Idaho Transition Instructional Guidelines

Emergency Medical Technician (EMT-2011)

IDAHO
E·M·S

Preparatory

EMS Systems

EMT Education Standard

Applies fundamental knowledge of the EMS system, safety/well-being of the EMT, and medical/legal and ethical issues to the provision of emergency care.

Transition Highlights

This section includes a more detailed discussion on patient safety issues, decreasing medical error, and required affective/behavioral characteristics.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. IDAPA 16.01.07.075 Standards of Professional Conduct for EMS Personnel

01. Method of Treatment. EMS personnel must practice medically acceptable methods of treatment and must not endeavor to extend their practice beyond their competence and the authority vested in them by the medical director.

02. Commitment to Self-Improvement. EMS personnel must continually strive to increase and improve their knowledge and skills and render to each patient the full measure of their abilities.

03. Respect for the Patient. EMS personnel must provide all services with respect for the dignity of the patient, unrestricted by considerations of social or economic status, personal attributes, or the nature of health problems. (7-1-11)T

04. Confidentiality. EMS personnel must hold in strict confidence all privileged information concerning the patient except as disclosure or use of this information is permitted or required by law or Department rule. (7-1-11)T

05. Conflict of Interest. EMS personnel must not accept gratuities for preferential consideration of the patient and must guard against conflicts of interest.

06. Professionalism. EMS personnel must uphold the dignity and honor of the profession and abide by its ethical principles and should be familiar with existing laws governing the practice of emergency medical services and comply with those laws.

07. Cooperation and Participation. EMS personnel must cooperate with other health care professionals and participate in activities to promote community and national efforts to meet the health needs of the public.

08. Ethical Responsibility. EMS personnel must refuse to participate in unethical procedures, and assume the responsibility to expose incompetence or unethical conduct of others to the appropriate authority in a proper and professional manner.

II. Roles, Responsibilities, and Professionalism of EMS Personnel

A. Roles and Responsibilities

1. Maintain vehicle and equipment readiness

Applies fundamental knowledge of the EMS system, safety/well-being of the EMT, and medical/legal and ethical issues to the provision of emergency care.

2. Safety
    a. Personal
    b. Patient
    c. Others on the scene
3. Operate emergency vehicles
4. Provide scene leadership
5. Perform patient assessment
6. Administer emergency medical care to a variety of patients with varied medical conditions
7. Provide emotional support
    a. Patient
    b. Patient's family
    c. Other responders
8. Integration with other professionals and continuity of care
    a. Medical personnel
    b. Law enforcement
    c. Emergency management
    d. Home healthcare providers
    e. Other responders
9. Resolve emergency incident
10. Maintain medical and legal standards
11. Provide administrative support
12. Enhance professional development
13. Develop and maintain community relations

B. Professionalism
1. Characteristics of professional behavior
    a. Integrity
    b. Empathy
    c. Self-motivation
    d. Appearance and hygiene
    e. Self-confidence
    f. Time management
    g. Communication
        i. verbal
        ii. written
        h. Teamwork and diplomacy
    i. Respect for patients, co-workers and other healthcare professionals
    j. Patient advocacy
    k. Careful delivery of service
2. Maintenance of certification and licensure
    a. Personal responsibility
    b. Continuing education
    c. Skill competency verification
    d. Criminal implications
    e. Fees

III. Patient Safety
A. Significant – One of the Most Urgent Health Care Challenges
B. High-Risk Activities
1. Hand-off

2. Communication issues
3. Dropping patients
4. Ambulance crashes
5. Spinal immobilization

C. How Errors Happen
1. Skills-based failure
2. Rules-based failure
3. Knowledge-based failure

D. Preventing Errors
1. Environmental
a. Clear protocols
b. Light
c. Minimal interruptions
d. Organization and packaging of drugs
2. Individual
a. Reflection in action
b. Constantly question assumptions
c. Reflection bias
d. Use decision aids
e. Ask for help

Preparatory
Research

EMT Education Standard

Applies fundamental knowledge of the EMS system, safety/well-being of the EMT, and medical/legal and ethical issues to the provision of emergency care.

Transition Highlights

This section includes new, limited information on evidence based decision making.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level plus the following material:

I. Evidence-Based Decision-Making
- A. Traditional Medical Practice Is Based on
  1. Medical knowledge
  2. Intuition
  3. Judgment
- B. High-Quality Patient Care Should Focus on Procedures Proven Useful in Improving Patient Outcomes
- C. The Challenge for EMS Is the Relative Lack of Prehospital Research
- D. Evidence-Based Decision-Making Technique
  1. Formulate a question about appropriate treatments
  2. Search medical literature for related research
  3. Appraise evidence for validity and reliability
  4. If evidence supports a change in practice, adopt the new therapy allowing for unique patient needs

Preparatory

Workforce Safety and Wellness

EMT Education Standard

Applies fundamental knowledge of the EMS system, safety/well-being of the EMT, and medical/legal and ethical issues to the provision of emergency care.

Transition Highlights

This section includes a brief discussion on safe lifting bariatric issues, neonatal isolettes and medical restraint.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level plus the following material:

I. Lifting and Moving Patients
- A. Lifting techniques
  - 1. Safety Precautions
  - 2. Guidelines for lifting

- B. Safe Lifting of Cots and Stretchers
  - 1. Power-lift or squat lift position
  - 2. Power grip
  - 3. Back in locked-in position
  - 4. Carrying
    - a. Precautions for carrying
    - b. Guidelines for carrying
    - c. Correct carrying procedure
    - d. One-handed carrying technique
    - e. Correct carrying procedure on stairs
  - 5. Reaching
    - a. Guidelines for reaching
    - b. Application for reaching techniques
    - c. Correct reaching for log rolls
  - 6. Pushing and pulling guidelines
    - a. Emergency move
      - i. fire or danger of fire
      - ii. explosives or other hazardous materials
      - iii. other hazards at the scene
      - gain access to other patients in a vehicle who need lifesaving care
      - patient’s location or position (e.g., a cardiac arrest patient sitting in a chair or lying on a bed)
    - b. Indications for urgent move
      - i. altered mental status

ii. inadequate breathing
iii. shock (hypoperfusion)
c. Non-urgent move
7. Emergency moves
a. Danger to patient
b. Techniques
8. Urgent moves
a. Danger to patient
b. Techniques

C. Techniques
1. Non-urgent moves
a. Direct ground lift (no suspected spine injury)
b. Extremity lift (no suspected extremity or back injuries)
c. Transfer of supine patient from bed to stretcher
i. direct carry
ii. draw sheet method

D. Equipment
1. Stretchers/cots
a. Wheeled stretcher
b. Portable stretcher
c. Stair chair
d. Scoop or orthopedic stretcher
e. Flexible stretcher
f. Bariatric stretcher
g. Pneumatic or electronic stretchers
2. Standard
3. Tracked systems (i.e. backboards)
i. long
ii. short
4. Neonatal Isolette
5. Maintenance—follow manufacturer's directions for inspection, cleaning, repair, and upkeep

E. Patient Positioning
1. Unresponsive patient without suspected spine injury
2. A patient with chest pain, discomfort, or difficulty breathing
3. A patient with suspected spine injury
4. Pregnant patient with hypotension
5. A patient who is nauseated or vomiting
6. Bariatric patients
7. Patient Size

F. Medical Restraint
1. Use of Force Doctrine
2. Reasonable Prevention of Harm
a. Suicidal
b. Homicidal
c. Ambulances
d. Ramps
e. Winches

G. Personnel Considerations

Preparatory

Therapeutic Communication

EMT Education Standard

Applies fundamental knowledge of the EMS system, safety/well-being of the EMT, medical/legal and ethical issues to the provision of emergency care.

Transition Highlights

This section includes more detailed information about improving communication with the patient.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Principles of Communicating With Patients in a Manner That Achieves a Positive Relationship
- A. Adjusting Communication Strategies
  - 1. Age-appropriate
  - 2. Stage of development
  - 3. Patients with special needs (i.e. hearing-impaired patients)
  - 4. Differing cultures
    - a. Transcultural considerations
      - i. introduce yourself and the way in which you want to be called
      - ii. both the EMT and the patient will bring cultural stereotypes to a professional relationship
      - iii. ethnocentrism
      - iv. cultural imposition
      - v. space
        - a) intimate zone
        - b) personal distance
        - c) social distance
        - d) public distance
      - vi. cultural issues
        - a) variety of space
        - b) accept the sick role in different ways
        - c) nonverbal communication may be perceived differently
        - d) Asians, Native Americans, Indochinese, and Arabs may consider direct eye contact impolite or aggressive
      - vii. touch
      - viii. language barrier
- B. Interviewing Techniques
  - 1. Non-verbal skills
    - a. Physical appearance

i. interviewer
ii. patient
b. Posture and gestures
i. interviewer
ii. patient
iii. gestures a) facial expressions b) eye contact c) voice d) touch
2. Using questions
a. Open-ended questions
b. Closed or direct questions
c. One question at a time
d. Choose language the patient understands
3. Hazards of interviewing
a. Providing false assurance or reassurance
b. Giving advice
c. Leading or biased questions
d. Talking too much
e. Interrupting
f. Using "why" questions
g. Authority
h. Professional jargon
C. Verbal Defusing Strategies
1. Interviewing a Hostile Patient
a. Build rapport with patient
b. Maintain professional non-threatening demeanor

D. Family Presence Issues
1. Family presence issues
a. Situations
i. adult
ii. children
iii. elderly
b. Department policies
c. EMT response
d. Family preference

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Preparatory

Medical/Legal and Ethics

EMT Education Standard

Applies fundamental knowledge of the EMS system, safety/well-being of the EMT, medical/legal and ethical issues to the provision of emergency care.

Transition Highlights

This section includes new content on HIPPA, Living Wills, Surrogate decision makers and expanded civil and court case content. Additionally, this section should include an Idaho specific discussion on privileged communication.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Confidentiality
- A. Obligation to Protect Patient Information
- B. Health Information Portability and Accountability Act (HIPAA)
- C. Responsibility Arising From Physician – Patient Relationship
  - 1. Assessment findings
  - 2. Treatments rendered
- D. Privileged Communications
  - 1. Need to know
  - 2. Education
  - 3. Legally mandated
    - a. Child abuse reported
    - b. Subpoena
  - 4. Third party billing
  - 5. Release of medical information
- E. Breach of Confidentiality
  - 1. Libel
  - 2. Slander

II. Advanced Directives
- A. Patient Self-Determination Act
  - 1. Do Not Resuscitate (DNR)
  - 2. Living wills
  - 3. Durable power of attorney

III. Tort and Criminal Actions
- A. Criminality
  - 1. Breaches of conduct
    - a. Assault

b. Battery
c. Kidnapping
2. Mandatory reporting requirements
a. Abuse and assault
i. child abuse or neglect
ii. elder abuse
iii. domestic violence
b. Criminality
i. sexual assault
ii. penetrating trauma
a) gunshot
b) stab wounds
c. Communicable diseases
i. reportable
ii. animal bites

B. Civil Tort
1. Concept of Negligence
a. Res Ispa Loquitur
b. Negligence per se
2. Elements of negligence
a. Duty to act
b. Breach of duty
c. Damages to plaintiff
i. physical (e.g., lost earnings)
ii. psychological (e.g., pain and suffering)
iii. punitive
d. Proximate causation
e. Defenses
i. good samaritan
ii. governmental immunity
iii. statute of limitations
iv. contributory negligence
f. Protection from liability
i. professionalism
ii. standard of care
iii. liability insurance

C. Mandatory Reporting
1. Legally compelled to notify authorities
a. Abuse
b. Neglect
2. Arises from special relationship with patient
3. Legal liability for failure to report

Anatomy and Physiology

EMT Education Standard

Applies fundamental knowledge of the anatomy and function of all human systems to the practice of EMS.

Transition Highlights

The respiratory information found in the 2000 Supplemental Airway and ventilation Module should be added; more detailed discussion on the life support chain focusing on oxygenation, perfusion, and the cellular environment.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level, PLUS the following material:

I. Life Support Chain
- A. Fundamental Elements
  - 1. Oxygenation
    - a. Alveolar/capillary gas exchange
    - b. Cell/capillary gas exchange
  - 2. Perfusion
    - a. Oxygen
    - b. Glucose
    - c. Removal of carbon dioxide and other waste products
  - 3. Cell environment
    - a. Aerobic metabolism
      - i. high ATP (energy) production
      - ii. byproduct of water and carbon dioxide
    - b. Anaerobic metabolism
      - i. low ATP (energy) production
      - ii. byproduct of lactic acid
- B. Issues Impacting Fundamental Elements
  - 1. Composition of ambient air
  - 2. Patency of the airway
  - 3. Mechanics of ventilation
  - 4.Regulation of respiration
  - 5. V entilation/perfusion ratio
  - 6. Transport of gases
  - 7. Blood volume
  - 8. Effectiveness of the heart as a pump
  - 9. Vessel size and resistance (systemic vascular resistance)
  - 10. Effects of acid on cells and organs

Pathophysiology

EMT Education Standard

Applies fundamental knowledge of the pathophysiology of respiration and perfusion to patient assessment and management.

Transition Highlights

This section includes expanded content on respiratory dysfunction and shock.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level, PLUS the following material:

I. Respiratory Compromise
- A. Changes in Structure or Function of
  - 1. Anatomic boundaries of the thorax
  - 2. Pleural lining
  - 3. Muscles of ventilation
  - 4. Accessory muscles of ventilation
  - 5. Inhalation
    - a. Muscle activity
    - b. Changes in intrapleural and intrapulmonary pressures
    - c. Active process
  - 6. Exhalation
    - a. Muscle activity
    - b. Changes in intrapleural and intrapulmonary pressures
    - c. Passive process
  - 7. Minute ventilation
    - a. Tidal volume
    - b. Respiratory rate
  - 8. Alveolar ventilation
    - a. Tidal volume
    - b. Dead air space
    - c. Respiratory rate
  - 9. Signs of mechanical ventilation impairment
  - 10. Effects of inadequate tidal volume and respiratory rate
    - a. Minute ventilation
    - b. Alveolar ventilation
  - 11. Hypoxia caused by poor mechanical ventilation

II. Alteration in Regulation of Respiration Due to Medical or Traumatic Conditions
- A. Chemoreceptors
- B. Stretch receptors
- C. Medulla rhythm centers
- D. Effects of arterial carbon dioxide and oxygen content on respiration rate and depth
- E. Hypoxia caused by respiratory regulation disturbance

III. Ventilation/Perfusion (V/Q) Ratio and Mismatch
- A. Apex of Lung
- B. Base of Lung
- C. Ventilation Disturbance Related to Hypoxemia
- D. Perfusion Disturbance Related to Hypoxemia

IV. Perfusion and Shock
- A. Oxygen
  - 1. Dissolve in plasma
  - 2. Attached to hemoglobin
- B. Carbon Dioxide
  - 1. Dissolved in plasma
  - 2. Attached to hemoglobin
  - 3. Bicarbonate
- C. Alveolar/Capillary Gas Exchange
  - 1. Oxygen
  - 2. Carbon dioxide
- D. Cell/Capillary Gas Exchange
  - 1. Oxygen
  - 2. Carbon dioxide
- E. Cell Hypoxia Related to Oxygen Transport Disturbance
- F. Hypercarbia Related to Carbon Dioxide Transport Disturbance
- G. Blood Volume
  - 1. Composition of blood
    - a. Plasma
    - b. Red blood cells
    - c. White blood cells
    - d. Platelets
  - 2. Distribution
    - a. Arteries
    - b. Arterioles
    - c. Capillaries
    - d. Venules
    - e. Veins
    - f. Heart
    - g. Pulmonary veins
  - 3. Hydrostatic pressure
  - 4. Plasma oncotic pressure
- H. Myocardial Effectiveness
  - 1. Cardiac output
    - a. Heart rate
    - b. Stroke volume
      - i. preload
      - ii. myocardial contractility
      - iii. afterload
    - c. Impairment of cardiac output
      - i. high heart rates
      - ii. low hear rates
      - iii. low blood volume
      - iv. decrease in myocardial contractility
      - v. high blood pressure

2. Influence of autonomic nervous system on cardiac output
    a. Sympathetic
        i. neural
        ii. hormonal
            a) epinephrine
            b) norepinephrine
    b. Parasympathetic

I. Systemic Vascular Resistance (SVR)
1. Anatomy of the vessel
2. Influence of autonomic nervous system on SVR
    a. Sympathetic
    b. Parasympathetic
3. Effects of blood volume and vessel size on pressure inside the vessel

V. Microcirculation
A. True Capillaries
B. Arteriole-Venule Shunt
C. Influence on Capillary
1. Local
2. Neural
3. Hormonal

VI. Blood Pressure
A. Cardiac Output
B. Systemic Vascular Resistance
C. Baroreceptors
D. Effects of Changes in Cardiac Output on Blood Pressure
1. Increase in heart rate
2. Decrease in heart rate
3. Increase in stroke volume
4. Decrease in stroke volume
E. Effects of Changes in Systemic Vascular Resistance on Blood Pressure
1. Increase in SVR
2. Decrease in SVR

F. Effects of Changes of Blood Pressure on Perfusion of Cells
Oxygen delivery
Glucose delivery

VII. Alteration of Cell Metabolism
A. Aerobic Metabolism
1. Glucose
2. Oxygen
3. Energy (ATP) released
4. Byproducts
    a. Carbon dioxide
    b. Water
B. Anaerobic Metabolism
1. Glucose
2. Lack of oxygen
3. Energy (ATP) released
4. Byproducts
    a. Lactic acid
    b. Effects of acidic environment on cell structure and function
C. Effects of Inadequate Perfusion on Cells

1. Lack of glucose
2. Lack of oxygen
3. Lack of energy
    a. Sodium/potassium pump shutdown
    b. Cell membrane rupture
    c. Cell death

Life Span Development

EMT Education Standard

Applies fundamental knowledge of life span development to patient assessment and management.

