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CORE CONTENT FOR EMERGENCY MEDICINE

Preamble

The Core Content represents the breadth of emergency medicine practice and has two functions. For AOBEM, it outlines the content and specificity of topics for examinations in emergency medicine. Secondly, 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.

Adapted from CORE CONTENT IN EMERGENCY MEDICINE. This document was revised April, 2008 by AOBEM.

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1.0 ABDOMINAL AND GASTROINTESTINAL DISORDERS (SEE 12.1)

1.1 Esophagus

1.1.1 Motor abnormalities

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1.1.1.2 Achalasia (SEE 12.1.4.3) ......................................................... L

1.1.2 Structural disorders

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1.1.2.2 Rupture (Boerhaave’s syndrome) ........................................... M
1.1.2.3 Perforation ............................................................................. M
1.1.2.4 Tears (Mallory-Weiss syndrome) ............................................ M
1.1.2.5 Foreign body (SEE 12.1.5) .................................................... M
1.1.2.6 Hiatal hernia/ Diaphragmatic hernia ...................................... L
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1.1.3.2 Caustic injury ........................................................................ M

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1.6.3 Inflammatory disorders
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1.6.4 Infectious disorders
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1.6.5.1 Mesenteric ischemia
1.6.5.2 Ischemic colitis

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1.7.1.2 Obstruction/pseudo obstruction

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1.7.3.1 Ulcerative colitis
1.7.3.2 Radiation colitis

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1.7.4.2 Viral
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1.7.4.4 Antibiotic associated

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1.8.1.2 Hemorrhoids
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1.12 GI bleed
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1.12.2 Lower
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2.2.1.3 Cor pulmonale ......................................................... H

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2.2.3.2 Myocardial infarction ............................................... H
2.2.3.3 Cardiogenic shock ..................................................... H
2.2.3.4 Ventricular aneurysm ................................................. M

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2.5.1.3 Arteritis ................................................................. L
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2.5.1.5 Thrombosis ............................................................. M
2.5.1.6 Aortic dissection ....................................................... H

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2.5.2.2 Thromboembolism/Thrombophlebitis .............................................. H

2.5.3 Lymphatics ................................................................. L

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2.7.2 Chronic hypertension ........................................................ M

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   2.9.2 Endocrine and metabolic diseases (SEE 12.3) ...................... L
   2.9.3 Rheumatologic ......................................................... L
   2.9.4 Renal ........................................................................ L
   2.9.5 Toxic exposures ........................................................ L

2.10 Treatment Modalities
   2.10.1 Thrombolytic therapy ....................................................... H
   2.10.2 Pharmacologic agents ..................................................... H
   2.10.3 Cardiac Pacemakers ....................................................... M
   2.10.4 Surgical interventions
       2.10.4.1 Vascular reconstruction .......................................... L
       2.10.4.2 Angioplasty .......................................................... M
       2.10.4.3 Circulatory augmentation ...................................... L
       2.10.4.4 Implantable defibrillators ..................................... M
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- **3.1.2 Contact**: M
- **3.1.3 Eczema**
  - 3.1.3.1 Dyshidrotic: L
  - 3.1.3.2 Nummular: L
- **3.1.4 Exfoliative**: L
- **3.1.5 Psoriasis**: L
- **3.1.6 Seborrhea**: L
- **3.1.7 Photosensitivity**: L

## 3.2 Infections
- **3.2.1 Bacterial**
  - 3.2.1.1 Abscesses: H
  - 3.2.1.2 Cellulitis/lymphangitis: M
  - 3.2.1.3 Erysipelas: L
  - 3.2.1.4 Folliculitis: L
  - 3.2.1.5 Bacterial exanthems: L
- **3.2.2 Fungal**: M
- **3.2.3 Infestation**: L
- **3.2.4 Viral**
  - 3.2.4.1 Aphthous ulcers: L
  - 3.2.4.2 Herpes simplex: M
  - 3.2.4.3 Herpes zoster: M
  - 3.2.4.4 Molluscum contagiosum: L
  - 3.2.4.5 Viral exanthems: M

## 3.3 Maculopapular Lesions
- **3.3.1 Pityriasis rosea**: L
- **3.3.2 Purpura and petechiae**: M
- **3.3.3 Urticaria**: M

## 3.4 Papular/Nodular Lesions
- **3.4.1 Epidermal inclusion cysts/sebaceous cysts**: L
- **3.4.2 Fibroma**: L
- **3.4.3 Hemangioma**: L
- **3.4.4 Lipoma**: L
- **3.4.5 Nevi**: L
- **3.4.6 Lichen planus**: L

## 3.5 Erythemas
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- **3.5.2 Erythema nodosum**: L

## 3.6 Vesicular/Bullous Lesions
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- **3.6.2 Scaled skin syndrome**: M
- **3.6.3 Toxic epidermal necrolysis**: M

## 3.7 Cancers
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- **3.7.2 Kaposi’s sarcoma**: M
- **3.7.3 Melanoma**: M
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4.1 Acid-Base Disturbances
   4.1.1 Metabolic or Respiratory
      4.1.1.1 Acidosis ................................................................. H
      4.1.1.2 Alkalosis ................................................................. H
   4.1.2 Mixed acid-base disorders ................................................... M

4.2 Adrenal Disease
   4.2.1 Hyperadrenalism (Cushing’s syndrome) ................................... L
   4.2.2 Hypoadrenalism (Addison’s disease) ....................................... L

4.3 Fluid and Electrolyte Disturbances
   4.3.1 Calcium ........................................................................ M
   4.3.2 Magnesium ..................................................................... L
   4.3.3 Phosphorus .................................................................... L
   4.3.4 Potassium ....................................................................... H
   4.3.5 Sodium ................................................................ .......... H
   4.3.6 Water – Hydration ........................................................... M
   4.3.7 SIADH ........................................................................ L

