

## **CORE CONTENT FOR EMERGENCY MEDICINE**

### **Preamble**

The Core Content's purpose and function are threefold. It represents the breadth of emergency medicine practice. For ABEM, it outlines the content at risk for examination in emergency medicine. Finally, it serves as a guide in the development of graduate and continuing medical education programs for those involved in the practice of emergency medicine. Because emergency medicine is changing rapidly, the Core Content requires periodic revision.

## **CORE CONTENT FOR EMERGENCY MEDICINE**

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## **1.0 ABDOMINAL AND GASTROINTESTINAL DISORDERS (SEE 13.1)**

### **1.1 Esophagus**

- 1.1.1 Motor abnormalities
  - 1.1.1.1 Esophageal spasm
  - 1.1.1.2 Achalasia (SEE 13.1.4.3)
- 1.1.2 Structural disorders
  - 1.1.2.1 Varices
  - 1.1.2.2 Rupture (Boerhaave's syndrome)
  - 1.1.2.3 Perforation
  - 1.1.2.4 Tears (Mallory-Weiss syndrome)
  - 1.1.2.5 Hematoma
  - 1.1.2.6 Foreign body (SEE 13.1.5)
  - 1.1.2.7 Diaphragmatic hernia
  - 1.1.2.8 Diverticula
  - 1.1.2.9 Hiatal hernia
  - 1.1.2.10 Webs, strictures, stenosis, fistulas
- 1.1.3 Inflammatory disorders
  - 1.1.3.1 Reflux esophagitis
  - 1.1.3.2 Caustic injury
- 1.1.4 Infectious disorders
  - 1.1.4.1 Herpetic esophagitis
  - 1.1.4.2 Monilial esophagitis
- 1.1.5 Tumors

### **1.2 Liver**

- 1.2.1 Hepatitis
  - 1.2.1.1 Viral
  - 1.2.1.2 Bacterial
  - 1.2.1.3 Parasitic
  - 1.2.1.4 Drug and toxin
  - 1.2.1.5 Alcoholic
  - 1.2.1.6 Prophylaxis
- 1.2.2 Cirrhosis
  - 1.2.2.1 Alcoholic
  - 1.2.2.2 Viral
  - 1.2.2.3 Biliary obstructive
  - 1.2.2.4 Drug-induced
  - 1.2.2.5 Toxin-induced
- 1.2.3 Hepatic/hepato-renal failure
- 1.2.4 Tumors of the liver
- 1.2.5 Abscess
  - 1.2.5.1 Primary abscess
  - 1.2.5.2 Metastatic abscess

### **1.3 Gall Bladder and Biliary Tract**

- 1.3.1 Cholecystitis
- 1.3.2 Cholangitis
- 1.3.3 Cholelithiasis and choledocholithiasis

- 1.3.4 Gallstone ileus
- 1.3.5 Tumors
- 1.4 Pancreas**
- 1.4.1 Inflammatory
  - 1.4.1.1 Acute pancreatitis
  - 1.4.1.2 Chronic pancreatitis
  - 1.4.1.3 Pseudocyst/abscess
  - 1.4.1.4 Pancreatic insufficiency
- 1.4.2 Tumors
  - 1.4.2.1 Islet cell tumors
  - 1.4.2.2 Carcinoma
- 1.5 Stomach**
- 1.5.1 Structural lesions
  - 1.5.1.1 Volvulus
  - 1.5.1.2 Foreign bodies
  - 1.5.1.3 Rupture
  - 1.5.1.4 Gastric outlet obstruction
- 1.5.2 Inflammatory disorders
  - 1.5.2.1 Acute gastritis
    - 1.5.2.1.1 Stress-related gastritis
    - 1.5.2.1.2 Corrosive gastritis
    - 1.5.2.1.3 Drug-induced gastritis
- 1.5.3 Peptic ulcer disease
  - 1.5.3.1 Duodenal ulcer
  - 1.5.3.2 Gastric ulcer
  - 1.5.3.3 Acute gastrointestinal hemorrhage (SEE 13.1.8)
- 1.5.4 Tumors
- 1.6 Small Bowel**
- 1.6.1 Motor abnormalities
  - 1.6.1.1 Obstruction
    - 1.6.1.1.1 Mechanical
    - 1.6.1.1.2 Adynamic
  - 1.6.1.2 Pseudo obstruction
- 1.6.2 Structural disorders
  - 1.6.2.1 Aortoenteric fistula
  - 1.6.2.2 Malabsorption
  - 1.6.2.3 Meckel's diverticulum (SEE 13.1.4.6)
- 1.6.3 Inflammatory disorders
  - 1.6.3.1 Acute appendicitis
  - 1.6.3.2 Regional enteritis/Crohn's disease
- 1.6.4 Infectious disorders
  - 1.6.4.1 Viral
  - 1.6.4.2 Bacterial
  - 1.6.4.3 Parasitic
- 1.6.5 Tumors
- 1.6.6 Vascular disorders
  - 1.6.6.1 Mesenteric ischemia

- 1.6.6.2 Ischemic colitis
- 1.7 Large Bowel**
- 1.7.1 Motor abnormalities
  - 1.7.1.1 Irritable bowel
  - 1.7.1.2 Constipation
  - 1.7.1.3 Aganglionic megacolon/Hirschsprung's (SEE 13.1.4.7)
  - 1.7.1.4 Obstruction/pseudo obstruction
- 1.7.2 Structural disorders
  - 1.7.2.1 Diverticular disease
  - 1.7.2.2 Volvulus
  - 1.7.2.3 Vascular dysplasia (angiodysplasia)
- 1.7.3 Inflammatory disorders
  - 1.7.3.1 Ulcerative colitis
  - 1.7.3.2 Radiation colitis
- 1.7.4 Infectious disorders
  - 1.7.4.1 Bacterial
  - 1.7.4.2 Viral
  - 1.7.4.3 Parasitic
  - 1.7.4.4 Antibiotic associated
- 1.7.5 Tumors
- 1.8 Rectum and Anus**
- 1.8.1 Structural disorders
  - 1.8.1.1 Anal fissure
  - 1.8.1.2 Anorectal fistula (SEE 13.1.1)
  - 1.8.1.3 Hemorrhoids
    - 1.8.1.3.1 Internal
    - 1.8.1.3.2 External
  - 1.8.1.4 Rectal prolapse
  - 1.8.1.5 Foreign body
  - 1.8.1.6 Perirectal abscess
  - 1.8.1.7 Perianal/Pilonidal abscess
- 1.8.2 Inflammatory disorders
  - 1.8.2.1 Proctitis
- 1.8.3 Tumors
- 1.9 Abdominal Wall**
- 1.9.1 Hernias (SEE 13.1.9)
- 1.10 Peritoneum**
- 1.10.1 Ascites
- 1.10.2 Spontaneous bacterial peritonitis

## **2.0 CARDIOVASCULAR DISORDERS**

- 2.1 Pathophysiology**
- 2.1.1 Congenital disorders
- 2.1.2 Acquired disorders
- 2.1.3 Effects of aging

- 2.2 Diseases of the Myocardium, Acquired**
  - 2.2.1 Cardiac failure
    - 2.2.1.1 High output
    - 2.2.1.2 Low output
    - 2.2.1.3 Cor pulmonale
  - 2.2.2 Cardiomyopathy
  - 2.2.3 Ischemic heart disease
    - 2.2.3.1 Angina
      - 2.2.3.1.1 Stable
      - 2.2.3.1.2 Variant
      - 2.2.3.1.3 Unstable
    - 2.2.3.2 Myocardial infarction
    - 2.2.3.3 Cardiogenic shock
    - 2.2.3.4 Ventricular aneurysm
  - 2.2.4 Endocarditis
  - 2.2.5 Valvular heart disease
    - 2.2.5.1 Aortic insufficiency/stenosis
    - 2.2.5.2 Mitral insufficiency/stenosis
    - 2.2.5.3 Pulmonary insufficiency/stenosis
    - 2.2.5.4 Tricuspid insufficiency/stenosis
  - 2.2.6 Myocarditis (SEE 13.2.3.3)
- 2.3 Diseases of the Pericardium**
  - 2.3.1 Pericarditis (SEE 13.2.3.1)
  - 2.3.2 Pericardial effusion/tamponade
- 2.4 Diseases of the Conduction System (Disturbances of Cardiac Rhythm)**
  - 2.4.1 Dysrhythmias (SEE 13.2.1)
    - 2.4.1.1 Atrial flutter/fibrillation
    - 2.4.1.2 Atrial/junctional ectopy
    - 2.4.1.3 Preexcitation syndromes
    - 2.4.1.4 Supraventricular tachycardia/bradycardia
    - 2.4.1.5 Ventricular flutter/fibrillation
    - 2.4.1.6 Ventricular tachycardia
    - 2.4.1.7 Ventricular ectopy
    - 2.4.1.8 QT interval syndrome
  - 2.4.2 Conduction blocks
    - 2.4.2.1 Sinoatrial block
    - 2.4.2.2 Sick sinus syndrome
    - 2.4.2.3 Atrioventricular blocks (11, 21, 31)
    - 2.4.2.4 Bundle branch blocks
- 2.5 Diseases of the Circulation, Acquired**
  - 2.5.1 Arterial
    - 2.5.1.1 Atherosclerosis/insufficiency
    - 2.5.1.2 Aneurysm
      - 2.5.1.2.1 Aortic/iliac
      - 2.5.1.2.2 Peripheral arterial
    - 2.5.1.3 Arteritis

- 2.5.1.4 Emboli
- 2.5.1.5 Spasm
- 2.5.1.6 Thrombosis
- 2.5.1.7 Aortic dissection
- 2.5.2 Venous
  - 2.5.2.1 Venous insufficiency/varicosities
  - 2.5.2.2 Thromboembolism
  - 2.5.2.3 Thrombophlebitis
- 2.5.3 Lymphatics
- 2.6 Congenital Abnormalities of the Cardiovascular System (SEE 13.3.2)**
- 2.6.1 Familial/genetically transmitted disorders
- 2.6.2 Disorders due to anatomic anomalies
  - 2.6.2.1 Hypertrophic heart disease
  - 2.6.2.2 Mitral valve prolapse
  - 2.6.2.3 Patent foramen ovale
- 2.7 Cardiac Transplant Patient**
- 2.8 Hypertension**
- 2.8.1 Acute hypertensive crisis (SEE 12.3.6)
- 2.8.2 Chronic hypertension
  - 2.8.2.1 Essential
  - 2.8.2.2 Secondary
- 2.9 Primary Tumors of the Heart**
- 2.10 Myocardial Manifestations of Systemic Diseases**
- 2.10.1 Infections
  - 2.10.1.1 Early (endocarditis 21 sepsis)
  - 2.10.1.2 Late (rheumatic fever 21 group A streptococcal infection)
- 2.10.2 Endocrine and metabolic diseases (SEE 13.3)
- 2.10.3 Rheumatologic
- 2.10.4 Renal
- 2.10.5 Toxic exposures
- 2.11 Treatment Modalities**
- 2.11.1 Thrombolytic therapy
- 2.11.2 Pharmacologic agents
- 2.11.3 Cardiac pacemakers
  - 2.11.3.1 Temporary
  - 2.11.3.2 Permanent
- 2.11.4 Surgical interventions
  - 2.11.4.1 Vascular reconstruction
  - 2.11.4.2 Angioplasty
  - 2.11.4.3 Circulatory augmentation
  - 2.11.4.4 Implantable defibrillators