Transition Highlights

This section includes all new content.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level, PLUS the following material:

I. Infancy (Birth to 1 Year)
- A. Physiology
  - 1. Vital signs
    - a. Heart rate
      - i. 100 to 160 beats per minute during first 30 minutes
      - ii. settling around 120 beats per minute
    - b. Respiratory rate
      - i. initially 40-60
      - ii. dropping to 30-40 after first few minutes of life
      - iii. slowing to 20-30 by one year
      - iv. tidal volume
      - v. 6-8 ml/kg initially
      - vi. increasing to 10-15 ml/kg by 1 year
    - c. Blood pressure -- average systolic blood pressure increases from 70 at birth to 90 at 1 year
    - d. Temperature ranges -- 98 to 100 degrees Fahrenheit is the thermoneutral range
  - 2. Weight
    - a. Normally 3.0-3.5 kg at birth
    - b. Normally drops 5 to 10 percent in the first week of life
    - c. Infants head equal to 25 percent of the total body weight
  - 3. Pulmonary system
    - a. Airways, shorter, narrower, less stable, more easily obstructed
    - b. Infants primarily nose breathers until four weeks
    - c. Lung tissue is fragile and prone to trauma from pressure
    - d. Fewer alveoli with decreased collateral ventilation
    - e. Accessory muscles immature, susceptible to early fatigue
    - f. Chest wall less rigid
    - g. Diaphragmatic breathing
    - h. Rapid respiratory rates lead to rapid heat, and fluid loss
  - 4. Immune system
    - a. Passive immunity retained through the first six months of life
    - b. Based on maternal antibodies
  - 5. Nervous system
    - a. Movements
      - i. strong, coordinated suck and gag

ii. well flexed extremities
iii. extremities move equally when infant is stimulated
b. Reflexes
c. Fontanelles
i. posterior fontanelle closes at three months
ii. anterior fontanelle closes between 9 and 18 months
iii. fontanelles may provide an indirect estimate of hydration
6. Growth and development in infants
a. Rapid changes over first year
i. two months
a) tracks objects with eyes
b) recognizes familiar faces
ii. six months
a) sits upright in a highchair
b) makes one syllable sounds (e.g., ma, mu, da, di)
iii. 12 months
a) walks with help
b) knows own name
B. Psychosocial development
1. Crying
a. Basic cry
b. Anger cry
c. Pain cry
2. Situational crisis – parental separation reactions
a. Protest
b. Despair
c. Withdrawal

II. Toddler (12 to 36 Months) and Preschool Age (3 to 5)
A. Physiological
1. Vital signs
a. Heart rate
i. toddlers—80 to 130 beats per minute
ii. preschoolers—80 to 120 beats per minute
b. Respiratory rate
i. toddlers—20 to 30 breaths per minute
ii. preschoolers—20 to 30 breaths per minute
c. Systolic blood pressure
i. toddlers—70 to 100 mmHg
ii. preschoolers—80 to 110 mmHg
d. Temperature—96.8 to 99.6 degrees Fahrenheit
2. Pulmonary system
a. Terminal airways continue to branch
b. Alveoli increase in number
3. Immune system
a. Passive immunity lost, more susceptible to minor respiratory and gastrointestinal infections
b. Develops immunity to common pathogens as exposure occurs
4. Nervous system
a. Brain 90 percent of adult brain weight
b. Development allows effortless walking and other basic motor skills
c. Fine motor skills developing

5. Musculoskeletal system
    a. Muscle mass increases
    b. Bone density increases

6. Elimination patterns
    a. Toilet training
        i. physiologically capable by 12 to 15 months
        ii. psychologically ready between 18 and 30 months
        iii. average age for completion – 28 months

B. Psychosocial
1. Cognitive
    a. Basics of language mastered by approximately 36 months, with continued refinement throughout childhood
    b. Understands cause and effect between 18-24 months
    c. Develops separation anxiety—approximately 18 months
2. Play
    a. Able to play simple games and follow basic rules
    b. Begin to display competitiveness

III. School-Age Children (6 to 12 Years)
A. Physiological
1. Vital signs
    a. Heart rate—70 to 110 beats per minute
    b. Respiratory rate—20 to 30 breaths per minutes
    c. Systolic blood pressure—80 to 120 mmHg
    d. Temperature—98.6 degrees Fahrenheit
2. Bodily functions
    a. Brain function increases in both hemispheres
    b. Loss of primary teeth and replacement with permanent teeth begins

B. Psychosocial
1. Develop self-concept (i.e. more interaction with adults and children
    a. begin comparing themselves with others
    b. develop self-esteem

IV. Adolescence (13 to18 Years)
A. Physiological
1. Vital signs
    a. Heart rate—55 to 105 beats per minute
    b. Respiratory rate—12 to 20 breaths per minute
    c. Blood pressure—100 to 120 mmHg
    d. Temperature—98.6 degrees Fahrenheit
2. Growth rate
    a. Most experience a rapid two- to three-year growth spurt
        i. begins distally with enlargement of feet and hands
        ii. enlargement of the arms and legs follows
        iii. chest and trunk enlarge in final stage
    b. Girls are mostly done growing by age 16, boys are mostly done growing by age 18
    c. Secondary sexual development occurs
    d. Endocrine changes
    e. Reproductive maturity
    f. Muscle mass and bone growth nearly complete

B. Psychological
1. Family
a. Conflicts arise
2. Develop identity
a. Self-consciousness increases
b. Peer pressure increases
c. Interest in the opposite sex increases
d. Want to be treated like adults
e. Anti-social behavior peaks around eighth or ninth grade
f. Body image of great concern
i. continual comparison amongst peers
ii. eating disorders are common
g. Self-destructive behaviors begin
i. tobacco
ii. alcohol
iii. illicit drugs
h. Depression and suicide more common than any other age group

V. Early Adulthood (20 to 40 Years)
A. Physiological
1. Vital signs
a. Heart rate—average 70 beats per minute
b. Respiratory rate—average 16 to 20 breaths per minutes
c. Blood pressure—average 120/80 mmHg
d. Temperature—98.6 degrees Fahrenheit
2. Peak physical conditioning between 19 and 26 years of age
3. Adults develop lifelong habits and routines during this time
4. All body systems at optimal performance
5. Accidents are a leading cause of death in this age group
B. Psychological
1. Experience highest levels of job stress during this time
2. Love develops
a. Romantic love
b. Affectionate love
3. Childbirth most common in this age group
4. This period is less associated with psychological problems related to well being

VI. Middle Adulthood (41 to 60 Years)
A. Physiological
1. Vital signs
a. Heart rate—average 70 beats per minute
b. Respiratory rate—average 16 to 20 breaths per minute
c. Blood pressure—average 120/80 mmHg
d. Temperature—98.6 degrees Fahrenheit
2. Body still functioning at high level with varying degrees of degradation
3. Vision changes
4. Hearing less effective
5. Cardiovascular health becomes a concern
a. Cardiac output decreases throughout this period
b. Cholesterol levels increased
6. Cancer strikes in this age group often
7. Weight control more difficult

8. Menopause in women in late 40s early 50s

B. Psychological

1. Approach problems more as challenges than threats
2. Empty-nest syndrome
3. Often burdened by financial commitments for elderly parents as well as young adult children

VII. Late Adulthood (61 Years and Older)

A. Physiological

1. Vital signs
    a. Heart rate—depends on patient's physical and health status
    b. Respiratory rate—depends on patient's physical and health status
    c. Blood pressure—depends on patient's physical and health status
    d. Temperature—98.6 degrees Fahrenheit
2. Life span—maximum approximately 120 years
3. Life expectancy—average length based on year of birth
4. Cardiovascular function changes
    a. Blood vessels
        i. thickening
        ii. increased peripheral vascular resistance
        iii. reduced blood flow to organs
    b. Heart
        i. increased workload
        ii. myocardium is less able to respond to exercise
        iii. tachycardia not well tolerated
    c. Blood cells
5. Respiratory system
    a. Changes in mouth, nose, and lungs
    b. Metabolic changes lead to decreased lung function
    c. Muscular changes
        i. diaphragm elasticity diminished
        ii. chest wall weakens
    d. Diffusion through alveoli diminished
    e. Lung capacity diminished
    f. Coughing ineffective
        i. weakened chest wall
        ii. weakened bone structure
6. Endocrine system changes
    a. Decreased glucose metabolism
    b. Decreased insulin production
    c. Reproductive organs atrophy in women
7. Gastrointestinal system
    a. Mouth, teeth, and saliva changes
    b. GI secretions decreased
    c. Vitamin and mineral deficiencies
8. Renal system
    a. 50 percent of nephrons lost
    b. Abnormal glomeruli more common
    c. Decreased elimination
9. Sensory changes
    a. Loss of taste buds
    b. Olfactory diminished

c. Diminished pain perception
d. Diminished kinesthetic sense
e. Visual acuity diminished
f. Reaction time diminished
g. Hearing loss

10. Nervous system
    a. Neuron loss
    b. Sleep-wake cycle disrupted

B. Psychological
1. Wisdom attributed to age in some cultures
2. 95 percent of older adults live in communities
3. Challenges
    a. Self-worth
    b. Declining well-being
    c. Financial burdens
    d. Death or dying of companions

Pharmacology
Medication Administration

EMT Education Standard

Applies fundamental knowledge of the medications that the EMT may assist/administer to a patient during an emergency.

Transition Highlights

This section reemphasizes the five rights of medication administration.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Assist/Administer Medications to a Patient
- A. Medication Administration Procedure
- 1. The "rights" of drug administration
  - a. Right patient – prescribed to patient
  - b. Right medication – patient condition
  - c. Right route – patient condition
  - d. Right dose – prescribed to patient
  - e. Right time – within expiration date

Pharmacology
Emergency Medications

EMT Education Standard

Applies fundamental knowledge of the medications that the EMT may assist/administer to a patient during an emergency.

Transition Highlights

This section includes new material on aspirin.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

The EMT must know the names, mechanism of action, indications, contraindications, complications, routes of administration, side effects, interactions, dose, and any specific administration considerations, for all of the following emergency medications

I. Specific Medications
- A. EMT – Administer Medications
  - 1. Aspirin

Airway Management, Respiration, and Artificial Ventilation

Airway Management

EMT Education Standard

Applies knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management in order to assure a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.

Transition Highlights

This section includes new content.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Airway Anatomy
- A. Upper Airway Tract
  - 1. Nose – warm and humidify air
  - 2. Mouth and oral cavity
    - a. Alternative airway, especially in emergency
    - b. Entrance to the digestive system
    - c. Also involved in the production of speech
    - d. Tongue
  - 3. Jaw
  - 4. Pharynx
    - a. Nasopharynx
    - b. Oropharynx
    - c. Laryngopharyx
  - 5. Larynx
    - a. Epiglottis – muscular structure which protects the airway of conscious patients during swallowing
    - b. Vocal cords – thin muscles which are the center for speech and protect the lower airways
    - c. Thyroid cartilage
    - d. Cricoid ring
- B. Lower Airway Tract
  - 1. Trachea
    - a. Hollow tube which passes air to the lower airways
    - b. Supported by cartilage rings
  - 2. Carina – the bifurcation of the trachea into the two mainstem bronchi
  - 3. Bronchi
    - a. Hollow tubes which further divide into lower airways of the lungs
    - b. Supported by cartilage
  - 4. Lungs
    - a. Bronchioles

i. thin hollow tubes leading to the alveoli
ii. remain open through smooth muscle tone

b. Alveoli
i. the end of the airway
ii. millions of thin walled sacs
iii. each alveolus surrounded by capillary blood vessels
iv. site where oxygen and carbon dioxide (waste) are exchanged

c. Pulmonary capillary beds
i. blood vessels that begin as capillary surrounding each alveolus
ii. with adequate blood volume and blood pressure, the vessels return oxygenated blood to the heart

II. Airway Assessment

A. Signs of Adequate Airway
1. Airway is open, can hear/feel air move in and out
2. Patient is speaking in full sentences
3. Sound of the voice is normal for the patient

B. Signs of Inadequate Airway (Not every sign listed below is present in every patient who has inadequate airway)
1. Unusual sounds are heard with breathing
a. stridor
b. snoring
2. Awake patient is unable to speak or sounds hoarse
3. No air movement (apnea)
4. Airway obstruction
a. Tongue
b. Food
c. Vomit
d. Blood
e. Teeth
f. Foreign body

C. Swelling Due to Trauma or Infection

III. Techniques of Assuring a Patent Airway

A. Manual Airway Maneuvers -- review and elaborate on the manual airway maneuvers used by EMRs

B. Mechanical Airway Devices
1. Review and elaborate on the mechanical airway maneuvers used by EMRs
2. Nasopharyngeal
a. Purpose
b. Indications
c. Contraindications
d. Complications
e. Procedure

C. Relief of Foreign Body Airway Obstruction (refer to current American Heart Association guidelines)

D. Upper Airway Suctioning -- review and elaborate on all material from the EMR Level

IV. Consider Age-Related Variations in Pediatric and Geriatric Patients (see Special Patient Populations Section)

Airway Management, Respiration, and Artificial Ventilation
Respiration

EMT Education Standard

Applies knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management in order to assure a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.

Transition Highlights

This section includes increased level of detail.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Anatomy of the Respiratory System
- A. Includes All Airway Anatomy Covered in the Airway Management Section
- B. Additional Respiratory System Anatomy
  - 1. Chest cage
  - 2. Ribs
  - 3. Muscles
    - a. Intercostal
    - b. diaphragm
  - 4. Pleura
  - 5. Phrenic nerve innervation
- C. Vascular Structures Which Support Respiration
  - 1. Pulmonary capillary structures
  - 2. The heart
    - a. Right heart
      - i. receives systemic circulation
      - ii. drives pulmonary circulation
    - b. Left heart
      - i. receives pulmonary circulation
      - ii. drives systemic circulation
    - c. Automaticity
  - 3. Arteries, arterioles, capillaries, venules, veins
  - 4. Tissue/cellular beds
- D. Cells
  - 1. All cells perform a specific function
  - 2. Cells require chemicals in order to function, including oxygen, glucose, and electrolytes
    - a. Cells must excrete waste products, including carbon dioxide and water
    - b. Aerobic versus anaerobic respiration
  - 3. Respiratory regulation – influenced by carbon dioxide and oxygen levels in the blood and spinal fluid

4. Respiration; pulmonary ventilation – the movement of air in and out of the lungs
    a. External respiration – the exchange of respiratory gases between the alveoli and the pulmonary capillary bed
    b. Internal respiration – the exchange of respiratory gases between the systemic capillaries and their surrounding tissue beds
    c. Cellular respiration and metabolism – the use of oxygen and carbohydrates to produce energy and the creation of carbon dioxide and water as a by-product of metabolism

II. Physiology of Respiration
- A. Pulmonary Ventilation
    1. Ventilation is the movement of air in and out of the lungs
    2. Adequate ventilation is necessary for, but does not assure, adequate respiration
    3. The mechanics of ventilation
        a. Inhalation
        b. Exhalation
    4. Alveolar Ventilation
        a. Tidal volume
        b. Dead space
        c. Vital capacity
        d. Respiratory Rate
        e. Minute volume
        f. Residual volume
- B. Oxygenation
    1. Oxygenation is the process of loading oxygen molecules onto hemoglobin molecules in the bloodstream
    2. Oxygenation is required for, but does not assure, internal respiration

- C. Respiration
    1. Respiration is the exchange of oxygen and carbon dioxide and is essential for life
        a. External respiration – exchange of oxygen and carbon dioxide between the alveoli and the blood in the pulmonary capillaries
        b. Internal respiration – exchange of oxygen and carbon dioxide between the capillaries of the body tissues and the individual cells
        c. Cellular respiration
            i. each cell of the body performs a specific function
            ii. oxygen and sugar are essential to produce energy for cells to perform their function
            iii. produce carbon dioxide as a waste product
    2. Adequate ventilation is required for, but does not assure, external respiration
    3. Adequate external ventilation and perfusion are required for, but do not assure, internal respiration

III. Pathophysiology of Respiration
- A. Pulmonary Ventilation
    1. Interruption of nervous control
        a. Drugs
        b. Trauma
        c. Muscular dystrophy
    2. Structural damage to the thorax
    3. Bronchoconstriction
    4. Disruption of airway patency

a. Infection
b. Trauma/burns
c. Foreign body obstruction
d. Allergic reactions
e. Unconsciousness (loss of muscle tone)

B. Oxygenation

C. Respiration

1. External
a. Altitude
b. Closed environments
c. Toxic or poisonous environments

2. Internal
a. Pathology typically related to changes in alveolar – capillary gas exchange
b. Typical disease processes
i. emphysema
ii. pulmonary edema
iii. pneumonia
iv. environmental/occupational exposure
v. drowning

3. Cellular

D. Circulation compromise

1. Pathology typically related to derangement of pulmonary and systemic perfusion and oxygenation
2. Typical disease processes
a. Obstruction of blood flow
i. pulmonary embolism
ii. tension pneumothorax
iii. heart failure
iv. cardiac tamponade
b. Anemia
c. Hypovolemia
d. Vasodilatory shock

E. Cells

1. Hypoxia
2. Hypoglycemia
3. Infection

IV. Assessment of Adequate and Inadequate Ventilation

A. Internal Respiration is Necessary for Life

B. It Is Sometimes Difficult to Assess Internal Respiration

C. It May Be Difficult to Determine If You Have a Respiration, Ventilation, or Oxygenation Problem as They May Coexist and One Can Cause Another

D. Assessment of Ventilation

1. Signs of adequate ventilation
a. Respiratory rate is normal
b. Breath sounds are clear on both sides of the chest
i. anterior
ii. posterior
c. Tidal volume
d. Minute volume

2. Signs of inadequate ventilation *(not every sign listed below is present in every patient who has inadequate ventilation and/or oxygenation)*

a. Abnormal work of breathing
i. retractions
ii. nasal flaring
iii. abdominal breathing
iv. diaphoresis
b. Abnormal breath sounds
i. stridor
ii. wheezing
iii. crackles
iv. silent chest
v. breath sounds are unequal
a) trauma
b) infection
c) pneumothorax
c. Minute volume (respiratory rate x tidal volume)
d. Chest wall movement or damage
i. trauma
a) paradoxical
b) splinting
c) penetrating
e. Irregular respiratory pattern
i. head trauma
ii. stroke
iii. metabolic
iv. toxic
v. rapid respiratory rate without clinical improvement

E. Assessment of Respiration
1. Ambient air is abnormal
a. Enclosed space
b. High altitude
c. Poison gas
2. Level of consciousness
3. Skin color/mucosa is not normal
a. Cyanosis – etiology
b. Pallor – etiology
c. Mottling – etiology
4. Assessment of oxygenation
a. Mental status
i. baseline
b. Skin color normal
c. Oral mucosa normal
d. Pulse oximeter reading within acceptable level
e. Pulse oximetry
i. purpose
a) assesses oxygenation
b) quantify hemoglobin saturation
c) assess adequacy of oxygen delivery during positive pressure ventilation
d) assess impact of interventions
ii. indications – routine vital sign
iii. contraindications
iv. complications

a) hypoperfusion
b) carbon monoxide
c) cold extremity
d) time lag in detection of respiratory insufficiency

v. procedure

a) refer to the manufacturer's instructions for the device being used
b) considered alternative measurement sites

V. Management of Adequate and Inadequate Respiration

A. Assure an Adequate Airway

B. Supplemental Oxygen Therapy

1. Ambient air is
   a. Oxygen
   b. Nitrogen
   c. Carbon dioxide
2. Supplemental oxygen therapy replaces some of the inert gas with oxygen and can improve internal respiration
3. Oxygen sources
   a. Portable oxygen cylinder
      i. cylinder size
      ii. assembly and use of cylinders
      iii. changing a cylinder
         a) safe residual for operation is 200 psi
         b) calculating cylinder duration
      iv. securing and handling cylinders
   b. Liquid oxygen
4. Oxygen delivery devices
   a. Nasal cannula
      i. purpose
      ii. indications
      iii. contraindications
      iv. complications
      v. procedure
   b. Partial re-breather face mask
      i. purpose
      ii. indications
      iii. contraindications
      iv. complications
      v. procedure
   c. Non-rebreather
      i. purpose
      ii. indications
      iii. contraindications
      iv. complications
      v. procedure
   d. tracheostomy mask
      i. purpose
      ii. indications
      iii. contraindications
      iv. complications
      v. procedure

e. Venturi mask
i. purpose
ii. indications
iii. contraindications
iv. complications
v. procedure
f. Humidifiers
i. purpose
ii. indications
iii. contraindications
iv. complications
v. procedure

C. Assisting Ventilation in Respiratory Distress/Failure
1. Purpose
a. To improve oxygenation
b. To improve ventilation
2. Indications
a. Shows signs and symptoms of inadequate ventilation
i. altered mental status
ii. inadequate minute ventilation
iii. fatigue from work of breathing
iv. others
3. Complications
a. Combative/hypoxic patients
b. Inadequate mask seal
c. Over pressure causing injury to the lung
d. Risk of gastric inflation and vomiting
4. Procedure
a. Explain the procedure to the patient
b. Place the mask over the patient's nose and mouth
c. Initially assist at the rate at which the patient has been breathing
d. Squeeze the bag each time the patient begins to inhale
e. Over the next 5-10 breaths
i. slowly adjust the rate and the delivered tidal volume
ii. appropriate rate and volume are determined by minute ventilation

VI. Consider Age-Related Variations in Pediatric and Geriatric Patients (see Special Patient Populations)

Airway Management, Respiration, and Artificial Ventilation
Artificial Ventilation

EMT Education Standard

Applies knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management in order to assure a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.

