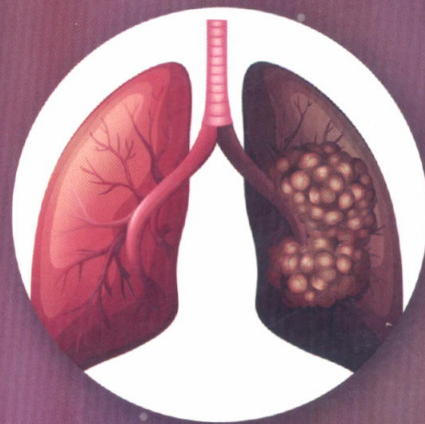


GOULD'S Pathophysiology for the Health Professions

SIXTH EDITION

Robert J. Hubert
Karin C. VanMeter



B0052188

ห้องสมุดวทบ.นครราชสีมา

ELSEVIER



EVOLVE STUDY RESOURCES
FREE WITH TEXTBOOK PURCHASE
EVOLVE.ELSEVIER.COM

Contents

SECTION I Pathophysiology: Background and Overview, 1

- CHAPTER 1 Introduction to Pathophysiology, 1**
What Is Pathophysiology and Why Study It?, 1
Understanding Health and Disease, 2
Concept and Scope of Pathophysiology, 2
Beginning the Process: A Medical History, 4
New Developments and Trends, 4
Basic Terminology of Pathophysiology, 5
Introduction to Cellular Changes, 8
Terms Used for Common Cellular Adaptations, 8
Cell Damage and Necrosis, 9
- CHAPTER 2 Fluid, Electrolyte, and Acid-Base Imbalances, 14**
Fluid Imbalance, 15
Review of Concepts and Processes, 15
Fluid Excess: Edema, 16
Fluid Deficit: Dehydration, 20
Third-Spacing: Fluid Deficit and Fluid Excess, 21
Electrolyte Imbalances, 21
Sodium Imbalance, 21
Potassium Imbalance, 24
Calcium Imbalance, 26
Other Electrolytes, 28
Acid-Base Imbalance, 29
Review of Concepts and Processes, 29
Control of Serum pH, 30
Acid-Base Imbalance, 32
Treatment of Imbalances, 36
- CHAPTER 3 Introduction to Basic Pharmacology and Other Common Therapies, 40**
Pharmacology, 40
Basic Principles, 40
Drug Effects, 41
Administration and Distribution of Drugs, 42
Drug Mechanisms and Receptors, 45
Responses, 46
Drug Classifications and Prescriptions, 46
Traditional Forms of Therapy, 48
Physiotherapy, 48
Occupational Therapy, 48
Speech/Language Therapy, 48
Nutrition/Diet, 48
Registered Massage Therapy, 48

- Osteopathy, 48*
Chiropractic, 49
Complementary or Alternative Therapies, 49
Noncontact Therapeutic Touch, 49
Naturopathy, 49
Homeopathy, 49
Herbal Medicine, 49
Aromatherapy, 49
Asian Concepts of Disease and Healing, 49

CHAPTER 4 Pain, 53

- Etiology and Sources of Pain, 53
Structures and Pain Pathways, 54
Physiology of Pain and Pain Control, 55
Characteristics of Pain, 57
Signs and Symptoms, 57
Young Children and Pain, 57
Referred Pain, 57
Phantom Pain, 57
Pain Perception and Response, 57
Basic Classifications of Pain, 59
Acute Pain, 59
Chronic Pain, 59
Headache, 59
Central Pain, 60
Neuropathic Pain, 60
Ischemic Pain, 61
Cancer-Related Pain, 61
Pain Control, 61
Methods of Managing Pain, 61
Anesthesia, 62

SECTION II Defense/Protective Mechanisms, 65

- CHAPTER 5 Inflammation and Healing, 65**
Review of Body Defenses, 66
Review of Normal Capillary Exchange, 67
Physiology of Inflammation, 67
Definition, 67
Causes, 67
Steps of Inflammation, 67
Acute Inflammation, 69
Pathophysiology and General Characteristics, 69
Local Effects, 70
Systemic Effects, 71
Diagnostic Tests, 71
Potential Complications, 72

