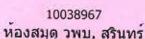
Critical Care Nursing seventh edition

Diagnosis and Management







CONTENTS

FOUNDATIONS OF CRITICAL UNIT I CARE NURSING

1 Critical Care Nursing Practice, 1

Linda D. Urden

Overview, 1

History of Critical Care, 1

Critical Care Nursing, 1

Contemporary Critical Care, 2

Critical Care Nursing Roles, 2

Critical Care Professional Accountability, 3

Critical Care Nursing Standards, 3

Evidence-Based Nursing Practice, 3

Holistic Critical Care Nursing, 4

Complementary and Alternative

Therapies, 7

Nursing's Unique Role in Health Care, 7

Critical Care Nursing Practice, 7

Technology in Critical Care, 8

Interprofessional Collaborative Practice, 9

Interdisciplinary Care Management Models

and Tools, 10

Quality, Safety, and Regulatory Issues in

Critical Care, 11

Privacy and Confidentiality, 13

Healthy Work Environment, 13

2 Ethical Issues, 17

Linda D. Urden

Differences Between Morals and

Ethics, 17

Ethical Principles, 20

Scarce Resources in Critical Care, 22

Withholding and Withdrawing

Treatment, 23

Medical Futility, 23

Ethics as a Foundation for Nursing

Practice, 23

Ethical Decision Making in Critical

Strategies for Promotion of Ethical Decision

Making, 27

3 Legal Issues, 30

Kelly K. Dineen

Overview, 30

Administrative Law: Professional

Regulation, 30

Tort Law: Negligence and Professional

Malpractice, Intentional Torts, 32

Constitutional Law: Patient Decision

Making, 43

Legal Issues Looking Forward, 45

4 Genetics and Genomics in Critical Care, 48

Mary E. Lough

Genetics and Genomics, 48

Genetic and Genomic Structure and

Function, 49

Genetic Inheritance, 54

How Information about Genetics is

Obtained, 58

Genetics in Critical Care, 60

Genetics, Genomics, and Nursing, 62

Human Genetics Key Terms, 65

5 Patient and Family Education, 69

Barbara Mayer

Challenges of Patient and Family

Education, 69

Education, 70

Step 1: Assessment, 70

Step 2: Education Plan Development, 75

Step 3: Implementation, 78

Step 4: Evaluation, 83

Step 5: Documentation, 83

Factors that Affect the Teaching-Learning

Process, 84

Informational Needs of Families in Critical

Care, 84

Preparation of the Patient and Family for

Transfer from Critical Care, 84

6 Psychosocial and Spiritual Alterations and Management, 88

Valerie Yancey

Stress and Psychoneuroimmunology, 88

Post-Traumatic Stress Reactions, 90

Anxiety, 91

Alterations in Self-Concept, 91

Risk for Compromised Human Dignity, 92

Spiritual Challenges in Critical Care, 93

Coping with Stress and Illness, 94

Holistic Psychosocial-Spiritual Care, 95

Communicate with Compassion and Care, 95

Practice Dignity-Enhancing Care, 96

Support Patient Coping, 97 Provide Family-Centered Care, 97 Engage Spiritual Resources, 98 Patients with Mental Health Co-Morbidities, 99 Nurse Self-Care, 99

7 Sleep Alterations and Management, 104

Kathleen M. Stacy

Normal Human Sleep, 104 Pharmacology, 106 Sleep Pattern Disturbance, 107 Sleep Apnea Syndrome, 108

8 Nutrition Alterations and Management, 115

Kasuen Mauldin

Nutrient Metabolism, 115
Assessing Nutritional Status, 117
Implications of Undernutrition for the Sick or Stressed Patient, 121
Nutrition Support, 122
Nutrition and Cardiovascular
Alterations, 130
Nutrition and Pulmonary Alterations, 132
Nutrition and Neurologic Alterations, 133
Nutrition and Renal Alterations, 134
Nutrition and Gastrointestinal
Alterations, 135
Nutrition and Endocrine Alterations, 137

9 Pain and Pain Management, 143

Céline Gélinas, Caroline Arbour

Importance of Pain Assessment, 143 Definition and Description of Pain, 143* Pain Assessment, 149 Pain Management, 155

10 Sedation, Agitation, Delirium: Assessment and Management, 170

Mary E. Lough

Sedation, 170
Agitation, 175
Delirium, 176
Alcohol Withdrawal Syndrome and Delirium
Tremens, 179
Collaborative Management, 179

11 End-of-Life Issues, 182

Caroline Etland

End-of-Life Experience in Critical Care, 183 Ethical and Legal Issues, 184 Comfort Care, 185

Communication and Decision Making, 186

Withdrawal or Withholding of Treatment, 188
Palliative Care, 188
Withdrawal of Mechanical Ventilation, 190
Professional Issues, 191
Organ Donation, 192
Family Care, 192
Collaborative Care, 194

