

# Contents

Introduction to the BCSC . . . . .	xv
<b>Objectives . . . . .</b>	<b>1</b>
<b>1 Using Research to Improve Clinical Practice. . . . .</b>	<b>3</b>
Highlights . . . . .	3
Researching Answers to Clinical Questions . . . . .	3
Critical Reading of Studies . . . . .	4
Understanding Study Design . . . . .	8
Case Reports . . . . .	9
Case Series . . . . .	9
Case-Control Studies . . . . .	10
Cross-Sectional Studies . . . . .	12
Cohort Studies . . . . .	12
Clinical Trials . . . . .	13
Systematic Reviews and Meta-analyses of Clinical Trials . . . . .	14
Interpreting Diagnostic and Screening Tests . . . . .	15
The Straightforward Case . . . . .	15
Complicating Features . . . . .	16
Summary . . . . .	21
Discussing Benefits, Risks, Probabilities, and Expected Outcomes With Patients . . . . .	22
How to Measure and Improve Clinical Practice . . . . .	23
Using Big Data to Improve Clinical Practice. . . . .	23
Issues in Designing a Measurement System . . . . .	24
Implementation of a Monitoring System . . . . .	25
Analysis of the Results . . . . .	27
Methods of Presenting Data to Facilitate Continuous Improvement . . . . .	28
Other Features of Continuous Quality Improvement . . . . .	28
Using Lean Techniques to Improve Clinical Practice . . . . .	31
Summary . . . . .	32
<b>2 Endocrine Disorders . . . . .</b>	<b>33</b>
Highlights . . . . .	33
Diabetes Mellitus . . . . .	33
Classification of Diabetes Mellitus . . . . .	33
Diagnosis of Diabetes Mellitus . . . . .	34
Reduction of Risk for Diabetes Mellitus . . . . .	35
Treatment . . . . .	36
Complications of Diabetes Mellitus . . . . .	38

Thyroid Disease . . . . .	41
Physiology . . . . .	41
Tests of Thyroid Function . . . . .	41
Hyperthyroidism . . . . .	43
Hypothyroidism . . . . .	44
Thyroiditis . . . . .	45
Thyroid Tumors . . . . .	46
Disorders of the Hypothalamic-Pituitary Axis . . . . .	46
Pituitary Adenomas . . . . .	47
Pituitary Apoplexy . . . . .	49
Multiple Endocrine Neoplasia Syndromes . . . . .	49
<b>3 Hypertension . . . . .</b>	<b>51</b>
Highlights . . . . .	51
Introduction . . . . .	51
Classification of Blood Pressure and Diagnosis of Hypertension . . . . .	52
Etiology and Pathogenesis of Hypertension . . . . .	53
Evaluation of Patients With Hypertension . . . . .	55
Treatment of Hypertension . . . . .	56
Lifestyle Modifications . . . . .	57
Pharmacologic Treatment . . . . .	57
Future Treatments and Targets for Hypertension . . . . .	64
Special Considerations . . . . .	65
Ischemic Heart Disease . . . . .	65
Heart Failure . . . . .	65
Diabetes Mellitus and Hypertension . . . . .	65
Chronic Renal Disease . . . . .	65
Cerebrovascular Disease . . . . .	66
Obesity and Metabolic Syndrome . . . . .	66
Obstructive Sleep Apnea Syndrome . . . . .	66
Left Ventricular Hypertrophy . . . . .	66
Peripheral Arterial Disease . . . . .	66
Orthostatic Hypotension . . . . .	67
Hypertension in Older Patients . . . . .	67
Women and Pregnancy . . . . .	67
Children and Adolescents . . . . .	68
Withdrawal Syndromes . . . . .	68
Hypertensive Crisis . . . . .	69
<b>4 Hyperlipidemia and Cardiovascular Risk . . . . .</b>	<b>71</b>
Highlights . . . . .	71
Introduction . . . . .	71
Lipoproteins, Cholesterol, and Cardiovascular Disease . . . . .	72
Risk Assessment . . . . .	72
Management . . . . .	74
The Role of Statins . . . . .	76
Metabolic Syndrome . . . . .	77