- Chronic Inflammation, 72
 - Pathophysiology and General Characteristics*, 72
 - Potential Complications*, 73
- Treatment of Inflammation, 73
 - Drugs*, 73
 - First Aid Measures*, 75
 - Other Therapies*, 75
- Healing, 75
 - Types of Healing*, 75
 - Healing Process*, 76
 - Factors Affecting Healing*, 76
 - Complications Due to Scar Formation*, 78
- Example of Inflammation and Healing, 78
 - Burns*, 78
 - Classifications of Burns*, 79

CHAPTER 6 Infection, 88

- Review of Microbiology, 89
 - Microorganisms*, 89
 - Types of Microorganisms*, 90
 - Other Agents of Disease*, 99
 - Resident Flora (Indigenous Normal Flora, Resident Microbiota)*, 99
- Principles of Infection, 100
 - Transmission of Infectious Agents*, 100
 - Host Resistance*, 101
 - Virulence and Pathogenicity of Microorganisms*, 102
 - New Issues Affecting Infections and Transmission*, 102
 - Control of Transmission and Infection*, 103
- Physiology of Infection, 105
 - Onset and Development*, 105
 - Patterns of Infection*, 106
 - Signs and Symptoms of Infection*, 106
 - Methods of Diagnosis*, 107
 - Treatment and Antimicrobial Drugs*, 107
 - Example of Infection: Influenza (Flu)*, 110

CHAPTER 7 Immunity, 114

- Review of the Immune System, 115
 - Components of the Immune System*, 115
 - Elements of the Immune System*, 115
 - Immune Response*, 118
 - Diagnostic Tests*, 119
 - Process of Acquiring Immunity*, 120
 - Outcome of Infectious Disease*, 121
 - Emerging and Reemerging Infectious Diseases and Immunity*, 121
 - Bioterrorism*, 121
- Tissue and Organ Transplant Rejection, 121
 - Rejection Process*, 122
 - Treatment and Prevention*, 122
- Hypersensitivity Reactions, 122
 - Type I: Allergic Reactions*, 123
 - Type II: Cytotoxic Hypersensitivity*, 126
 - Type III: Immune Complex Hypersensitivity*, 127
 - Type IV: Cell-Mediated or Delayed Hypersensitivity*, 127
- Autoimmune Disorders, 128
 - Mechanism*, 128

Example: Systemic Lupus Erythematosus, 128

- Immunodeficiency, 131
 - Causes of Immunodeficiency*, 131
 - Effects of Immunodeficiency*, 132
 - Acquired Immunodeficiency Syndrome*, 132

SECTION III Pathophysiology of Body Systems, 142

CHAPTER 8 Skin Disorders, 142

- Review of the Skin, 143
- Resident Microbial Flora, 144
- Skin Lesions, 144
 - Diagnostic Tests*, 146
- Skin Inflammatory Disorders, 146
 - Contact Dermatitis*, 146
 - Urticaria (Hives)*, 147
 - Atopic Dermatitis*, 147
 - Psoriasis*, 148
 - Pemphigus*, 149
 - Scleroderma*, 149
- Skin Infections, 150
 - Bacterial Infections*, 150
 - Viral Infections*, 152
 - Fungal Infections*, 154
 - Other Infections*, 155
- Skin Tumors, 157
 - Malignant Melanoma*, 157
 - Kaposi Sarcoma*, 158