### **3.0 CUTANEOUS DISORDERS**

- 3.1 Dermatitis**
- 3.1.1 Acne

- 3.1.2 Atopic
- 3.1.3 Contact
- 3.1.4 Dyshidrotic eczema
- 3.1.5 Exfoliative
- 3.1.6 Lichen simplex
- 3.1.7 Psoriasis
- 3.1.8 Seborrhea
- 3.1.9 Stasis
- 3.1.10 Photosensitivity
- 3.1.11 Nummular eczema
- 3.2 Infections**
- 3.2.1 Bacterial
  - 3.2.1.1 Abscesses
  - 3.2.1.2 Cellulitis/lymphangitis
  - 3.2.1.3 Erysipelas
  - 3.2.1.4 Folliculitis
  - 3.2.1.5 Impetigo
  - 3.2.1.6 Bacterial exanthems
- 3.2.2 Fungal
  - 3.2.2.1 Candida
  - 3.2.2.2 Tinea
- 3.2.3 Parasitic
  - 3.2.3.1 Pediculosis
  - 3.2.3.2 Scabies
- 3.2.4 Viral
  - 3.2.4.1 Aphthous ulcers
  - 3.2.4.2 Herpes simplex
  - 3.2.4.3 Herpes zoster
  - 3.2.4.4 Molluscum contagiosum
  - 3.2.4.5 Warts
  - 3.2.4.6 Viral exanthems
- 3.3 Maculopapular Lesions**
- 3.3.1 Pityriasis rosea
- 3.3.2 Purpura and petechiae
- 3.3.3 Urticaria
- 3.4 Papular/Nodular Lesions**
- 3.4.1 Epidermal inclusion cysts
- 3.4.2 Fibroma
- 3.4.3 Hemangioma
- 3.4.4 Lipoma
- 3.4.5 Nevi
- 3.4.6 Lichen planus
- 3.5 Erythemas**
- 3.5.1 Erythema multiforme
- 3.5.2 Erythema nodosum
- 3.6 Vesicular/Bullous Lesions**
- 3.6.1 Pemphigus/pemphigoid

- 3.6.2 Scalded skin syndrome
- 3.6.3 Toxic epidermal necrolysis
- 3.7 Cancers**
- 3.7.1 Basal cell
- 3.7.2 Kaposi=s sarcoma
- 3.7.3 Melanoma
- 3.7.4 Squamous cell
- 3.8 Cutaneous Manifestations of Allergic Reactions**
- 3.9 Cutaneous Manifestations of Systemic Disease**

#### **4.0 ENDOCRINE, METABOLIC, AND NUTRITIONAL DISORDERS (SEE 13.3)**

- 4.1 Acid-Base Disturbances**
- 4.1.1 Metabolic
  - 4.1.1.1 Acidosis
  - 4.1.1.2 Alkalosis
- 4.1.2 Mixed acid-base disorders
- 4.1.3 Respiratory
  - 4.1.3.1 Acidosis
  - 4.1.3.2 Alkalosis
- 4.2 Adrenal Disease**
- 4.2.1 Hyperadrenalism (Cushing=s syndrome)
- 4.2.2 Hypoadrenalism (Addison=s disease)
- 4.3 Fluid and Electrolyte Disturbances**
- 4.3.1 Calcium
- 4.3.2 Chloride
- 4.3.3 Magnesium
- 4.3.4 Phosphorus
- 4.3.5 Potassium
- 4.3.6 Sodium
- 4.3.7 Water
- 4.3.8 Syndrome of inappropriate antidiuretic hormone
- 4.4 Glucose Metabolism**
- 4.4.1 Diabetes mellitus
  - 4.4.1.1 Diabetic ketoacidosis
  - 4.4.1.2 Hyperosmolar coma
- 4.4.2 Hypoglycemic syndromes
- 4.5 Nutritional Disorders (SEE 13.8.2)**
- 4.5.1 Wernicke-Korsakoff syndrome
- 4.5.2 Vitamin deficiency
- 4.5.3 Vitamin excess
- 4.6 Parathyroid Disease**
- 4.7 Pheochromocytoma**
- 4.8 Pituitary Disorders**
- 4.8.1 Panhypopituitarism
- 4.8.2 Growth hormone abnormalities



- 4.8.3 Tumors
- 4.9 Thyroid Disorders**
- 4.9.1 Hyperthyroidism/thyroid storm
- 4.9.2 Hypothyroidism/myxedema (SEE 13.3.2.2)
- 4.9.3 Thyroiditis
- 4.10 Endocrine Manifestations of Neoplasia**

## **5.0 ENVIRONMENTAL DISORDERS**

- 5.1 Diving Emergencies/Dysbarism**
- 5.1.1 Acute gas embolism
- 5.1.2 Decompression sickness
- 5.2 Submersion Incidents**
- 5.2.1 Near drowning
- 5.2.2 Cold water immersion
- 5.3 Electrical Injury (SEE 18.4.17.4.2)**
- 5.3.1 Lightning injury
- 5.3.2 AC/DC current
- 5.3.3 High voltage/low voltage
- 5.4 High-Altitude Illness**
- 5.4.1 Acute mountain sickness
- 5.4.2 High-altitude cerebral edema
- 5.4.3 High-altitude pulmonary edema
- 5.5 Radiation Injury**
- 5.6 Poisonous Plants (SEE 17.2.34)**
- 5.7 Smoke Inhalation (SEE 17.2.26)**
- 5.8 Temperature-Related Illness**
- 5.8.1 Heat
- 5.8.2 Cold
  - 5.8.2.1 Hypothermia
  - 5.8.2.2 Frostbite
- 5.9 Bites and Stings (SEE 18.4.17.6)**
- 5.9.1 Arthropods
  - 5.9.1.1 Insects
  - 5.9.1.2 Spiders
  - 5.9.1.3 Scorpions
- 5.9.2 Mammals
- 5.9.3 Marine organisms
- 5.9.4 Reptiles

## **6.0 HEAD, EAR, EYE, NOSE, THROAT DISORDERS (SEE 13.7)**

- 6.1 Ear**
- 6.1.1 Cellulitis/abscess of external ear
- 6.1.2 Foreign body

- 6.1.3 Labyrinthitis
- 6.1.4 Malignant otitis externa
- 6.1.5 Mastoiditis
- 6.1.6 Meniere=s disease
- 6.1.7 Otitis externa
- 6.1.8 Otitis media (SEE 13.7.6)
- 6.1.9 Tympanic membrane perforation
- 6.2 Nose**
- 6.2.1 Epistaxis anterior
- 6.2.2 Epistaxis posterior
- 6.2.3 Nasal foreign body (SEE 13.7.2)
- 6.2.4 Rhinitis
- 6.2.5 Sinusitis (SEE 13.7.9)
  - 6.2.5.1 Acute
  - 6.2.5.2 Chronic
- 6.3 Oropharynx/Throat**
- 6.3.1 Foreign body
- 6.3.2 Gingivitis (SEE 13.7.10)
- 6.3.3 Larynx/trachea
  - 6.3.3.1 Acute diphtheric laryngitis
  - 6.3.3.2 Acute nondiphtheric infection
    - 6.3.3.2.1 Bacterial tracheitis
    - 6.3.3.2.2 Epiglottitis
    - 6.3.3.2.3 Laryngitis
- 6.3.4 Ludwig=s angina
- 6.3.5 Oral candidiasis
- 6.3.6 Pericoronitis
- 6.3.7 Periodontal abscess
- 6.3.8 Tonsillitis/peritonsillar abscess (SEE 13.7.8)
- 6.3.9 Pharyngitis (SEE 13.7.7 and 16.1)
- 6.3.10 Retropharyngeal abscess (SEE 13.7.15)
- 6.3.11 Sialoadenitis
- 6.3.12 Sialolithiasis
- 6.3.13 Stomatitis
- 6.3.14 Temporomandibular joint disorders
- 6.3.15 Uvulitis
- 6.4 Eye (SEE 18.4.6)**
- 6.4.1 External eye
  - 6.4.1.1 Blepharitis
  - 6.4.1.2 Chalazion/hordeolum
  - 6.4.1.3 Conjunctivitis
  - 6.4.1.4 Corneal abrasions
  - 6.4.1.5 Dacryocystitis/dacryoadenitis
  - 6.4.1.6 Foreign body
- 6.4.2 Anterior pole
  - 6.4.2.1 Cataract
  - 6.4.2.2 Glaucoma

- 6.4.2.3 Hyphema/hypopyon
- 6.4.2.4 Iritis
- 6.4.3 Posterior pole
  - 6.4.3.1 Choroiditis
  - 6.4.3.2 Optic neuritis
  - 6.4.3.3 Papilledema
  - 6.4.3.4 Retinal detachment
  - 6.4.3.5 Vascular occlusion
    - 6.4.3.5.1 Central retinal artery
    - 6.4.3.5.2 Central retinal vein
  - 6.4.3.6 Vitreous hemorrhage
  - 6.4.3.7 Retinal manifestations of systemic diseases
- 6.4.4 Orbit
  - 6.4.4.1 Panophthalmitis
  - 6.4.4.2 Periorbital/preseptal orbital cellulitis (SEE 13.12.1.1.1 and 13.12.1.1.2)
- 6.5 Cavernous Sinus Thrombosis**

## **7.0 HEMATOLOGIC DISORDERS (SEE 13.4)**

- 7.1 Hemostatic Disorders (SEE 13.4.3)
  - 7.1.1 Clotting factor disorders
    - 7.1.1.1 Hemophilias
    - 7.1.1.2 Acquired
  - 7.1.2 Disseminated intravascular coagulation
  - 7.1.3 Platelet disorders
    - 7.1.3.1 Immune thrombocytopenic purpura
    - 7.1.3.2 Thrombotic thrombocytopenic purpura
    - 7.1.3.3 Drug inactivation of platelets
  - 7.1.4 Von Willebrand=s disease
- 7.2 Lymphomas (SEE 13.4.5)
- 7.3 Pancytopenia
- 7.4 Red Blood Cell Disorders
  - 7.4.1 Anemia (SEE 13.4.1)
    - 7.4.1.1 Aplastic
    - 7.4.1.2 Hemolytic
      - 7.4.1.2.1 Glucose-6-phosphate dehydrogenase deficiency
      - 7.4.1.2.2 Hemolytic uremic syndrome
    - 7.4.1.3 Hypochromic/microcytic
    - 7.4.1.4 Megaloblastic
    - 7.4.1.5 Normochromic normocytic
    - 7.4.1.6 Hemoglobinopathies (SEE 13.4.2)
      - 7.4.1.6.1 Sickle cell disease/trait
      - 7.4.1.6.2 Sickle C disease