4.4 Glucose Metabolism
   4.4.1 Diabetes mellitus
      4.4.1.1 Diabetic ketoacidosis .................................................... H
      4.4.1.2 Hyperosmolar coma ..................................................... H
   4.4.2 Hypoglycemic syndromes ................................................... M

4.5 Nutritional Disorders (SEE 12.8.2)
   4.5.1 Wernicke-Korsakoff syndrome ............................................ L
   4.5.2 Vitamin deficiency/excess .................................................. L

4.6 Parathyroid Disease ................................................................. L
4.7 Pheochromocytoma ................................................................. L
4.8 Pituitary Disorders ................................................................... L

4.9 Thyroid Disorders
   4.9.1 Hyperthyroidism/thyroid storm .............................................. M
   4.9.2 Hypothyroidism/myxedema ................................................ M
   4.9.3 Thyroiditis ........................................................................ L

4.10 Endocrine Manifestations of Neoplasia ..................................... L
5.0 ENVIRONMENTAL DISORDERS

5.1 Diving Emergencies/Dysbarism
   5.1.1 Acute gas embolism ................................................................. L
   5.1.2 Decompression syndrome ....................................................... M
   5.1.3 Barotrauma ........................................................................... L

5.2 Submersion Incidents
   5.2.1 Near drowning ................................................................. M
   5.2.2 Cold water immersion .......................................................... M

5.3 Electrical Injury (SEE 17.2.17.3.2)
   5.3.1 Lightning injury ................................................................. M
   5.3.2 AC/DC current/voltage .......................................................... M

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   5.4.1 Acute mountain sickness ..................................................... L
   5.4.2 High-altitude cerebral edema ..................................................... L
   5.4.3 High-altitude pulmonary edema ............................................ L

5.5 Radiation Injury/emergency ..................................................... L

5.6 Poisonous Plants (SEE 16.2.32) ..................................................... M

5.7 Smoke Inhalation (SEE 16.2.25) .................................................. H

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   5.8.1 Heat ...................................................................................... H
   5.8.2 Cold
      5.8.2.1 Hypothermia ................................................................. H
      5.8.2.2 Frostbite ........................................................................ L

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   5.9.1 Arthropods ........................................................................... L
   5.9.2 Mammals ............................................................................. M
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   5.9.4 Reptiles ............................................................................. L
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   6.1.3.1 Malignant............................................................. M
6.1.4 Otitis media (SEE 12.7.6) ............................................... H
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   6.3.3.1 Laryngitis............................................................ L
6.3.3.2 Epiglottitis............................................................ M
6.3.3.3 Tracheitis............................................................. L
6.3.4 Ludwig's angina ......................................................... M
6.3.5 Oral candidiasis ......................................................... L
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6.3.9 Angioedema
6.3.10 Sialoadenitis/sialolithiasis ........................................ L
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6.4.1.3 Conjunctivitis ......................................................... M
6.4.1.4 Corneal abrasions .................................................. H
6.4.1.5 Dacryocystitis/dacryoadenitis ................................. L
6.4.1.6 Foreign body ........................................................ H

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6.4.2.2 Glaucoma ............................................................. H
6.4.2.3 Hyphema/hypopyon .............................................. M
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6.4.3.5 Vascular occlusion
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- **7.1.3 Platelet disorders** ........................................................................ M
- **7.1.4 Von Willebrand’s disease** ......................................................... L

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7.3 Pancytopenia .............................................................................................. L

7.4 Red Blood Cell Disorders
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    - **7.4.1.2.1 Glucose-6-phosphate dehydrogenase deficiency** .................. L
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    - **7.4.1.3.1 Sickle cell disease/trait** ................................................... M
    - **7.4.1.3.2 Thalassemia** ...................................................................... L
  - **7.4.2 Polycythemia** ................................................................................ L

7.5 Transfusions
- **7.5.1 Complications** .............................................................................. H
- **7.5.2 Component therapy** ...................................................................... M
- **7.5.3 Indications for transfusion** ............................................................ H

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- **7.6.2 Leukemoid reaction** ........................................................................ L
- **7.6.3 Leukopenia** ..................................................................................... M
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  - **7.7.2.3 Reiter’s** ...................................................................................... L
  - **7.7.2.4 Rheumatoid arthritis** ............................................................. L
  - **7.7.2.5 Sarcoidosis** ................................................................................ M
  - **7.7.2.6 Systemic lupus erythematosus** ................................................ M
  - **7.7.2.7 Scleroderma** .............................................................................. L
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7.8 Immune Deficiency Syndromes
- **7.8.1 HIV** ............................................................................................ H
- **7.8.2 Immunosuppression** ..................................................................... M
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- **7.9.1 Rejection** ..................................................................................... M

7.10 Hypersensitivity
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- **7.10.3 Drug allergies** ............................................................................. M
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8.1.1 Bacterial food poisoning
8.1.1.1 Botulism .......................................................... L

8.1.2 Sexually transmitted diseases
8.1.2.1 Gonococcal disease.............................................. H
8.1.2.2 Syphilis .............................................................. M
8.1.2.3 Chancroid ......................................................... L
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   9.1.2 Osteomyelitis ................................................................. M
   9.1.3 Tumors .............................................................................. L
   9.1.4 Paget’s disease ................................................................. L

9.2 Joint Abnormalities
   9.2.1 Arthritis
       9.2.1.1 Septic ........................................................................... H
       9.2.1.2 Gout/pseudogout ........................................................... M
       9.2.1.3 Collagen vascular ......................................................... L
       9.2.1.4 Degenerative ............................................................. L

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   13.9.1 Suicidal risk or self abuse (SEE 12.8.3) .......................... H
   13.9.2 Risk of violence against others (i.e., abuse behavior) (SEE 13.12.1) .......... H

13.10 Involuntary Competency Assessment/Commitment (SEE 18.7.2.1) ............... H

13.11 Treatment Modalities
   13.11.1 Chemical restraints ...................................................... H
   13.11.2 Physical restraints .......................................................... H
   13.11.3 Management of violence (SEE 18.4.19) ........................... H
   13.11.4 Community resource utilization ...................................... M

