Contents

| Introduction | The World of Bone | 1 |
|--------------|---|---|
| SECTION I Ge | tting Oriented | |
| Chapter 1 | Shattering the Paradigm — Osteoporosis Treatment in Crisis Shattering the Paradigm Special Considerations: Race and Transgender People | 15 16 20 |
| Chapter 2 | How to Choose an Osteoporosis Doctor What Patients Want — and Deserve Case Study: Ruth Three Common Shortcomings in Medical Approaches How to Choose a Healthcare Partner | 27 28 28 29 30 |
| Chapter 3 | Bone Biology The Bony Core of Your Existence The Origin of Bone Elements of Bone Bone Cells Modeling and Remodeling Stem Cells Signaling Systems | 35 38 39 41 48 52 57 |
| Chapter 4 | How Bone Loss Occurs Coupled and Uncoupled Bone Remodeling Past Is Present Case Study: Emma | 67 67 69 75 |
| Chapter 5 | Case Study: Carla Case Study: Jenn | 79 80 91 95 97 98 100 103 107 |
| Chapter 6 | Primary vs. Secondary Therapeutic Targets Signs and Symptoms Laboratory Testing | 113 113 115 119 |

| SECTION II O | nderlying Systems That Have an Impact on Bone | |
|--------------|---|---|
| Chapter 7 | The Web of Organs and Glands That Have an Impact on Bone Health Organ Systems Related to Bone Health Group 1: Organs That Release Calcium-Regulating Hormones Group 2: Sex Hormone–Producing Organs Group 3: Other Organs and Glands | 203 203 205 209 213 |
| Chapter 8 | Chronic Systemic Inflammation The Immune System Chronic Systemic Inflammation The Prime Forces Behind Osteoporosis | 247 248 252 254 |
| Chapter 9 | The Gastrointestinal Tract: Ground Zero for Bone Health Case Study: Terry How the GI and Immune Systems Interact Osteomicrobiology: The Link Between Bones and Bugs Glycosylation Dysbiosis | 265 265 268 275 283 292 |
| Chapter 10 | Causes of Low Bone Density Risk Factors Linked to Osteoporosis Genetic Disorders Epigenetics Peak Bone Mass Menopause Falls: Number One Cause of Broken Bones Dietary Effects on Bone Health | 303 303 306 315 325 329 330 331 |
| Chapter 11 | Medical Conditions Linked to Osteoporosis Autoimmune Disorders Case Study: Anna Marie Case Study: Alan Diabetes Mellitus Blood Disorders Brain and Emotional Disorders Cardiovascular Disease Endocrine/Hormonal Disorders Energy Metabolism Disorders Gastrointestinal Disorders Case Study: Karen Other Organ Diseases (Kidney, Liver, Lungs) Cancer, Sarcopenia, Osteomalacia and Other Conditions Case Study: Audrey Toxins Medications That Increase Fracture Risk | 347 347 349 354 355 369 361 365 368 380 382 393 396 402 406 410 417 |

| SECTION III | Navigating Back to Better Skeletal Health | |
|-----------------|---|---|
| Chapter 12 | Key Nutrients and Compounds for Great Bones Protein Minerals Vitamins Compounds, Antioxidants, and Herbs | 423 424 428 459 472 |
| Chapter 13 | The Power of Exercise Mechanical Signaling Promotes Bone Formation Types of Exercise Research: What's the Best and Safest? Osteosarcopenia Muscle Clocks Reduce Stress and Get Adequate Rest | 509 510 512 515 521 523 527 |
| Chapter 14 | Medications for Osteoporosis Emergency Therapy A Bit About Drug Companies Current Guidelines for Prevention and Treatment Drug Categories Antiresorptive Medications Case Study: Jean Anabolic Medications Case Study: Francie Combination vs. Sequential Therapy | 529 529 532 534 535 536 552 557 565 |
| Chapter 15 | Other Therapies Whole Body Vibration Stem Cell Therapy Pulsed Electromagnetic Field (PEMF) Low-Intensity Pulsed Ultrasound | 571 571 574 575 576 |
| Chapter 16 | The Future Improved Diagnostics Better Prevention Enhanced Senotherapeutics — Tissue Rejuvenation Gene Therapy | 579 580 581 582 583 |
| Appendix | Ten Steps to Great Bones | 585 |
| Acknowledgments | | 601 |
| References | | 603 |
| Index | | 683 |