Transition Highlights

This section includes increased level of detail.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. The Management of Inadequate Ventilation
- A. Assure an Adequate Airway
- B. Supplemental Oxygen Therapy
- C. Artificial Ventilation Devices
  - 1. Bag-valve-mask with reservoir
    - a. Advantages
    - b. Disadvantages
  - 2. Manually triggered ventilation device
    - a. Advantages
      - i. allows for a single rescuer to use both hands to maintain a mask-to-face seal while providing positive pressure ventilation to a patient
      - ii. reduces rescuer fatigue during extended transport times
    - b. Disadvantages
      - i. difficult to maintain adequate ventilation without assistance
      - ii. requires oxygen however, typical adult ventilation consumes 5 liters per minute O2 versus 15-25 liters per minute for a bag-valve-mask
      - iii. typically used on adult patients only
      - iv. requires special unit and additional training for use in pediatric patients
      - v. the rescuer is unable to easily assess lung compliance
      - vi. high ventilatory pressures may damage lung tissue
  - 3. Automatic Transport Ventilator/Resuscitator
    - a. Advantages
    - b. Disadvantages
      - i. requires oxygen, however typical adult ventilation consumes 5 liters per minute 02 versus 15-25 liters per minute for a bag-valve-mask
      - ii. may require an external power source
      - iii. must have bag-valve-mask device available
      - iv. may interfere with timing of chest compressions during CPR
      - v. must monitor to assure full exhalation
      - vi. barotrauma

D. Ventilation of an Apneic Patient
    1. Purpose
    2. Indications
    3. Contraindications
    4. Procedure
E. Ventilation of the Protected Airway
    1. Purpose
    2. Indications
    3. Contraindications
    4. Complications
    5. Procedure

II. The Differences Between Normal and Positive Pressure Ventilation
A. Air Movement
    1. Normal ventilation
        a. Negative intrathoracic pressure
        b. Air is sucked into lungs
    2. Positive pressure ventilation
B. Blood Movement
    1. Normal ventilation
        a. Blood return from the body happens naturally
        b. Blood is pulled back to the heart during normal breathing
    2. Positive pressure ventilation
        a. Venous return is decreased during lung inflation
        b. Amount of blood pumped out of the heart is reduced
C. Airway Wall Pressure
    1. Normal ventilation
    2. Positive pressure ventilation
        a. Walls are pushed out of normal anatomical shape
        b. More volume is required to have the same effect as normal breathing
D. Esophageal Opening Pressure
    1. Normal ventilation
    2. Positive pressure ventilation
        a. Air is pushed into the stomach during ventilation
        b. Gastric distention may lead to vomiting
    3. Sellick's maneuver (cricoid pressure)
        a. Use during positive pressure ventilation
        b. Reduces amount of air in stomach
        c. Procedure
            i. identify cricoid cartilage
            ii. apply firm backward pressure to cricoid cartilage with thumb and index finger
        d. Do not use if
            i. patient is vomiting or starts to vomit
            ii. patient is responsive
            iii. breathing tube has been placed by advanced level providers
E. Over Ventilation (Either by Rate or Volume) Can Be Detrimental to the Patient
    1. Positive pressure ventilation may cause
        a. Hypotension
        b. Gastric distention
        c. Other unintended consequences

III. Consider Age-Related Variations in Pediatric and Geriatric Patients (see Special Patient Considerations)

Patient Assessment
Scene Size-Up

EMT Education Standard

Applies scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management.

Transition Highlights

This section includes re-emphasis on scene safety.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Scene Safety
- A. Common Scene Hazards
  - 1. Environmental
  - 2. Hazardous substances
    - a. Chemical
    - b. Biological
  - 3. Violence
    - a. Patient
    - b. Bystanders
    - c. Crime scenes
  - 4. Rescue
    - a. Motor vehicle collisions
      - i. extrication hazards
      - ii. roadway operation dangers
    - b. Special situations

- B. Evaluation of the Scene -- is the scene safe?
  - 1. Yes -- establish patient contact and proceed with patient assessment.
  - 2. No -- is it possible to quickly make the scene safe?
    - a. Yes -- assess patient
    - b. No -- do not enter any unsafe scene until minimizing hazards
  - 3. Request specialized resources immediately

Patient Assessment
Primary Assessment

EMT Education Standard

Applies scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management.

Transition Highlights

This section includes new terminology

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Primary Survey/Primary Assessment
- A. Initial General Impression – Based on the Patient's Age-Appropriate Appearance
  - 1. Appears stable
  - 2. Appears stable but potentially unstable
  - 3. Appears unstable
- B. Level of Consciousness
  - 1. While approaching the patient or immediately upon patient contact attempt to establish level of consciousness
    - a. Speak to the patient and determine the level of response
    - b. EMT should identify himself or herself
    - c. EMT should explain that he or she is there to help
  - 2. Patient response
    - a. Alert
      - i. the patient appears to be awake
      - ii. the patient acknowledges the presence of the EMT
    - b. Responds to verbal stimuli
      - i. the patient opens his/her eyes in respond to the EMT's voice
      - ii. the patient responds appropriately to a simple command
    - c. Responds to painful stimuli
      - i. the patient neither acknowledges the presence of the EMT nor responds to loud voice
      - ii. patient responds only when the EMT applies some form of irritating stimulus
        - a) when an irritating stimulus is encountered, the human body will either attempt to move away from the stimulus or will attempt to move the stimulus away from the body
        - b) acceptable stimuli
          - i) pinch the patient's ear
          - ii) trapezius squeeze
          - iii) others

d. Unresponsive – the patient does not respond to any stimulus

C. Airway Status

1. Unresponsive patient

a. Medical patients

i. open and maintain the airway with head-tilt, chin-lift technique

ii. see the current American Heart Association guidelines for the steps in performing this procedure for victims of all ages

b. Trauma patients

i. open and maintain the airway with modified jaw thrust technique while maintaining manual cervical stabilization

ii. see the current American Heart Association guidelines for the steps in performing this procedure for victims of all ages

2. Responsive patient

a. If the patient speaks, the airway is functional but may still be at risk -- foreign body or substances in the mouth may impair the airway and must be removed

i. finger sweep (solid objects)

ii. suction (liquids)

b. If the upper airway becomes narrowed, inspiration may produce a high-pitched whistling sound known as stridor

i. foreign body

ii. swelling

iii. trauma

c. Airway patency must be continually reassessed

D. Breathing Status

1. Patient responsive

a. Breathing is adequate (rate and quality)

b. Breathing is too fast (>24 breaths per minute)

c. Breathing is too slow (<8 breaths per minute)

d. Breathing absent (choking)

2. Patient unresponsive

a. Breathing is adequate (rate and quality)

b. Breathing is inadequate

c. Breathing is absent

E. Circulatory Status

1. Radial pulse present (rate and quality)

a. Normal rate

b. Fast

c. Slow

d. Irregular rate

2. Radial pulse absent

3. Assess if major bleeding is present

4. Perfusion status

a. Skin color

b. Skin temperature

c. Skin moisture

d. Capillary refill (as appropriate)

F. Identifying Life Threats

1. Assess patient and determine if the patient has a life-threatening condition

a. Unstable – if a life threatening condition is found, treat immediately

b. Stable – assess nature of illness or mechanism of injury

G. Assessment of Vital Functions

Patient Assessment
History-Taking

EMT Education Standard

Applies scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management.

Transition Highlights

This section includes new terminology and geriatric content.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Investigation of the Chief Complaint
- A. The Chief Complaint Is a Very Brief Description of the Reason for Summoning EMS to the Scene
- B. Factors Influencing the Data Collection
  - 1. What is the source of the information?
    - a. Patient
      - i. usually the best source for information
    - b. Family
    - c. Friends
    - d. Bystanders
    - e. Public safety personnel
    - f. Medical identification jewelry or other medical information sources
  - 2. How reliable is the data?
- C. History of the Present Illness
  - 1. Detailed evaluation of the chief complaint
  - 2. Provides a full, clear, chronological account of the signs and symptoms

II. Components of a Patient History
- A. Statistical and Demographic
  - 1. Obtain correct dates
  - 2. Accurately document all times
  - 3. Identifying data
    - a. Age
    - b. Sex
    - c. Race
- B. Past Medical History (Pertinent to the Medical Event)
  - 1. Medical
  - 2. Trauma
  - 3. Surgical
  - 4. Consider medical identification tag
- C. Current Health Status (Pertinent to the Medical Event)

1. Focuses on present state of health
2. Environmental conditions
3. Individual factors
    a. Current medications
    b. Allergies
    c. Tobacco use
    d. Alcohol, drugs and related substances
    e. Diet
    f. Screening tests
    g. Immunizations
    h. Environmental hazards
    i. Use of safety measures (in and out of the home)
    j. Family history

III. Techniques of History Taking
A. Setting the Stage
1. Environment – personal space
2. EMS personnel demeanor and appearance
    a. Be aware of body language
    b. Clean, neat, and professional
3. Note-taking
    a. Difficult to remember all details
    b. Most patients comfortable with note-taking
B. Learning About the Present Illness
1. Refer to the patient by name
    a. Refer to the patient by their last name with the proper title
        i. Mr., Mrs., or Ms.
        ii. if they inform you to address them by their first name, do so
    b. Avoid the use of unfamiliar or demeaning terms such as “granny” or “honey”
C. Determine Chief Complaint
1. Use a general, open-ended question
2. Follow the patient’s lead
    a. Facilitation
        i. posture, actions, or words should encourage the patient to say more
        ii. making eye contact or saying phrases such as “go on” or “I’m listening” may help the patient to continue
    b. Reflection
        i. repeating the patient’s words encourages additional responses
        ii. typically does not bias the story or interrupt the patient’s train of thought
    c. Clarification – used to clarify ambiguous statements or words
    d. Empathetic responses – use techniques of therapeutic communication to interpret feelings and your response
    e. Confrontation – some issues or responses may require you to confront patients about their feelings
    f. Interpretation – goes beyond confrontation, requires you to make an inference
D. History of the Present Illness
1. Location (where is it?)
2. Onset (when did it start?)
3. Provocative, palliative, and positioning
    a. What makes it worse?
    b. What makes it better?

c. What position is the patient comfortable?

4. Quality (what is it like?)
5. Radiation (does it move anywhere?)
6. Severity
    a. Attempt to quantify the pain
    b. Utilize the scale, 1-10
7. Time
    a. Duration
    b. When did it start?
    c. How long does it last?
8. Associated signs and symptoms
9. Pertinent negative(s)
10. For trauma patients, determine the mechanism of injury

E. Assess Past Medical History (Pertinent to the Medical Event)
1. Pre-existing medical conditions or surgeries
2. Medications
3. Allergies
4. Family history
5. Social history; travel history

F. Current Health Status
1. Tobacco use
2. Use of alcohol, drugs, and other related substances
3. Diet

IV. Standardized Approach to History-Taking

A. SAMPLE History
1. S = Signs and symptoms
2. A = Allergies
    a. Medication
    b. Environmental
3. M = Medications
    a. Over the counter (OTC)
    b. Prescribed
    c. Vitamins and herbal
    d. Birth control / erectile dysfunction
    e. Other people's medications
    f. Recreational drugs
4. P = Past pertinent medical history – relevant information concerning the illness or injury
5. L = Last oral intake
    a. Fluids
    b. Food
    c. Other substances
6. E = Events leading to the illness or injury
    a. What was taking place just prior to the illness or injury?

B. OPQRST History
1. O = Onset – time the signs or symptoms started
2. P = Provocative, palliative, and positioning
    a. What makes it worse?
    b. What makes it better?
    c. Positioning
        i. in what position is the patient found?

ii. should the patient remain in that position?

3. Q = Quality of the discomfort
    a. Patient's ability to describe the type of discomfort
        i. burning
        ii. stabbing
        iii. crushing
4. R = Radiation
    a. Does the discomfort move in any direction?
5. S = Severity
    a. Pain scale
6. T = Time
    a. Relating to onset, however, more definitive in regards to initial onset in the history

V. Taking History on Sensitive Topics
- A. Alcohol and Drugs
- B. Physical Abuse or Violence
- C. Sexual History
- D. Special Challenges
    1. Silent patient
        a. Silence is often uncomfortable
        b. Be alert for nonverbal clues of distress
        c. Silence may be the result of the interviewer's lack of sensitivity
    2. Overly talkative patients
        a. Give the patient free reign for the first several minutes
        b. Summarize frequently
    3. Patient with multiple symptoms
    4. Anxious patient
        a. Anxiety is natural
        b. Be sensitive to nonverbal clues
        c. Reassurance
    5. Angry and hostile patient
        a. Understand that anger and hostility are natural
        b. Often the anger is displaced toward the clinician
        c. Do not get angry in return
    6. Intoxicated patient
        a. Be accepting, not challenging
        b. Do not attempt to have the patient lower their voice or stop cursing; this may aggravate them
        c. Avoid trapping them in small areas
        d. Treat with dignity, despite their intoxication
    7. Crying patient may provide valuable insight
    8. Depressed patient
        a. Be alert for signs of depression
        b. Be willing to listen and be non-judgmental
    9. Patient with confusing behavior or history
    10. Patient with limited cognitive abilities
        a. Do not overlook the ability of these patients to provide you with adequate information
        b. Be alert for omissions
    11. EMT-patient language barrier – take every possible step to find a translator

12. Patient with hearing problem – if the patient can write, have the patient write down questions and answers on paper
13. Patient with visual impairment – be careful to announce presence and provide careful explanations
14. Talking with family and friends
    a. Some patients may not be able to provide you with all information
    b. Try to find a third party who can help you get the whole story

VI. Age-Related Variations for Pediatric and Geriatric Assessment and Management
- A. Pediatric (see Special Patient Population section)
- B. Geriatric (see Special Patient Population section)
    1. Obtain eye glasses and hearing aids
    2. Expect history to take more time

Patient Assessment
Secondary Assessment

EMT Education Standard

Applies scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management

Transition Highlights

This section includes new terminology and an increased level of detail.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Techniques of Physical Examination
- A. General Approach
  - 1. Examine the patient systematically
  - 2. Place special emphasis on areas suggested by the present illness and chief complaint
  - 3. Keep in mind that most patients view a physical exam with apprehension and anxiety—they feel vulnerable and exposed
  - 4. Maintain professionalism throughout the physical exam while displaying compassion towards your patient
- B. Respiratory System
  - 1. Expose the chest as appropriate for the environment
  - 2. Chest shape and symmetry
  - 3. Respiratory effort
    - a. Accessory muscle use
    - b. Retractions
  - 4. Auscultation
    - a. Technique – medical versus trauma
    - b. Presence of breath sounds
    - c. Absence of breath sounds
- C. Cardiovascular System
  - 1. Pulse
    - a. Rate
    - b. Rhythm
    - c. Predictable
    - d. Adjust timing for irregularity
    - e. Strength
    - f. Location
      - i. common locations
      - ii. pelation to perfusion
  - 2. Perfusion
    - a. Blood pressure
      - i. equipment size

ii. placement of cuff
iii. position of patient
iv. position of arm
v. methods of measurement a) auscultation b) palpation
vi. relation to perfusion

D. Neurological System
1. Mental status
a. Appearance and behavior
i. assess for level of consciousness (AVPU)
a) alert
b) response to verbal stimuli
i) drowsiness
ii) stupor
(a) state of lethargy
(b) person seems unaware of surroundings
c) response to painful stimuli
d) unresponsive
i) coma
(a) state of profound unconsciousness
(b) absence of spontaneous eye movements
(c) no response to verbal or painful stimuli
(d) patient cannot be aroused by any stimuli
ii. observe posture and motor behavior
iii. facial expression
a) anxiety
b) depression
c) anger
d) fear
e) sadness
f) pain
b. Speech and language
i. rate
ii. appropriateness
a) slurred
b) garbled
c) aphasia
c. Mood
i. nature
ii. intensity
iii. suicidal ideation
d. Thought and perceptions
i. assess thought processes
a) logic
b) organization
ii. assess thought content
a) unusual thoughts
b) unpleasant thoughts
iii. assess perceptions
a) unusual
b) hearing things
c) seeing things
e. Memory and attention

i. person
ii. place
iii. time
iv. purpose

E. Musculoskeletal System
1. Pelvic region
a. Symmetry
b. Tenderness
2. Lower extremities
a. Overview
i. symmetry
ii. surface findings
b. General physical findings
i. range of motion
ii. sensory
iii. motor function
iv. circulatory function
c. Peripheral vascular system
i. tenderness
ii. temperature of lower legs
iii. distal pulses
3. Upper extremities
a. Overview
i. symmetry
ii. strength
iii. surface findings
b. General physical findings
i. range of motion
ii. sensory
iii. motor function
iv. circulatory function
v. arm drift
4. Back
a. Overview
i. symmetry
ii. contour
iii. surface findings
b. General physical findings
i. flank tenderness
ii. spinal column tenderness

F. All Anatomical Regions
1. Head
a. Scalp
b. Skull
c. Face
i. symmetry of expression
ii. appropriate facial expression
d. Eyes
i. pupil size, shape, and response
a) normal – equal and reactive to light
b) abnormal
i) constricted

ii) dilated
iii) unequal
ii. conjunctiva color and hydration
e. Ears – fluids
f. Nose
i. symmetry
ii. fluid in nares
g. Mouth and pharynx

i. odor
ii. hydration
iii. condition of teeth
2. Neck
a. Physical findings
b. Symmetry
c. Masses
d. Arterial pulses
3. Chest
a. Overview
i. expose appropriately
ii. chest shape and symmetry
iii. respiratory effort
iv. surface findings – inspection
b. Auscultation

i. technique – medical versus trauma
ii. lung sounds
a) presence of breath sounds – wheezes
b) absence of breath sounds
c. Anterior chest
i. auscultation findings – lungs
ii. intercostal muscle use
iii. retraction
d. Posterior chest
i. auscultation
ii. spinal column
4. Abdomen
a. Overview
i. position patient for examination
ii. shape and size
iii. palpation method
a) four quadrants
b) palpate affected area last
b. Physical findings
i. symmetry
ii. masses
iii. organ margins
iv. contour
v. softness
vi. tenderness
vii. findings associated with pregnancy – physical changes of contour and shape

Patient Assessment
Monitoring Devices

EMT Education Standard

Applies scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management.