- 7.4.1.6.3 Thalassemia
- 7.4.2 Polycythemia

## 7.5 Transfusions

- 7.5.1 Autotransfusion
- 7.5.2 Complications
  - 7.5.2.1 Febrile
  - 7.5.2.2 Hemolytic
  - 7.5.2.3 IgA-mediated
  - 7.5.2.4 Disease transmission risk
    - 7.5.2.4.1 HIV
    - 7.5.2.4.2 Hepatitis
  - 7.5.2.5 Of massive transfusions
- 7.5.3 Component therapy
- 7.5.4 Synthetic blood replacement
- 7.5.5 Indications for transfusion

## 7.6 White Blood Cell Disorders

- 7.6.1 Leukemia (SEE 13.4.4)
- 7.6.2 Leukemoid reaction
- 7.6.3 Leukopenia
- 7.6.4 Multiple myeloma

## **8.0 IMMUNE SYSTEM DISORDERS**

- 8.1 Humoral Immunity
- 8.2 Cellular Immunity
- 8.3 Chemical Mediators
- 8.4 Complement
- 8.5 Autoimmune Diseases
  - 8.5.1 Acute rheumatic fever
  - 8.5.2 Collagen vascular diseases
    - 8.5.2.1 Dermatomyositis
    - 8.5.2.2 Polymyositis
    - 8.5.2.3 Reiter=s
    - 8.5.2.4 Rheumatoid arthritis
    - 8.5.2.5 Sarcoidosis
    - 8.5.2.6 Systemic lupus erythematosus
    - 8.5.2.7 Scleroderma
  - 8.5.3 Nephritis
  - 8.5.4 Thyroiditis
  - 8.5.5 Vasculitis
- 8.6 Immune Deficiency Syndromes
  - 8.6.1 HIV
  - 8.6.2 Immunosuppression
  - 8.6.3 Drug-related

- 8.6.4 Radiation-induced
- 8.6.5 Malnutrition
- 8.7 Transplant-Related Problems
  - 8.7.1 Rejection
- 8.8 Hypersensitivity
  - 8.8.1 Anaphylactic/anaphylactoid reactions
  - 8.8.2 Angioedema
  - 8.8.3 Allergic rhinitis
  - 8.8.4 Drug allergies
  - 8.8.5 Serum sickness

## **9.0 SYSTEMIC INFECTIOUS DISORDERS**

- 9.1 Bacterial
  - 9.1.1 Botulism
  - 9.1.2 Gonococcal disease
  - 9.1.3 Bacteremia/sepsis
  - 9.1.4 Mycobacterial infections
    - 9.1.4.1 Tuberculosis
    - 9.1.4.2 Atypical mycobacteria
  - 9.1.5 Meningococemia
  - 9.1.6 Plague
  - 9.1.7 Tetanus
  - 9.1.8 Toxic shock syndrome
  - 9.1.9 Spirochetes
    - 9.1.9.1 Lyme disease
    - 9.1.9.2 Syphilis
  - 9.1.10 Chlamydia
  - 9.1.11 Mycoplasma (SEE 16.10.3)
- 9.2 Fungal
- 9.3 Protozoan B Parasites
  - 9.3.1 Malaria
  - 9.3.2 Toxoplasmosis
- 9.4 Rickettsial
  - 9.4.1 Rocky Mountain spotted fever
  - 9.4.2 Ehrlichiosis
- 9.5 Viral
  - 9.5.1 HIV
  - 9.5.2 Infectious mononucleosis
  - 9.5.3 Influenza
  - 9.5.4 Mumps
  - 9.5.5 Polio
  - 9.5.6 Rabies
  - 9.5.7 Rubella (SEE 13.12.4.4)
  - 9.5.8 Roseola (SEE 13.12.4.3)
  - 9.5.9 Varicella/zoster (SEE 13.12.4.5)

- 9.5.10 Herpes simplex
- 9.6 Travel-Related (SEE 9.7.2 and 13.15)
- 9.7 Prevention
  - 9.7.1 Prophylaxis
  - 9.7.2 Immunizations (SEE 13.15 and 20.4.20)

## **10.0 MUSCULOSKELETAL DISORDERS (NONTRAUMATIC)**

- 10.1 Bony Abnormalities
  - 10.1.1 Aseptic necrosis of hip
  - 10.1.2 Osteogenesis imperfecta
  - 10.1.3 Osteomyelitis
  - 10.1.4 Tumors
  - 10.1.5 Bone cysts
  - 10.1.6 Osteoporosis
  - 10.1.7 Osteomalacia
  - 10.1.8 Bone spurs
  - 10.1.9 Paget's disease
- 10.2 Joint Abnormalities
  - 10.2.1 Arthritis
    - 10.2.1.1 Septic
    - 10.2.1.2 Gout/pseudogout
    - 10.2.1.3 Collagen vascular
    - 10.2.1.4 Degenerative
  - 10.2.2 Osteochondritis dessecans
- 10.3 Disorders of the Spine
  - 10.3.1 Ankylosing spondylitis
  - 10.3.2 Spondylolysis/spondylolisthesis
  - 10.3.3 Disk disorders
    - 10.3.3.1 Herniated nucleus pulposus
    - 10.3.3.2 Discitis
  - 10.3.4 Low back syndromes
    - 10.3.4.1 Acute sprain
    - 10.3.4.2 Sacroiliitis
    - 10.3.4.3 Sciatica
    - 10.3.4.4 Tumors
    - 10.3.4.5 Cauda equina syndrome
  - 10.3.5 Spinal stenosis
- 10.4 Overuse Syndromes
  - 10.4.1 Tendonitis
  - 10.4.2 Bursitis
  - 10.4.3 Fibrositis
  - 10.4.4 Muscle strains
  - 10.4.5 Carpal tunnel syndrome
- 10.5 Muscle Abnormalities
  - 10.5.1 Muscular dystrophies

- 10.5.2 Rhabdomyolysis
- 10.5.3 Myositis
- 10.5.4 Myositis ossificans
- 10.6 Soft Tissue Infections
  - 10.6.1 Necrotizing fasciitis
  - 10.6.2 Gangrene
  - 10.6.3 Paronychia
  - 10.6.4 Felon
  - 10.6.5 Tenosynovitis

## 11.0 NERVOUS SYSTEM DISORDERS

- 11.1 Hemorrhagic Stroke
  - 11.1.1 Subarachnoid hemorrhage
    - 11.1.1.1 Cerebral aneurysm
    - 11.1.1.2 Arteriovenous malformation
  - 11.1.2 Intracerebral hemorrhage
  - 11.1.3 Ischemic stroke
    - 11.1.3.1 Embolic
    - 11.1.3.2 Thrombotic
  - 11.1.4 Transient ischemic attack
- 11.2 Cranial Nerve Disorders
  - 11.2.1 Bell=s palsy
  - 11.2.2 Trigeminal neuralgia
  - 11.2.3 Other cranial nerves
- 11.3 Demyelinating Disorders
  - 11.3.1 *Multiple sclerosis*
- 11.4 Infections/Inflammatory Disorders
  - 11.4.1 Abscess
    - 11.4.1.1 Brain
    - 11.4.1.2 Epidural
  - 11.4.2 Encephalitis (SEE 13.5.2)
  - 11.4.3 Meningitis (SEE 13.5.2)
  - 11.4.4 Myelitis
  - 11.4.5 Neuritis
- 11.5 Neuromuscular Disorders
  - 11.5.1 Landry=s/Guillain-Barré syndromes
  - 11.5.2 Myasthenia gravis
  - 11.5.3 Amyotrophic lateral sclerosis
- 11.6 Peripheral Neuropathy
  - 11.6.1 Compression syndromes
  - 11.6.2 Toxic and other neuropathies
- 11.7 Spinal Cord Compression
- 11.8 Hydrocephalus (SEE 13.5.4)
  - 11.8.1 Acute

- 11.8.2 Normal pressure
- 11.8.3 CNS shunt malfunction
- 11.9 Seizure Disorders
  - 11.9.1 Status epilepticus
  - 11.9.2 Focal seizures
  - 11.9.3 Generalized seizures
  - 11.9.4 Pseudo seizures
- 11.10 Headache
- 11.11 Pseudotumor Cerebri/Benign Intracranial Hypertension
- 11.12 Tumors
- 11.13 Movement Disorders

## **12.0 OBSTETRICS AND DISORDERS OF PREGNANCY**

- 12.1 Contraception
- 12.2 Pregnancy, Uncomplicated
- 12.3 Pregnancy, Complicated
  - 12.3.1 Ectopic
  - 12.3.2 Hyperemesis gravidarum
  - 12.3.3 Abortion
    - 12.3.3.1 Threatened
    - 12.3.3.2 Inevitable
    - 12.3.3.3 Incomplete
    - 12.3.3.4 Complete
    - 12.3.3.5 Septic
    - 12.3.3.6 Missed
  - 12.3.4 Abruptio placentae
  - 12.3.5 Placenta previa
  - 12.3.6 Toxemia/pregnancy-induced hypertension (SEE 2.8.1)
    - 12.3.6.1 Preeclampsia
    - 12.3.6.2 Eclampsia
  - 12.3.7 Rh incompatibility
  - 12.3.8 Hydatidiform mole
  - 12.3.9 Underlying illness
- 12.4 Labor, Uncomplicated
- 12.5 Labor, Complicated
  - 12.5.1 Premature rupture of membranes
  - 12.5.2 Preterm labor
  - 12.5.3 Failure to progress
  - 12.5.4 Fetal distress
  - 12.5.5 Ruptured uterus
- 12.6 Delivery, Uncomplicated
  - 12.6.1 Presentation
  - 12.6.2 Position
  - 12.6.3 Lie
  - 12.6.4 Episiotomy



- 12.7 Delivery, Complicated
  - 12.7.1 Presentation
  - 12.7.2 Dystocia
  - 12.7.3 Prolapsed cord
  - 12.7.4 Retained placenta (SEE 12.8.1)
  - 12.7.5 Uterine inversion
  - 12.7.6 Multiple births
  - 12.7.7 Stillbirth
  - 12.7.8 Emergency cesarean section (SEE 18.5.2.3 and 23.4.2.3)
- 12.8 Postpartum Complications
  - 12.8.1 Retained products of conception (SEE 12.7.4)
  - 12.8.2 Hemorrhage
  - 12.8.3 Endometritis
  - 12.8.4 Mastitis

## **13.0 PEDIATRIC DISORDERS**

### **13.1 Abdominal/Gastrointestinal (SEE 1.0)**

- 13.1.1 Anorectal fissures (SEE 1.8.1.2)

### **13.1.2 Appendicitis**

- 13.1.3 Colic/formula intolerance

### **13.1.4 Congenital lesions**

- 13.1.4.1 Tracheoesophageal fistula
- 13.1.4.2 Esophageal atresia
- 13.1.4.3 Achalasia (SEE 1.1.1.2)
- 13.1.4.4 Pyloric stenosis
- 13.1.4.5 Biliary atresia
- 13.1.4.6 Meckel=s diverticulum (SEE 1.6.2.3)
- 13.1.4.7 Aganglionic megacolon/Hirschsprung=s (SEE 1.7.1.3)
- 13.1.5 Foreign bodies (SEE 1.1.2.6)

