



**F.D.N.Y. - E.M.S.  
Bureau of Training**

**CFR Program**

**Handout Manual**

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# **Introduction to EMS System**

**Emergency Medical Services System = A network of resources to provide emergency care and transport to victims of sudden illness or injury**

## **How Does It Work?**

- Prevention of injury through public education
- Recognition of the emergency and activation of 911
- Bystander care following instructions given by dispatcher/call receiving operator
- Arrival of First Responders
- Arrival of additional EMS resources/transport unit
- Emergency medical care at the scene
- Transport to receiving hospital
- Transfer to in-hospital care

## **The 10 Classic Components of an EMS System:**

1. regulation & policy
2. resource management
3. human resources training
4. transportation
5. facilities
6. communications
7. public information and education
8. medical oversight
9. trauma systems
10. evaluation

## **Hospital Systems:**

Emergency Departments and Specialty Referral Centers

- Trauma Centers (adult & pediatric)
- Burn Centers
- Pediatrics
- Venomous Bite Centers
- Replantation Centers
- Hyperbarics

## **New York State Levels of Training:**

Certified First Responder (CFR)

Emergency Medical Technician – Basic (EMT – B)

Emergency Medical Technician – Intermediate (EMT – I)

Emergency Medical Technician – Critical Care (EMT – CC)

Emergency Medical Technician – Paramedic (EMT – P)

## **The Roles of the CFR:**

- Scene Safety – personal, the crew, the patients & the bystanders...in that order
- Gaining access to the patient
- Assessment of the patient to identify life threatening conditions
- Patient care
- Record keeping & documentation
- Liaison with other public safety workers

## **Medical Oversight:**

- A formal relationship between the EMS providers and the physician responsible for the out-of-hospital emergency medical care provided in a community
- Every EMS System must have medical oversight.
- FDNY EMS operates under the license of the FDNY Medical Director.

**Direct Medical Control** (“on-line medical control”) = direction given by the medical director to a field provider at the time that care is being given. Communication can be via radio, telephone or actual contact on the scene.

**Indirect Medical Control** (“off-line medical control”) = everything that is not direct medical control: standing orders, protocols, quality management, education, etc.

# Research & Public Health

- Findings are important in identifying
  - Changes in EMS assessment and management techniques
  - Methods to improve patient care and outcome
  - Ways to improve service delivery
  - Information obtained through data collection

## **Basic Health Principals**

Focuses on examining the health needs of an entire population with the goal of preventing health problems

## **Role of Public Health**

- Focus is on the prevention of health problems
- Works towards preventing injury and illness through public education
- Accomplished through primary and secondary prevention strategies
- Primary Strategies
  - Designed to prevent an event from happening
- Secondary Strategies
  - Deal with events that have already happened
  - Look to lessen the impact

## **EMS Interface**

- EMS is a public health system
- Provides a critical function
  - Patient care
  - Education of the public
- Incorporates services within the EMS system
- Collaborates with other agencies

- EMS role in health prevention and promotion
  - Primary prevention
- Vaccination
- Education
  - Secondary prevention
- Preventing complications or the progression of disease
  - Health screenings
- Disease and Injury surveillance
  - EMS providers are first line care givers
  - Patient Care reports offer information on epidemics of disease
  - Information collected from reports can help to determine solutions

## **Safety Equipment**

- Child safety seats
- Bicycle helmets
- Seat belts
- Airbags
- Public access defibrillators

## **Education**

- EMS providers are in an ideal position to provide education to the public
  - While rendering patient care
  - In public forums, schools, health fairs
  -
- Topics can include
  - Car seat safety
  - Seat belt use
  - Helmet use
  - Driving under the influence
  - Falls
  - Fire

# **Communication and Documentation**

## **Effective Communication involves:**

- Introduction
  - Self
  - Team / Partners
  - Patient Introducing him or herself to you
  
- Privacy
  - Respecting the patient’s right to confidentiality
  
- Minimizing Interruptions
  
- Note-Taking
  
- Physical Environment
  - Lighting
  - Noise / Outside interference
  - Distracting equipment
  - Distance
  - Equal seating / eye level

## **Tips for Effectively Communicating**

- Sensitivity
- Listening
- Non-verbal Communication
- Body positioning

## **Patient Interview**

- Be aware of surroundings
- Introduce yourself and your partner
- Use appropriate titles; Mr. and Mrs.
- Ask what it is you can do for them
- Ask questions one at a time in order to obtain a complete answer
- Utilize an assortment of open or closed ended questions as is pertinent to the information you are trying to gather
- Open ended questions
  - Cannot be answered with a simple yes or no
  - Allows the patient to explain what they are feeling
- Closed ended questions
  - Simple yes or no answers
  - Allows for you to expand on the answer
    - Is the pain sharp ?
    - Is it a tightness ?