13.12 Patterns of Violence/Abuse/Neglect
   13.12.1 Family violence (SEE 12.8.1, and 13.9.2) ........................ M
   13.12.2 Sexual assault (See 11.9) ............................................... H
## 14.0 RENAL DISORDERS/ UROGENITAL DISORDERS

### 14.1 Structural Disorders
- **14.1.1 Renal calculi**: H
- **14.1.2 Obstructive uropathy**: M
- **14.1.3 Renal obstruction**: M

### 14.2 Infection
- **14.2.1 Pyelonephritis**: H
- **14.2.2 Perinephric abscess**: L

### 14.3 Glomerular Disorders
- **14.3.1 Glomerulonephritis**: L
- **14.3.2 Nephrotic syndrome**: L

### 14.4 Acute and Chronic Renal Failure

### 14.5 Interstitial Tubular Necrosis

### 14.6 Interstitial Nephritis

### 14.7 Tumors

### 14.8 Complications of Dialysis

### 14.9 Genital Tract/Male
- **14.9.1 Congenital**
  - **14.9.1.1 Hydrocele/varicocele**: L
  - **14.9.1.2 Hypospadias**: L
- **14.9.2 Structural**
  - **14.9.2.1 Paraphimosis/phimosis (SEE 13.13.2.2)**: M
  - **14.9.2.2 Peyronie’s disease**: L
  - **14.9.2.3 Priapism**: M
  - **14.9.2.4 Testicular torsion (SEE 13.13.3.1)**: H
  - **14.9.2.5 Urethral strictures**: L
  - **14.9.2.6 Urethral foreign bodies**: L
  - **14.9.2.7 Prostatic hypertrophy**: L
- **14.9.3 Inflammation/infection**
  - **14.9.3.1 Epididymitis/orchitis**: M
  - **14.9.3.2 Balanitis (SEE 13.13.2.1)**: L
  - **14.9.3.3 Gangrene of the scrotum (Fournier’s gangrene)**: M
  - **14.9.3.4 Prostatitis**: M
  - **14.9.3.5 Urethritis**: M
- **14.9.4 Tumors**: L

### 14.10 Sexual Assault

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15.0 THORACIC-RESPIRATORY DISORDERS

15.1 Acute Upper Airway Obstruction (SEE 6.3.7, 13.9)
   15.1.1 Tracheostomy/complications ................................................................. M

15.2 Breast Disorders ............................................................................................. L

15.3 Disorders of Pleura, Mediastinum, and Chest Wall
   15.3.1 Costochondritis ...................................................................................... M
   15.3.2 Mediastinal masses .................................................................................. L
   15.3.3 Mediastinitis ............................................................................................ L
   15.3.4 Pleural effusions/empyema ................................................................. M
   15.3.5 Pluerisy ................................................................................................. L
   15.3.6 Pneumomediastinum .............................................................................. M
   15.3.7 Pneumothoraces (SEE 17.2.10.11) ...................................................... H

15.4 Hyperventilation Syndrome ........................................................................... L

15.5 Noncardiogenic Pulmonary Edema (Adult Respiratory Distress Syndrome) ........................................................................ M

15.6 Obstructive/Restrictive Lung Disease
   15.6.1 Asthmas (SEE 12.9.5) ......................................................................... H
   15.6.2 Bronchitis .............................................................................................. H
   15.6.3 Chronic obstructive pulmonary disease ....................................... H
   15.6.4 Cystic fibrosis (SEE 12.9.3) ................................................................. L
   15.6.5 Interstitial fibrosis ............................................................................... L
   15.6.6 Environmental/industrial exposure .................................................. M

15.7 Physical and Chemical Irritants/Insults
   15.7.1 Chemical agents .................................................................................. L
   15.7.2 Foreign bodies ..................................................................................... L
   15.7.3 Aspiration of gastric contents ......................................................... M

15.8 Primary Pulmonary Hypertension .................................................................... L

15.9 Pulmonary Embolism/Infarct .......................................................................... H

15.10 Pulmonary Infections
   15.10.1 Bacterial .............................................................................................. H
   15.10.2 Fungal ................................................................................................. L
   15.10.3 Atypical (SEE 8.1.9) ......................................................................... M
   15.10.4 Lung abscess ...................................................................................... L
   15.10.5 Bronchiectasis .................................................................................. L
   15.10.6 Opportunistic ...................................................................................... M
   15.10.7 Septic emboli ...................................................................................... L
   15.10.8 Tuberculosis ....................................................................................... H
   15.10.9 Viral .................................................................................................... M

15.11 Thoracic Outlet Syndrome (OM considerations) ......................................... L

15.12 Pulmonary Tumors ......................................................................................... L

15.13 Sarcoidosis ..................................................................................................... M

15.14 Sleep Apnea Syndromes ................................................................................. L
## 16.0 TOXICOLOGIC DISORDERS/CLINICAL PHARMACOLOGY

### 16.1 Principles

1. **Toxicologic information**
2. **Toxicologic diagnostic modalities**
3. **Toxidromes**
4. **Treatment modalities**
   - **Antidotes**
   - **Skin decontamination**
   - **Gastric decontamination**
   - **Enhanced elimination**
     - Activated charcoal
     - Cathartics/whole bowel irrigation
     - Diuresis
     - Dialysis/hemoperfusion
     - Hyperbaric oxygen

### 16.2 Drug and Chemical Classes

#### 16.2.1 Acetaminophen

#### 16.2.2 Alcohols

- **Ethanol**
- **Ethylene glycol**
- **Isopropyl Alcohol**
- **Methanol**

#### 16.2.3 Analgesics/anesthetics

#### 16.2.4 Anticholinergics/cholinergics

#### 16.2.5 Anticoagulants

#### 16.2.6 Anticonvulsants

#### 16.2.7 Antidepressants

- **Lithium**
- **Monoamine oxidase inhibitors**
- **Cyclic antidepressants**
- **SSRI**