<b>5</b>	<b>Acquired Heart Disease</b>	<b>81</b>
	Highlights	81
	Ischemic Heart Disease	81
	Pathophysiology	81
	Risk Factors for Coronary Heart Disease	82
	Clinical Syndromes	82
	Noninvasive Cardiac Diagnostic Procedures	86
	Invasive Cardiac Diagnostic Procedures	89
	Management of Ischemic Heart Disease	89
	Congestive Heart Failure	95
	Classification	95
	Symptoms	95
	Clinical Signs	97
	Diagnostic Evaluation	97
	Etiology	98
	Medical and Nonsurgical Management	98
	Invasive or Surgical Management	100
	Disorders of Cardiac Rhythm	101
	Bradyarrhythmias and Conduction Disturbances	101
	Premature Contractions	101
	Tachyarrhythmias	102
<b>6</b>	<b>Cerebrovascular Disease</b>	<b>109</b>
	Highlights	109
	Introduction	109
	Cerebral Ischemia	110
	Transient Cerebral Ischemia	110
	Ischemic Stroke	110
	Diagnosis and Management	111
	Carotid Occlusive Disease	115
	Diagnostic Evaluation	116
	Management of Carotid Stenosis	116
	Intracranial Hemorrhage	120
	Intracerebral Hemorrhage	120
	Intraventricular Hemorrhage	120
	Subarachnoid Hemorrhage	121
<b>7</b>	<b>Pulmonary Diseases</b>	<b>123</b>
	Highlights	123
	Introduction	123
	Obstructive Lung Diseases	123
	Restrictive Lung Diseases	125
	Evaluation	125
	Treatment	126
	Nonpharmacologic Treatment	126
	Pharmacologic Treatment	127

<b>8</b>	<b>Hematologic Disorders . . . . .</b>	<b>131</b>
	Highlights . . . . .	131
	Blood Composition . . . . .	131
	Erythropoiesis . . . . .	131
	Anemia . . . . .	132
	Anemia Due to Blood Loss or Nutritional Deficiency . . . . .	132
	Anemia Due to Defective Hemoglobin Synthesis (Hemoglobinopathies) . . . . .	134
	Anemia Due to Destruction of Red Blood Cells . . . . .	136
	Anemia Due to Inflammation and Chronic Disease . . . . .	137
	Anemia Due to Bone Marrow Disorders . . . . .	137
	Disorders of Hemostasis . . . . .	138
	Laboratory Evaluation of Hemostasis and Blood Coagulation . . . . .	139
	Clinical Manifestations of Hemostatic Abnormalities . . . . .	140
	Vascular Disorders . . . . .	140
	Platelet Disorders . . . . .	141
	Disorders of Blood Coagulation . . . . .	144
	Primary Hypercoagulable States . . . . .	146
	Secondary Hypercoagulable States . . . . .	148
<b>9</b>	<b>Rheumatic Disorders . . . . .</b>	<b>151</b>
	Highlights . . . . .	151
	Introduction . . . . .	151
	Rheumatoid Arthritis . . . . .	152
	Extra-articular Manifestations . . . . .	152
	Laboratory Testing . . . . .	153
	Treatment . . . . .	153
	Spondyloarthritis . . . . .	154
	Ankylosing Spondylitis . . . . .	154
	Reactive Arthritis . . . . .	155
	Enteropathic Arthritis . . . . .	156
	Psoriatic Arthritis . . . . .	156
	Juvenile Idiopathic Arthritis . . . . .	157
	Systemic Lupus Erythematosus . . . . .	158
	Signs and Symptoms . . . . .	158
	Diagnosis . . . . .	160
	Treatment . . . . .	161
	Sarcoidosis . . . . .	162
	Signs and Symptoms . . . . .	162
	Diagnosis . . . . .	162
	Treatment . . . . .	163
	Antiphospholipid Syndrome . . . . .	163
	Signs and Symptoms . . . . .	163
	Diagnosis . . . . .	163
	Treatment . . . . .	164
	Systemic Sclerosis . . . . .	164
	Signs and Symptoms . . . . .	164