### **13.1.6 Gastroenteritis/enterocolitis**

- 13.1.6.1 Viral
- 13.1.6.2 Bacterial
- 13.1.6.3 Parasitic
- 13.1.6.4 Allergic
- 13.1.6.5 Inflammatory bowel disease
- 13.1.6.6 Toxin-induced
- 13.1.7 Gastroesophageal reflux

### **13.1.8 Gastrointestinal bleeding (SEE 1.5.3.3)**

- 13.1.8.1 Upper
- 13.1.8.2 Lower
- 13.1.9 Hernias (SEE 1.9.1)
  - 13.1.9.1 Inguinal

### 13.1.9.2 Umbilical

#### 13.1.10 *Intussusception*

13.1.11 Malrotation of the bowel with volvulus

13.1.12 Tumors

13.1.12.1 Neuroblastoma

13.1.12.2 Wilms= tumor

#### 13.2 Cardiovascular

13.2.1 Dysrhythmias (SEE 2.4.1)

13.2.1.1 Fast

13.2.1.2 Irregular

13.2.1.3 Slow

13.2.2 Congenital heart disease

13.2.2.1 Left to right shunts

13.2.2.2 Right to left shunts

13.2.2.3 Obstructive lesions

13.2.3 Acquired heart disease

13.2.3.1 Pericarditis (SEE 2.3.1)

13.2.3.2 Infective endocarditis (SEE 2.2.6)

13.2.3.3 Myocarditis (SEE 2.2.6)

13.2.3.4 Rheumatic fever

#### 13.3 *Endocrine/Metabolic (SEE 2.10.2 and 4.0)*

13.3.1 Glucose metabolism

13.3.1.1 Diabetes mellitus

13.3.1.2 Diabetic ketoacidosis

13.3.1.3 Hypoglycemia

13.3.2 Congenital abnormalities (SEE 2.6)

13.3.2.1 Adrenal hyperplasia

13.3.2.2 Hypothyroidism (SEE 4.9.2)

13.3.3 Inborn errors of metabolism

#### 13.4 Hematologic (SEE 7.0)

13.4.1 Anemias (SEE 7.4.1)

13.4.2 Hemoglobinopathies (SEE 7.4.1.6)

13.4.3 Hemostatic disorders (SEE 7.1)

13.4.4 Leukemias (SEE 7.6.1)

13.4.5 Lymphomas (SEE 7.2)

#### 13.5 *Neurologic*

13.5.1 Encephalopathies

13.5.1.1 Reye=s syndrome

13.5.2 Meningitis/encephalitis (SEE 11.4.3 and 11.4.2)

13.5.2.1 Aseptic/viral

13.5.2.2 Bacterial

13.5.3 Seizures (SEE 13.16.4)

13.5.3.1 Febrile

13.5.3.2 Nonfebrile

- 13.5.4 Hydrocephalus/ventricular shunts (SEE 11.8)
- 13.5.5 Neuromuscular disorders
- 13.5.6 Tumors
- 13.6 Orthopedic (SEE 18.4.12.2.2.1 and 18.6.7)
  - 13.6.1 Legg-Calvé-Perthes disease
  - 13.6.2 Septic joint
  - 13.6.3 Osteomyelitis
  - 13.6.4 Slipped capital femoral epiphysis
  - 13.6.5 Transient synovitis
  - 13.6.6 Tumors
    - 13.6.6.1 Ewing=s sarcoma
    - 13.6.6.2 Osteogenic sarcoma
  - 13.6.7 Osgood-Schlatter disease
  - 13.6.8 Congenital dislocation of the hip
- 13.7 *Head, Ear, Eye, Nose, Throat (SEE 6.0 and 18.6.2)*
  - 13.7.1 Epiglottitis
  - 13.7.2 Foreign bodies (SEE 6.2.3)
    - 13.7.3 Laryngotracheobronchitis (croup)
  - 13.7.4 Nasopharyngitis (upper respiratory infection)
    - 13.7.5 Otitis externa
      - 13.7.6 Otitis media (SEE 6.1.8)
      - 13.7.7 Pharyngitis (SEE 6.3.9)
      - 13.7.8 Tonsillitis/peritonsillar abscess (SEE 6.3.8)
      - 13.7.9 Sinusitis (SEE 6.2.5)
      - 13.7.10 Gingivostomatitis (SEE 6.3.2)
      - 13.7.11 Torticollis
      - 13.7.12 Tracheitis/bacterial
      - 13.7.13 Tumor
        - 13.7.13.1 Retinoblastoma
      - 13.7.14 Congenital cysts
      - 13.7.15 Retropharyngeal abscess (SEE 6.3.10)
      - 13.7.16 Cervical adenitis
- 13.8 Psychiatric
  - 13.8.1 Abuse (SEE 14.2 and 18.6.1.4)
  - 13.8.2 Eating disorders (SEE 4.5)
  - 13.8.3 Depression/suicide (SEE 14.2.2 and 14.9.1)
  - 13.8.4 Acute psychosis
  - 13.8.5 Behavioral disorders (SEE 14.0)
- 13.9 Respiratory (SEE 16.1)
  - 13.9.1 Bronchiolitis
  - 13.9.2 Bronchopulmonary dysplasia
    - 13.9.3 Cystic fibrosis (SEE 16.6.4)
  - 13.9.4 Foreign bodies
    - 13.9.5 Asthma /reactive airway disease (SEE 16.6.1)
      - 13.9.6 Pneumonia
        - 13.9.6.1 Chlamydial

- 13.9.6.2 Mycoplasmal
- 13.9.6.3 Bacterial
- 13.9.6.4 Viral
  - 13.9.6.4.1 Parainfluenza
  - 13.9.6.4.2 Respiratory syncytial
- 13.9.7 Pertussis
- 13.10 Bacteremia and Sepsis (SEE 13.16.3)
- 13.11 Rheumatologic
  - 13.11.1 Juvenile rheumatoid arthritis
  - 13.11.2 Kawasaki syndrome
  - 13.11.3 Schönlein-Henoch purpura
- 13.12 Skin and Soft Tissue Infections
  - 13.12.1 Bacterial
    - 13.12.1.1 Cellulitis
      - 13.12.1.1.1 Orbital (SEE 6.4.4.2)
      - 13.12.1.1.2 Periorbital/preseptal (SEE 6.4.4.2)
    - 13.12.1.2 Impetigo
    - 13.12.1.3 Staphylococcal scalded skin syndrome
  - 13.12.2 Infestations
    - 13.12.2.1 Pediculosis
    - 13.12.2.2 Scabies
  - 13.12.3 Fungal
    - 13.12.3.1 Candida
    - 13.12.3.2 Tinea/kerion
  - 13.12.4 Viral exanthema
    - 13.12.4.1 Erythema infectiosum
    - 13.12.4.2 Measles
    - 13.12.4.3 Roseola (SEE 9.5.8)
    - 13.12.4.4 Rubella (SEE 9.5.7)
    - 13.12.4.5 Varicella/zoster (SEE 9.5.9)

**13.13 Genitourinary**

- 13.13.1 Congenital kidney abnormalities
  - 13.13.1.1 Polycystic kidney disease
  - 13.13.1.2 Horseshoe kidney
  - 13.13.1.3 Congenital absence of kidney
- 13.13.2 Penile
  - 13.13.2.1 Balanitis
  - 13.13.2.2 Phimosis/paraphimosis (SEE 19.2.1.3)
  - 13.13.2.3 Priapism
- 13.13.3 Testicular
  - 13.13.3.1 Torsion
  - 13.13.3.2 Undescended testis
- 13.13.4 Urinary tract infections
- 13.13.5 Vaginal foreign bodies
- 13.13.6 Renal failure (SEE 15.4)

**13.14 Sudden Infant Death Syndrome/Acute Life-Threatening Event**

**13.15 Immunizations (SEE 9.7.2 and 20.4.20)**

**13.16 Neonatal**

13.16.1 Assessment

13.16.2 Jaundice

13.16.3 Sepsis (SEE 13.10)

13.16.4 Seizures (SEE 13.5.3)

**13.17 Pediatric/Neonatal Resuscitation**

13.17.1 Fluid and electrolyte management (SEE 18.6.1.3)

## **14.0 PSYCHOBEHAVIORAL DISORDERS (SEE 13.8.5)**

**14.1 Thought Disorders**

14.1.1 Schizophrenia

14.1.2 Delusional paranoia

**14.2 Mood Disorders (SEE 13.8.1)**

14.2.1 Bipolar disorder

14.2.2 Depression (SEE 13.8.3)

**14.3 Anxiety Disorders**

14.3.1 Posttraumatic stress

14.3.2 Panic

14.3.3 Phobia

14.3.4 Obsessive-compulsive

14.3.5 Catatonic

**14.4 Somatoform Disorders**

14.4.1 Hysterical conversion

14.4.2 Hypochondriasis

**14.5 Factitious Disorders**

14.5.1 Munchausen syndrome

14.5.2 Drug-seeking behavior

**14.6 Addictive Behavior**

14.6.1 Substance abuse

14.6.2 Eating disorders

14.6.2.1 Anorexia nervosa

14.6.2.2 Bulimia

**14.7 Personality Disorders**

14.7.1 Antisocial

14.7.2 Histrionic

- 14.7.3 Obsessive/compulsive
- 14.7.4 Passive/aggressive
- 14.7.5 Borderline personality

**14.8 Organic Brain Syndromes**

- 14.8.1 Delirium
- 14.8.2 Dementia
  - 14.8.2.1 Alzheimer=s disease
  - 14.8.2.2 Multi-infarct
- 14.8.3 Amnesia
  - 14.8.3.1 Traumatic
  - 14.8.3.2 Transient global
- 14.8.4 Intoxication and withdrawal
  - 14.8.4.1 Alcohol
  - 14.8.4.2 Sympathomimetics and cocaine
  - 14.8.4.3 Hallucinogens
  - 14.8.4.4 Phencyclidine
  - 14.8.4.5 Opioids
  - 14.8.4.6 Sedatives/hypnotics/anxiolytics

**14.9 Risk Assessment**

- 14.9.1 Suicidal risk or self abuse (SEE 13.8.3)
- 14.9.2 Risk of violence against others (i.e., abuse behavior) (SEE 14.12.1)

**14.10 Involuntary Competency Assessment/Commitment (SEE 20.7.2.1)**

**14.11 Treatment Modalities**

- 14.11.1 Major tranquilizers
- 14.11.2 Sedatives/hypnotics
- 14.11.3 Physical restraints
- 14.11.4 Management of violence (SEE 20.4.21)
- 14.11.5 Community resource utilization

**14.12 Patterns of Violence/Abuse/Neglect**

- 14.12.1 Family violence (SEE 13.8.1, 14.9.2 and 18.1.11.2.1.3)
- 14.12.2 Sexual assault (SEE 19.3)