Transition Highlights

This section includes new content for Pulse Oximetry.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Pulse Oximetry
- A. Purpose
  - 1. Assess oxygenation
  - 2. Assess adequacy of oxygen delivery during positive pressure ventilation
  - 3. Assess impact of interventions
- B. Indications
- C. Procedure
  - 1. Refer to the manufacturer's instructions for the specific device being used
  - 2. Considered alternative measurement sites
- D. Limitations
  - 1. General
    - a. Appropriateness of use
    - b. Does not provide a direct measurement of blood oxygen content
    - c. Does not indicate whether body cells can utilize the oxygen present
  - 2. Specific
    - a. Hypoperfusion
    - b. Carbon monoxide
    - c. Cold extremity
    - d. Time lag in detection of respiratory insufficiency

Patient Assessment
Reassessment

EMT Education Standard

Applies scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management.

Transition Highlights

Reassessment of vital signs has been added to this section.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. How and When to Reassess

II. A Reassessment Includes:
- A. Primary Assessment
- B. Vital Signs
- C. Chief Complaint
- D. Interventions

III. Vital Signs
- A. Repeat Vital Signs as Necessary
- B. Attention Should be Paid to:
  1. Respirations
  2. Pulse
  3. Blood Pressure
  4. Pupils

IV. Age-Related Considerations for Pediatric and Geriatric Assessment and Management

Medicine
Neurology

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes a new stroke discussion.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Stroke/TIA
- A. Causes
  1. Hemorrhage
  2. Clot
- B. Review of Anatomy and Function of the Brain and Cerebral Blood Vessels
- C. Assessment Findings and Symptoms
  1. Confused, dizzy, weak
  2. Decreasing or increasing level of consciousness
  3. Combative or uncooperative or restless
  4. Facial drooping, inability to swallow, tongue deviation
  5. Double vision or blurred vision
  6. Difficulty speaking or absence speech
  7. Decreased or absent movement of one or more extremities
  8. Headache
  9. Decreased or absent sensation in one or more extremities or other areas of body
  10. Coma
- D. Stroke Alert Criteria
  1. Cincinnati Prehospital Stroke Scale
  2. Other stroke scales
- E. Management of Patient With Stroke Assessment Findings or Symptoms
- F. Scene Safety and Standard Precautions
  1. ABCs /position
  2. Oxygen/suction
  3. Pulse oximetry
  4. Emotional support
  5. Rapid transport
- G. Transient Ischemic Attack (TIA)

Medicine

Abdominal and Gastrointestinal Disorders

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes new content on anatomy, assessment, managements, GI bleeding, peritonitis, ulcerative disease, age-related variations.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Define Acute Abdomen

II. Anatomy of the Organs of the Abdominopelvic Cavity
- A. Stomach
- B. Intestines
- C. Esophagus
- D. Spleen
- E. Urinary Bladder
- F. Liver
- G. Gall Bladder
- H. Pancreas
- I. Kidney
- J. Reproductive Organs

III. Specific Acute Abdominal Conditions—Definition, Causes, Assessment Findings and Symptoms, Complications, and Specific Prehospital Management
- A. Acute and Chronic Gastrointestinal Hemorrhage
- B. Peritonitis
- C. Ulcerative Diseases

IV. Consider Age-Related Variations for Pediatric and Geriatric Assessment and Management

Medicine
Immunology

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes additional geriatric information and a re-emphasis on anaphylaxis (the term anaphylaxis did not appear in the 1994 EMT-B National Standard Curriculum.)

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Introduction
- A. Definition of Terms
  - 1. Allergic reaction
  - 2. Anaphylaxis
- B. Risk Factors and Common Allergens

II. Basic Immune System's Response to Allergens
- A. The Purpose of the Response
- B. The Type of Response (Local versus Systemic)
- C. The Speed of the Response

III. Fundamental Pathophysiology
- A. Increased Capillary Permeability
- B. Vasodilation
- C. Bronchoconstriction
- D. Increased Mucus Production

IV. Assessment Findings for Allergic Reaction
- A. Respiratory System—Sneezing, Tightness in Chest, Cough, Rapid and Labored Breathing, Wheezing, Stridor
- B. Cardiovascular—Increased Heart Rate
- C. Skin—Pale or Redness, Hives, Swelling Locally or Generalized, Itching
- D. Other—Anxiety, Itchy and Watery Eyes, Dizziness

V. Assessment Findings for Anaphylaxis
- A. Respiratory System—Severe Respiratory Distress, Wheezing to Silent Chest
- B. Cardiovascular—Rapid Pulse, Hypotension
- C. Skin—Pale, Red, or Cyanotic
- D. Other—Decreasing Mental Status

VI. Management

- A. ABCs
- B. Position
- C. Oxygen
- D. Emotional Support
- E. Vitals
- F. Assist With Patient's Auto injector
- G. Remove Allergen If Possible

VII. Epinephrine as a Treatment for Allergic Reaction

- A. Indications – Severe Allergic Reaction or Hypersensitivity to Exposed Substance
- B. Contraindications – Not Patient's Drug, Expired, or Discolored
- C. Actions – Slows Allergic Response, Raises B/P, Dilates the Bronchioles
- D. Side Effects – Increased Pulse Rate and B/P, Anxiety, Cardiac Arrhythmias
- E. Auto injection Systems
    1. Physician order
    2. Expiration date and patient prescription
    3. Prep site, remove needle cover
    4. Lateral thigh; push against thigh; hold until drug fully injected
    5. Monitor patient response
    6. Dispose properly

VIII. Consider Age-Related Variations for Pediatric and Geriatric Assessment and Management

- A. Pediatric – Pediatric Weight-Based Auto injector Available
- B. Geriatric – Possible Contraindication in Coronary Artery Disease

IX. Communication and Documentation

X. Transport Decisions

Medicine
Infectious Disease

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes updated infectious disease information, for example methicillin-resistant Staphylococcus aureus (MRSA) and Acquired Immune Deficiency Syndrome (AIDS) update; should include a discussion on cleaning and sterilizing equipment and decontaminating the ambulance

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Body Substance Isolation, Personal Protective Equipment, and Cleaning and Disposing of Equipment and Supplies

- A. Principles of Body Substance Isolation
- B. Hand Washing Guidelines
- C. Recommendations for PPE
- D. Recommendations for Cleaning or Sterilization of Equipment
- E. Recommendations for Disposing of Contaminated Linens and Supplies Including Sharps
- F. Recommendations for Decontaminating the Ambulance

Medicine
Endocrine Disorders

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes increased level of detail on diabetes.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Introduction
- A. Definition of Terms
  - 1. Diabetes—types I and II
  - 2. Hypoglycemia
  - 3. Hyperglycemia, diabetic ketosis

- B. Anatomy and Function of the Pancreas
- C. General Assessment Findings and Symptoms
  - 1. Confusion, vertigo, headache, syncope
  - 2. Decreasing level of consciousness
  - 3. Combative or uncooperative or restless
  - 4. Increasing level of consciousness
  - 5. Visual changes
  - 6. Speech changes
  - 7. Movement and sensation changes

II. Diabetes
- A. Overview of Condition
  - 1. Incidence
  - 2. Explanation of relationship of glucose and insulin
  - 3. Normal Blood Glucose Levels (BGL)
  - 4. Types
    - a. Type 1 (formerly known as Insulin Dependent Diabetes or Type I)
    - b. Type 2 (formerly known as Non-Insulin Dependent Diabetes or Type II)
      - i. oral agents
      - ii. diet-controlled
  - 5. Diabetic medications
    - a. Insulins
    - b. Oral agents
  - 6. Complications
- B. Hyperglycemia/Diabetic Ketoacidosis
  - 1. Pathophysiology

2. Causes
3. History and assessment findings
    a. onset—slow changes in mental status
    b. Kussmaul's breathing, acetone breath
    c. Dehydration, poor skin tugor, pale, warm and dry
    d. Weakness, nausea, and vomiting
    e. Weak and rapid pulse
    f. Polyuria, polydipsia, polyphagia
    g. Other
    h. Medical alert identification
4. Management
    a. ABCs (airway adjunct)
    b. Position
    c. Oxygen
    d. Pulse oximetry
    e. Emotional support

C. Hypoglycemia
1. Causes
2. History and assessment findings
    a. Onset – rapid changes in mental status
    b. Bizarre behavior, tremors, shaking
    c. Sweating, hunger
    d. Rapid full pulse, rapid shallow respirations
    e. Seizures, coma late
    f. Medical alert identification
3. Management
    a. ABCs, oxygen
    b. Oral glucose as indicated (must be able to control airway)
    c. Emotional support
4. Oral glucose
    a. Indication/contraindications
    b. Actions
    c. Side effects
    d. Dose and route
    e. Medical control role
    f. When in doubt if hyper/hypoglycemia, give glucose

D. Consider Age-Related Variations for Pediatric and Geriatric Assessment and Management
1. Pediatric
    a. Usually insulin dependant called juvenile diabetes
    b. Late stages of hyperglycemia may have cerebral edema
    c. Prone to seizures
    d. Prone to dehydration
    e. May be undiagnosed
2. Geriatric
    a. Can mask signs and symptoms of myocardial infarction
    b. Prone to dehydration and infections

Medicine
Psychiatric

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes new material, revised restraint techniques, and new material on excited delirium.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Psychiatric Emergencies
- A. Acute Psychosis
- B. Assessment for Suicide Risk
  - 1. Depression
  - 2. Risk factors/signs or symptoms
    - a. Ideation or defined lethal plan of action which has been verbalized and/or written
    - b. Alcohol and substance abuse
    - c. Purposelessness
    - d. Anxiety, agitation, unable to sleep or sleeping all the time
    - e. Feeling trapped, no way out
    - f. Hopelessness
    - g. Withdrawal from friends, family and society
    - h. Anger and/or aggressive tendencies
    - i. Recklessness or engaging in risky activities
    - j. Dramatic mood changes
    - k. History of trauma or abuse
    - l. Some major physical illness (cancer, CHF, etc.)
    - m. Previous suicide attempt
    - n. Job or financial loss
    - o. Relational or social loss
    - p. Easy access to lethal means
    - q. Lack of social support and sense of isolation
    - r. Certain cultural and religious beliefs
  - 3. Important questions
    - a. How does the patient feel?
    - b. Determine suicidal tendencies
    - c. Is patient threat to self or others?
    - d. Is there a medical problem?
    - e. Is there trauma involved?

f. Interventions?

C. Agitated Delirium

1. Emergency medical care

a. Scene size-up, personal safety

b. Establish rapport

i. utilize therapeutic interviewing techniques a) engage in active listening b) supportive and empathetic c) limit interruptions d) respect patient's territory, limit physical touch

ii. avoid threatening actions, statements and questions

iii. approach slowly and purposefully

c. Patient assessment

i. intellectual functioning

ii. orientation

iii. memory

iv. concentration

v. judgment

vi. thought content a) disordered thoughts b) delusions, hallucinations c) unusual worries, fears

vii. language

a) speech pattern and content

b) garbled or unintelligible

viii. mood

a) anxiety, depression, elation, agitation

b) level of alertness, distractibility

i) appearance, hygiene, dress

ii) psychomotor activity

d. Calm the patient – do not leave the patient alone, unless unsafe situation; consider need for law enforcement

e. Restrain if necessary

f. Transport

g. If overdose, bring medications or drugs found to medical facility

II. Medical-Legal Considerations

A. Types of Restraints

B. Transport Against Patient Will

Medicine
Cardiovascular

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes Increased emphasis on anatomy, physiology and pathophysiology; increased emphasis on specific cardiovascular emergencies, addition of aspirin information for acute coronary syndrome.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Anatomy of the Cardiovascular System
- A. Heart
  1. Chambers
  2. Valves
  3. Blood supply to myocardium
  4. Myocardial muscle cells
  5. Specialized electrical cells
  6. Automaticity
  7. Autonomic system control
     - a. Sympathetic – “fight or flight”
     - b. Parasympathetic
- B. Vessels
  1. Aorta
  2. Arteries
  3. Arterioles
  4. Capillaries
  5. Venules
  6. Veins
  7. Vena cava
- C. Blood
  1. Red blood cells
  2. White blood cells
  3. Platelets
  4. Plasma

II. Physiology
- A. Cardiac Cycle
  1. Systole
  2. Diastole

B. Pulses
    1. Peripheral Pulses
    2. Central pulses
C. Blood Pressure
    1. Systolic
    2. Diastolic
D. Blood Circulation Through a Double Pump
    1. Respiratory system
        a. Deoxygenated blood to lungs
        b. Oxygenated blood back to heart
    2. Body
E. Cardiac Output
    1. Heart rate X blood volume ejected/beat
F. Perfusion
    1. Function of red blood cells in oxygen delivery
    2. Factors governing adequate perfusion
        a. Rate
        b. Pump
        c. Volume
G. Oxygenation of Tissues
    1. Delivery of oxygenated blood
    2. Removal of tissue wastes

III. Pathophysiology
A. Cardiac Compromise
    1. Inadequate circulation of blood and/ or perfusion of vital processes or organs
    2. Atherosclerosis
        a. Plaque buildup in lumen of artery
        b. Obstruction of blood flow
        c. Interference with dilation and constriction of vessel
        d. Occlusion
        e. Ischemia is a result of decreased blood flow
    3. Rate-related compromise
    4. Inadequate pumping
    5. Inappropriate circulating volume

IV. Assessment
A. Primary Survey
    1. Level of responsiveness
        a. Restlessness, anxiety
        b. Feeling of impending doom
    2. Airway
    3. Breathing
        a. Rate and depth
        b. Effort
        c. Breath sounds
        d. Significance of findings
    4. Circulation
        a. Pulse
            i. rate
            ii. quality
        b. Skin

i. color
ii. temperature
iii. moisture
iv. edema
c. Blood pressure
B. History
1. Chief complaint
2. History of the present illness
a. Chest discomfort/pain
i. signs and symptoms
ii. OPQRST evaluation
b. Respiratory
i. dyspnea
a) continuous
b) exertional
c) non-exertional
d) orthopneic
ii. cough
a) dry
b) productive
c. Related signs and symptoms
i. nausea/vomiting
ii. fatigue
iii. palpitations
iv. headache
v. recent trauma
3. Past medical history
a. SAMPLE history
b. Previous heart disease/surgery
i. angina
ii. previous AMI
iii. hypertension
iv. heart failure
v. valve disease
vi. aneurysm
vii. pulmonary disease
viii. diabetes
ix. COPD
x. renal disease
c. Current/past medications
i. prescribed
ii. over-the-counter
iii. home remedies
iv. recreational drug use
d. Family history
C. Secondary Survey

V. Management (refer to the current American Heart Association guidelines)
A. Place in proper position
B. Evaluation and appropriate management of ventilations/respirations
1. Oxygen saturation evaluation
2. pulse oximetry

C. May be unreliable in cardiac arrest, toxic inhalation
    1. Appropriate management of any related ventilatory/respiratory compromise
        a. BVM assistance
        b. PEEP
        c. CPAP/BiPAP
        d. MTV/ATV

    2. Appropriate oxygen therapy
D. Evaluation and appropriate management of cardiac compromise
    1. Manual and auto BP
    2. Mechanical CPR
    3. AED
E. Pharmacological interventions
    1. Aspirin
    2. Nitroglycerin
    3. Oral glucose
F. Consider AEMT/Paramedic assistance at the scene
G. Appropriate transportation

VI. Specific Cardiovascular Emergencies (refer to current American Heart Association guidelines)
A. Acute Coronary Syndromes (ACS) Heart Failure
B. Hypertensive Emergencies
    1. Systolic BP greater than 160 mmHg
    2. Diastolic BP greater than 94 mmHg
    3. Signs and symptoms
    a. Strong, bounding pulse
    b. Skin warm, dry, or moist
    c. Headache
    d. Ringing in ears
    e. Nausea/vomiting
    f. Nose bleed
    4. Assessment
C. Cardiogenic Shock
D. Cardiac Arrest

VII. Pharmacological Agents
A. Aspirin
    1. Generic and trade names
    2. Indications
    3. Contraindications
    4. Actions
    5. Side effects
    6. Precautions
    7. Expiration date
    8. Dosage
    9. Administration
B. Nitroglycerin
    1. Generic and trade names
    2. Indications
    3. Contraindications
    4. Actions
    5. Side effects

6. Precautions
7. Expiration date
8. Dosage
9. Administration

C. Role of Medical Oversight in Medication Administration
D. Patient Assisted Administration
E. Documentation

VIII. Consider Age-Related Variations for Pediatric and Geriatric Patients for Assessment and Management of Cardiac Compromise

A. Pediatric
1. Cardiac problems typically associated with congenital heart condition
2. Cardiovascular compromise often caused by respiratory compromise

B. Geriatric -- typical MI presentation often related to other underlying disease processes
1. Diabetes
2. Asthma
3. COPD

Medicine
Toxicology

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes poison control and new drugs of abuse information.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Introduction
- A. Define Toxicology, Poisoning, Overdose
- B. National Poison Control Center
- C. Routes of Absorption
  - 1. Ingestion
  - 2. Inhalation
  - 3. Injection
  - 4. Absorption

II. Drugs of Abuse
- A. Opiates/Narcotics
  - 1. Common causative agents
  - 2. Assessment findings and symptoms
    - a. Decreased level of consciousness, sedation
    - b. Hypotension
    - c. Respiratory depression/arrest
    - d. Nausea, pinpoint pupils
    - e. Seizures and coma
  - 3. Management for a patient using opiates
- B. Alcohol
  - 1. Overview of alcoholism including long-term effects
  - 2. Alcohol abuse
    - a. CNS changes—agitation to sedation to altered level of consciousness
    - b. Respiratory depression
    - c. Nausea and vomiting
    - d. Uncoordination
  - 3. Alcohol withdrawal
    - a. Tremors, sweating weakness
    - b. Hallucinations and seizures
  - 4. Assessment findings and symptoms for patients with alcohol abuse and alcohol withdrawal

5. Management for a patient using alcohol or withdrawing from alcohol — airway, ventilation, and circulation

C. Common Causative Agents, Assessment Findings and Symptoms, Management

1. Cannabis
2. Hallucinogens
3. Stimulants
4. Barbiturates/sedatives/ hypnotics

Medicine
Respiratory

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes increased level of detail on respiratory distress.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Anatomy of the Respiratory System
- A. Upper Airway
- B. Lower Airway
- C. Lungs and Accessory Structures