CHAPTER 9 Musculoskeletal System Disorders, 161

- Review of the Musculoskeletal System, 162
 - Bone*, 162
 - Skeletal Muscle*, 164
 - Joints*, 166
 - Diagnostic Tests*, 166
- Trauma, 167
 - Fractures*, 167
- Bone Disorders, 172
 - Osteoporosis*, 172
 - Rickets and Osteomalacia*, 173
 - Paget Disease (Osteitis Deformans)*, 173
 - Osteomyelitis*, 173
 - Abnormal Curvatures of the Spine*, 173
 - Bone Tumors*, 174
- Disorders of Muscle, Tendons, and Ligaments, 175
 - Muscular Dystrophy*, 175
 - Primary Fibromyalgia Syndrome*, 176
- Joint Disorders, 176
 - Osteoarthritis*, 176
 - Rheumatoid Arthritis*, 178
 - Juvenile Rheumatoid Arthritis*, 180
 - Infectious (Septic) Arthritis*, 180
 - Gout (Gouty Arthritis)*, 180
 - Ankylosing Spondylitis*, 181
 - Other Inflammatory Joint Disorders*, 182

CHAPTER 10 Blood and Circulatory System Disorders, 184

- Review of the Circulatory System and Blood, 185

Anatomy, Structures, and Components, 185
Blood Vessels, 185
Blood, 186
 Blood Dyscrasias, 195
 Anemias, 195
 Blood-Clotting Disorders, 204
 Myelodysplastic Syndrome, 207
 Neoplastic Blood Disorders, 208
 Polycythemia, 208
 Leukemias, 208

CHAPTER 11 Lymphatic System Disorders, 213

Review of the Lymphatic System, 213
 Structures and Function, 213
 Composition and Production of Lymph, 215
 Lymphatic Disorders, 217
 Lymphomas, 217
 Multiple Myeloma or Plasma Cell Myeloma,
 220
 Lymphedema, 220
 Elephantiasis (Filariasis), 221
 Castleman Disease, 221

CHAPTER 12 Cardiovascular System Disorders, 223

Review of the Cardiovascular System, 224
 Heart, 224
 Blood Pressure, 229
 Heart Disorders, 230
 *Diagnostic Tests for Cardiovascular
 Function*, 230
 *General Treatment Measures for Cardiac
 Disorders*, 231
 *Coronary Artery Disease, Ischemic Heart
 Disease, or Acute Coronary
 Syndrome*, 233
 Cardiac Dysrhythmias (Arrhythmias), 242
 Congestive Heart Failure, 245
 *Young Children With Congestive Heart
 Failure*, 249
 Congenital Heart Defects, 250
 *Inflammation and Infection in the
 Heart*, 255
 Vascular Disorders, 258
 Arterial Disorders, 258
 Venous Disorders, 262
 Shock, 264

CHAPTER 13 Respiratory System Disorders, 272

Review of Structures of the Respiratory
 System, 273
 Purpose and General Organization, 273
 Structures in the Respiratory System, 273
 Ventilation, 275
 Gas Exchange, 278
 Diagnostic Tests, 280
 General Manifestations of Respiratory
 Disease, 281
 Common Treatment Measures for
 Respiratory Disorders, 283
 Infectious Diseases, 283
 Upper Respiratory Tract Infections, 283
 Lower Respiratory Tract Infections, 286
 Obstructive Lung Diseases, 294

Cystic Fibrosis, 294
Lung Cancer, 296
Aspiration, 298
Obstructive Sleep Apnea, 300
Asthma, 300
 Chronic Obstructive Pulmonary Disease, 302
 Emphysema, 303
 Chronic Bronchitis, 307
 Bronchiectasis, 307
 Restrictive Lung Disorders, 308
 Pneumoconioses, 308
 Vascular Disorders, 309
 Pulmonary Edema, 309
 Pulmonary Embolus, 309
 Expansion Disorders, 312
 Atelectasis, 312
 Pleural Effusion, 313
 Pneumothorax, 314
 Flail Chest, 315
 Infant Respiratory Distress Syndrome, 317
 *Adult or Acute Respiratory Distress
 Syndrome*, 319
 Acute Respiratory Failure, 320