#### 16.2.8 Antiparkinsonian drugs

#### 16.2.9 Antihistamines

#### 16.2.10 Antipsychotics

- **Dystonia**
- **Tardive dyskinesia**
- **Neuroleptic malignant syndrome**

#### 16.2.11 Bronchodilators

#### 16.2.12 Cannabis

#### 16.2.13 Carbon monoxide (SEE 5.7)

#### 16.2.14 Cardiovascular drugs

- **Antiarrhythmics**
- **Antihypertensives**
- **Digitalis preparations**
- **Calcium channel blockers**
- **β-Blockers**

#### 16.2.15 Caustic agents

#### 16.2.16 Cocaine

#### 16.2.17 Cyanides, hydrogen sulfide

#### 16.2.18 Food Additives

#### 16.2.19 Hallucinogens

#### 16.2.20 Heavy metals and chelation

#### 16.2.21 Household/industrial poisons

#### 16.2.22 Hormones/steroids
16.0 TOXICOLOGIC DISORDERS/CLINICAL PHARMACOLOGY (continued)

16.2.23 Hydrocarbons/halogenated hydrocarbons ............................................................. M
16.2.24 Hypoglycemics/insulin ......................................................................................... M
16.2.25 Inhaled toxins (SEE 5.7) ................................................................................ L
16.2.26 Iron ..................................................................................................................... L
16.2.27 Isoniazid ............................................................................................................ L
16.2.28 Local anesthetics ............................................................................................... M
16.2.29 Irritant gases ..................................................................................................... L
16.2.30 Marine toxins
   16.2.30.1 Ciguatera ............................................................................................... L
   16.2.30.2 Scombroid .............................................................................................. L
16.2.31 Methemoglobinemia ........................................................................................ L
16.2.32 Mushrooms/poisonous plants (SEE 5.6) ............................................................. L
16.2.33 Neuromuscular blocking agents
   16.2.33.1 Depolarizing ........................................................................................... H
   16.2.33.2 Nondepolarizing ..................................................................................... H
16.2.34 Nitrogen compounds ........................................................................................ L
16.2.35 Nonsteroidal anti-inflammatories ....................................................................... M
16.2.36 Organophosphates/carbamate .......................................................................... M
16.2.37 Opiates/opioids ................................................................................................. M
16.2.38 Salicylates ........................................................................................................ H
   16.2.39 Sedatives/hypnotics ..................................................................................... M
16.2.40 Stimulants/sympathomimetics .......................................................................... M
16.2.41 Strychnine ....................................................................................................... L
16.2.42 Tocolytics, oxytocics ......................................................................................... L

16.3 Clinical Pharmacology

16.3.1 Principles
   16.3.1.1 Pharmacokinetics ..................................................................................... L
   16.3.1.2 Drug interactions ..................................................................................... M
   16.3.1.3 Adverse reactions ..................................................................................... M
   16.3.1.4 Drugs in pregnancy/breast-feeding ............................................................. M
   16.3.1.5 Effect of age ............................................................................................. L
   16.3.1.6 Withdrawal syndromes ............................................................................ M
   16.3.1.7 Neonatal/pediatric considerations ............................................................ M
   16.3.1.8 Sedatives/hypnotics
17.0 TRAUMATIC DISORDERS (SEE 19.1.3.3)

17.1 Principles of Care
17.1.1 Resuscitations and stabilization
  17.1.1.1 Hemorrhagic shock ................................................................. H
  17.1.1.2 Neurogenic shock ................................................................. M

17.1.2 Injury prevention and control
  17.1.2.1 Epidemiology overview ........................................................ M
  17.1.2.2 Mechanism of injury
    17.1.2.2.1 Blunt ................................................................. H
    17.1.2.2.2 Penetrating
      17.1.2.2.2.1 Gunshot wounds
        17.1.2.2.2.1.1 Ballistics ........................................ L
      17.1.2.2.2.2 Stab wounds ............................................. H
    17.1.2.2.3 Clinical forensics ................................................ L
  17.1.2.3 Kinematics ................................................................. M

17.2 Diagnosis and Management by Anatomic Areas

17.2.1 Head trauma
  17.2.1.1 Scalp lacerations/avulsions ................................................ L
  17.2.1.2 Skull fractures ................................................................. L
  17.2.1.3 Intracranial injury ............................................................. H
  17.2.1.4 Cerebrospinal fluid leaks (otorrhea, rhinorrhea) .................. M

17.2.2 Spinal cord and peripheral nervous system trauma
  17.2.2.1 Complete spinal cord injuries .......................................... H
  17.2.2.2 Incomplete cord injuries ................................................. H
  17.2.2.3 Nerve root injuries ........................................................ L
  17.2.2.4 Brachial and lumbosacral plexus injuries ............................ L
  17.2.2.5 Peripheral nerve injuries ................................................ M

17.2.3 Injuries of the spine
  17.2.3.1 Fractures ................................................................. H
  17.2.3.2 Dislocations/subluxations .............................................. H

17.2.4 Facial fractures
  17.2.4.1 Dental fractures and avulsions ....................................... M
  17.2.4.2 Maxillofacial ............................................................... M
  17.2.4.3 Mandibular ................................................................. M
  17.2.4.4 Orbital ................................................................. M

17.2.5 Soft tissue facial injuries .................................................... M

17.2.6 Ophthalmologic trauma (SEE 6.4)
  17.2.6.1 Corneal abrasions/lacerations .................................... H
  17.2.6.2 Foreign bodies ............................................................. H
  17.2.6.3 Iritis ........................................................................ M
  17.2.6.4 Hyphema ................................................................. H
  17.2.6.5 Lens dislocation ............................................................. M
  17.2.6.6 Retinal detachment ....................................................... M
  17.2.6.7 Penetrating globe injuries ............................................. H
  17.2.6.8 Eyelid lacerations ....................................................... M
  17.2.6.9 Lacrimal duct injuries ................................................ M
  17.2.6.10 Corneal burns
    17.2.6.10.1 Acid ............................................................... M
    17.2.6.10.2 Alkali ............................................................... H
    17.2.6.10.3 Ultraviolet ......................................................... M
17.0 TRAUMATIC DISORDERS (continued)