II. Normal Respiratory Effort

III. Assessment Findings and Symptoms and Management for Respiratory Conditions
- A. Respiratory Distress
  - 1. Assessment
    - a. Shortness of breath
    - b. Restlessness
    - c. Increased pulse rate
    - d. Changes in respiratory rate or rhythm
    - e. Skin color changes
    - f. Abnormal sounds of breathing/lung sounds
    - g. Inability to speak
    - h. Retractions
    - i. Altered mental status
    - j. Abdominal breathing
    - k. Coughing
    - l. Tripod position
  - 2. Management of respiratory distress
    - a. Scene safety and Standard Precautions
    - b. ABCs, position
    - c. Oxygen/suction
    - d. Pulse oximetry
    - e. Emotional support
    - f. Transport

IV. Specific Respiratory Conditions—Definition, Causes, Assessment Findings and Symptoms, Complications, and Specific Prehospital Management and Transport Decisions

A. Asthma
B. Pulmonary Edema
C. Chronic Obstructive Pulmonary Disease
D. Pneumonia
E. Spontaneous Pneumothorax
F. Pulmonary Embolism
G. Epiglottis
H. Pertussis
I. Cystic Fibrosis
J. Environmental/Industrial Exposure/ Toxic Gasses
K. Viral Respiratory Infections

Medicine
Hematology

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes a brief discussion of sickle cell disease.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Sickle Cell Crisis
- A. General Assessment
  1. Level of consciousness
  2. Skin
  3. Visual disturbances
  4. Gastrointestinal
  5. Skeletal
  6. Cardiorespiratory
  7. Genitourinary
- B. General Management
  1. Airway, ventilation, and circulation
  2. Oxygen
  3. Transport considerations
  4. Psychological/communication strategies

Medicine
Genitourinary/Renal

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes increased level of detail.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Dialysis
- A. Hemodialysis
  - 1. Shunt
  - 2. Fistula
  - 3. Graft
- B. Peritoneal Dialysis
- C. Special Considerations for Hemodialysis Patients
  - 1. Obtaining B/P
- D. Complications/Adverse Effects of Dialysis
  - 1. Hypotension
  - 2. Muscle cramps
  - 3. Nausea/vomiting
  - 4. Hemorrhage especially from access site
  - 5. Infection at access site

Medicine
Gynecology

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes a brief discussion of sexually transmitted diseases and pelvic inflammatory disease.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Specific Gynecological Emergencies—Definition, Causes, Risk Factors, Assessment Findings, Management

- A. Vaginal Bleeding
- B. Sexual Assault — Legal Issues
- C. Infections — Pelvic Inflammatory Disease
- D. Sexually Transmitted Diseases

Medicine
Non-traumatic Musculoskeletal Disorders

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Transition Highlights

This section includes new information at this level.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Anatomy and physiology review
- A. Bones
- B. Muscles

II. Pathophysiology
- A. Non-Traumatic Fractures (i.e. cancer or osteoporosis)

Shock and Resuscitation

EMT Education Standard

Applies a fundamental knowledge of the causes, pathophysiology, and management of shock, respiratory failure or arrest, cardiac failure or arrest, and post-resuscitation management.

Transition Highlights

Shock content was moved from trauma to emphasize the fact that it occurs in contexts other than trauma; the cardiac arrest information was moved from cardiology for the same reason. This section includes a brief discussion on devices to assist circulation, although subject to local protocol. Shock should be taught in a more comprehensive context rather than simply as a consequence of bleeding.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Ethical Issues in Resuscitation
- A. Withholding Resuscitation Attempts
  - 1. Irreversible death
  - 2. Do Not Resuscitate (DNR) orders
- B. Provide Emotional Support for Family

II. Anatomy and Physiology Review
- A. Respiratory System
  - 1. Passageway for fresh oxygen to enter the lungs and blood supply
  - 2. Respiratory waste products to leave the blood and lungs
- B. Cardiovascular System
  - 1. Heart
    - a. Four chambers
    - b. Pumps blood to the lungs to pick up oxygen
    - c. Pumps blood around the body
      - i. to deliver oxygen and nutrients to the tissues
      - ii. to remove waste products from the tissues
  - 2. Vascular System
    - a. Arteries carry blood to tissues
      - i. carotid pulse
      - ii. femoral pulse
      - iii. radial pulse
      - iv. brachial pulse
    - b. Veins carry blood to heart

III. Respiratory Failure
- A. Pathophysiology
  - 1. Constrictive
  - 2. Obstructive
  - 3. Destructive

B. Assessment
    1. Pulmonary symptoms
    2. Cardiovascular symptoms
    3. Neurological symptoms
    4. Other symptoms
C. Treatment
    1. Oxygen therapy
    2. Ventilatory support
        a. Carbon dioxide clearance
        b. Pharmacological therapy

IV. Respiratory Arrest
A. Assessment
B. Treatment
    1. Oxygen therapy
    2. Ventilatory support
        a. Carbon dioxide clearance
        b. Advanced airways

V. Cardiac Arrest
A. Pathophysiology
    1. If the heart stops contracting, no blood will flow
    2. The body cannot survive when the heart stops
        a. Organ damage begins quickly after the heart stops
        b. Brain damage begins 4-6 minutes after the patient suffers cardiac arrest — damage becomes irreversible in 8-10 minutes
    3. Cardio-pulmonary resuscitation (CPR)
        a. Artificial ventilation — oxygenates the blood
        b. External chest compressions — pushing on the chest squeezes the heart and simulates a contraction
        c. Oxygenated blood is circulated to the brain and other vital organs

B. General Reasons for the Heart to Stop Beating
    1. Sudden death and heart disease
    2. Breathing stops, especially in infants and children
    3. Medical emergencies
    4. Trauma

VI. Resuscitation
A. System Components to Maximize Survival
    1. Early access
        a. Public education and awareness
            i. rapid recognition of a cardiac emergency
            ii. rapid notification before CPR starts — "phone first"
        b. 911-pre-arrival instructions and dispatcher directed CPR
    2. Early CPR
        a. Lay public
            i. family
            ii. bystanders
        b. Emergency Medical Responders
    3. Early Defibrillation
    4. Early Advanced Care

B. Basic Cardiac Life Support (Refer to the Current American Heart Association Guidelines)
    1. Adult CPR and foreign body airway obstruction
    2. Child CPR and foreign body airway obstruction
    3. Infant CPR and foreign body airway obstruction

C. Airway Control and Ventilation
    1. Basic Airway adjuncts
    2. Ventilation
        a. Delivery of excessive rate or depth of ventilation reduces blood return to the right side of the hear
        b. Reduces the overall blood flow that can be generated with CPR

D. Chest Compressions
    1. Factors which decrease effectiveness
        a. Compression that are too shallow
        b. Slow compression rate
        c. Sub-maximum recoil
        d. Frequent interruptions

    2. Devices to assist circulation
        a. Impedance Threshold Device
        b. Mechanical Piston Device
        c. Load-Distributing Band or Vest CPR

VII. Automated External Defibrillation (AED) (Refer to the current American Heart Association guidelines)
A. Adult AED Use
B. Child AED Use
C. Infant AED Use
D. Special AED situations
    1. Pacemaker
    2. Wet patients
    3. Transdermal medication patches

VIII. Shock (Poor Perfusion)
A. Definition
    1. Perfusion is the passage of blood and oxygen and other essential nutrients to the body's cells
    2. While delivering these essentials to the body's cells, the circulatory system is also removing waste such as carbon dioxide from the cells
    3. Shock is a state of hypoperfusion, or inadequate perfusion of blood through body tissues
    4. Hypoperfusion can lead to death if not corrected

B. Anatomy and Physiology Review
    1. Heart/Blood vessels
    2. Physiology of respiration
        a. Gas exchange
            i. alveolar level
            ii. tissue level
        b. Circulation
            i. pulmonary

ii. systemic

3. Essential components for normal perfusion
    a. Functioning pump/heart
        i. pump delivers blood to the tissue
        ii. pump collects blood from the body
        iii. controlled by the autonomic nervous system during shock
    b. Adequate volume
        i. blood contains formed elements
            a) RBCs transport oxygen
            b) WBCs fight infection
            c) platelets form blood clots
            d) clots are very unstable and prone to rupture
        ii. plasma is the fluid that transports the formed elements
    c. Intact container/vessels
        i. arteries surrounded by smooth muscle contract and dilate to deliver blood to tissue
        ii. capillary beds are the site where perfusion occurs
        iii. veins are low pressure vessels responsible for returning blood to the heart
        iv. smooth muscle and sphincters controlled by the autonomic nervous system to constrict or dilate
        v. blood flow controlled by cellular tissue demands

C. Disruptions That Can Cause Shock
1. Inadequate fluid/blood – blood/water loss
2. Failing pump/heart
    a. Disease or injury to conduction system
    b. Damage to cardiac muscle
3. Leaky or dilated container/vessels
    a. Loss of nervous control
    b. Severe allergic reactions
    c. Massive infection
    d. Hypothermia

D. Categories of Shock
1. Compensated shock
2. Decompensated shock
3. Irreversible shock

E. Shock Due to Fluid Loss
1. Hypovolemic
    a. Examples
    b. Signs and symptoms

F. Shock Due to Pump Failure
1. Cardiogenic
    a. Examples
    b. Signs and symptoms

G. Shock Due to Container Failure
1. Anaphylaxis
    a. Examples
    b. Signs and symptoms
2. Neurogenic
    a. Examples
    b. Signs and symptoms
3. Sepsis

a. Examples
b. Signs and symptoms

H. Patient Assessment
1. Complete a scene size-up
2. Perform a primary assessment
3. Obtains a relevant history
4. Perform secondary assessment
5. Perform a reassessment

I. Management
1. Manual in-line spinal stabilization, as needed
2. Comfort, calm, and reassure the patient while awaiting additional EMS resources
3. Do not give food or drink
4. Airway control – adjuncts, as needed
5. Breathing
a. Oxygen administration (high-flow/high-concentration)
b. Assist ventilation, as needed
6. Circulation
a. Attempt to control obvious uncontrolled external bleeding
b. Position patient appropriately for all ages
c. Keep patient warm – attempt to maintain normal body temperature
7. Pneumatic anti-shock garment (PASG) application
8. Begin transport at the earliest possible moment
9. Treat any additional injuries that may be present

J. Age-related variations
1. Pediatrics
a. Common causes of shock
i. trauma
ii. fluid loss
iii. infection
iv. anaphylaxis
v. congenital heart disease
vi. chest wall injury
b. Presentation of Shock
i. cardiovascular
ii. skin signs
iii. CNS
iv. decreased fluid output
v. vital signs
c. Management
i. inline spinal stabilization, if indicated
ii. suction, as needed
iii. high oxygen concentration
iv. control bleeding
v. positioning
vi. maintain body temperature
vii. transport
2. Geriatrics
a. Assessment
i. body system changes affecting presentation of shock
a) CNS
b) cardiovascular
c) respiratory

d) skin
e) renal
f) GI

ii. vital signs changes
a) CNS
b) hypoxia

iii. airway
a) decreased cough reflex
b) cervical arthritis
c) loose dentures

iv. breathing
a) higher resting respiratory rate
b) lower tidal volume
c) less elasticity/compliance of chest wall

v. circulation
a) higher resting heart rate
b) irregular pulses

vi. skin
a) dry, less elastic
b) cold
c) fever, not common
d) hot

b. Management
i. inline spinal stabilization, if indicated
ii. suction, as needed
iii. high oxygen concentration
iv. control bleeding
v. positioning
vi. maintain body temperature
vii. transport

Trauma

Trauma Overview

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

The Field Triage Decision Scheme was added to this section.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Identification and Categorization of Trauma Patients

A. Entry-level students need to be familiar with the National Trauma Triage Protocol

1. Centers for Disease Control and Prevention. Guidelines for Field Triage of Injured Patients: Recommendations of the National Expert Panel on Field Triage. MMWR 2008:58 RR-1:1-35.
2. http://cdc.gov/fieldtriage contains the National Trauma Triage Protocols and additional instructional materials.

Trauma
Chest Trauma

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes an increased level of detail.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Physiology
- A. Role of the Chest in Systemic Oxygenation
  - 1. Musculoskeletal structure
  - 2. Intercostal muscle
  - 3. Diaphragm
  - 4. Accessory muscle
  - 5.Changes in intrathoracic pressure
- B. Ventilation
  - 1. Gas exchange depends on
    - a. Normal inspiration
      - i. active process
      - ii. normal chest rise
      - iii. negative pressure in chest allows air to flow in
    - b. Normal expiration – passive process
  - 2. Chest wall movement – intact chest wall
  - 3. Minute volume – volume of air exchanged between lungs and environment per minute

II. Pathophysiology of Chest Trauma
- A. Impaired Cardiac Output Related to
  - 1. Trauma that affects the heart
    - a. Heart can’t refill with blood
    - b. Blood return to the heart is blocked
  - 2. Blood loss (external and internal)
- B. Impaired Ventilation
  - 1. Collapse of lung
  - 2. Multiple rib fractures
- C. Impaired Gas Exchange
  - 1. Blood in lungs
  - 2. Bruising of lung tissue

Trauma

Abdominal and Genitourinary Trauma

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes an increased level of detail.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Physiology
- A. Solid Organs
- B. Hollow Organs
- C. Vascular Structures

II. Specific Injuries
- A. Closed Abdominal Trauma
  - 1. Mechanism of Injury
    - a. Compression
    - b. Deceleration
    - c. MVA
    - d. Motorcycle collisions
    - e. Pedestrian injuries
    - f. Falls
    - g. Assault
    - h. Blast injuries
  - 2. Signs and Symptoms
    - a. Pain
    - b. Guarding
    - c. Distention – rise in abdomen between pubis and xiphoid process
    - d. Discoloration of abdominal wall
    - e. Tenderness – on movement
    - f. Lower rib fractures
    - g. May be overlooked in multi-system injuries
    - h. Suspicion based on mechanism of injury
  - 3. Assessment
    - a. Inspection
    - b. Noting position of the patient
    - c. Noting pain with movement
    - d. Auscultation – little value
    - e. Blood loss through rectum or vomit
  - 4. Management
    - a. Oxygen
    - b. Transport in position of comfort if indicated

c. Treat for shock – internal bleeding

B. Penetrating/Open Abdominal Trauma

1. Low-velocity penetration – knife wound, tear of abdominal wall, consider injury to underlying organ
2. Medium velocity penetration – shot gun wound
3. High velocity penetration – gunshot wound
4. Signs and Symptoms of penetrating abdominal trauma
    a. Bleeding
    b. Puncture wounds – entrance and exits
    c. Many signs and symptoms of closed abdominal wounds could also be present along with a puncture wound
5. Assessment
    a. Clothing removal
    b. Inspection – look for exit wounds including posterior
    c. Noting position of patient
6. Management
    a. Cover wounds
    b. Use non-porous dressing if chest may be involved
    c. Treat for shock
    d. Oxygen
    e. Transport decision

C. Considerations in Abdominal Trauma

1. Hollow organs injuries
    a. Stomach
    b. Small bowel
    c. Large bowel
    d. Gallbladders
    e. Urinary bladder
    f. Considerations of signs and symptoms of hollow organ injuries
        i. pain – may be intense with open wounds to the stomach or small bowel
        ii. infection – delayed complication which may be fatal
        iii. air in peritoneal cavity
2. Solid organ injuries
    a. Blood in the abdomen does not acutely produce abdominal pain
    b. Abdominal pain from solid organ penetration or rupture is of slow onset
    c. Liver
        i. largest organ
        ii. very vascular leading to hypo-perfusion
        iii. injured with lower right rib fractures or penetrating trauma
    d. Spleen
        i. injured in auto crashes, falls, bicycle accidents, motorcycles
        ii. injured with lower left rib fractures or penetrating trauma
        iii. left shoulder pain
    e. Pancreas – injury with penetrating trauma
    f. Kidney
        i. vascular
        ii. blood in urine
    g. Diaphragm
        i. abnormal respiratory sounds
        ii. shortness of breath
    h. Retroperitoneal structures – the abdomen can hold a large volume of blood due to injuries of solid organs and major blood vessels

Trauma

Head, Facial, Neck, and Spine Trauma

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes an increased level of detail and an emphasis on the potential harm of hyperventilation.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Review of Anatomy and Physiology of the Head, Face, and Neck
- A. Arteries
- B. Veins
- C. Nerves
- D. Bones
  - 1. Nasal
  - 2. Zygoma/Zygomatic arch
  - 3. Orbital
  - 4. Maxilla
  - 5. Mandible
  - 6. Skull
- E. Scalp
  - 1. Hair
  - 2. Subcutaneous tissue
  - 3. Muscle
- F. Mouth/Throat
  - 1. Airway
    - a. Oropharynx
    - b. Larynx
    - c. Trachea
    - d. Tongue
    - e. Teeth
- G. Neck
  - 1. Blood vessels
    - a. Carotid arteries
    - b. Jugular veins
  - 2. Airway – trachea
  - 3. Gastrointestinal – esophagus
- H. Eye
  - 1. Bony orbit
  - 2. Sclera
  - 3. Cornea

4. Iris
5. Pupil
6. Lens
7. Retina
8. Optic nerve

Trauma
Nervous System Trauma

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes an increased emphasis on neurological assessment.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. General Assessment Considerations for Brain Trauma Patients
- A. Airway and Ventilation
  - 1. Maintain airway
  - 2. Assess for adequate ventilation
- B. Mechanism of Injury
  - 1. Consider the potential for blunt head trauma based on mechanism of injury
  - 2.Assess the need to remove the helmet with proper spinal considerations if airway compromise or bleeding under the helmet is present
- C. Spinal Immobilization
  - 1. In patients with head injuries with altered mental status
  - 2. Mechanism of injury that suggests the possibility of trauma to the spine
- D. Respiratory Status -- brain injuries can cause irregular breathing patterns due to injuries affecting the brain stem
- E. Complete a Neurological Exam
  - 1. Appearance and behavior
    - a. Alert
    - b. Responds to verbal stimuli
    - c. Responds to painful stimuli
    - d. Unresponsive
  - 2. Observe posture and motor behavior – appropriate movement
  - 3. Facial expression
  - 4. Speech and language
  - 5. Thoughts and perceptions
    - a. Logical
    - b. Ability to make decisions
  - 6. Memory and attention
    - a. Assess orientation
      - i. person
      - ii. place
      - iii. time
      - iv. purpose
    - b. Knowledge of recent events

7. Pupils
    a. Equal
    b. React to light
8. Vital signs
    a. Blood pressure
        i. systolic pressure increase
        ii. hypotension is associated with poorer outcomes in head injured patients
    b. Pulse rate – may be slower than normal if severe head injury

F. Management Considerations With Brain Trauma
1. Maintain airway throughout care
2. Administer oxygen by non-rebreather mask – maintain oxygen saturation >90 percent at all times
3. Nasopharyngeal airways should not be used
4. Assist ventilation if indicated – avoid hyperventilation; except in specific circumstances

