to the Presence of an Implant	200
Classification According to Anatomy and Comorbidity	200
References	201
Chapter 14 Osteomyelitis in Children	205
<i>Priya Sukhtankar, Saul N. Faust, and Nicholas M.P. Clarke</i>	
Introduction	205
Epidemiology	205
Pathophysiology	206
Clinical Presentation, Diagnosis, and Microbiology	207
Treatment	214
Complications	217
Key Points	217
References	217
Chapter 15 Acute Osteomyelitis in Adults	221
<i>Werner Zimmerli</i>	
Introduction	221
Pathogenesis	221
Epidemiology	223
Microbiology	224
Risk Factors	225
Clinical Features	227
Laboratory Investigation	229
Imaging Procedures	231
Clinical and Imaging Differential Diagnosis	232
Treatment	233
Key Points	236
References	236
Chapter 16 Subacute Osteomyelitis: Tuberculous and Brucellar Vertebral Osteomyelitis	241
<i>Juan D. Colmenero and Pilar Morata</i>	
Introduction	241
Epidemiology	241

Clinical Features	242
Laboratory Investigation	244
Imaging Procedures	247
Antimicrobial and Surgical Therapy	250
Key Points	252
References	252
Chapter 17 Chronic Osteomyelitis in Adults	257
<i>Silvin Lito, Antoine Lomessy, Pierre Vaudaux, and Ilker Uçkay</i>	
Introduction	257
Epidemiology and Pathogenesis	259
Diagnosis	260
Treatment	262
Future Perspectives	268
Key Points	268
Acknowledgments	269
References	269
Chapter 18 Diabetic Foot Osteomyelitis	273
<i>Eric Senneville and Sophie Nguyen</i>	
Introduction	273
Classification	273
Microbiology	276
Risk Factors	278
Clinical Features	279
Inflammatory Parameters	279
Imaging Procedures	280
Management	281
Prevention	284
References	284
Chapter 19 Osteomyelitis of the Jaws	289
<i>Werner Zimmerli</i>	
Introduction	289
Classification	289
Microbiology	291
Risk Factors	292
Clinical Features	292
Laboratory Investigation	294
Imaging Procedures	296
Management	297
Key Points	299
References	299
Chapter 20 Implant-Associated Osteomyelitis of Long Bones	303
<i>Martin McNally and Parham Sendi</i>	
Introduction	303
Classification and Risk Factors	304
Microbiology	306

Clinical Features	306
Laboratory Investigation	307
Imaging Procedures	309
Management	309
Instructive Cases	317
References	320
Chapter 21 Implant-Associated Vertebral Osteomyelitis	325
<i>Todd J. Kowalski</i>	
Introduction	325
Epidemiology, Risk Factors, and Preventive Measures	326
Microbiology	327
Clinical Features	331
Diagnostic Procedures	332
Management	333
Instructive Cases	339
References	341
Chapter 22 Postoperative Sternal Osteomyelitis	347
<i>Parham Sendi, Örjan Friberg, Mihai A. Constantinescu, and Lars Englberger</i>	
Introduction	347
Risk Factors	348
Microbiology	351
Clinical Features	352
Laboratory Investigation	354
Imaging Procedures	355
Management	356
Instructive Cases	360
References	362
<i>Index</i>	367