17.2.7 Otolologic trauma
- 17.2.7.1 Lacerations ........................................................................................... M
- 17.2.7.2 Avulsions ............................................................................................. L
- 17.2.7.3 Subperichondrial hematoma ............................................................... M
- 17.2.7.4 Tympanic membrane perforation ....................................................... L

17.2.8 Neck trauma
- 17.2.8.1 Vascular injuries
  - 17.2.8.1.1 Carotid artery ........................................................................ M
  - 17.2.8.1.2 Internal and external jugular veins ........................................... L
  - 17.2.8.1.3 Thoracic duct ......................................................................... L
- 17.2.8.2 Penetrating neck trauma ................................................................. L

17.2.9 Laryngotracheal injuries
- 17.2.9.1 Lacerations ........................................................................................ L
- 17.2.9.2 Crush injuries .................................................................................... M
- 17.2.9.3 Vocal cord avulsions/hematomas ..................................................... L
- 17.2.9.4 Fractured larynx ............................................................................. M
- 17.2.9.5 Tracheal transaction ....................................................................... M
- 17.2.9.6 Compression with hematomas ......................................................... M

17.2.10 Chest trauma
- 17.2.10.1 Penetrating chest trauma .................................................................. H
- 17.2.10.2 Rib fractures ..................................................................................... L
- 17.2.10.3 Sternal fractures ............................................................................. M
- 17.2.10.4 Flail chest ...................................................................................... M
- 17.2.10.5 Clavicle fracture/dislocation ........................................................ M
- 17.2.10.6 Aortic/vascular injury ..................................................................... M
- 17.2.10.7 Myocardial contusion .................................................................... H
- 17.2.10.8 Pulmonary contusion ...................................................................... L
- 17.2.10.9 Pericardial tamponade ................................................................... H
- 17.2.10.10 Tracheobronchial tree injuries ....................................................... M
- 17.2.10.11 Pneumothoraces (SEE 15.3.7) ....................................................... H
- 17.2.10.12 Hemothorax ............................................................................... H

17.2.11 Abdominal trauma
- 17.2.11.1 Penetrating abdominal trauma ....................................................... H
- 17.2.11.2 Solid viscus injuries ...................................................................... M
- 17.2.11.3 Hollow viscus injuries ................................................................ M
- 17.2.11.4 Vascular injuries .......................................................................... M
- 17.2.11.5 Diaphragmatic rupture .................................................................. M
- 17.2.11.6 Renal/retroperitoneal ................................................................... M
- 17.2.11.7 Genitourinary
  - 17.2.11.7.1 Contusions .......................................................................... L
  - 17.2.11.7.2 Lacerations ......................................................................... M
  - 17.2.11.7.3 Renal vascular injuries .......................................................... M
- 17.2.11.8 Ureteral injuries .......................................................................... L

17.2.12 Upper extremity bony trauma
- 17.2.12.1 Fractures (open and closed) ............................................................... M
- 17.2.12.2 Dislocations/subluxations ................................................................ M

17.2.13 Lower extremity bony trauma
- 17.2.13.1 Fractures (open and closed) ............................................................... M
- 17.2.13.2 Dislocations/subluxations ................................................................ M

17.2.14 Soft tissue extremity injuries
- 17.2.14.1 Tendon injuries .......................................................................... M
- 17.2.14.2 Periarticular injuries .................................................................... M
- 17.2.14.3 Injuries to joints ........................................................................... M
17.0 TRAUMATIC DISORDERS (continued)

17.2.14.4 Compartment syndromes/crush injuries .................................................. H
17.2.14.5 Penetrating soft tissue injuries ................................................................. L
17.2.14.6 High pressure injection injuries ............................................................... M
17.2.14.7 Amputations/replantation ........................................................................ M
17.2.15 Pelvic fractures ............................................................................................. M
17.2.16 Injuries of the genitalia
   17.2.16.1 Female ................................................................................................... L
   17.2.16.2 Male ..................................................................................................... L
17.2.17 Cutaneous injuries
   17.2.17.1 Lacerations .......................................................................................... M
   17.2.17.2 Avulsions ............................................................................................ L
   17.2.17.3 Burns
      17.2.17.3.1 Thermal ...................................................................................... M
      17.2.17.3.2 Electrical ............................................................................... M
      17.2.17.3.3 Chemical ............................................................................... M
   17.2.17.4 Puncture wounds .................................................................................. M

17.3 Trauma in Pregnancy
17.3.1 Principles of care ............................................................................................ M
17.3.2 Clinical assessment and management ............................................................. M
17.3.3 Types of injuries
   17.3.3.1 Uterine rupture ...................................................................................... M
   17.3.3.2 Placental abruption ............................................................................... M
   17.3.3.3 Preterm labor ....................................................................................... L
   17.3.3.4 In utero injuries to the fetus ................................................................... L
   17.3.3.5 Penetrating injuries to the uterus ........................................................... L

17.4 Special Considerations for Pediatric Trauma Victim
17.4.1 Clinical assessment and management
   17.4.1.1 Anatomic/physiologic differences from adults ....................................... M
   17.4.1.2 Airway management ............................................................................. H
   17.4.1.3 Fluid resuscitation (SEE 12.17.1) ........................................................... H
   17.4.1.4 Recognition of child abuse (SEE 12.8.1) ............................................... H
17.4.2 Head trauma (SEE 12.7) .............................................................................. M
17.4.3 Spinal injuries
   17.4.3.1 Spinal cord injury without radiologic abnormality (SCIWORA).............. M
17.4.4 Chest trauma .................................................................................................. M
17.4.5 Abdominal trauma ....................................................................................... H
17.4.6 Burns .......................................................................................................... M
17.4.7 Fractures (SEE 12.6)
   17.4.7.1 Greenstick ............................................................................................ L
   17.4.7.2 Torus ..................................................................................................... L
   17.4.7.3 Epiphyseal ............................................................................................ M
18.0 ADMINISTRATIVE ASPECTS OF EMERGENCY MEDICINE