Diagnosis . . . . .	165
Treatment . . . . .	165
Sjögren Syndrome . . . . .	166
Polymyositis and Dermatomyositis . . . . .	167
Polymyalgia Rheumatica . . . . .	168
Relapsing Polychondritis . . . . .	168
Vasculitis . . . . .	169
Large-Vessel Vasculitis . . . . .	170
Medium-Sized-Vessel Vasculitis . . . . .	170
Small-Vessel Vasculitis . . . . .	171
Variable-Vessel Vasculitis . . . . .	173
Medical Therapy for Rheumatic Disorders . . . . .	174
Corticosteroids . . . . .	174
Nonsteroidal Anti-inflammatory Drugs . . . . .	176
Disease-Modifying Antirheumatic Drugs . . . . .	176

**10 Geriatrics . . . . . 183**

Highlights . . . . .	183
Introduction . . . . .	183
Physiologic Aging and Pathologic Findings of the Aging Eye . . . . .	184
Elder Abuse . . . . .	185
Perioperative Considerations in the Management of Elderly Patients . . . . .	187
Psychology of Aging . . . . .	188
Depression . . . . .	188
Alzheimer Disease and Dementia . . . . .	190
Osteoporosis . . . . .	190
Falls . . . . .	191

**11 Behavioral and Neurologic Disorders . . . . . 193**

Highlights . . . . .	193
Introduction . . . . .	193
Behavioral Disorders . . . . .	194
Behavioral Disorders Associated With Medical Conditions . . . . .	194
Schizophrenia . . . . .	194
Mood Disorders . . . . .	195
Somatization, Anxiety, and Stress-Related Disorders . . . . .	196
Substance Abuse Disorders . . . . .	198
Pharmacologic Treatment of Psychiatric Disorders . . . . .	199
Antipsychotic Drugs . . . . .	199
Antianxiety and Hypnotic Drugs . . . . .	201
Neurologic Disorders . . . . .	204
Parkinson Disease . . . . .	204
Multiple Sclerosis . . . . .	206
Epilepsy . . . . .	206
Stroke . . . . .	209
Alzheimer Disease and Dementia . . . . .	209
Prion-Associated Neurologic Disorders . . . . .	211
Informed Consent in Patients with Behavioral and Neurologic Disorders . . . . .	211

<b>12</b>	<b>Preventive Medicine</b>	<b>213</b>
	Highlights	213
	Screening Procedures	213
	Cardiovascular Diseases	214
	Cancer	215
	Infectious Diseases	222
	Immunization	223
	Hepatitis	224
	Influenza	226
	Varicella-Zoster	227
	Measles	228
	Mumps	228
	Rubella	229
	Polio	229
	Tetanus and Diphtheria	229
	Rotavirus	230
	Pneumococcal Pneumonia	230
	Meningococcus	231
	Human Papillomavirus	231
	Travel Immunizations	232
	New and Future Vaccines	232
<b>13</b>	<b>Cancer</b>	<b>235</b>
	Highlights	235
	Introduction	235
	Etiology	235
	Radiation Therapy	237
	Chemotherapy	239
	Angiogenesis Inhibitors	241
	Biologic Therapies	241
<b>14</b>	<b>Infectious Diseases</b>	<b>245</b>
	Highlights	245
	General Microbiology	245
	<i>Staphylococcus</i>	246
	<i>Streptococcus</i>	247
	<i>Clostridium difficile</i>	249
	<i>Haemophilus influenzae</i>	249
	<i>Neisseria</i>	250
	<i>Pseudomonas aeruginosa</i>	251
	<i>Treponema pallidum</i>	252
	Diagnosis	252
	Management	253
	<i>Borrelia burgdorferi</i>	254
	Stages	254
	Diagnosis	254
	Management	255