**15.0 RENAL DISORDERS**

**15.1 Structural Disorders**

- 15.1.1 Renal calculi
- 15.1.2 Obstructive uropathy
- 15.1.3 Renal obstruction

**15.2 Infection**

- 15.2.1 Pyelonephritis
- 15.2.2 Perinephric abscess

**15.3 Glomerular Disorders**

- 15.3.1 Glomerulonephritis
- 15.3.2 Nephrotic syndrome

**15.4 Acute and Chronic Renal Failure (SEE 13.13.6)**

**15.5 Interstitial Tubular Necrosis**

**15.6 Interstitial Nephritis**

**15.7 Tumors**

**15.8 Complications of Dialysis**

**16.0 THORACIC-RESPIRATORY DISORDERS**

**16.1 Acute Upper Airway Obstruction (SEE 6.3.9, 13.9)**

- 16.1.1 Tracheostomy/complications

**16.2 Breast Disorders**

- 16.2.1 Fibrocystic disease
- 16.2.2 Tumor
- 16.2.3 Infections

**16.3 Disorders of Pleura, Mediastinum, and Chest Wall**

- 16.3.1 Costochondritis
- 16.3.2 Mediastinal masses
- 16.3.3 Mediastinitis
- 16.3.4 Pleural effusions/empyema
- 16.3.5 Pleurisy
- 16.3.6 Pneumomediastinum
- 16.3.7 Pneumothoraces (SEE 18.4.10.12)
  - 16.3.7.1 Spontaneous
  - 16.3.7.2 Iatrogenic
  - 16.3.7.3 Tension

**16.4 Hyperventilation Syndrome**

**16.5 Noncardiogenic Pulmonary Edema (Adult Respiratory Distress Syndrome)**

- 16.6 Obstructive/Restrictive Lung Disease
  - 16.6.1 Asthma (SEE 13.9.5)
  - 16.6.2 Bronchitis
  - 16.6.3 Chronic obstructive pulmonary disease
  - 16.6.4 Cystic fibrosis (SEE 13.9.3)
  - 16.6.5 Interstitial fibrosis
  - 16.6.6 Environmental/industrial exposure

**16.7 Physical and Chemical Irritants/Insults**

- 16.7.1 Chemical agents
- 16.7.2 Foreign bodies
- 16.7.3 Aspiration of gastric contents

- 16.8 Primary Pulmonary Hypertension
    - 16.9 Pulmonary Embolism/Infarct
      - 16.9.1 Venous thromboembolism
        - 16.9.2 Fat
        - 16.9.3 Septic
        - 16.9.4 Amniotic fluid
  - 16.10 Pulmonary Infections
    - 16.10.1 Bacterial
    - 16.10.2 Fungal
    - 16.10.3 Mycoplasma (SEE 9.1.11)
    - 16.10.4 Lung abscess
      - 16.10.5 Bronchiectasis
      - 16.10.6 Opportunistic
      - 16.10.7 Septic emboli
      - 16.10.8 Tuberculosis
      - 16.10.9 Viral
- 16.11 *Thoracic Outlet Syndrome*
- 16.12 Pulmonary Tumors
  - 16.13 Sarcoidosis
  - 16.14 Sleep Apnea Syndromes

## **17.0 TOXICOLOGIC DISORDERS**

- 17.1 Principles
  - 17.1.1 Toxicologic information
  - 17.1.2 Toxicologic diagnostic modalities
  - 17.1.3 Toxidromes
  - 17.1.4 Treatment modalities
    - 17.1.4.1 Antidotes
    - 17.1.4.2 Skin decontamination
    - 17.1.4.3 Gastric decontamination
      - 17.1.4.3.1 Emetics
      - 17.1.4.3.2 Lavage
    - 17.1.4.4 Enhanced elimination
      - 17.1.4.4.1 Activated charcoal
      - 17.1.4.4.2 Cathartics/whole bowel irrigation
      - 17.1.4.4.3 Diuresis
      - 17.1.4.4.4 Dialysis/hemoperfusion
      - 17.1.4.4.5 Hyperbaric oxygen
  - 17.1.5 Withdrawal syndromes
- 17.2 Drug and Chemical Classes
  - 17.2.1 Acetaminophen
  - 17.2.2 Alcohols
    - 17.2.2.1 Ethanol
    - 17.2.2.2 Ethylene glycol



- 17.2.2.3 Isopropyl alcohol
- 17.2.2.4 Methanol
- 17.2.3 Analgesics/anesthetics (SEE 22.2.1)
- 17.2.4 Anticholinergics/cholinergics
- 17.2.5 Anticoagulants (SEE 22.2.3)
- 17.2.6 Anticonvulsants (SEE 22.2.4)
- 17.2.7 Antidepressants
- 17.2.7.1 Lithium
- 17.2.7.2 Monoamine oxidase inhibitors
- 17.2.7.3 Cyclic antidepressants
- 17.2.8 Antiparkinsonian drugs
- 17.2.9 Antihistamines (SEE 22.2.5)
- 17.2.10 Antipsychotics (SEE 22.2.6)
- 17.2.11 Bronchodilators (SEE 22.2.7)
- 17.2.12 Cannabis
- 17.2.13 Carbon monoxide (SEE 5.7)
- 17.2.14 Cardiovascular drugs (SEE 22.2.8)
- 17.2.14.1 Antiarrhythmics
- 17.2.14.2 Antihypertensives
- 17.2.14.3 Digitalis preparations
- 17.2.14.4 Calcium channel blockers
- 17.2.14.5  $\beta$ -Blockers
- 17.2.15 Caustic agents
- 17.2.16 Cocaine
- 17.2.17 Cyanides, hydrogen sulfide
- 17.2.18 Food additives
- 17.2.19 Hallucinogens
- 17.2.20 Hazardous material spills (SEE 21.4.3)
- 17.2.21 Heavy metals and chelation
- 17.2.22 Household/industrial poisons
- 17.2.23 Hormones/steroids (SEE 22.2.9)
- 17.2.24 Hydrocarbons/halogenated hydrocarbons
- 17.2.25 Hypoglycemics/insulin (SEE 22.2.10)
- 17.2.26 Inhaled toxins (SEE 5.7)
- 17.2.27 Iron
- 17.2.28 Isoniazid
- 17.2.29 Local anesthetics (SEE 22.2.12)
- 17.2.30 Locally acting drugs (SEE 22.2.13)
- 17.2.30.1 Antacids
- 17.2.30.2 Antiseptics
- 17.2.30.3 Cathartics
- 17.2.30.4 Laxatives
- 17.2.31 Irritant gases
- 17.2.32 Marine toxins
- 17.2.32.1 Ciguatera
- 17.2.32.2 Scombroid
- 17.2.33 Methemoglobinemia

- 17.2.34 Mushrooms/poisonous plants (SEE 5.6)
- 17.2.35 Nitrogen compounds
- 17.2.36 Nonsteroidal anti-inflammatories
- 17.2.37 Organophosphates/carbamate
- 17.2.38 Opiates/opioids (SEE 22.2.16)
- 17.2.39 Salicylates
- 17.2.40 Sedatives/hypnotics
  - 17.2.40.1 Barbiturates
  - 17.2.40.2 Benzodiazepines
  - 17.2.40.3 Chloral hydrate
- 17.2.41 Stimulants/sympathomimetics
- 17.2.42 Strychnine

## **18.0 TRAUMATIC DISORDERS (SEE 21.4.3.3)**

- 18.1 Principles of Care
  - 18.1.1 Prehospital trauma care
  - 18.1.2 Triage
  - 18.1.3 Resuscitation and stabilization
    - 18.1.3.1 Hemorrhagic shock
    - 18.1.3.2 Neurogenic shock
  - 18.1.4 Role of the emergency physician
  - 18.1.5 Team response
  - 18.1.6 Reassessment and monitoring
  - 18.1.7 Diagnosis
  - 18.1.8 Treatment
  - 18.1.9 Consultation
  - 18.1.10 Disposition
  - 18.1.11 Injury prevention and control
    - 18.1.11.1 Epidemiology overview
    - 18.1.11.2 Cause of injury
      - 18.1.11.2.1 Intentional injury
        - 18.1.11.2.1.1 Homicide
        - 18.1.11.2.1.2 Suicide
        - 18.1.11.2.1.3 Family violence: elder abuse, child abuse, domestic violence  
(SEE 14.12.1 and 18.6.1.4)
      - 18.1.11.2.2 Unintentional injury
        - 18.1.11.2.2.1 Motor vehicle crashes
        - 18.1.11.2.2.2 Falls
        - 18.1.11.2.2.3 Drownings
        - 18.1.11.2.2.4 Poisonings
        - 18.1.11.2.2.5 Burns and fire-related injuries
        - 18.1.11.2.2.6 Occupational injuries
- 18.2 Radiologic Evaluation
  - 18.2.1 Plain radiography
  - 18.2.2 Contrast radiography

- 18.2.3 Computed tomography scan
- 18.2.4 Angiography
- 18.2.5 Magnetic resonance imaging
- 18.2.6 Ultrasonography (SEE 23.3.7)
- 18.3 Mechanism of Injury
  - 18.3.1 Blunt
  - 18.3.2 Penetrating
    - 18.3.2.1 Gunshot wounds
  - 18.3.2.1.1 *Ballistics***
    - 18.3.2.2 Stab wounds
    - 18.3.2.3 Clinical forensics
  - 18.3.3 Kinematics
- 18.4 Diagnosis and Management by Anatomic Areas
  - 18.4.1 Head trauma
    - 18.4.1.1 Scalp lacerations/avulsions
    - 18.4.1.2 Skull fractures
    - 18.4.1.3 Brain concussions, contusions
    - 18.4.1.4 Intracranial hematomas
    - 18.4.1.5 Brainstem injuries
    - 18.4.1.6 Penetrating head trauma
    - 18.4.1.7 Cerebrospinal fluid leaks (otorrhea, rhinorrhea)
  - 18.4.2 Spinal cord and peripheral nervous system trauma