18.1 Academic Emergency Medicine
   18.1.1 Faculty/staff ............................................................... L
   18.1.2 Research ................................................................. M
   18.1.3 Institutional affiliations ............................................... L
   18.1.4 Teaching/curriculum .................................................. L
   18.1.5 Testing/evaluation ..................................................... L

18.2 Certification and Licensure Requirements
   18.2.1 Allied health licensure .................................................. L
   18.2.2 Continuing medical educations .................................... L
   18.2.3 Physician licensure .................................................... L
   18.2.4 Specialty and subspecialty certification ......................... L

18.3 Information Systems

18.4 Departmental Administration
   18.4.1 Accreditation ............................................................... L
   18.4.2 Billing/reimbursement .................................................. M
   18.4.3 Budgeting ................................................................. L
   18.4.4 Cost containment principles ......................................... L
   18.4.5 Equipment and supplies .............................................. L
   18.4.6 Facility design ........................................................... L
   18.4.7 Health care financing ................................................... L
   18.4.8 Medical records/documentation .................................... H
   18.4.9 Personnel management ............................................... L
   18.4.10 Public relations .......................................................... L
   18.4.11 Quality improvement .................................................. H
   18.4.12 Staffing requirements .................................................. L
   18.4.13 Policies and procedures .............................................. M
   18.4.14 Nursing practice ....................................................... L
   18.4.15 Interdepartmental relations ......................................... L
   18.4.16 Patient flow .............................................................. L
   18.4.17 Observation units/clinical decision units ....................... M
   18.4.18 Infection control (SEE 8.7.2 and 12.15) ......................... M
   18.4.19 Security, violence in the emergency department (SEE 13.11.3) ........................................ M

18.5 Ethics
   18.5.1 Ethical principles ....................................................... M
   18.5.2 Professional relations
       18.5.2.1 Physician-patient .................................................. M
       18.5.2.2 Physician-physician
           18.5.2.2.1 Peer review ..................................................... M
           18.5.2.2.2 Impairment (SEE 18.13.4) ................................. M
           18.5.2.2.3 Incompetence ................................................. M
   18.5.3 Life-sustaining
       18.5.3.1 Advance directives ................................................. H
       18.5.3.2 Medical decision surrogates ................................... H
   18.5.4 Academic ethics ........................................................ L

18.6 Hospital Administration
   18.6.1 Departmental interaction .............................................. L
   18.6.2 Governance .............................................................. L
   18.6.3 Structure .................................................................... L

18.7 Medical-Legal Aspects
   18.7.1 Consent
       18.7.1.1 Expressed, implied ................................................. H
       18.7.1.2 Informed ............................................................. H

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18.0 ADMINISTRATIVE ASPECTS OF EMERGENCY MEDICINE (continued)

18.7.1.3 Uninformed
  18.7.1.3.1 Incompetent patients ......................................................... H
  18.7.1.3.2 Minors .............................................................................. H

18.7.2 Laws
  18.7.2.1 Commitment (SEE 13.10) ......................................................... H
  18.7.2.2 Drug-related
    18.7.2.2.1 Controlled substances ......................................................... L
    18.7.2.2.2 Drug abuse ...................................................................... L
    18.7.2.2.3 Food and Drug Administration regulations .......................... L
    18.7.2.2.4 Investigational drugs ........................................................ L
  18.7.2.3 Good Samaritan laws .............................................................. L
  18.7.2.4 Patient transfer regulations/EMTALA ....................................... H
  18.7.2.5 Regulations regarding reportable conditions
    18.7.2.5.1 Abuse ............................................................................. L
    18.7.2.5.2 Assault ........................................................................... L
    18.7.2.5.3 Communicable disease ..................................................... L
    18.7.2.5.4 Seizures/loss of consciousness ........................................ L
    18.7.2.5.5 Deaths
      18.7.2.5.5.1 Coroner’s cases ..................................................... L
    18.7.2.5.6 Transfusion restrictions .................................................... L
    18.7.2.5.7 Organ donation ................................................................. L
  18.7.2.6 Liability
    18.7.2.6.1 Duty to treat ................................................................. M
    18.7.2.6.2 Duty to third party ........................................................ M
    18.7.2.6.3 Intentional torts
      18.7.2.6.3.1 Battery .................................................................. M
      18.7.2.6.3.2 False imprisonment .............................................. M
    18.7.2.6.4 Insurance ......................................................................... M
    18.7.2.6.5 Malpractice ..................................................................... M
    18.7.2.6.6 Negligence ..................................................................... M
    18.7.2.6.7 Patient-related
      18.7.2.6.7.1 Privileged communications .................................. M
      18.7.2.6.7.2 Research ................................................................. M
      18.7.2.6.7.3 Termination of patient care ...................................... M
      18.7.2.6.8 Resuscitation decisions ................................................ M
      18.7.2.6.9 Risk management ........................................................ M
      18.7.2.6.10 Testimony ..................................................................... M

18.7.3 Expert witnesses .............................................................................. L

18.8 Clinical Pathways .................................................................................. M

18.9 Medical Staff
  18.9.1 Committees ............................................................................... L
  18.9.2 Credentialing ............................................................................... L
  18.9.3 Disciplinary policy ....................................................................... L
  18.9.4 Structure .................................................................................... L

18.10 Medical Organizations ......................................................................... L

18.11 Practice Management
  18.11.1 Benefits .................................................................................... L
  18.11.2 Contracts
    18.11.2.1 Group ............................................................................. L
    18.11.2.2 Hospital ........................................................................... L
    18.11.2.3 Staff ................................................................................ L
    18.11.2.4 Independent contractor .................................................... L
  18.11.3 Structure .................................................................................. L
18.0 ADMINISTRATIVE ASPECTS OF EMERGENCY MEDICINE (continued)