UNIT II CARDIOVASCULAR ALTERATIONS

12 Cardiovascular Anatomy and Physiology, 200

Mary E. Lough Anatomy, 200

Physiology, 213

13 Cardiovascular Clinical Assessment, 222

Mary E. Lough History, 222 Physical Examination, 224

14 Cardiovascular Diagnostic Procedures, 237

Mary E. Lough, Christine Thompson Cardiovascular Assessment and Monitoring, 237 Laboratory Assessment, 311 Diagnostic Procedures, 318

15 Cardiovascular Disorders, 338

Elizabeth Scruth, Annette Haynes

Coronary Artery Disease, 338
Myocardial Infarction, 351
Sudden Cardiac Death, 366
Heart Failure, 366
Cardiomyopathy, 375
Pulmonary Hypertension, 378
Endocarditis, 384
Valvular Heart Disease, 388
Atherosclerotic Diseases of the Aorta, 392
Peripheral Arterial Disease, 394
Carotid Artery Disease, 397

Peripheral Arterial Disease, 394 Carotid Artery Disease, 397 Venous Thromboembolism, 399

Hypertensive Emergency, 402

16 Cardiovascular Therapeutic Management, 412

Joni Dirks, Julie Waters

Pacemakers, 412 Implantable Cardioverter Defibrillators, 422 Fibrinolytic Therapy, 424 Catheter Interventions for Coronary Artery

Disease, 428 Cardiac Surgery, 437 Mechanical Circulatory Assist Devices, 446 Vascular Surgery, 450 Effects of Cardiovascular Medications, 453