- 18.4.2.1 Complete spinal cord injuries
- 18.4.2.2 Incomplete cord injuries
- 18.4.2.3 Cauda equina injuries
- 18.4.2.4 Nerve root injuries
- 18.4.2.5 Brachial and lumbosacral plexus injuries
- 18.4.2.6 Peripheral nerve injuries
- 18.4.3 Injuries of the spine
  - 18.4.3.1 Fractures
    - 18.4.3.1.1 Cervical
    - 18.4.3.1.2 Thoracic
    - 18.4.3.1.3 Lumbar
    - 18.4.3.1.4 Sacral/coccygeal
  - 18.4.3.2 Dislocations/subluxations
    - 18.4.3.2.1 Unilateral facet
    - 18.4.3.2.2 Bilateral facet
    - 18.4.3.2.3 Ligamentous injuries
- 18.4.4 Facial fractures
  - 18.4.4.1 Frontal sinus
  - 18.4.4.2 Mandibular
  - 18.4.4.3 Maxillary
  - 18.4.4.4 Nasal
  - 18.4.4.5 Orbital
  - 18.4.4.6 Dental fractures and avulsions
  - 18.4.4.7 Zygomatic
- 18.4.5 Soft tissue facial injuries
  - 18.4.5.1 Complex lacerations
  - 18.4.5.2 Avulsions
  - 18.4.5.3 Severe abrasions
  - 18.4.5.4 Parotid gland/duct injuries
  - 18.4.5.5 Nerve injuries
- 18.4.6 Ophthalmologic trauma (SEE 6.4)
  - 18.4.6.1 Corneal abrasions/lacerations
  - 18.4.6.2 Foreign bodies
  - 18.4.6.3 Iritis
  - 18.4.6.4 Hyphema
  - 18.4.6.5 Lens dislocation
  - 18.4.6.6 Retinal detachment
  - 18.4.6.7 Penetrating globe injuries
  - 18.4.6.8 Eyelid lacerations
  - 18.4.6.9 Lacrimal duct injuries
  - 18.4.6.10 Corneal burns
    - 18.4.6.10.1 Acid
    - 18.4.6.10.2 Alkali
    - 18.4.6.10.3 Ultraviolet
- 18.4.7 Otologic trauma
  - 18.4.7.1 Lacerations

- 18.4.7.2 Avulsions
- 18.4.7.3 Subperichondrial hematoma
- 18.4.7.4 Tympanic membrane perforation
- 18.4.8 Neck trauma
  - 18.4.8.1 Vascular injuries
    - 18.4.8.1.1 Carotid artery
    - 18.4.8.1.2 Internal and external jugular veins
    - 18.4.8.1.3 Thoracic duct
  - 18.4.8.2 Penetrating neck trauma
    - 18.4.8.2.1 Anterior and posterior triangle injuries
    - 18.4.8.2.2 Anatomic zones (I, II, III) and injuries specific to them
    - 18.4.8.2.3 Mandatory versus selective exploration
- 18.4.9 Laryngotracheal injuries
  - 18.4.9.1 Lacerations
  - 18.4.9.2 Crush injuries
  - 18.4.9.3 Vocal cord avulsions/hematomas
  - 18.4.9.4 Fractured larynx
  - 18.4.9.5 Tracheal transection
  - 18.4.9.6 Compression with hematomas
- 18.4.10 Chest trauma
  - 18.4.10.1 Penetrating chest trauma
  - 18.4.10.2 Rib fractures
  - 18.4.10.3 Sternal fractures
  - 18.4.10.4 Flail chest
  - 18.4.10.5 Clavicle fracture/dislocation
  - 18.4.10.6 Aortic disruption
  - 18.4.10.7 Myocardial contusion
  - 18.4.10.8 Pulmonary contusion
  - 18.4.10.9 Pericardial tamponade
  - 18.4.10.10 Vascular injuries
  - 18.4.10.11 Tracheobronchial tree injuries
  - 18.4.10.12 Pneumothoraces (SEE 16.3.7)
    - 18.4.10.12.1 Simple
    - 18.4.10.12.2 Open
    - 18.4.10.12.3 Tension
  - 18.4.10.13 Hemothorax
- 18.4.11 Abdominal trauma
  - 18.4.11.1 Penetrating abdominal trauma
  - 18.4.11.2 Abdominal wall contusion
  - 18.4.11.3 Solid viscus injuries
  - 18.4.11.4 Hollow viscus injuries
  - 18.4.11.5 Vascular injuries
  - 18.4.11.6 Diaphragmatic rupture
  - 18.4.11.7 Evisceration
  - 18.4.11.8 Mesenteric avulsion, hematoma
  - 18.4.11.9 Bladder rupture, contusion

- 18.4.11.10 Renal injuries
  - 18.4.11.10.1 Contusions
  - 18.4.11.10.2 Lacerations
  - 18.4.11.10.3 Renal vascular injuries
- 18.4.11.11 Ureteral injuries
- 18.4.12 Upper extremity bony trauma
  - 18.4.12.1 Fractures (open and closed)
    - 18.4.12.1.1 Phalangeal
    - 18.4.12.1.2 Metacarpal
    - 18.4.12.1.3 Carpal
    - 18.4.12.1.4 Forearm
    - 18.4.12.1.5 Supracondylar
    - 18.4.12.1.6 Humeral shaft and head
    - 18.4.12.1.7 Scapula
  - 18.4.12.2 Dislocations/subluxations
    - 18.4.12.2.1 Shoulder
      - 18.4.12.2.1.1 Acromioclavicular
      - 18.4.12.2.1.2 Glenohumeral
    - 18.4.12.2.2 Elbow
      - 18.4.12.2.2.1 Radial head
        - 18.4.12.2.2.2 Posterior
    - 18.4.12.2.3 Wrist
      - 18.4.12.2.3.1 Lunate
      - 18.4.12.2.3.2 Perilunate
    - 18.4.12.2.4 Hand
      - 18.4.12.2.4.1 Metacarpophalangeal joint
      - 18.4.12.2.4.2 Interphalangeal joint
- 18.4.13 Lower extremity bony trauma
  - 18.4.13.1 Fractures (open and closed)
    - 18.4.13.1.1 Phalangeal
    - 18.4.13.1.2 Metatarsal
    - 18.4.13.1.3 Tarsal
      - 18.4.13.1.3.1 Calcaneal
      - 18.4.13.1.3.2 Talus
    - 18.4.13.1.4 Ankle
      - 18.4.13.1.4.1 Distal tibial and fibular
      - 18.4.13.1.4.2 Bimalleolar and trimalleolar
    - 18.4.13.1.5 Leg (tibia-fibula)
      - 18.4.13.1.5.1 Tibial plateau
      - 18.4.13.1.5.2 Tibial shaft
      - 18.4.13.1.5.3 Fibular head
    - 18.4.13.1.6 Patellar
    - 18.4.13.1.7 Midshaft and distal femur
    - 18.4.13.1.8 Proximal femur (hip)
      - 18.4.13.1.8.1 Subtrochanteric
      - 18.4.13.1.8.2 Femoral neck

- 18.4.13.1.8.3 Intertrochanteric
- 18.4.13.2 Dislocations
  - 18.4.13.2.1 Phalangeal
  - 18.4.13.2.2 Lisfranc
  - 18.4.13.2.3 Ankle
  - 18.4.13.2.4 Knee
  - 18.4.13.2.5 Patellar
  - 18.4.13.2.6 Hip
- 18.4.14 Soft tissue extremity injuries
  - 18.4.14.1 Tendon injuries
    - 18.4.14.1.1 Partial lacerations
    - 18.4.14.1.2 Complete transections
    - 18.4.14.1.3 Tendon ruptures
  - 18.4.14.2 Periarticular injuries
    - 18.4.14.2.1 First-, second-, and third-degree sprains
    - 18.4.14.2.2 Injuries to bursa
    - 18.4.14.2.3 Ligamentous lacerations
  - 18.4.14.3 Injuries to joints
    - 18.4.14.3.1 Penetrating injuries
    - 18.4.14.3.2 Rupture of joint capsule
  - 18.4.14.4 Compartment syndromes/crush injuries
  - 18.4.14.5 Penetrating soft tissue injuries
  - 18.4.14.6 High pressure injection injuries
  - 18.4.14.7 Amputations /replantation
- 18.4.15 Pelvic fractures
  - 18.4.15.1 Pubic rami
  - 18.4.15.2 Straddle
  - 18.4.15.3 Iliac crest
  - 18.4.15.4 Malgaigne
- 18.4.16 Injuries of the genitalia
  - 18.4.16.1 Female
    - 18.4.16.1.1 Labial contusion/hematoma
    - 18.4.16.1.2 Vaginal laceration
  - 18.4.16.2 Male
    - 18.4.16.2.1 Penis
      - 18.4.16.2.1.1 Fracture
      - 18.4.16.2.1.2 Avulsion/amputation
    - 18.4.16.2.2 Penetrating injury
    - 18.4.16.2.3 Urethral
    - 18.4.16.2.4 Scrotal
    - 18.4.16.2.5 Testicular
- 18.4.17 Cutaneous injuries
  - 18.4.17.1 Principles of wound management (SEE 23.9.8)
  - 18.4.17.2 Lacerations
  - 18.4.17.3 Avulsions
  - 18.4.17.4 Burns

- 18.4.17.4.1 Thermal
    - 18.4.17.4.2 Electrical (SEE 5.3)
    - 18.4.17.4.3 Chemical
  - 18.4.17.5 Puncture wounds
  - 18.4.17.6 Bite wounds (SEE 5.9)
- 18.5 Trauma in Pregnancy
  - 18.5.1 Principles of care
  - 18.5.2 Clinical assessment and management
    - 18.5.2.1 Anatomic/physiologic alterations in the pregnant woman
    - 18.5.2.2 Fetal monitoring
    - 18.5.2.3 Emergency department cesarean section (SEE 12.7.8 and 23.4.2.3)
  - 18.5.3 Types of injuries
    - 18.5.3.1 Uterine rupture
    - 18.5.3.2 Placental abruption
    - 18.5.3.3 Preterm labor
    - 18.5.3.4 In utero injuries to the fetus
    - 18.5.3.5 Penetrating injuries to the uterus
- 18.6 Special Considerations for Pediatric Trauma Victim
  - 18.6.1 Clinical assessment and management
    - 18.6.1.1 Anatomic/physiologic differences from adults
    - 18.6.1.2 Airway management
    - 18.6.1.3 Fluid resuscitation (SEE 13.17.1)
    - 18.6.1.4 Recognition of child abuse (SEE 13.8.1 and 18.1.11.2.1.3)
  - 18.6.2 Head trauma (SEE 13.7)
  - 18.6.3 Spinal injuries
    - 18.6.3.1 Spinal cord injury without radiologic abnormality (SCIWORA)
  - 18.6.4 Chest trauma
  - 18.6.5 Abdominal trauma
  - 18.6.6 Burns
  - 18.6.7 Fractures (SEE 13.6)
    - 18.6.7.1 Greenstick
    - 18.6.7.2 Torus
    - 18.6.7.3 Epiphyseal

## **19.0 UROGENITAL/GYNECOLOGIC DISORDERS**

- 19.1 Genital Tract/Female
  - 19.1.1 Ovarian disorders
    - 19.1.1.1 Ovarian cyst
    - 19.1.1.2 Ovarian torsion
    - 19.1.1.3 Tumors
  - 19.1.2 Vagina and vulva
    - 19.1.2.1 Foreign bodies (SEE 13.13.5)
    - 19.1.2.2 Imperforate hymen
  - 19.1.3 Uterus
    - 19.1.3.1 Endometriosis
    - 19.1.3.2 Dysfunctional uterine bleeding