*Chlamydia trachomatis* . . . . . 255  
*Mycoplasma pneumoniae* . . . . . 256  
Mycobacteria . . . . . 256  
    Tuberculosis . . . . . 256  
Fungal Infections . . . . . 258  
*Toxoplasma* . . . . . 258  
Herpesvirus . . . . . 259  
    Herpes Simplex . . . . . 260  
    Varicella-Zoster . . . . . 260  
    Cytomegalovirus . . . . . 261  
    Epstein-Barr Virus . . . . . 262  
Influenza . . . . . 262  
Hepatitis. . . . . 262  
    Hepatitis A and B . . . . . 262  
    Hepatitis C and Other Forms of Hepatitis . . . . . 263  
Human Papillomavirus . . . . . 264  
Ebola Virus . . . . . 264  
Zika Virus . . . . . 265  
Human Immunodeficiency Virus . . . . . 266  
    Etiology and Pathogenesis . . . . . 266  
    Clinical Syndromes . . . . . 267  
    Diagnosis . . . . . 267  
    Treatment . . . . . 268  
    Immune Reconstitution Inflammatory Syndrome . . . . . 269  
Update on Antibiotics . . . . . 270  
    Antibacterial Agents. . . . . 270  
    Future Directions . . . . . 276  
    Antifungal Agents. . . . . 277  
    Antiviral Agents . . . . . 277  
COVID-19. . . . . 279

**15 Perioperative Management in Ocular Surgery. . . . . 281**

Highlights . . . . . 281  
Introduction . . . . . 281  
Preoperative Assessment. . . . . 281  
    Children and Adolescents . . . . . 283  
Management of Medical Conditions Associated with Increased  
    Perioperative Risk . . . . . 283  
    Cardiovascular Disease . . . . . 283  
    Diabetes Mellitus . . . . . 284  
    Respiratory Diseases . . . . . 284  
Perioperative Medication Management . . . . . 285  
    Cardiac . . . . . 285  
    Diabetes Mellitus . . . . . 286  
    Pulmonary Medications . . . . . 287  
Perioperative Considerations . . . . . 287  
    Preoperative Fasting . . . . . 287

Latex Allergy . . . . .	288
Universal Protocol . . . . .	288
Intraoperative Considerations . . . . .	289
Systemic Anesthetic Agents. . . . .	289
Local Anesthetic Agents . . . . .	290
Malignant Hyperthermia. . . . .	291

**16 Medical Emergencies and Ocular Adverse Effects of Systemic Medications . . . . . 295**

Highlights . . . . .	295
Introduction . . . . .	295
Cardiopulmonary Arrest. . . . .	296
Syncope . . . . .	299
Hypoglycemia . . . . .	300
Shock . . . . .	300
Classification . . . . .	300
Assessment. . . . .	301
Treatment . . . . .	301
Anaphylaxis . . . . .	302
Seizures and Status Epilepticus . . . . .	303
Toxic Reactions to Local Anesthetic Agents and Other Drugs. . . . .	304
The Opioid Crisis . . . . .	306
Ocular Adverse Effects of Systemic Medications. . . . .	307

**17 Social Determinants of Health. . . . . 311**

Highlights . . . . .	311
Introduction . . . . .	311
Categories of Social Determinants of Health . . . . .	311
Health Care Access and Quality . . . . .	312
Economic Stability . . . . .	313
Education Access and Quality. . . . .	313
Neighborhood and Built Environment . . . . .	314
Social and Community Context . . . . .	314
Discrimination and Social Determinants of Health . . . . .	314
Ethnicity. . . . .	315
Gender . . . . .	315
Sexual Orientation and Gender Identity . . . . .	315
Age and Disability. . . . .	315
Approaches to Address Social Determinants of Health . . . . .	316
Basic Texts. . . . .	317
Related Academy Materials . . . . .	319
Requesting Continuing Medical Education Credit. . . . .	321
Study Questions . . . . .	323
Answer Sheet for Section 1 Study Questions . . . . .	331
Answers . . . . .	333
Index . . . . .	341