G. Transport Considerations
1. Head trauma patients with impaired airway or ventilation, open wounds, abnormal vital signs, or who do not respond to painful stimuli may need rapid extrication
2. Head trauma patients must be transported to appropriate trauma centers
3. Head trauma patients may deteriorate rapidly and may need air medical transport
4. Adequate airway, ventilation, and oxygenation are critical to the outcome of head trauma patients
5. Head trauma patients frequently vomit – keep suction available
6. Head trauma patient frequently have seizures

H. Refer to Brain Injury Foundation Guidelines

Trauma

Special Considerations in Trauma

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes added content for pregnant, pediatric, elderly and cognitively impaired patients.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Trauma in Pregnancy
- A. Special Unique Considerations for Pregnant Patient Involved in Trauma
  - 1. Mechanism of injury
    - a. Pregnant patients can sustain all types of trauma
    - b. Susceptible to falls and physical abuse
  - 2. Fetal considerations – trauma to an expectant mother can have effects on fetal health
- B. Special Anatomy, Physiology, and Pathophysiology Considerations
  - 1. Cardiovascular
    - a. Increase to total vascular volume
    - b. Increase in maternal heart rate in third trimester
    - c. Shock in a third trimester patient may be difficult to detect
    - d. Third trimester fetus size can affect venous return in patients lying flat on their backs
    - e. Decreased gastrointestinal motility increases risk of vomiting and aspiration after trauma
- C. Unique Types of Injuries and Conditions of Concern for Pregnant Patients Involved in Trauma
  - 1. Fetal distress due to hypoxia or hypovolemia/shock
  - 2. Separation of the placenta from the uterine wall
    - a. Abdominal pain
    - b. Vaginal bleeding often present
    - c. High risk of fetal death
  - 3. Fetal injury from penetrating trauma
  - 4. Seat belts
  - 5. Cardiac arrest due to trauma
- D. Unique Assessment Considerations for Pregnant Patients Involved in Trauma
  - 1. Two patients to consider
    - a. Mother
      - i. immobilize and tilt the long spine board to the left if spinal injury is suspected

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      - ii. internal blood loss is difficult to assess as signs of shock are masked
      - iii. vaginal exam may be present

iv. increased risk of aspiration from decreased gastrointestinal motility

b. Fetus

i. size of fetus is important (number of weeks pregnant)

ii. difficult to assess so treat mother aggressively if severe trauma

E. Unique Management Considerations for the Pregnant Patients Involved in Trauma

1. Airway, ventilation, and oxygenation

a. Anticipate vomiting – have suction available

b. Assure bilateral breath sounds are present

c. Keep oxygenation levels high (100%) – administer oxygen by nonrebreather mask

d. Assist ventilation if inadequate

2. Circulation

3. Transport considerations

a. Transport on left side

b. Major trauma may need ALS intercept or air medical resources

c. Trauma centers – inform them that pregnant patient is involved in the trauma

II. Trauma in the Pediatric Patient

A. Special Unique Considerations for Pediatric Patient Involved in Trauma

1. Vehicle crashes

2. Pedestrian versus vehicle collisions

3. Drowning

4. Burns

5. Falls

6. Penetrating trauma

B. Unique Anatomy, Physiology, and Pathophysiology Considerations of Injured Pediatric Patients

1. Heavy head with weak neck muscles in children increases risk of cervical spine injury

2. Chest wall flexibility produces flail chest

C. Unique Assessment Considerations for a Pediatric Patient Who Has Sustained Trauma

1. Pediatric assessment triangle

a. Appearance

b. Work of breathing

c. Circulation

2. Airway, ventilation, oxygenation

a. Respiratory rates vary by age

b. Accessory muscle use more prominent during respiratory distress

3. Vital signs

a. Assess brachial pulse in infants

b. Pulse rates vary by age

c. Slow pulse rate indicates hypoxia

d. Blood pressure for age 3 or younger unreliable

e. Blood pressure varies by age

f. Normal blood pressure may be present in compensated shock

D. Unique Management Considerations for Pediatric Patients Involved in Trauma

1. Manage hypovolemia and shock as for adults

2. Shaken baby syndrome may cause brain trauma

3. Prevent hypothermia in shock

4. Transport to appropriate facility

5. Pad beneath child from shoulders to hips during cervical immobilization to prevent flexion of the neck

6. Ventilate bradycardic pediatric patient

III. Trauma in the Elderly Patient

A. Special Considerations for Geriatric Patients Involved in Trauma

1. Vehicle crashes
2. Pedestrian versus vehicle collisions
3. Fall
4. Burns
5. Penetrating trauma
6. Elder abuse

B. Unique Anatomy, Physiology, and Pathophysiology Considerations of Injured Geriatric Patients

1. Changes in pulmonary, cardiovascular, neurologic, and musculoskeletal systems make older patients susceptible to trauma
2. Circulation changes lead to inability to maintain normal vital signs during hemorrhage, blood pressure drops sooner
3. Multiple medications are more common and may affect
    a. Assessment, especially vital signs
    b. Blood clotting
4. Brain shrinks leading to higher risk of cerebral bleeding following head trauma
5. Skeletal changes cause curvature of the upper spine that may require padding during spinal immobilization
6. Loss of strength, sensory impairment, and medical illness increase risk of falls

C. Unique Assessment Considerations for Injured Geriatric Patients

1. Airway
    a. Dentures may cause airway obstruction
    b. May have decrease in cough reflex so suctioning is important
    c. Curvature of the spine may require padding to keep patient supine
2. Breathing
    a. Use pulse oximetry to monitor oxygenation
    b. Minor chest trauma can cause lung injury
3. Circulation

D. Unique Management Considerations for Injured Geriatric Patients

1. Suctioning is important in elderly due to decrease cough reflex
2. Decrease muscle size in the abdomen may mask abdominal trauma
3. Prevent hypothermia
4. Broken bones are common – traction splints are not used to treat hip fractures
5. Falls leading to trauma must be investigated as to the reason for the fall

IV. Trauma in the Cognitively Impaired Patient

A. Unique Considerations for Injured Cognitively Impaired Patients

1. Types of cognitive impairment
    a. Alzheimer's disease
    b. Vascular dementia
    c. Down's syndrome
    d. Autistic disorders
    e. Brain injury
    f. Stroke
2. Mechanism of injury – cognitively impaired patients are more susceptible to trauma

B. Unique Anatomy, Physiology, and Pathophysiology Considerations for Injured Cognitively Impaired Patients

1. Sensory loss related to aging and disease may increase risk of injury and alter the patient's response to injury

2. Musculoskeletal strength due to aging or impairment
3. Memory loss with Alzheimer's disease will alter patient assessment
4. Cardiovascular changes with dementia

C. Unique Assessment Consideration for Cognitive Impaired Patients Involved in Trauma
1. Poor historians of past medical history or events of trauma
2. Pain perception may be altered
3. Psychological implications of trauma may be different
4. Patient may be bed ridden or under nursing home care

D. Unique Management Consideration for Cognitively Impaired Patients Involved in Trauma
1. Cognitively impaired patient special care
2. Involve usual care givers in emergency treatment

Trauma

Environmental Emergencies

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes increased level of detail on submersion, bites, envenomation, diving injuries, and radiation exposure.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I . Submersion Incidents
- A. Drowning
  - 1. Definition
  - 2. Incidence
  - 3. Predictors of morbidity and mortality
- B. Types 1. Fresh water 2. Salt water
- C. Pathophysiology
  - 1. Little difference in patient lungs regardless of what type of water submersion occurred
  - 2. Submersion in cold water results in better survival than warm water
  - 3. Age is a factor due to cardiovascular health
  - 4. Duration under water effects outcome
  - 5. Submersion in very cold water can produce cardiac disturbances
  - 6. Hypoxia from submersion is major factor in death
  - 7. Diving in shallow water can cause spinal trauma
  - 8. Prolonged hypoxia causes death of brain tissue
- D. Unique Signs and Symptoms
  - 1. Airway – obstructed with water immediately after rescue
  - 2. Breathing
    - a. May be coughing if early rescue
    - b. Agonal breaths if prolonged submersion
    - c. Respiratory arrest if very prolonged submersion
  - 3. Circulation a. May be in cardiac arrest
    - b. Skin is cyanotic
    - c. Skin may be cold
- E. Assessment Considerations
  - 1. Airway, ventilation, and oxygenation
    - a. Oxygen saturation may be difficult to obtain if patient is cold
    - b. Use spinal precautions when opening airway to assess if risk of spinal trauma is possible
    - c. Auscultate breath sounds
  - 2. Assess for presence of other injuries

3. Obtain past medical history

F. Management Considerations

1. Airway, ventilation, and oxygenation
    a. Suction and maintain open airway
        i. anticipate vomiting
        ii. position lateral recumbent if no risk of spinal injury
    b. Ventilate with bag-mask if impaired ventilation or respiratory arrest
    c. Administer oxygen by non-rebreather mask if breathing is adequate
2. Circulation
    a. If cardiac arrest is present, refer to current American Heart Association guidelines
    b. Defibrillate with AED if indicated (refer to current American Heart Association guidelines)
3. Transport Considerations
    a. Transport to appropriate facility
    b. All patients who had submersion injury with any report of signs and symptoms during or after submersion need transport to the hospital

II. Bites and Envenomations

A. Injuries of Concern

1. Spider bites
2. Snake bites
3. Hymenoptera (bees, wasps, ants, yellow jackets)

B. Pathophysiology of Bites and Envenomations

1. Spider bites (black widow) -- inject neurotoxins
2. Snake bites -- rattlesnake is most common in United States
    a. toxins affect blood and nervous system both at the bite site and systemically
    b. patient age and size cause different effects
    c. amount of toxin injected is related to toxicity (often none at all)
    d. initial 6-8 hours of care is essential
3. Hymenoptera
    a. Cause allergic reactions in sensitized (allergic) people
    b. May lead to anaphylactic response

C. Signs and Symptoms

1. Spider bite (black widow)
    a. Localized swelling initially
    b. Chest or abdominal pain depending on bite site
    c. Dangerous in children, may be fatal
2. Rattlesnake bite
    a. Time of bite to care is important
    b. Pain at site
    c. Progressive weakness
    d. Nausea and vomiting
    e. Seizures
    f. Vision problems
    g. Changes in level of consciousness
3. Bee, wasp, and other stings
    a. Pain at site
    b. Swelling
    c. Signs of allergic reaction
    d. Signs of anaphylaxis

D. Unique Management Considers of Bites and Stings

1. Spider bite (black widow)
    a. Ice pack to area of bite
    b. Clean wound with soap and water
    c. Transport immediately with supportive care
2. Rattlesnake bite
    a. Note time of bite to transport
    b. Slow venous return
    c. Keep patient calm
    d. Immobilize extremity
    e. Position extremity
    f. Clean bite site with soap and water
    g. Identify snake if possible
3. Bees, wasps, and other stings
    a. Remove stinger or venom sac
    b. If anaphylaxis develops follow protocol

III. Diving Emergencies (Dysbarism)

A. Mechanism of Injury
1. SCUBA diving at greater depths for long periods of time
2. Repeated dives at depth on the same day

B. Pathophysiology
1. Diver remains at depth too long
2. Compressed air in blood at depth expands upon ascent, turning into bubbles in blood which obstruct blood flow

C. Signs and Symptoms
1. Occur after the patient raises to the surface too fast following dive at depths
2. Cyanosis
3. Cough
4. Respiratory distress
5. Pain in joints

D. Unique Management Considerations
1. Administer high-concentration oxygen
2. Transport rapidly for recompression therapy at the appropriate facility

IV. Radiation

Trauma
Multi-System Trauma

EMT Education Standard

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Transition Highlights

This section includes increased level of detail and a discussion of kinematics and blast.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Kinematics of Trauma
- A. Definition
  - 1. Looking at a trauma scene and attempting to predict what injuries might have resulted based on an evaluation of the motion involved
  - 2. Kinetic energy – function of weight of an item and its speed – speed is the most import variable
  - 3. Blunt trauma
    - a. Objects collide during crashes
      - i. car with object
      - ii. patient with part of car
      - iii. organs collide inside body
    - b. Unbelted drivers and front seat passengers suffer multi-system trauma due to multiple collisions of the body and organs
    - c. Direction of the force has impact on type of injury
      - i. frontal impacts
      - ii. rear impacts
      - iii. side impacts
      - iv. rotational impacts
      - v. rollovers
  - 4. Deceleration Injuries
  - 5. Penetrating Trauma
    - a. Damage is influenced by
      - i. distance from shooter
      - ii. size of bullet
      - iii. fragmentation
      - iv. cavitation
      - v. velocity of weapon
    - b. Energy levels have effect
      - i. low energy (stabbings)
      - ii. medium energy (handguns, some rifles)
      - iii. high energy (military weapons)
    - c. Signs and symptoms will vary according to the organ struck

i. head
ii. chest
iii. abdomen
iv. extremities

II. Specific Injuries Related to Multi-System Trauma
A. Blast Injuries
1. Types of Blast Injuries (explosions)
a. Release
i. blast waves
ii. blast winds
iii. ground shock
iv. heat

Special Patient Populations
Obstetrics

EMT Education Standard

Applies a fundamental knowledge of growth, development, aging and assessment findings to provide basic emergency care and transportation for a patient with special needs.

Transition Highlights

This section includes a more detailed discussion on complications of pregnancy and uses the terms preeclampsia, eclampsia and premature rupture of membranes (which do not require a lengthy discussion.)

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. General System Physiology, Assessment, and Management
- A. Premonitory Signs of Labor
  - 1. Lightening
  - 2. Braxton Hicks
  - 3. Cervical changes
  - 4. Bloody show
  - 5. Rupture membranes
  - 6. Other
- B. Stages of Labor and Delivery
  - 1. First stage
  - 2. Second stage
    - a. Spontaneous birth
    - b. Positional changes of the fetus
  - 3. Third stage
    - a. Placental separation
    - b. Placental delivery
- C. Antepartum and Intrapartal Assessment Findings
  - 1. Airway, breathing, circulation
  - 2. Initial assessment
  - 3. SAMPLE history
  - 4. Vital signs
  - 5. Obstetrical history
  - 6. Physical examination
    - a. Fetal movement
    - b. Inspect for crowning
- D. Management of a Normal Delivery Obstetrical Patient
  - 1. Treatment modalities
    - a. Oxygen
    - b. Non-pharmacological intervention – positioning
- E. Postpartum Care

1. Fundal massage
2. Signs of hemorrhage

II. Complications of Pregnancy
A. Abuse
B. Substance Abuse
C. Diabetes Mellitus
D. Bleeding: Pathophysiology, Assessment, Complications, and Management
1. Abortion
a. Elective abortion
b. Spontaneous abortion
2. Ectopic pregnancy
E. Placental Problems: Pathophysiology, Assessment, Complications, and Management
1. Abruption placenta
2. Placenta previa
F. Hypertensive Disorders: Pathophysiology, Assessment, Complications, and Management
1. Pregnancy-induced hypertension
2. Preeclampsia
3. Eclampsia

Special Patient Populations
Pediatrics

EMT Education Standard

Applies a fundamental knowledge of growth, development, aging and assessment findings to provide basic emergency care and transportation for a patient with special needs.

Transition Highlights

This section includes increased level of detail throughout.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Anatomy and Physiology
- A. Pediatric Head versus Adult's
- B. Head is Proportionally Larger to Body Size
- C. Implications for Health Care Provider
  - 1. Increased incidence of blunt head trauma
  - 2. Excessive heat loss may occur from head
  - 3. Securing the airway may be difficult; to open the airway and obtain "sniffing" position may require a towel or roll under the shoulders
- D. Examine Fontanelles in Infants
  - 1. Bulging fontanelle in an ill-appearing non-crying infant suggests increased intracranial pressure
  - 2. Sunken fontanelle in an ill-appearing infant suggests dehydration

II. Airway Compared to an Adult's
- A. Smaller in Diameter and Shorter in Length
- B. Jaw Smaller With Infant's Tongue Taking Up More Room in the Oropharynx
- C. Infants are Nasal Breathers
- D. Tracheal Cartilage is Softer and More Collapsible
- E. Epiglottis of Infants and Toddlers Long, Floppy, Narrow and Extends at a 45Degree Angle Into Airway
- F. Implications for the Health Care Provider
  - 1. Essential to suction the nares of infants in respiratory distress
  - 2. Posterior displacement of the tongue may cause airway obstruction
  - 3. Smaller airways more easily obstructed by
    - a. Flexion or hyperextension
    - b. Particulate matter (including mucus)
    - c. Soft tissue swelling (injury, inflammation) can cause obstruction

III. Chest and Lungs Compared to an Adult's

A. Ribs More Cartilaginous and Pliable

B. Less Overlying Muscle and Fat to Protect Ribs and Vital Organs

C. Young Children Breathe Primarily With Their Diaphragms

D. Thin Chest Wall Easily Transmits Breath Sounds

E. Implications for the Health Care Provider

1. Effective diaphragmatic excursion essential for adequate ventilation

2. Rib fractures less common due to pliability; when present represent significant energy transmission accompanied by multi-system injury (e.g., pulmonary contusion)

3. Lungs prone to pneumothorax from excessive pressures while bag-mask ventilating

IV. Abdominal Difference

A. Less-Developed Abdominal Muscles and Organs Situated More Anteriorly, Therefore Less Protection of Rib Cage

B. Liver and Spleen Proportionally Larger

C. Implications for the Health Care Provider

1. Seemingly insignificant forces can cause serious internal injury

2. Liver, spleen, and kidneys are more frequently injured

3. Multiple organ injury common

V. Extremities Compared to Adult's

A. Bones Softer

B. Open Growth Plates Are Weaker Than Ligaments and Tendons, So Injury to Growth Plate Can Result in Length Discrepancies

C. Implications for the Health Care Provider

VI. Integumentary Differences

A. Larger Surface Area to Body Mass Ratio

B. Implications for the Health Care Provider

1. Skin more easily, quickly, and deeply burned

2. Larger surface can lead to large fluid and heat losses

3. Hypothermia can complicate resuscitative efforts

VII. Respiratory System Compared to an Adult's

A. Higher Oxygen Demand per Kilogram of Body Weight (Twice That of an Adult's)

B. Smaller Lung Oxygen Reserves

C. Implications for the Healthcare Provider

1. Higher oxygen demand with less reserve increases risk of hypoxia with apnea or ineffective bagging

2. Err on using a larger bag for ventilating the pediatric patient (regardless of the size of the bag used for ventilation, use only enough force to make the chest rise slightly)

VIII. Nervous System and Spinal Column Compared to an Adult's

A. Continually

B. Brain Tissue and Vascular System More Fragile and Prone to Bleeding From Injury

C. Subarachnoid Space Is Relatively Smaller, With Less Cushioning Effect for Brain

D. Pediatric Brain Requires Nearly Twice the Cerebral Blood Flow As Does an Adult's

E. Brain and Spinal Cord Less Well Protected

F. Implications for the Health Care Provider

1. The large cerebral blood flow requirement increases risk of hypoxia; hypoxia and hypotension in a child with a head injury can cause ongoing damage
2, Head momentum may result in bruising and damage to the brain
3, Spinal cord injuries less common
4. Cervical spine injuries more commonly ligamentous injuries