CHAPTER 14 Nervous System Disorders, 325

Review of Nervous System Anatomy and
 Physiology, 326
 Brain, 326
 Spinal Cord, 331
 Neurons and Conduction of Impulses, 334
 Autonomic Nervous System, 335
 General Effects of Neurologic Dysfunction, 338
 Local (Focal) Effects, 338
 Supratentorial and Infratentorial Lesions, 338
 Left and Right Hemispheres, 338
 Level of Consciousness, 338
 Motor Dysfunction, 339
 Sensory Deficits, 339
 Visual Loss: Hemianopia, 339
 Language Disorders, 340
 Seizures, 341
 Increased Intracranial Pressure, 341
 Herniation, 343
 Diagnostic Tests, 344
 Acute Neurologic Problems, 344
 Brain Tumors, 344
 Vascular Disorders, 345
 Infections, 350
 Brain Injuries, 354
 Spinal Cord Injury, 358
 Congenital Neurologic Disorders, 363
 Hydrocephalus, 363
 Spina Bifida, 364
 Cerebral Palsy, 365
 Seizure Disorders, 367
 Chronic Degenerative Disorders, 370
 Multiple Sclerosis, 370
 Parkinson Disease (Paralysis Agitans), 372
 Amyotrophic Lateral Sclerosis, 373
 Myasthenia Gravis, 374
 Huntington Disease, 374
 Dementia, 375

- Alzheimer Disease, 375
 - Other Forms of Dementia, 377
 - Mental Disorders, 377
 - Schizophrenia, 378
 - Depression, 378
 - Panic Disorders, 379
 - Spinal Cord Disorder, 380
 - Herniated Intervertebral Disc, 380
- CHAPTER 15 Disorders of the Eyes, Ears, and Other Sensory Organs, 385**
- Sensory Receptors, 385
 - The Eye, 386
 - Review of Structure and Function, 386
 - Diagnostic Tests, 388
 - Structural Defects, 388
 - Infections and Trauma, 389
 - Glaucoma, 390
 - Cataracts, 392
 - Detached Retina, 393
 - Macular Degeneration, 393
 - The Ear, 394
 - Review of Structure and Function, 394
 - Hearing Loss, 395
 - Ear Infections, 396
 - Chronic Disorders of the Ear, 398
- CHAPTER 16 Endocrine System Disorders, 400**
- Review of the Endocrine System, 400
 - Endocrine Disorders, 403
 - Insulin and Diabetes Mellitus, 404
 - Type 1 and Type 2 Diabetes, 404
 - Parathyroid Hormone and Calcium, 413
 - Pituitary Hormones, 414
 - Growth Hormone, 414
 - Antidiuretic Hormone (Vasopressin), 416
 - Diabetes Insipidus, 416
 - Inappropriate Antidiuretic Hormone Syndrome, 416
 - Thyroid Disorders, 417
 - Goiter, 417
 - Hyperthyroidism (Graves Disease), 418
 - Hypothyroidism, 420
 - Diagnostic Tests, 420
 - Adrenal Glands, 420
 - Adrenal Medulla, 420
 - Adrenal Cortex, 421
- CHAPTER 17 Digestive System Disorders, 427**
- Review of the Digestive System, 428
 - Structures and Their Functions, 428
 - Neural and Hormonal Controls, 433
 - Digestion and Absorption, 434
 - Common Manifestations of Digestive System Disorders, 435
 - Anorexia, Vomiting, and Bulimia, 435
 - Diarrhea, 436
 - Constipation, 437
 - Fluid and Electrolyte Imbalances, 437
 - Pain, 438
 - Malnutrition, 438
 - Basic Diagnostic Tests, 439
 - Common Therapies and Prevention, 439
 - Upper Gastrointestinal Tract Disorders, 441
 - Disorders of the Oral Cavity, 441
 - Dysphagia, 446
 - Esophageal Cancer, 448
 - Hiatal Hernia, 448
 - Gastroesophageal Reflux Disease, 449
 - Gastritis, 449
 - Peptic Ulcer, 451
 - Gastric Cancer, 454
 - Dumping Syndrome, 455
 - Pyloric Stenosis, 456
 - Disorders of the Liver and Pancreas, 456
 - Gallbladder Disorders, 456
 - Jaundice, 457
 - Hepatitis, 458
 - Cirrhosis, 463
 - Liver Cancer, 467
 - Acute Pancreatitis, 468
 - Pancreatic Cancer, 469
 - Lower Gastrointestinal Tract Disorders, 469
 - Celiac Disease, 469
 - Chronic Inflammatory Bowel Disease, 469
 - Irritable Bowel Syndrome, 473
 - Appendicitis, 473
 - Diverticular Disease, 475
 - Colorectal Cancer, 476
 - Intestinal Obstruction, 479
 - Peritonitis, 482
- CHAPTER 18 Urinary System Disorders, 488**
- Review of the Urinary System, 489
 - Structures and Anatomy, 489
 - Kidneys, 489
 - Renal Arteries and Veins, 490
 - Incontinence and Retention, 493
 - Diagnostic Tests, 494
 - Urinalysis, 494
 - Blood Tests, 495
 - Other Tests, 496
 - Diuretic Drugs, 496
 - Dialysis, 497
 - Disorders of the Urinary System, 498
 - Urinary Tract Infections, 498
 - Inflammatory Disorders, 500
 - Urinary Tract Obstructions, 503
 - Urolithiasis (Calculi, or Kidney Stones), 503
 - Hydronephrosis, 504
 - Tumors, 505
 - Vascular Disorders, 505
 - Nephrosclerosis, 505
 - Congenital Disorders, 506
 - Adult Polycystic Kidney, 507
 - Wilms Tumor (Nephroblastoma), 507
 - Renal Failure, 507
 - Acute Renal Failure, 507
 - Chronic Renal Failure, 509
- CHAPTER 19 Reproductive System Disorders, 514**
- Disorders of the Male Reproductive System, 515
 - Review of the Male Reproductive System, 515
 - Congenital Abnormalities of the Penis, 516
 - Disorders of the Testes and Scrotum, 516
 - Inflammation and Infections, 518