- 19.1.3.3 Tumors
- 19.1.3.4 Uterine prolapse
- 19.1.4 Cervix
  - 19.1.4.1 Carcinoma
  - 19.1.4.2 Cysts
  - 19.1.4.3 Leukoplakia
- 19.1.5 Infectious disorders
  - 19.1.5.1 Bartholinian abscess
  - 19.1.5.2 Cervicitis
  - 19.1.5.3 Pelvic inflammatory disease
    - 19.1.5.3.1 Endometritis
  - 19.1.5.3.2 *Salpingitis***
    - 19.1.5.3.3 Tubo-ovarian abscess
  - 19.1.5.3.4 *Fitz-Hugh B Curtis syndrome***
    - 19.1.5.4 Vulvovaginitis
    - 19.1.5.5 Urethritis
- 19.2 Genital Tract/Male
  - 19.2.1 Congenital
    - 19.2.1.1 Hydrocele
    - 19.2.1.2 Hypospadias
    - 19.2.1.3 Phimosis (SEE 13.13.2.2)
    - 19.2.1.4 Varicocele
    - 19.2.1.5 Undescended testis (SEE 13.13.3.2)
    - 19.2.1.6 Inguinal hernia (SEE 13.1.9.1)
  - 19.2.2 Structural
    - 19.2.2.1 Paraphimosis (SEE 13.13.2.2)
    - 19.2.2.2 Peyronie=s disease
    - 19.2.2.3 Priapism
    - 19.2.2.4 Testicular torsion (SEE 13.13.3.1)
    - 19.2.2.5 Urethral strictures
    - 19.2.2.6 Urethral foreign bodies
    - 19.2.2.7 Prostatic hypertrophy
  - 19.2.3 Inflammation/infection
    - 19.2.3.1 Epididymitis/orchitis
    - 19.2.3.2 Balanitis (SEE 13.13.2.1)
    - 19.2.3.3 Gangrene of the scrotum (Fournier=s gangrene)
    - 19.2.3.4 Prostatitis
    - 19.2.3.5 Urethritis
  - 19.2.4 Tumors
- 19.3 Sexual Assault (SEE 14.12.2)
- 19.4 Genital Lesions
  - 19.4.1 *Chancroid***
  - 19.4.2 Granuloma inguinale

**19.4.3 Condyloma acuminata**

**20.0 ADMINISTRATIVE ASPECTS OF EMERGENCY MEDICINE**

**20.1 Academic Emergency Medicine**

- 20.1.1 Faculty/staff
  - 20.1.1.1 Credentials
  - 20.1.1.2 Career development
  - 20.1.1.3 Recruitment

**20.1.2 Research**

- 20.1.2.1 Diagnostic testing logic
- 20.1.2.2 Statistical concepts
- 20.1.2.3 Epidemiologic fundamentals
- 20.1.3 Institutional affiliations
  - 20.1.3.1 University
  - 20.1.3.2 Community

**20.1.4 Teaching/curriculum**

- 20.1.5 Testing/evaluation

**20.2 Certification and Licensure Requirements**

- 20.2.1 Allied health licensure
  - 20.2.1.1 Emergency medical technician/EMT-1/EMT-paramedic
  - 20.2.1.2 Nurses
  - 20.2.1.3 Physician extenders/midlevel providers
- 20.2.2 Continuing medical education
- 20.2.3 Physician licensure
- 20.2.4 Specialty and subspecialty certification

**20.3 Information Systems**

- 20.3.1 Practice
- 20.3.2 Research

**20.4 Departmental Administration**

- 20.4.1 Accreditation
  - 20.4.1.1 Joint Commission on Accreditation of Healthcare Organizations standards
  - 20.4.1.2 State or local agencies
- 20.4.2 Billing/reimbursement
  - 20.4.2.1 Medicaid
  - 20.4.2.2 Medicare
  - 20.4.2.3 Insurance
  - 20.4.2.4 Managed care/capitation
- 20.4.3 Budgeting
- 20.4.4 Cost containment principles
- 20.4.5 Equipment and supplies
  - 20.4.5.1 Adult

- 20.4.5.2 Pediatric
- 20.4.6 Facility design
- 20.4.7 Forms
- 20.4.8 Health care financing
- 20.4.9 Marketing
- 20.4.10 Medical records/documentation
- 20.4.11 Personnel management
- 20.4.12 Public relations
- 20.4.13 Quality improvement
- 20.4.14 Staffing requirements
- 20.4.15 Policies and procedures**
  - 20.4.16 Nursing practice
  - 20.4.17 Interdepartmental relations
  - 20.4.18 Patient flow
  - 20.4.19 Observation units/clinical decision units
  - 20.4.20 Infection control (SEE 9.7.2 and 13.15)
  - 20.4.21 Security, violence in the emergency department (SEE 14.11.4)
- 20.5 Ethics
  - 20.5.1 Ethical principles
    - 20.5.1.1 Beneficence/non-maleficence
    - 20.5.1.2 Decision-making capacity
    - 20.5.1.3 Privacy and confidentiality
    - 20.5.1.4 Autonomy
    - 20.5.1.5 Ethical decision-making
    - 20.5.1.6 Justice
    - 20.5.1.7 Allocation of health care resources
  - 20.5.2 Professional relations
    - 20.5.2.1 Physician-patient
    - 20.5.2.2 Physician-physician
      - 20.5.2.2.1 Peer review
      - 20.5.2.2.2 Impairment (SEE 20.13.4)
      - 20.5.2.2.3 Incompetence
    - 20.5.2.3 Physician-emergency health professional
    - 20.5.2.4 Physician-hospital
    - 20.5.2.5 Physician-societal
  - 20.5.3 Life-sustaining treatment
    - 20.5.3.1 Advance directives
    - 20.5.3.2 Medical decision surrogates
  - 20.5.4 Academic ethics
    - 20.5.4.1 Research responsibilities
    - 20.5.4.2 Publication ethics
- 20.6 Hospital Administration
  - 20.6.1 Departmental interaction
  - 20.6.2 Governance

- 20.6.3 Structure
- 20.7 Medical-Legal Aspects
  - 20.7.1 Consent
    - 20.7.1.1 Expressed, implied
    - 20.7.1.2 Informed
    - 20.7.1.3 Uninformed
      - 20.7.1.3.1 Incompetent patients
      - 20.7.1.3.2 Minors
  - 20.7.2 Laws
    - 20.7.2.1 Commitment (SEE 14.10)
    - 20.7.2.2 Drug-related
      - 20.7.2.2.1 Controlled substances
      - 20.7.2.2.2 Drug abuse
      - 20.7.2.2.3 Food and Drug Administration regulations
      - 20.7.2.2.4 Investigational drugs
    - 20.7.2.3 Good Samaritan laws
    - 20.7.2.4 Patient transfer regulations /EMTALA
    - 20.7.2.5 Regulations regarding reportable conditions
      - 20.7.2.5.1 Abuse
      - 20.7.2.5.2 Assault
      - 20.7.2.5.3 Communicable disease
      - 20.7.2.5.4 Seizures/loss of consciousness
      - 20.7.2.5.5 Deaths
        - 20.7.2.5.5.1 Coroner=s cases
      - 20.7.2.5.6 Transfusion restrictions
      - 20.7.2.5.7 Organ donation
    - 20.7.2.6 Liability
      - 20.7.2.6.1 Duty to treat
      - 20.7.2.6.2 Duty to third party
      - 20.7.2.6.3 Intentional torts
        - 20.7.2.6.3.1 Battery
        - 20.7.2.6.3.2 False imprisonment
      - 20.7.2.6.4 Insurance
      - 20.7.2.6.5 Malpractice
      - 20.7.2.6.6 Negligence
      - 20.7.2.6.7 Patient-related
        - 20.7.2.6.7.1 *Privileged communications*
        - 20.7.2.6.7.2 Research
        - 20.7.2.6.7.3 *Termination of patient care*
      - 20.7.2.6.8 Resuscitation decisions
      - 20.7.2.6.9 Risk management
      - 20.7.2.6.10 Testimony
    - 20.7.3 Expert witnesses
- 20.8 Clinical Pathways
- 20.9 Medical Staff

- 20.9.1 Committees
- 20.9.2 Credentialing
- 20.9.3 Disciplinary policy
- 20.9.4 Structure
- 20.10 Medical Organizations
- 20.11 Practice Management**
  - 20.11.1 Benefits
  - 20.11.2 Contracts
    - 20.11.2.1 Employee
      - 20.11.2.1.1 Group
      - 20.11.2.1.2 Hospital
      - 20.11.2.1.3 Staff
    - 20.11.2.2 Independent contractor
  - 20.11.3 Structure
- 20.12 Skills
  - 20.12.1 Accounting
  - 20.12.2 Management
  - 20.12.3 Negotiations
  - 20.12.4 Physician interpersonal skills
    - 20.12.4.1 Effective patient-physician communication
      - 20.12.4.1.1 Diversity issues
    - 20.12.4.2 Hostile encounters/complaints
    - 20.12.4.3 Grief reactions
- 20.13 Wellness**
  - 20.13.1 Wellness maintenance
  - 20.13.2 Stress management
    - 20.13.2.1 Unique stressors
    - 20.13.2.2 Reduction techniques
    - 20.13.2.3 Debriefing (SEE 21.4.2.8)
  - 20.13.3 Shift work
  - 20.13.4 Physician impairment (SEE 20.5.2.2.2)
  - 20.13.5 Family dynamics

## **21.0 EMERGENCY MEDICAL SERVICES/DISASTER MEDICINE**

- 21.1 EMS System Organization
  - 21.1.1 System components
    - 21.1.1.1 Prehospital personnel
    - 21.1.1.2 Emergency department personnel
    - 21.1.1.3 Transport services
    - 21.1.1.4 Lead agency and local organizations
  - 21.1.2 Categorization and designation of levels of services
  - 21.1.3 Specialized care centers
- 21.2 EMS System Operations

- 21.2.1 Communications system
  - 21.2.1.1 Radio configuration
  - 21.2.1.2 Dispatch
  - 21.2.1.3 Communications protocols
- 21.2.2 Patient care protocols
  - 21.2.2.1 Scene triage and treatment
  - 21.2.2.2 Hospital triage and treatment
- 21.2.3 Transport vehicles
  - 21.2.3.1 Ground
  - 21.2.3.2 Air
  - 21.2.3.3 Water access
- 21.2.4 Medical control
  - 21.2.4.1 Medical director
  - 21.2.4.2 Offline and online supervision
- 21.2.5 Governmental controls
  - 21.2.5.1 Development and implementation of regulations
  - 21.2.5.2 Funding
  - 21.2.5.3 Certification/recertification
- 21.2.6 EMS administration
  - 21.2.6.1 System monitoring and maintenance
  - 21.2.6.2 Serving as a training resource
  - 21.2.6.3 Resource allocation
  - 21.2.6.4 Stress/burnout of EMS personnel
  - 21.2.6.5 Scene violence
- 21.2.7 System overload
- 21.2.8 EMS continuous quality improvement
- 21.3 EMS Education
  - 21.3.1 CPR, first aid, and EMS awareness training
    - 21.3.1.1 First responders
    - 21.3.1.2 General public
  - 21.3.2 EMT training
    - 21.3.2.1 Basic
    - 21.3.2.2 Intermediate
    - 21.3.2.3 Paramedic
  - 21.3.3 EMS continuing education/skills maintenance
  - 21.3.4 Injury prevention and safety
  - 21.3.5 Assessment of environmental, biologic, and toxicologic hazards
- 21.4 Disaster Medicine
  - 21.4.1 Definition of disaster
    - 21.4.1.1 Disaster assessment
    - 21.4.1.2 Epidemiology of disasters
    - 21.4.1.3 Philosophy of disaster management and the incident command system
    - 21.4.1.4 Types of disaster/homenclature