IX. Metabolic Differences Compared to an Adult
- A. Limited Glucose Stores
- B. Newborns and Infants Less Than One Month Most Susceptible to Hypothermia
- C. Implications for the Health Care Provider
  - 1. Keep the infant or child warm during treatment and transport
  - 2, Cover the head (not the face, though) to minimize heat loss
  - 3, Newborns should not be overwarmed, as this can worsen their neurologic outcomes

X. Growth and Development
- A. Infancy
  - 1. Birth to two months
    - a. Physical development
      - i. control gazing at faces, turning their heads, and sucking
      - ii. sleep accounts for up to 16 hours a day
      - iii. infants have a relatively large surface area which predisposes them to hypothermia
    - b. Cognitive development
      - i. crying form of communication
      - ii. infants cry for obvious reasons such as hunger and needing to be changed
      - iii. when obvious reasons for crying have been addressed, persistent crying can be a sign of significant illness
    - c. Implications for the health care provider
      - i. persistent crying or irritability in a 0- to 2-month-old can be a symptom of serious illness
      - ii. infants sleep a lot, however should arouse easily; inability to arouse a baby should be considered an emergency
      - iii. head control is limited
  - 2. Two to six months
    - a. Physical development
      - i. voluntarily smile and increasing eye contact
      - ii. uses both hands to examine objects
      - iii. 70 percent of babies sleep through the night by six months intentional rolling over begins to hold their heads up
    - b. Cognitive development
      - i. increased awareness of surroundings
      - ii. explore bodies
    - c. Implications for the health care provider
      - i. persistent crying or irritability can be a symptom of serious illness

ii. by six months, babies should make eye contact; lack of eye contact in a sick infant could be a sign of significant illness or depressed mental status or delayed development

3. Six to 12 months
    a. Physical development
        i. sit without support
        ii. develop a pincer grasp; everything goes to the mouth
        iii. begin to crawl
        iv. begin getting teeth and eating soft foods
    b. Cognitive development
        i. begin babbling and by 12 months learn their first word
        ii. develop "separation anxiety" from parents
    c. Implications for the health care provider
        i. persistent crying or irritability can be a symptom of serious illness
        ii. at-risk for foreign body aspiration and poisoning due to exploration of environment with their mouths
        iii. reduce separation anxiety by keeping the child and parent together during evaluation and involving the parent in the treatment if appropriate
        iv. crawling and walking increase exposure to physical dangers

B. Toddler Years
1. Twelve to 18 months
    a. Physical development – begin to walk and explore their environments
    b. Cognitive development
        i. imitate older children and parents
        ii. know major body parts
        iii. know four to six words
    c. Implications for the health care provider
        i. persistent crying or irritability can be a symptom of serious illness
        ii. children may not be able to grind up food before swallowing, due to lack of molars, increasing risk of food aspiration
        iii. increased mobility increases exposure to physical dangers and injury
        iv. distracting a child with a flashlight or toy may aid in physical exam
2. Eighteen to 24 months
    a. Physical development
        i. improved gait and balance
        ii. begin to run and climb
    b. Cognitive development
        i. begin to understand cause and effect
        ii. begin to label objects
        iii. ten to 15 words becomes 100 by 24 months
    c. Emotional development
        i. clinginess with parents
        ii. attachment to a special object, like a blanket
    d. Implications for the health care provider
        i. persistent crying or irritability can be a symptom of serious illness

ii. allow a child to hold objects of importance to them (e.g., blanket)
iii. children no longer require shoulder rolls to limit flexion of the neck when bag-valve-mask ventilating or intubating
iv. painful procedures make lasting impressions

C. Preschool Years (2-5 Years)
1. Physical development
a. Perfectly normal walking and running
b. Begin throwing, catching, kicking
c. Toilet training
2. Cognitive development
a. Most rapid increase in language
b. Magical thinking
c. Rules tend to be absolute
d. Irrational fears
3. Emotional development
a. Learn acceptable behaviors
b. Tantrums around control issues
c. Modesty developing
4. Implications for the health care provider
a. Rapid increase in language enhances ability to understand care explanations
b. Respect modesty
c. Foreign body airway obstruction risk continues to be high
d. Appealing to their magical thinking may allow you to do more (e.g., this magic smoke will help you breathe better [nebulizer])

D. Middle Childhood Years (6-12 Years)
1. Physical development
a. Loss of baby teeth; permanent teeth come in
2. Cognitive development
a. Think logically
b. School important
3. Emotional development
a. Popularity and peer pressure important
b. Children with chronic illness or disabilities very self-conscious
c. Begin to understand that death is final
4. Implications for health care provider
a. Provide simple explanations for illness and treatments
b. Provide sense of control by giving choices if possible
c. Respect patient's modesty and cover after the physical exam
d. Asking about school will often allow patients to warm up to you faster

E. Adolescence (12-20 Years)
1. Physical development – puberty begins
2. Cognitive development
a. Ability to reason
b. Do not see possibilities as real things which could happen to them

c. Develop morals

3. Emotional development

a. Self-conscious about body image

b. Begin to understand who they are and begin to be comfortable with that

c. Relationships generally transition to those of the opposite sex

4. Implications for the health care provider

a. Explain things clearly and honestly as you would to an adult

b. Give choices when appropriate

c. Respect modesty and cover after the physical exam

d. Be honest about procedures which will cause discomfort

e. Address concerns and fears about the lasting effects of their injuries (especially cosmetic) and if appropriate, reassure

f. Adolescence time of hormonal surges, emotions, and peer pressure; increases risk for substance abuse, self-endangerment, pregnancy, and dangerous sexual practices

XI. Assessment

A. General Considerations

1. Many components of the initial evaluation can be done by careful observation without touching the patient

2. When appropriate, utilize the parent/guardian to help the infant or child be more comfortable with your exam and therapies

3, Communicating with scared, concerned parents and family is an important aspect of one's responsibilities at the scene of an ill infant or child

4, Assessment is an ongoing process continuing until care is transferred to the receiving facility

B. Assessment Process

1. Preparing for arrival

a. Assembling age-appropriate equipment

b. Reviewing age-appropriate vital signs and anticipated development

2. Scene survey

a. Evaluate the scene for safety threats to patient and health care providers

b. Evaluate the scene for clues related to the chief complaint

i. ingestions or toxic exposures: pills, medicine bottles, chemicals, alcohol, drug paraphernalia, etc.

ii. child abuse: injury must be consistent with history given and physical/developmental capabilities of the patient

iii. note position and location in which patient is found

c. Observe and note parents'/guardians'/caregivers' interactions with the child

i. are they appropriately concerned, angry, or indifferent?

ii. does the child seem comforted by them or scared by them?

3. Patient assessment

a. Pediatric assessment triangle

i. general

a) Provides a 15- to 30-second assessment of the

severity of the patient's illness or injury
b) Use prior to addressing "the ABCs"
c) Does not require touching the patient, just looking and listening

ii. components
a) appearance
i) muscle tone
ii) interactiveness
iii) consolability
iv) eye contact
v) speech or cry
b) work of breathing
i) abnormal airway noise (i.e., wheeze, stridor, grunting)
ii) abnormal positioning (i.e., tripoding)
iii) retractions (i.e., chest wall, nasal flaring)
c) Circulation to the skin
i) pallor
ii) mottling
iii) cyanosis

iii. possible physiologic states based upon the above three components
a) respiratory distress or failure
b) cardiovascular shock
c) cardiopulmonary failure or arrest
d) isolated head injury, ingestion, or other primary CNS abnormality
e) stable patient

iv. initial triage and transport decision based on physiologic state
a) urgent—begin rapid ABCs assessment and treatment; transport once treatment has begun
b) stable patient—proceed with ABCs assessment followed by focused history and complete physical exam; begin transport starting potential therapies en route

4. Hands-on ABCs
a. Airway
i. open and remove if possible, secretions, blood, or foreign body(ies)
ii. maintainable on its own, with help (jaw thrust, chin lift, oral or nasal airway), or unmaintainable (in need of advanced airway care)
b. Breathing/oxygenation
i. respiratory rate and effort
ii. auscultation for wheezes, crackles, etc.
iii. oxygen saturation
c. Circulation
i. heart rate
ii. central and peripheral pulse quality: strong or weak

iii. extremity skin temperature, assess capillary refill time, and active bleeding
iv. blood pressure

d. Disability
i. determine level of consciousness
ii. AVPU scale
iii. assess pupils: dilated, constricted, reactive, or fixed
neurological motor deficit or moving all extremities equally
pain assessment using standardized pain scale

e. Exposure
i. examine for additional injuries and rashes
ii. promptly cover to prevent hypothermia

5. Additional assessment

a. Focused history
i. symptoms and duration
a) fever
b) activity level
c) recent eating, drinking, and urine output history
d) history of vomiting, diarrhea, or abdominal pain
e) note any rashes
ii. medications taking and medication allergies
iii. past medical problems or chronic illnesses
iv. key events leading to the injury or illness

b. Detailed physical exam—"Head to Toe"
i. head: bruising, swelling, quality of fontanelles, if present
ii. nose: drainage obstructing ability to breathe through nose
iii. ears: drainage suggestive of trauma or infection
iv. mouth: loose teeth, identifiable odors, bleeding
v. neck: abnormal bruising or swelling, inability to move neck if febrile
vi. chest and back: bruises, injuries, or rashes
vii. abdomen: distention, tenderness, seat belt abrasions or bruising
viii. extremities: deformities, swellings, or pain on movement

XII. Specific Pathophysiology, Assessment, and Management

A. Respiratory Distress

1. Introduction
a. Epidemiology
b. Anatomic and physiologic differences in children

2. Pathophysiology
a. Respiratory distress
b. Respiratory failure
c. Respiratory arrest

3. Assessment
a. History
b. Physical findings

4. Upper airway obstruction
    a. Croup
    b. Foreign body aspiration
    c. Bacterial tracheitis
    d. Epiglottitis
    e. Tracheostomy dysfunction
5. Lower airway disease and reactive airway disease
    a. Asthma
    b. Bronchiolitis
    c. Pneumonia
    d. Foreign body lower airway obstruction
    e. Pertussis
6. Management
    a. Airway positioning (chin lift, jaw thrust)
    b. Age and situation appropriate airway clearance measures (finger sweep, back blows, abdominal thrusts, suctioning)
    c. Airway adjuncts (nasopharyngeal and oropharyngeal airways)
    d. Oxygen
    e. Inhaled medications (albuterol)
    f. Assisted ventilation (bag mask)

B. Shock
1. Introduction
    a. Anatomic differences
    b. Physiologic differences
2. Pathophysiology
    a. Shock shock
    b. Decompensated shock
3. Assessment
    a. History
    b. Physical findings
4. Management

C. Neurology
1. Introduction
    a. Anatomic differences
    b. Physiologic differences
2. Pathophysiology
    a. Causes of altered mental status in children
    b. Causes of seizures
        i. febrile
        ii. afebrile
3. Assessment
    a. History
    b. Physical findings
4. Specific Conditions
    a. Meningitis

b. Seizures
i. febrile/afebrile
ii. status epilepticus
c. Altered mental status
d. Closed head injury
i. bleeding inside skull
ii. fractures
5. Management
a. Seizures
b. Altered mental status
i. assess for need to protect airway
ii. assess and intervene for increased intracranial
6. Management
D. Gastrointestinal
1. Introduction – anatomic and physiologic differences in children
2. Pathophysiology
a. Vomiting
b. Diarrhea
3. Assessment
a. History
b. Physical findings
4. Vomiting and diarrhea
E. Toxicology
1. Introduction
2. Assessment
a. History
b. Physical findings
c. Ingestion
d. Inhalation
F. Sudden Infant Death Syndrome (SIDS)
1. Introduction
a. Definition of SIDS
b. Risk factors
2. Assessment
a. Cardiopulmonary status
b. Clinical signs of death
c. Evaluation for signs of abuse
3. Management
a. Local EMS criteria for death in the field
b. Notification of appropriate authorities
c. Caregiver support
G. Pediatric Trauma

Special Patient Populations
Geriatrics

EMT Education Standard

Applies a fundamental knowledge of growth, development, aging and assessment findings to provide basic emergency care and transportation for a patient with special needs.

Transition Highlights

This section includes all new content.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Cardiovascular System Anatomical and Physiological Changes, and Pathophysiology
- A. Cardiovascular Changes in the Elderly
  - 1. Degeneration of valves
  - 2. Degeneration of conduction system
  - 3. Vascular changes
  - 4. Muscular changes
  - 5. Stroke volume
  - 6. Cardiac output
  - 7. Dysrhythmias
- B. Myocardial Infarction
  - 1. Associated signs and symptoms
    - a. Recognition of the types of chest pain that occur in the elderly
      - i. Typical
      - ii. atypical
    - b. Dyspnea
    - c. Epigastric and abdominal pain
    - d. Nausea and vomiting
    - e. Fatigue
    - f. Dizziness, lightheaded, syncope
    - g. Confusion
  - 2. Possible changes in physical assessment
    - a. Changes in circulation
    - b. Diaphoresis, pale, cyanotic mottled skin
    - c. Adventitious or decrease breath sounds
    - d. Increased peripheral edema
  - 3. Assessment tools
  - 4. Treatment
    - a. Airway, ventilatory, and circulatory support
    - b. Oxygen with adjuncts appropriate to patient condition
    - c. Evaluation of patient treatment through reassessment
- C. Heart Failure – A Condition Caused by Left and Right Ventricular Failure With Accompanying Pulmonary Edema

1. Associated signs and symptoms
    a. Dyspnea – on exertion and paroxysmal nocturnal dyspnea
    b. Orthopnea
    c. Tachypnea
    d. Pulmonary edema
    e. Accessory muscle use to breath
    f. Chest Pain
    g. Anxiety
    h. Fatigue
2. Possible changes in physical assessment
    a. Changes in circulation
    b. Diaphoresis and Cyanosis
    c. Adventitious breath sounds to include crackles, wheezing, and rales
    d. Tachycardia
    e. Hypertension early and hypotension as a late sign
3. Assessment tools – blood pressures
4. Treatment
    a. Airway, ventilatory, and circulatory support
    b. Oxygen with adjuncts appropriate to patient condition

II. Respiratory System Anatomical and Physiological Changes, and Pathophysiology

A. Respiratory Changes in the Elderly

1. Loss of elastic recoil in the chest wall resulting in air trapping and increase in lung capacity and residual volume
2. Loss of alveoli
3. Reduction in oxygen and carbon dioxide exchange
4. Inability to increase rate of respiratory effort
5. Decreased cough reflex
6. Decreased ability of cilia to move mucus upward

B. Pneumonia – Infection of the Lung From Bacterial Viral or Fungal Causes

1. Evaluation of pathophysiology through history and possible risk factors
    a. Institutionalized
    b. Chronic disease processes
    c. Immune system compromise
    d. Chronic Obstructive Pulmonary Disease
    e. Cancer
    f. Inhaled toxins
    g. Aspiration
2. Associated signs and symptoms
    a. Exertional dyspnea
    b. Productive cough
    c. Chest discomfort and pain
    d. Wheezing
    e. Headache
    f. Nausea and vomiting
    g. Musculoskeletal pain
    h. Weight loss
    i. Confusion
3. Possible changes in physical assessment
    a. Changes in circulation
    b. Cyanosis and pallor, dry skin, possible fever
    c. Increased skin turgor, pale, dry mucosa, and furrowed tongue

d. Tachycardia
e. Diminished breath sounds with adventitious noises of wheezing, rales, or rhonchi; percussion will produce a dull sound; increased vocal
f. Hypotension

4. Assessment
a. Wheezing, rales, and rhonchi
b. Temperature: oral or core
c. Orthostatic pressures
d. Pulse oximetry
5. Treatment
a. Airway, ventilatory, and circulatory support
b. Oxygen with appropriate adjuncts
c. Supportive measures
d. Evaluation of patient treatment through reassessment

C. Pulmonary Embolism – Sudden Blockage of the Pulmonary Artery by a Venous Clot
1. Associated signs and symptoms
a. Sudden onset of dyspnea
b. Shoulder/back/chest pain
c. Syncope
d. Anxiety/apprehension
e. Fever
f. Leg pain/redness/unilateral pedal edema
g. Fatigue
h. Cardiac arrest
2. Possible changes in physical assessment
a. Changes in circulation
b. Tachycardia
c. Adventitious noises such as wheezing, rales or decrease breath sounds
d. Decreased pulse oximetry reading of 70 percent or lower
e. Hypotension
3. Assessment tools
a. Blood pressure
b. Pulse oximetry
4. Treatment
a. Airway, ventilatory, and circulatory support
b. Oxygen with appropriate adjunct; events may necessitate aggressive management
c. Respiratory and cardiac arrest management according to current ACLS standards or area protocol
d. Evaluation of patient treatment through reassessment

III. Neurovascular System Anatomical and Physiological Changes, and Pathophysiology
A. Neurovascular Changes in the Elderly
1. Atrophy of the brain tissue
a. Cognitive and short-term memory effects
b. Delayed verbal response
2. Deterioration of the nervous system function in controlling
a. Rate and depth of breathing
b. Heart rate
c. Blood pressure
d. Hunger and thirst

e. Temperature
f. Sensory perception – including audio, visual, olfactory, touch, and pain

3. Neuropathy

B. Dementia – A Chronic, Generally Irreversible Condition That Causes a Progressive Loss of Cognitive Abilities, Psychomotor Skills, and Social Skills

1. Demographics
2. Evaluation of pathophysiology through history, and risk factors and current medications
    a. Cerebrovascular accidents
    b. Alzheimer's disease
    c. Various forms of encephalitis
    d. Alcohol
    e. Work history with metals or organic or airborne toxins
3. Known reversible causes of dementia
    a. Drug overdose
    b. Emotional disorders
    c. Metabolic and endocrine disorders
    d. Eye and ear problems
    e. Tumors
    f. Trauma
    g. Infections
    h. Parkinson's disease
    i. Huntington's chorea
4. Associated signs and symptoms
    a. Progressive loss of cognitive function; short- and long-term memory problems, decreased attention span
    b. Inability to perform daily routines with decreased ability to communicate and confusion over environment
    c. Mood often angry
5. Problems associated with management of patient with dementia
    a. Poor historian; impaired judgment
    b. Inability to vocalize areas of pain and current symptoms
    c. Unable to follow commands
    d. Anxiety over movement out of home or current establishment
    e. Anxiety and fear of treatment of current medical problems

C. Delirium – A Sudden Change in Behavior, Consciousness, or Cognitive Processes Generally Due to a Reversible Physical Ailment

1. Mortality rates
2. Evaluation of pathophysiology through history, possible risk factors, and current medications
    a. Intoxication or withdrawal from alcohol
    b. Withdrawal from sedatives
    c. Medical conditions as urinary tract infections/ Bowel obstructions
    d. dehydration, cardiovascular disease, febrile episodes may increase risk
    e. Hyper/hypoglycemia
    f. Psychiatric disorders (i.e., depression)
    g. Malnutrition/vitamin deficiencies
    h. Environmental emergencies
3. Associated signs and symptoms
    a. Onset of minutes, hours, days
    b. Disorganized thoughts: inattention, memory loss, disorientation

c. Hallucinations
d. Delusions
e. Reduced level of consciousness

4. Possible changes in physical assessment
a. Changes in circulation
b. Changes in response of pupils
c. Changes in response to motor tests
d. Adventitious breath sounds