- Disorders of the Female Reproductive System, 521
 - Review of the Female Reproductive System, 521*
 - Structural Abnormalities, 525*
 - Menstrual Disorders, 526*
 - Infections and Inflammation, 527*
 - Benign Tumors, 530*
 - Malignant Tumors, 532*
- Infertility, 537
- Sexually Transmitted Diseases, 538
 - Bacterial Infections, 538*
 - Viral Infections, 541*
 - Protozoan Infection, 542*

SECTION IV Factors Contributing to Pathophysiology, 545

- CHAPTER 20 Neoplasms and Cancer, 545**
 - Review of Normal Cells, 546
 - Benign and Malignant Tumors, 546
 - Nomenclature, 547*
 - Characteristics of Benign and Malignant Tumors, 547*
 - Malignant Tumors: Cancer, 547
 - Examples of Malignant Tumors, 561
 - Skin Cancer, 561*
 - Ovarian Cancer, 561*
 - Brain Cancer, 561*
 - Cancer Incidences, 563*
- CHAPTER 21 Congenital and Genetic Disorders, 565**
 - Review of Genetic Control, 565
 - Congenital Anomalies, 567
 - Genetic Disorders, 570
 - Single-Gene Disorders, 570*
 - Chromosomal Disorders, 572*
 - Multifactorial Disorders, 572*
 - Developmental Disorders, 573
 - Diagnostic Tools, 574
 - Genetic Technology, 575
 - Genetic Engineering and Gene Therapy, 575*
 - Genetic Diagnosis and DNA Testing, 575*
 - Proteomic Research and Designer Drugs, 576*
 - Down Syndrome, 576
- CHAPTER 22 Complications of Pregnancy, 579**
 - Embryonic and Fetal Development, 579
 - Physiologic Changes During Pregnancy, 580
 - Diagnosis of Pregnancy, 580*
 - Physiologic Changes and Their Implications, 581*
 - Potential Complications of Pregnancy, 583
 - Ectopic Pregnancy, 583*
 - Preeclampsia and Eclampsia: Pregnancy-Induced Hypertension, 583*
 - Gestational Diabetes Mellitus, 583*
 - Placental Disorders, 584*
 - Blood Clotting Disorders, 584*
 - Rh Incompatibility, 584*
 - Infection, 585*
 - Adolescent Pregnancy, 586*