18.12 Skills
  18.12.1 Management ........................................................................................................... L
  18.12.2 Negotiations ............................................................................................................ L
  18.12.3 Physician interpersonal skills
    18.12.3.1 Effective patient-physician communication ..................................................... H
    18.12.3.1.1 Diversity issues .............................................................................................. L
    18.12.3.2 Hostile encounters/complaints ........................................................................ M
    18.12.3.3 Grief reactions ................................................................................................. M

18.13 Wellness
  18.13.1 Wellness maintenance .......................................................................................... M
  18.13.2 Stress management
    18.13.2.1 Unique stressors ............................................................................................ M
    18.13.2.2 Reduction techniques .................................................................................... M
    18.13.2.3 Debriefing (SEE 19.1.2.8) ........................................................................... M
  18.13.3 Shift work ............................................................................................................. M
  18.13.4 Physician impairment (SEE 18.5.2.2.2) ................................................................. M
  18.13.5 Family dynamics ................................................................................................ M

18.14 EMS System Organization
  18.14.1 System components
    18.14.1.1 Prehospital personnel .................................................................................... M
    18.14.1.2 Emergency department personnel ................................................................. L
    18.14.1.3 Transport services ......................................................................................... L
    18.14.1.4 Lead agency and local organizations ............................................................. L
  18.14.2 Categorization and designation of levels of services ............................................. L
  18.14.3 Specialized care centers ..................................................................................... L

18.15 EMS System Operation
  18.15.1 Communications system ..................................................................................... L
  18.15.2 Patient care protocols ......................................................................................... M
  18.15.3 Transport vehicles ............................................................................................... L
  18.15.4 Medical control
    18.15.4.1 Medical director ............................................................................................ M
    18.15.4.2 Offline and online supervision ......................................................................... M
  18.15.5 Governmental controls
    18.15.5.1 Development and implementation of regulations .......................................... L
    18.15.5.2 Funding ......................................................................................................... L
    18.15.5.3 Certification/recertification .......................................................................... L
  18.15.6 EMS administration ............................................................................................ M
  18.15.7 System overload .................................................................................................. L
  18.15.8 EMS continuous quality improvement ............................................................... M

18.16 EMS Education
  18.16.1 CPR, first aid, and EMS awareness training ......................................................... L
  18.16.2 EMT training
    18.16.2.1 Basic ............................................................................................................. M
    18.16.2.2 Intermediate ................................................................................................. M
    18.16.2.3 Paramedic ................................................................................................... M
  18.16.3 EMS continuing education/skills maintenance ...................................................... M
  18.16.4 Injury prevention and safety ................................................................................ L

18.17 Assessment of environmental, biologic, and toxicologic hazards................................. M
19.0 Disaster Medicine

19.1.1 Definition of disaster
19.1.1.1 Disaster assessment ......................................................... L
19.1.1.2 Epidemiology of disasters .................................................. L
19.1.1.3 Philosophy of disaster management and the incident command system ........................................... M
19.1.1.4 Types of disaster/nomenclature
19.1.1.4.1 Explosions and fires ....................................................... M
19.1.1.4.2 Mass crowd gathering events ........................................... M
19.1.1.4.3 Medical response to terrorist incidents (conflict related) .... M
19.1.1.4.4 Natural ............................................................................. M
19.1.1.4.5 Transportation disasters .................................................. M
19.1.1.4.6 Technologic—industrial/HAZMAT ...................................... M

19.1.2 Phases of disaster response
19.1.2.1 Notification ........................................................................... L
19.1.2.2 Search and rescue ................................................................ L
19.1.2.3 Triage .................................................................................. M
19.1.2.4 Medical care of disaster victims ............................................. M
19.1.2.5 Disaster communications .................................................... L
19.1.2.6 Record keeping ..................................................................... L
19.1.2.7 Transportation and evacuation .............................................. L
19.1.2.8 Debriefing/critical incident stress debriefing (CISD)(SEE 18.13.2.3) .... L
19.1.2.9 Recovery ............................................................................. L

19.1.3 Disaster medical care
19.1.3.1 Rapid assessment of emergency health care needs ............... M
19.1.3.2 Medical care at mass casualties ............................................ M
19.1.3.3 Disaster specific medical problems (SEE 17.0)
19.1.3.3.1 Mental health and behavioral consequences ...................... L
19.1.3.3.2 Shock and its treatment in field situations ......................... M
19.1.3.3.3 Toxic-chemical casualties ............................................... M
19.1.3.3.4 Radiation exposure casualties ........................................... M
19.1.3.3.5 Blast injuries .................................................................... M
19.1.3.4 Medical supply/equipment management
19.1.3.4.1 Essential drugs for disasters .......................................... L
19.1.3.4.2 Pharmaceutical distribution/control .................................. L
19.1.3.4.3 Role of immunizations .................................................... L
19.1.3.4.4 Public health issues after disasters .................................... L
19.1.3.4.5 Nonmedical emergency responders ................................... L

19.1.4 Disaster information services
19.1.4.1 Local/national/international disaster information .................. L
19.1.4.2 Public relations ................................................................... L
19.1.4.3 Media coordination ............................................................ L
19.1.4.4 Legal aspects ....................................................................... L

19.1.5 Disaster education
19.1.5.1 Hospital disaster planning .................................................. M
19.1.5.2 Disaster drills ...................................................................... M
19.1.5.3 Post-disaster injury prevention and surveillance .................. M

19.1.6 Disaster medical assistance teams (DMATs) ................................. L

19.1.7 International relief assistance .................................................. L

19.2 Research
19.2.1 Assessment of new methods and procedures .............................. L
19.2.2 Testing of new equipment and technologic advances .................. L
19.2.3 Data collection/analysis .......................................................... L
### 20.0 PROCEDURES/SKILLS