- 21.4.1.4.1 Explosions and fires
- 21.4.1.4.2 Mass crowd gathering events
- 21.4.1.4.3 Medical response to terrorist incidents (conflict related)
- 21.4.1.4.4 Natural
- 21.4.1.4.5 Transportation disasters
- 21.4.1.4.6 Technologic B industrial/HAZMAT
- 21.4.2 Phases of disaster response
  - 21.4.2.1 Notification
  - 21.4.2.2 Search and rescue
  - 21.4.2.3 Triage
  - 21.4.2.4 Medical care of disaster victims
  - 21.4.2.5 Disaster communications
  - 21.4.2.6 Record keeping
  - 21.4.2.7 Transportation and evacuation
  - 21.4.2.8 Debriefing/critical incident stress debriefing (CISD) (SEE 20.13.2.3)
  - 21.4.2.9 Recovery
- 21.4.3 Disaster medical care (SEE 17.2.20)
  - 21.4.3.1 Rapid assessment of emergency health care needs
  - 21.4.3.2 Medical care at mass casualties
  - 21.4.3.3 Disaster specific medical problems (SEE 18.0)
    - 21.4.3.3.1 Mental health and behavioral consequences
      - 21.4.3.3.1.1 For disaster victims
      - 21.4.3.3.1.2 *For professionals*
      - 21.4.3.3.1.3 Critical incident stress debriefing (CISD) 21.4.3.3.2 Shock and its treatment in field situations
        - 21.4.3.3.3 Trauma casualties
        - 21.4.3.3.4 Crush syndrome/injury
        - 21.4.3.3.5 Compartment syndrome
        - 21.4.3.3.6 Mass burn care
    - 21.4.3.3.7 *Pulmonary casualties*
      - 21.4.3.3.8 Pediatric casualties
      - 21.4.3.3.9 Neuropsychiatric casualties
      - 21.4.3.3.10 Toxic-chemical casualties
      - 21.4.3.3.11 Radiation exposure casualties
      - 21.4.3.3.12 Blast injuries
  - 21.4.3.4 Medical supply/equipment management
    - 21.4.3.4.1 Essential drugs for disasters
    - 21.4.3.4.2 Pharmaceutical distribution/control
    - 21.4.3.4.3 Role of immunizations
  - 21.4.3.5 Public health issues after disasters
  - 21.4.3.6 Nonmedical emergency responders
- 21.4.4 Disaster information services
  - 21.4.4.1 Local/national/international disaster information

- 21.4.4.2 Public relations
- 21.4.4.3 Media coordination
- 21.4.4.4 Legal aspects
- 21.4.5 Disaster education
  - 21.4.5.1 Hospital disaster planning
  - 21.4.5.2 Disaster drills
  - 21.4.5.3 Post-disaster injury prevention and surveillance
- 21.4.6 Disaster medical assistance teams (DMATs)
- 21.4.7 International relief assistance
  - 21.4.7.1 Coordination
  - 21.4.7.2 Volunteers
- 21.5 Research
  - 21.5.1 Assessment of new methods and procedures
  - 21.5.2 Testing of new equipment and technologic advances
  - 21.5.3 Data collection/analysis

## **22.0 CLINICAL PHARMACOLOGY**

- 22.1 Principles
  - 22.1.1 Pharmacokinetics
  - 22.1.2 Drug interactions
  - 22.1.3 Adverse reactions
  - 22.1.4 Drugs in pregnancy/breast-feeding
  - 22.1.5 Effect of age
  - 22.1.6 Withdrawal syndromes
  - 22.1.7 Neonatal/pediatric considerations
- 22.2 Drug Classes
  - 22.2.1 Analgesics/anesthetics (SEE 17.2.3)
    - 22.2.1.1 Fentanyl
    - 22.2.1.2 Ketamine
    - 22.2.1.3 Nitrous oxide
  - 22.2.2 Antibiotics
  - 22.2.3 Anticoagulants (SEE 17.2.5)
  - 22.2.4 Anticonvulsants (SEE 17.2.6)
  - 22.2.5 Antihistamines (SEE 17.2.9)
  - 22.2.6 Antipsychotics (SEE 17.2.10)
    - 22.2.6.1 Dystonia
    - 22.2.6.2 Tardive dyskinesia
    - 22.2.6.3 Neuroleptic malignant syndrome
  - 22.2.7 Bronchodilating agents (SEE 17.2.11)
  - 22.2.8 Cardiovascular drugs (SEE 17.2.14)
    - 22.2.8.1 Antiarrhythmic
    - 22.2.8.2 Antihypertensives
    - 22.2.8.3 Digoxin
    - 22.2.8.4 Calcium channel blockers



- 22.2.9 Hormones/steroids (SEE 17.2.23)
- 22.2.10 Hypoglycemics (SEE 17.2.25)
  - 22.2.10.1 Oral agents
  - 22.2.10.2 Insulin
- 22.2.11 Intravenous fluids
- 22.2.12 Local anesthetics (SEE 17.2.29)
  - 22.2.12.1 Esters
  - 22.2.12.2 Amides
- 22.2.13 Locally acting drugs (SEE 17.2.30)
  - 22.2.13.1 Antacids
  - 22.2.13.2 Antiseptics
  - 22.2.13.3 Cathartics
  - 22.2.13.4 Laxatives
- 22.2.14 Neuromuscular blocking agents
  - 22.2.14.1 Depolarizing
  - 22.2.14.2 Nondepolarizing
- 22.2.15 Nonsteroidal anti-inflammatories
- 22.2.16 Opiates/opioids (SEE 17.2.38)
- 22.2.17 Sedatives/hypnotics
  - 22.2.17.1 Barbiturates
  - 22.2.17.2 Benzodiazepines
  - 22.2.17.3 Chloral hydrate
- 22.2.18 Thrombolytics
- 22.2.19 Tocolytics, oxytocics

## **23.0 PROCEDURES/SKILLS**

### **23.1 *Airway Techniques***

- 23.1.1 Cricothyrotomy
- 23.1.2 Heimlich maneuver
- 23.1.3 Intubation
  - 23.1.3.1 Esophageal obturator airway
  - 23.1.3.2 Nasotracheal
  - 23.1.3.3 Orotracheal
  - 23.1.3.4 Rapid sequence
  - 23.1.3.5 Fiberoptic
- 23.1.4 Mechanical ventilation
- 23.1.5 Percutaneous transtracheal ventilation
- 23.1.6 Airway adjuncts

### **23.2 Anesthesia**

- 23.2.1 Local
- 23.2.2 Regional intravenous anesthesia
- 23.2.3 Regional nerve blocks

### **23.3 *Diagnostic Procedures***

- 23.3.1 Arthrocentesis

- 23.3.2 Cystourethrogram
  - 23.3.3 Lumbar puncture
- 23.3.4 Nasogastric intubation
  - 23.3.5 Pericardiocentesis
  - 23.3.6 Peritoneal lavage
  - 23.3.7 Bedside ultrasonography (SEE 18.2.6)
    - 23.3.7.1 Cardiac
    - 23.3.7.2 Abdominal
    - 23.3.7.3 Traumatic
    - 23.3.7.4 Pelvic
- 23.3.8 Anoscopy
- 23.3.9 Thoracentesis
  - 23.3.10 Tonometry
  - 23.3.11 Slit lamp examination
  - 23.3.12 Electrocardiogram interpretation
  - 23.3.13 Radiographic interpretation
- 23.4 Genital/Urinary
  - 23.4.1 Bladder catheterization
    - 23.4.1.1 Foley catheters
    - 23.4.1.2 Suprapubic catheterization
  - 23.4.2 Delivery of newborn
    - 23.4.2.1 Breech delivery
    - 23.4.2.2 Normal delivery
    - 23.4.2.3 Perimortem cesarean section (SEE 12.7.8 and 18.5.2.3)
- 23.5 Head and Neck
  - 23.5.1 Control of epistaxis
    - 23.5.1.1 Anterior packing
    - 23.5.1.2 Posterior packing/balloon placement
    - 23.5.1.3 Cautery
  - 23.5.2 Laryngoscopy
  - 23.5.3 Nasopharyngeal endoscopy
- 23.6 Hemodynamic Techniques
  - 23.6.1 Arterial catheter insertion
  - 23.6.2 Central venous access
    - 23.6.2.1 Femoral
    - 23.6.2.2 Jugular
    - 23.6.2.3 Subclavian
    - 23.6.2.4 Umbilical
    - 23.6.2.5 Venous cutdown (SEE 23.6.4)
    - 23.6.2.6 Intraosseous infusion
  - 23.6.3 Military antishock trousers suit application and removal
  - 23.6.4 Peripheral venous cutdown (SEE 23.6.2.5)
  - 23.6.5 Pulmonary artery catheter insertion
- 23.7 Skeletal Procedures
  - 23.7.1 Fracture/dislocation immobilization techniques
  - 23.7.2 Fracture/dislocation reduction techniques

- 23.7.3 Spine
  - 23.7.3.1 Cervical traction techniques
  - 23.7.3.2 Immobilization techniques
    - 23.7.3.2.1 Backboard techniques
- 23.8 Thoracic
  - 23.8.1 Cardiac pacing
    - 23.8.1.1 Cutaneous
    - 23.8.1.2 Transvenous
  - 23.8.2 Defibrillation/cardioversion
  - 23.8.3 Cardiorrhaphy
  - 23.8.4 Pericardiotomy
  - 23.8.5 Thoracostomy
  - 23.8.6 Thoracotomy
- 23.9 Other Techniques
  - 23.9.1 End-tidal CO<sub>2</sub> monitoring
  - 23.9.2 Gastric lavage
  - 23.9.3 Incision - drainage
  - 23.9.4 Intestinal tube insertion
  - 23.9.5 Burr holes
  - 23.9.6 Pulse oximetry
  - 23.9.7 Sengstaken-Blakemore tube insertion
  - 23.9.8 Wound closure techniques (SEE 18.4.17.1)
  - 23.9.9 Trephination, nails
  - 23.9.10 Peak expiratory flow rate measurement**
    - 23.9.11 Excision of thrombosed hemorrhoids
    - 23.9.12 Foreign body removal
    - 23.9.13 Conscious sedation
- 23.10 Laboratory Skills
  - 23.10.1 Venipuncture
  - 23.10.2 Arterial blood gas sampling
  - 23.10.3 Microscopy
  - 23.10.4 Gram stain preparation/interpretation
- 23.11 Multiple Patient Management
- 23.12 Universal Precautions

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