- CHAPTER 23 Complications of Adolescence, 588**
 - Review of Changes During Adolescence, 588
 - Obesity and Metabolic Syndrome, 589
 - Musculoskeletal Abnormalities, 590
 - Kyphosis and Lordosis, 590*
 - Scoliosis, 590*
 - Osteomyelitis, 591*
 - Juvenile Rheumatoid Arthritis, 591*
 - Eating Disorders, 593
 - Anorexia Nervosa, 593*
 - Bulimia Nervosa, 593*
 - Skin Disorders, 593
 - Acne Vulgaris, 593*
 - Infection, 594
 - Infectious Mononucleosis, 594*
 - Disorders Affecting Sexual Development, 595
 - Chromosomal Disorders, 595*
 - Tumors, 595*
 - Menstrual Abnormalities, 595*
- CHAPTER 24 Complications of Aging, 597**
 - The Aging Process, 597
 - Physiological Changes With Aging, 598
 - Hormonal Changes, 598*
 - Reproductive System Changes, 598*
 - Changes in the Skin and Mucosa, 599*
 - Cardiovascular System Changes, 599*
 - Musculoskeletal System Changes, 600*
 - Respiratory System Changes, 601*
 - Nervous System Changes, 602*
 - Digestive System Changes and Nutrition, 602*
 - Urinary System Changes, 603*
 - Other Factors, 603
 - Multiple Disorders, 603

Section V Environmental Factors and Pathophysiology, 606

- CHAPTER 25 Immobility and Associated Problems, 606**
 - Factors Involving Immobility, 606
 - Musculoskeletal System Effects, 607
 - Cutaneous Effects, 607
 - Cardiovascular System Effects, 608
 - Respiratory System Effects, 608
 - Digestive System Effects, 609
 - Urinary System Effects, 609
 - Neurologic/Psychological Effects, 609
 - Effects of Immobility on Children, 610
- CHAPTER 26 Stress and Associated Problems, 611**
 - Review of the Stress Response, 611
 - Stress and Disease, 612
 - Potential Effects of Prolonged or Severe Stress, 614*
 - Coping With Stress, 615*
- CHAPTER 27 Substance Abuse and Associated Problems, 617**
 - Terminology, 618
 - Predisposing Factors, 619
 - Environmental/Behavioral Risk Factors, 619
 - Indications/Recognition of Abuse, 620
 - Potential Complications of Substance Abuse, 620

	<i>Overdose, 620</i>		<i>Physical Agents, 627</i>
	<i>Withdrawal, 621</i>		<i>Temperature Hazards, 627</i>
	<i>Effects on Pregnancy, 621</i>		<i>Radiation Hazards, 628</i>
	<i>Cardiovascular Problems, 621</i>		<i>Noise Hazards, 629</i>
	<i>Infection, 621</i>		<i>Food and Waterborne Hazards, 629</i>
	<i>Neurologic/Psychological Effects, 621</i>		<i>Biologic Agents, 629</i>
	<i>Alcohol, 621</i>		<i>Bites and Stings, 629</i>
	<i>Treatment for Substance Abuse, 622</i>		
CHAPTER 28	Environmental Hazards and Associated Problems, 624		Appendices, 631
	<i>Chemicals, 625</i>		Glossary, 654
	<i>Heavy Metals, 626</i>		Index, 663
	<i>Acids/Bases, 626</i>		
	<i>Inhalants, 626</i>		
	<i>Asbestos, 627</i>		
	<i>Pesticides, 627</i>		