5. Assessment tools
a. Blood pressures
b. Auscultation of breath sounds to detect adventitious noises

6. Treatment
a. Airway, ventilatory, and circulatory support
b. Oxygen with adjuncts appropriate to patient condition
c. Venous access

IV. Gastrointestinal System Anatomical and Physiological Changes, and Pathophysiology

A. Gastrointestinal (GI) Changes in the Elderly

1. Dental problems
2. Decrease in saliva
3. Poor muscle tone of smooth muscle sphincter between esophagus and stomach can cause regurgitation leading to heartburn, and acid reflux
4. Decrease in hydrochloric acid in the stomach
5. Alterations in absorption of nutrients
6. Slowing peristalsis causing constipation
7. Rectal sphincter may become weak resulting in fecal incontinence
8. Liver shrinks
9. Blood flow to the liver declines
10. Decrease metabolism in the liver

B. Gastrointestinal Bleeding Caused by Disease Processes, Inflammation, Infection and Obstruction of the Upper and Lower Gastrointestinal Tract

1. Associated signs and symptoms
a. Hematamesis
b. Hemetemesis
c. Melena
d. Dyspepsia
e. Hepatomegaly
f. Jaundice
g. Constipation, diarrhea
h. Agitation, inability to find a comfortable position
i. Dizziness

2. Possible changes in physical assessment
a. Changes in circulation
b. Pale or yellow, thin skin, frail musculoskeletal system
c. Peripheral, sacral, and periorbital edema
d. Hypertension
e. Fever
f. Tachycardia
g. Dyspnea

3. Assessment tools – blood pressure

4. Treatment:
a. Airway, ventilatory, and circulatory support

b. Oxygen with adjuncts appropriate to patient condition

5. Assessment tools

a. Blood pressures, lying, sitting, and standing noting any change of 10 mm/Hg or more lower as the patient moves to an upright position

b. Pulses, lying, sitting, and standing noting any change of 10 beats per minute more higher as the patient moves to an upright position

c. Auscultation of breath sounds to detect adventitious noises, or foreign bodies

6. Treatment:

a. Airway, ventilatory and circulatory support

b. Oxygen with adjuncts appropriate to patient condition

V. Genitourinary System Anatomical and Physiological Changes, and Pathophysiology

A. Genitourinary Changes in the Elderly

1. Reduction in renal function
2. 50 percent reduction in renal blood flow
3. Tubule degeneration
4. Decreased bladder capacity
5. Decline in sphincter muscle control
6. Decline in voiding senses
7. Increase in nocturnal voiding
8. In males benign prostatic hypertrophy

VI. Endocrine System Anatomical and Physiological Changes, and Pathophysiology

A. Endocrine Changes in the Elderly

1. Decreased metabolism of thyroxine
2. Decreased conversion of thyroxine to triiodothyronine
3. Reduction in pancreatic beta cell secretion causing hyperglycemia
4. Reduction of the hormones secreted by the hypothalamus and pituitary gland
5. Increase in secretion of antidiuretic hormone and atrial natriuretic hormone causing fluid imbalance
6. Increase in levels of norepinephrine

B. Hyperosmolar Hyperglycemic (Nonketotic Coma) Is a Diabetic Complication of Type 2 (Formerly NIDDM of Type II) in the Elderly; Unlike DKA the Resulting High Blood Glucose Levels Do Not Cause Ketosis, but Rather Lead to Osmotic Diuresis, and Shift of Fluid to the Intravascular Space, Resulting in Dehydration

1. Associated signs and symptoms

a. Hyperglycemia

b. Polydipsia

c. Dizziness

d. Confusion

e. Altered mental status

f. Seizures

2. Possible changes in physical assessment

a. Changes in circulation

b. Warm, flushed skin, poor skin turgor; pale, dry, oral mucosa, furrowed tongue

c. Hypotension and shock

d. Tachycardia

e. Blood glucose levels greater than 500 mg/dL

3. Assessment tools

a. Blood pressures

b. Distal pulses

c. Auscultation of breath sounds to detect adventitious noises

d. Temperature
4. Treatment
a. Airway, ventilatory, and circulatory support
b. Oxygen with adjuncts appropriate to patient condition

VII. Musculoskeletal System Anatomical and Physiological Changes, and Pathophsysiology
A. Musculoskeletal Changes in the Elderly
1. Atrophy of muscles and muscle wasting
2. Degenerative changes and loss of bone
3. Loss of strength
4. Degenerative changes in joints
5. Loss of elasticity in ligaments and tendons
6. Thinning of cartilage and thickening of synovial fluid
B. Osteoporosis Is a Bone Disease That Decreases Bone Density

VIII. Toxicological Emergencies
A. Pathophysiological Changes That Cause the Elderly to Be Susceptible to Toxicity
1. Decreased kidney function
2. Altered gastrointestinal absorption
3. Decrease vascular flow in the liver altering metabolism and excretion
B. Non-Compliance of Medication Can Occur From Financial Inability, a Motor Inability to Open Caps, Impaired Cognitive, Vision and Hearing Ability; Medics Should Check Prescription Dates and Number of Pills Available to Access Compliance of Medication Use
C. Polypharmacy is the Use of Multiple Medications, Often Prescribed by Different Doctors That Can Cause Adverse Reactions in the Patient
D. Adverse Reactions Occur When a Drug or Drugs Taken Together Change the Pharmacokinetics or Pharmacodynamics in the Body

IX. Sensory Changes in the Elderly
A. Vision
1. Decreased visual acuity – inability to accommodate
2. Inability to differentiate colors
3. Decreased night vision
4. Decreased tear production
5. Development of cataracts
6. Disease processes
a. Glaucoma
b. Macular degeneration
c. Retinal detachment
B. Hearing
1. Presbycusis
2. Inability to hear high frequency sounds
3. Use of hearing aids
C. Pain Perception
1. Alteration of pain perception
2. Inability to differentiate hot from cold

Special Patient Populations
Patients With Special Challenges

EMT Education Standard

Applies a fundamental knowledge of growth, development, aging, and assessment findings to provide basic emergency care and transportation for a patient with special needs.

Transition Highlights

This section includes new content on elder abuse, homelessness, poverty, bariatric, more technology dependent, hospices, sensory deficit, homecare, and developmental disabilities.

EMT-Level Instructional Guideline

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Abuse and Neglect
- A. Child Abuse
  - 1. Types of abuse
    - a. Neglect
    - b. Physical abuse
    - c. Sexual abuse
    - d. Emotional abuse
  - 2. Assessment
    - a. History or scene findings to concern for abuse or neglect
    - b. Caregiver's behavior
    - c. Physical findings
  - 3. Management
    - a. Reporting
    - b. Safely transporting
    - c. Role of child/adult protective services
  - 4. Legal aspects
  - 5. Documentation
- B. Elder Abuse
  - 1. Types of abuse
    - a. Neglect
    - b. Physical abuse
    - c. Sexual abuse
    - d. Emotional abuse
    - e. Financial abuse
  - 2. Epidemiology
  - 3. Assessment
  - 4. Management
  - 5. Legal aspects
  - 6. Documentation

II. Homelessness/Poverty
- A. Advocate for Patient Rights and Appropriate Care
- B. Identify Facilities That Will Treat Regardless of Payment
- C. Prevention Strategies Will Likely Be Absent, Increasing the Probability of Disease
- D. Familiarity With Assistance Resources Offered in Community

III. Bariatric Patients
- A. Increased Risk for
  1. Diabetes
  2. Hypertension
  3. Heart disease
  4. Stroke
- B. Patient Handling Issues to
  1. Prevent back injuries
  2. Position the patient to breathe

IV. Technology Assisted/Dependent
- A. Ventilation Devices
- B. Apnea Monitoring/Pulse Oximetry
- C. Long-Term Vascular Access Devices
- D. Dialysis Shunts
- E. Nutritional Support (i.e. gastric tubes)
- F. Colostomy or Ileostomy

V. Hospice Care and Terminally Ill
- A. What is Hospice?
  1. Comfort care versus curative care
  2. Terminally ill as verified by physician
  3. Typically cancer, heart failure, Alzheimer's disease, AIDS
- B. EMS Intervention
- C. DNR (Do Not Resuscitate) Orders

VI. Sensory Deficits
- A. Sight
  1. Service dogs
  2. Allow patient to take your arm
  3. Other
- B. Hearing Impaired
  1. Hearing aid issues
  2. Communication
     - a. Face patient (so he can lip read)
     - b. Lighted area
     - c. Communicate by writing
     - d. Obtain sign language interpreter

VII. Homecare
- A. Common for Patients Over Age 65
- B. Various Reasons for Calls

VIII. Patient With Developmental Disability
- A. Respect as With Any Other Patient
- B. Family or Friends May Supply Additional Information
- C. Take Special Care to Provide Explanations

EMS Operations

Principles of Safely Operating a Ground Ambulance

EMT Education Standard

Knowledge of operational roles and responsibilities to ensure patient, public, and personnel safety.

Transition Highlights

This section includes increased depth of discussion on the risks of emergency response and leaving the scene.

EMT-Level Instructional Guideline

The intent of this section is to give an overview of emergency response to ensure EMS personnel, patient, and other's safety during EMS operations. This does not prepare the entry-level student to be an experienced and competent driver.

Information related to the clinical management of the patient during emergency response is found in the clinical sections of the National EMS Education Standards and Instructional Guidelines for each personnel level.

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Risks and Responsibilities of Emergency Response
- A. Safety Issues During Transport
  - 1. All personnel and others riding in or on apparatus are properly seated and secured with safety belts.
  - 2. All patients are properly secured and all stretcher straps are appropriately in place and tightened.
  - 3. All equipment is appropriately secured
    - a. Cab areas
    - b. Rear of ambulances
    - c. Compartments
  - 4. Consideration of use of lights and sirens
    - a. Risk/benefit analysis
      - i. status of patient interventions
      - ii. patient condition
    - b. Audible warning devices
      - i. asking for right of way of others
      - ii. not to be used to clear traffic
  - 5. Transport with due regard
  - 6. High-risk situations
    - a. Intersections
    - b. Highway access
    - c. Speeding
    - d. Driver Distractions
      - i. mobile computer

ii. global Positioning Systems
iii. using mobile radio
iv. operating visual and audible devices
v. vehicle stereo
vi. wireless devices
vii. eating/drinking

e. Inclement weather
f. Aggressive drivers
g. Unpaved roadways (see Federal Highway Administration definition)
h. Driving alone
i. Fatigue

EMS Operations
Multiple Casualty Incidents

EMT Education Standard

Knowledge of operational roles and responsibilities to ensure patient, public, and personnel safety

Transition Highlights

This section references Center for Disease Control (CDC) Field Triage Division Scheme: The National Trauma Triage Protocol.

EMT-Level Instructional Guideline

The intent of this section is to give an overview of operating during a multiple casualty incident when a multiple casualty incident plan is activated.

Information related to the clinical management of the patients during a multiple casualty incident is found in the clinical sections of the National EMS Education Standards and Instructional Guidelines for each personnel level.

The EMT Instructional Guidelines in this section include all the topics and material at the EMR level PLUS the following material:

I. Triage
- A. Performing
  - 1. Primary versus secondary
    - a. Primary triage used on scene to rapidly categorize patient's condition
      - i. document location of patient and transport needs
      - ii. triage tape or labels used
      - iii. focus on speed to sort patients quickly
    - b. Secondary triage used at treatment area
      - i. re-triage of patients
      - ii. paper tags usually used
      - iii. not always necessary
  - 2. Techniques of Triage
    - a. Center for Disease Control (CDC) Guidelines
    - b. START
    - c. Other
- B. Re-Triage
- C. Destination Decisions
  - 1. Patient distribution
  - 2. Hospital surge capacity
  - 3. Specialty patient needs (burn, pediatric, etc.)
  - 4. Ongoing coordination and communication
- D. Post-Traumatic and Cumulative Stress
  - 1. Should be part of post-incident SOP
  - 2. Access to defusing during the MCI
  - 3. Roles of debriefing for an MCI
  - 4. Access to debriefing

EMS Operations
Mass Casualty Incidents Due to Terrorism and Disaster

EMT Education Standard

Knowledge of operational roles and responsibilities to ensure patient, public, and personnel safety.

Transition Highlights

This section includes all new content.

EMT-Level Instructional Guideline

The intent of this section is to give an overview of operating during a terrorist event or during a natural or manmade disaster.

Information related to the clinical management of patients exposed to a terrorist event is found in the clinical sections of the National EMS Education Standards and Instructional Guidelines for each personnel level.

I. Risks and Responsibilities of Operating on the Scene of a Natural or Man-Made Disaster
- A. Role of EMS
  - 1. Personal safety
  - 2. Provide patient care
  - 3. Initiate/operate in an incident command system (ICS)
  - 4. Assist with operations
- B. Safety
  - 1. Personal
    - a. First priority for all EMS personnel
    - b. Appropriate personnel protective equipment for conditions
    - c. Scene size-up
    - d. Time, distance, and shielding for self-protection
    - e. Emergency responders are targets
    - f. Dangers of the secondary attack
  - 2. Patient
    - a. Keep them informed of your actions
    - b. Protect from further harm
    - c. Signs and symptoms of biological, nuclear, incendiary, chemical and explosive (B-NICE) substances
    - d. Concept of “greater good” as it relates to any delay
    - e. Treating terrorists/criminals
  - 3. 360-degree assessment and scene size-up
    - a. Outward signs and characteristics of terrorist incidents
    - b. Outward signs of a weapons of mass destruction (WMD) incident
    - c. Outward signs and protective actions of biological, nuclear, incendiary, chemical, and explosive (B-NICE) weapons

4. Determine number of patients (implement local multiple-casualty incident (MCI) protocols as necessary)
5. Evaluate need for additional resources
6. EMS operations during terrorist, weapons of mass destruction, disaster events
    a. All hazards safety approach
    b. Initially distance from scene and approach when safe
    c. Ongoing scene assessment for potential secondary events
    d. Communicate with law enforcement at the scene of an armed attack
    e. Initiate or expand incident command system as needed
    f. Perimeter use to protect rescuers and public from injury
    g. Escape plan and a mobilization point at a terrorist incident
7. Care of emergency responders on scene
    a. Safe use of an auto injector for self and peers
    b. Safe disposal of auto injector devices after activation

EMS Operations
Incident Management

EMT Education Standard

Knowledge of operational roles and responsibilities to ensure patient, public, and personnel safety.

Transition Highlights

ICS and federal requirements added to this section.

EMT-Level Instructional Guideline

Information related to the clinical management of the patient within components of the Incident Management System (IMS) is found in the clinical sections of the National EMS Education Standards and Instructional Guidelines for each personnel level.

I. Establish and Work Within the Incident Management System

A. Entry-Level Students Need to Be Certified in

1. ICS-100: Introduction to ICS (http://training.fema.gov/emiweb/is/is100b.asp), or equivalent
2. FEMA IS-700: NIMS, An Introduction (http://training.fema.gov/EMIWeb/is/is700.asp)

B. This Can Be Done as a Co requisite or Prerequisite or as Part of the Transition Course

EMS Operations
Hazardous Materials Awareness

EMT Education Standard

Knowledge of operational roles and responsibilities to ensure patient, public, and personnel safety.

Transition Highlights

This section includes a new requirement.

EMT-Level Instructional Guideline

Information related to the clinical management of the patient exposed to hazardous materials is found in the clinical sections of the National EMS Education Standards and Instructional Guidelines for each personnel level.

I. Risks and Responsibilities of Operating at a Hazardous Material or Other Special Incident

A. Entry-Level Students Need to Be Certified in one of the following:

1. Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 29 CFR 1910.120 (q)(6)(i) -First Responder Awareness Level*

2. Other courses may qualify to meet this requirement. Contact the Idaho EMS Bureau for more details.

B. This Can Be Done as a Co requisite or Prerequisite or as Part of the Transition Course

*There are a number of sources for this training. Michigan State University is offering this training program at no cost to agencies in the public sector for a limited time. Visit http://www.saferesponse.com/sub_page/hazmat_main.htm for more details.

EMS Operations
Extrication Awareness

EMT Education Standard

Knowledge of operational roles and responsibilities to ensure patient, public, and personnel safety.

Transition Highlights

This section includes a new requirement.

EMT-Level Instructional Guideline

The intent of this section is to provide an overview of vehicle extrication to ensure EMS personnel and patent safety during extrication and so those who respond to motor vehicle accidents will be able to function safely as part of a "Rescue Team" as directed by the Incident Commander. This does not prepare the entry-level student to become a vehicle extrication expert or technician.

Information related to the clinical management of the patient being cared for during vehicle extrication is found in the clinical sections of the EMS Education Standards and Instructional Guidelines for each personnel level.

I. Establish and Work Within State Extrication Awareness Training
- A. Entry-Level Students Need to Complete
  1. Idaho Extrication Awareness training course (details available at www.idahoems.org)
  2. Idaho Emergency Services Training (EST) - Extrication Operations Course
- B. This Can Be Done as a Co requisite or Prerequisite or as Part of the Transition Course

II. Extrication Awareness Training Must Include the Following:
- A. Introduction
- B. What is Extrication
- C. Scene Size-up
  1. Scene Security
  2. Incident Management System (IMS)
  3. Collision Forces
  4. Fire Protection
  5. Resource Identification/Activation
  6. Special Situations
- D. Vehicle Systems
- E. Vehicle Stabilization and Gaining Access
- F. Patient(s) Care

Psychomotor Skills

EMT Education Standard

Safely and effectively perform all psychomotor skills within the National EMS Scope of Practice Model AND state Scope of Practice at this level.

Transition Highlights

This section highlights psychomotor skills removed from the Scope of Practice and includes new content for skills added to the Scope.

EMT-Level Instructional Guideline

The intent of this section is to provide an overview of skills or intervention changes between the Idaho License levels based on the old Idaho Standard Curriculum (ISC) and the new license levels based on the 2011 Idaho EMS Curriculum (IEC).

For more information on Idaho Scope of Practice changes, visit the Idaho EMS Physician Commission website at www.emspc.dhw.idaho.gov for the Draft 2012-1 EMSPC Future Scope of Practice grid which highlights changes between the old scope and new 2012 EMSPC Scope.

I. Skills or interventions added
   A. Airway / Ventilation / Oxygenation
      1. Automatic transport ventilators (ATV) for non-intubated patients
   B. Assessment
      1. Pulse Oximetry
   C. Pharmacological interventions
      1. Aspirin for chest pain
      2. Epinephrine (Adrenalin) auto-injector
      3. Atropine sulfate & 2-Pralidoxime chloride auto-injector (e.g. Mark-1, Duo-Dote)

II. Skills or interventions removed
   A. Hemorrhage Control – Pressure Point