UNIT III PULMONARY ALTERATIONS

17 Pulmonary Anatomy and Physiology, 467 Kathleen M. Stacy

Thorax, 467

Conducting Airways, 471

Respiratory Airways, 474

Pulmonary Blood and Lymph Supply, 475

Ventilation, 477

Respiration, 480

Ventilation/Perfusion Relationships, 481

Gas Transport, 483

18 Pulmonary Clinical Assessment, 488

Kathleen M. Stacy

History, 488

Physical Examination, 488

Assessment Findings

of Common Disorders, 495

19 Pulmonary Diagnostic Procedures, 502

Jeanne M. Maiden

Laboratory Studies, 502

Diagnostic Procedures, 506

Bedside Monitoring, 511

20 Pulmonary Disorders, 514

Kathleen M. Stacy

Acute Lung Failure, 514

Acute Respiratory Distress Syndrome, 519

Pneumonia, 524

Aspiration Pneumonitis, 528

Pulmonary Embolism, 530

Status Asthmaticus, 535

Air Leak Disorders, 537

Long-Term Mechanical Ventilator

Dependence, 540

21 Pulmonary Therapeutic Management, 549

Kathleen M. Stacy

Oxygen Therapy, 549

Artificial Airways, 552

Invasive Mechanical Ventilation, 563

Noninvasive Ventilation, 571

Positioning Therapy, 573

Thoracic Surgery, 575

Pharmacology, 579

UNIT IV NEUROLOGIC ALTERATIONS

22 Neurologic Anatomy and Physiology, 587

Kathleen M. Stacy

Divisions of the Nervous System, 587

Microstructure of the Nervous System, 587

Central Nervous System, 590

23 Neurologic Clinical Assessment and Diagnostic

Procedures, 620

Darlene M. Burke

Clinical Assessment, 620

History, 620

Physical Examination, 620

Diagnostic Procedures, 628

Laboratory Studies, 636

Multimodal Bedside Monitoring, 636

24 Neurologic Disorders and Therapeutic

Management, 646

Lourdes Januszewicz, Barbara Buesch

Coma, 646

Stroke, 649

Guillain-Barré Syndrome, 662

Craniotomy, 664

Intracranial Hypertension, 668

Pharmacologic Agents, 676

UNIT V KIDNEY ALTERATIONS

25 Kidney Anatomy and Physiology, 681

Mary E. Lough

Macroscopic Anatomy, 681

Vascular Anatomy, 681

Microscopic Structure and Function, 682

Nervous System Innervation, 684

Urine Formation, 684

Functions of the Kidneys, 685

Fluid Balance, 687

Electrolyte Balance, 689

26 Kidney Clinical Assessment and Diagnostic

Procedures, 694

Mary E. Lough

History, 694

Physical Examination, 694

Additional Assessments, 698

Laboratory Assessment, 699

Urine Toxicology Screen, 704

Imaging Studies, 704

Kidney Biopsy, 704

27 Kidney Disorders and Therapeutic

Management, 707

Mary E. Lough

Acute Kidney Injury, 707

Assessment and Diagnosis, 709

At-Risk Disease States and Acute Kidney

Injury, 710

Renal Replacement Therapy: Dialysis, 722

UNIT VI GASTROINTESTINAL ALTERATIONS

28 Gastrointestinal Anatomy and Physiology, 737

Kathleen M. Stacy

Mouth, 737

Esophagus, 737

Stomach, 738

Small Intestine, 740

Large Intestine, 742

Accessory Organs, 743

29 Gastrointestinal Clinical Assessment and Diagnostic Procedures, 750

Kathleen M. Stacy

Clinical Assessment, 750

History, 750

Physical Examination, 750

Laboratory Studies, 753

Diagnostic Procedures, 753

30 Gastrointestinal Disorders and Therapeutic Management, 763

Sheryl Leary

Acute Gastrointestinal Hemorrhage, 763

Acute Pancreatitis, 768

Acute Liver Failure, 772

Gastrointestinal Surgery, 775

Therapeutic Management, 779

UNIT VII ENDOCRINE ALTERATIONS

31 Endocrine Anatomy and Physiology, 788

Mary E. Lough

Pancreas, 788

Pituitary Gland and Hypothalamus, 793

Thyroid Gland, 795

Adrenal Gland, 797

32 Endocrine Clinical Assessment and Diagnostic

Procedures, 800

Mary E. Lough

History, 800

Pancreas, 800

Pituitary Gland, 802

Thyroid Gland, 804

Adrenal Gland, 805

33 Endocrine Disorders and Therapeutic Management, 809

Mary E. Lough

Neuroendocrinology of Stress and Critical

Illness, 809

Diabetes Mellitus, 815

Diabetic Ketoacidosis, 819

Hyperglycemic Hyperosmolar State, 826

Diabetes Insipidus, 831

Syndrome of Inappropriate Secretion of

Antidiuretic Hormone, 836

Thyroid Storm, 839

Myxedema Coma, 843

UNIT VIII MULTISYSTEM ALTERATIONS

34 Trauma, 849

Kara A. Snyder

Mechanisms of Injury, 849

Phases of Trauma Care, 850

Specific Trauma Injuries, 855

Complications of Trauma, 880

Special Considerations, 883

35 Shock, Sepsis, and Multiple Organ Dysfunction Syndrome, 887

Beverly Carlson, Lorraine Fitzsimmons

Shock Syndrome, 887

Hypovolemic Shock, 891

Cardiogenic Shock, 894

Anaphylactic Shock, 897

Neurogenic Shock, 900

Severe Sepsis and Septic Shock, 902

Multiple Organ Dysfunction

Syndrome, 908

36 Burns, 926

Jennifer Seigel, Carrie M. Wilson, MaryAlice McCubbins

Anatomy and Functions of the Skin, 926

Pathophysiology and Etiology of Burn

Injury, 927

Classification of Burn Injury, 928

Initial Emergency Burn Management, 932

Special Management Considerations, 935

Burn Nursing Diagnoses and

Management, 937

Stressors of Burn Nursing, 949

37 Organ Donation and Transplantation, 951

Jamie D. Blazek, Christine Hartley, Mary E. Lough, Mary Martel, Teresa J. Shafer, Schawnté Williams-Taylor

Organ Donation, 951

Immunology of Transplant Rejection, 959

Heart Transplantation, 966

Heart-Lung Transplantation, 971

Liver Transplantation, 976

Kidney Transplantation, 985

Pancreas Transplantation, 989

38 Hematologic Disorders and Oncologic

Emergencies, 997

Mary Russell, Carol Suarez

Overview of Coagulation and Fibrinolysis, 997 Disseminated Intravascular Coagulation, 998

Thrombocytopenia, 1003

Heparin-Induced Thrombocytopenia, 1005

Sickle Cell Anemia, 1007

Tumor Lysis Syndrome, 1011

Anemia of Critical Illness, 1014

UNIT IX SPECIAL POPULATIONS

39 The Obstetric Patient, 1017

Susie Hutchins

Risks to Fetal Development, 1018

Physiologic Alterations in Pregnancy, 1020

Physiologic Changes during Labor and

Delivery, 1021

Cardiac Disorders in Pregnancy, 1022

Hypertensive Disease, 1025

Disseminated Intravascular Coagulation, 1027

Shock, 1028

Pulmonary Dysfunction, 1028

Trauma, 1033

Postpartum Hemorrhage, 1036

40 The Pediatric Patient, 1041

Cynthia A. Lewis

Respiratory System, 1041

Cardiovascular System, 1052

Nervous System, 1059

Gastrointestinal System, Fluids,

and Nutrition, 1063

Pain Management, 1065

Psychosocial Issues of the Child and

Family, 1067

41 The Older Adult Patient, 1072

Fiona Winterbottom

Overview, 1072

Cardiovascular System, 1072

Pulmonary System, 1076

Renal System, 1079

Gastrointestinal System, 1080

Central Nervous System, 1082

Immune System, 1084

Integumentary and Musculoskeletal

Systems, 1085

Pharmacologic Therapy in Older Adults, 1086

Hospital-Associated Risk Factors for Older

Adults, 1087

Long-Term Complications of Critical

Care, 1087

Conclusion, 1090

42 The Perianesthesia Patient, 1095

Denise O'Brien

Selection of Anesthesia, 1095

General Anesthesia, 1096

Anesthetic Agents, 1098

Perianesthesia Assessment and Care, 1101

Management of Postanesthesia Problems and

Emergencies, 1107

Appendix A: Nursing Management Plans of Care, 1119

Appendix B: Physiologic Formulas for Critical

Care, 1163

Hemodynamic Formulas, 1163

Pulmonary Formulas, 1164

Neurologic Formulas, 1165

Endocrine Formulas, 1165

Kidney Formulas, 1165

Nutritional Formulas, 1166

Index, 1167