#### 20.1 Airway Techniques

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cricothyrotomy</td>
<td>H</td>
</tr>
<tr>
<td>Heimlich maneuver</td>
<td>L</td>
</tr>
<tr>
<td>Intubation</td>
<td></td>
</tr>
<tr>
<td>Rapid sequence</td>
<td>H</td>
</tr>
<tr>
<td>Difficult/failed airway</td>
<td>H</td>
</tr>
<tr>
<td>Mechanical ventilation</td>
<td>H</td>
</tr>
<tr>
<td>Percutaneous transtracheal ventilation</td>
<td>M</td>
</tr>
</tbody>
</table>

#### 20.2 Anesthesia/Analgesia

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>H</td>
</tr>
<tr>
<td>Regional nerve blocks</td>
<td>M</td>
</tr>
<tr>
<td>Procedural sedation</td>
<td>H</td>
</tr>
<tr>
<td>Pain management</td>
<td>M</td>
</tr>
</tbody>
</table>

#### 20.3 Diagnostic Procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthrocentesis</td>
<td>M</td>
</tr>
<tr>
<td>Cystourethrogram</td>
<td>L</td>
</tr>
<tr>
<td>Lumbar puncture</td>
<td>H</td>
</tr>
<tr>
<td>Nasogastric intubation</td>
<td>L</td>
</tr>
<tr>
<td>Pericardiocentesis</td>
<td>M</td>
</tr>
<tr>
<td>Peritoneal lavage</td>
<td>L</td>
</tr>
<tr>
<td>Ultrasonography</td>
<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td>L</td>
</tr>
<tr>
<td>Abdominal</td>
<td>M</td>
</tr>
<tr>
<td>Traumatic</td>
<td>M</td>
</tr>
<tr>
<td>Pelvic</td>
<td>M</td>
</tr>
<tr>
<td>Vascular</td>
<td>L</td>
</tr>
<tr>
<td>Procedural</td>
<td>L</td>
</tr>
<tr>
<td>Anoscopy</td>
<td>L</td>
</tr>
<tr>
<td>Thoracentesis</td>
<td>L</td>
</tr>
<tr>
<td>Tonometry</td>
<td>M</td>
</tr>
<tr>
<td>Slit lamp examination</td>
<td>M</td>
</tr>
<tr>
<td>Electrocardiogram interpretation</td>
<td>H</td>
</tr>
<tr>
<td>Radiographic interpretation</td>
<td>H</td>
</tr>
</tbody>
</table>

#### 20.4 Genital/Urinary

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder catheterization</td>
<td>M</td>
</tr>
<tr>
<td>Foley catheters</td>
<td>M</td>
</tr>
<tr>
<td>Suprapubic catheterization</td>
<td>L</td>
</tr>
<tr>
<td>Delivery of newborn</td>
<td></td>
</tr>
<tr>
<td>Complicated</td>
<td>L</td>
</tr>
<tr>
<td>Uncomplicated</td>
<td>M</td>
</tr>
<tr>
<td>Perimortem cesarean section</td>
<td>L</td>
</tr>
</tbody>
</table>

#### 20.5 Head and Neck

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control of epistaxis</td>
<td>M</td>
</tr>
<tr>
<td>Anterior packing</td>
<td>M</td>
</tr>
<tr>
<td>Posterior packing</td>
<td>M</td>
</tr>
<tr>
<td>Laryngoscopy</td>
<td>L</td>
</tr>
<tr>
<td>Nasopharyngeal endoscopy</td>
<td>M</td>
</tr>
</tbody>
</table>

#### 20.6 Hemodynamic Techniques

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial catheter insertion</td>
<td>L</td>
</tr>
<tr>
<td>Central venous access</td>
<td>M</td>
</tr>
<tr>
<td>Femoral</td>
<td>M</td>
</tr>
<tr>
<td>Jugular</td>
<td>H</td>
</tr>
<tr>
<td>Subclavian</td>
<td>M</td>
</tr>
</tbody>
</table>
20.6.2.4 Umbilical ................................................................. L
20.6.3 Intraosseous infusion .......................................................... M
20.6.4 Peripheral venous cutdown ....................................................... L
20.6.5 Pulmonary artery catheter insertion ................................................ L

20.7 Skeletal Procedures
20.7.1 Fracture/dislocation immobilization techniques .......................... H
20.7.2 Fracture/dislocation reduction techniques ................................. H
20.7.3 Spine
   20.7.3.1 Cervical traction techniques .................................. L
   20.7.3.2 Immobilization techniques 20.7.3.2.1 Backboard techniques ................... M

20.8 Thoracic
20.8.1 Cardiac pacing
   20.8.1.1 Cutaneous .............................................................. H
   20.8.1.2 Transvenous ............................................................ M
20.8.2 Defibrillation/cardioversion ................................................... H
20.8.3 Thoracostomy ........................................................................... H
20.8.4 Thoracotomy ................................................................. L

20.9 Other Techniques
20.9.1 End-tidal CO₂ monitoring ..................................................... M
20.9.2 Gastric lavage ........................................................................ L
20.9.3 Incision – drainage ............................................................... M
20.9.4 Intestinal tube insertion .......................................................... L
20.9.5 Pulse oximetry ................................................................. H
20.9.6 Tooth replacement re-implantation .......................................... L
20.9.7 Wound closure techniques .................................................. H
20.9.8 Trephination, nails ............................................................... M
20.9.9 Peak expiratory flow rate measurement ..................................... M
20.9.10 Autotransfusion ................................................................... L
20.9.11 Excision of thrombosed hemorrhoids ...................................... L
20.9.12 Foreign body removal ........................................................ M

20.10 Laboratory Skills
20.10.1 Venipuncture ................................................................. L
20.10.2 Arterial blood gas sampling .................................................. M
20.10.3 Microscopy ......................................................................... L
20.10.4 Gram stain preparation/interpretation .................................... L

20.11 Multiple Patient Management .................................................. H
20.12 Universal Precautions ................................................................... H