## **Communication Barriers**

- Language
  - Family members may be able to assist
  - Point to the question and answer aids
  - Language hotline
- Visually Impaired
  - Speak calmly and with a reassuring voice
  - Consider making physical contact with the patient if they extend their hand to yours
- Hearing Impaired
  - Determine the extent of the impairment
  - May need to raise your voice or speak slowly so the patient can read your lips

# System Communications

- Allows for relay of information to incoming units / resources arriving on scene
- 10-12
  - CFR's may contact incoming EMS units on Channel 10 (Interoperability Channel) to advise of patient condition
- Chief complaint
- Patient's age and sex
- How you found the patient
- Brief history of what happened
- Past medical history
- Assessment findings, including vital signs
- Treatments provided and any response to them

## Documentation

Making a record of the events. It is a basic responsibility of First Responders.

- Pre-hospital Care Report
  - Functions
  - Continuity of care
  - Administrative, part of the medical record
  - Legal document
- Time of events
- Assessment findings
- Medical care provided
- Changes in patient following treatment
- Observations at the scene
- Disposition
  - Refused care
  - Care turned over to another provider

# Wellness

## **STRESS PRODUCING SITUATIONS**

- Mass Casualty Incidents
- Terrorism
- Pediatric patients
- Traumatic injuries
- Violence
- Domestic abuse
- Death or injury of co-workers or other rescue personnel

CFRs will commonly experience great personal stress and will encounter patients and bystanders in severe stress. CFRs must be able to maintain composure in highly stressful environments and situations.

## **DEATH, DYING & THE GRIEVING PROCESS**

CFRs interact with people in all phases of the grieving process, both patients and family members. Understanding the grieving process provides insight to the reactions and behavior of these grief-stricken individuals and helps the CFR to remain professional and composed and to communicate effectively.

### **Stages of Grief:**

- Denial
- Anger
- Bargaining
- Depression
- Acceptance

# STRESS MANAGEMENT

Warning Signs of Stress Overload:

- Irritability
- Difficulty concentrating
- Difficulty sleeping
- Anxiety
- Loss of appetite
- Loss of interest in sexual activities, work or activities normally found enjoyable
- Isolation / Withdrawal from friends & family

Reducing Stress through Healthy Lifestyle Changes

- Diet: reduce sugar, fatty food and alcohol consumption
- Exercise and regular physical activity
- Request change of tour / shift / work location
- Seek professional help when needed
- Practice relaxation techniques

## Critical Incident Stress Management (CISM)

Critical Incident Stress is the normal stress response to abnormal circumstances.

Management includes:

- Pre-incident stress education
- Peer support
- Disaster support services
- Spouse / Family support
- **Critical Incident Stress Debriefing (CISD)**
  - Held within 24 – 72 hours of a major incident
  - Open discussion led by CISD team
  - All information is confidential
- **Defusings**
  - Less formal and less structured version of CISD
  - Allows for initial venting of emotions
  - May enhance or eliminate the need for a formal debriefing

# **BODY SUBSTANCE ISOLATION**

BSI = gloves, gown and face protection

- **Gloves are the absolute minimum level of protection.**
- Gloves must be worn whenever potential for contact with blood or other body fluids exists and must be changed between contact with different patients
- When there is a potential for splash or splatter, a gown and surgical type mask should be worn in addition to gloves.

## **PREVENT THE TRANSMISSION OF DISEASE THROUGH FREQUENT HAND WASHING, PROPER PERSONAL HYGIENE AND PROPER REPLACEMENT, CLEANING AND DECONTAMINATION OF EQUIPMENT**

Recommended Immunizations for Healthcare Providers (through BHS):

- Hepatitis B Vaccine
- Tetanus prophylaxis
- Tuberculin testing
- Verification of immune status to common contagious diseases (MMR, chicken pox, etc)

# Lifting & Moving Patients

## Role of the CFR

- Move patients who are in immediate danger
- Position patients to prevent further injury
- Assist other EMS providers in lifting, moving and preparing to transport patients

## Body Mechanics

- Lift with your legs, not your back
- Keep weight as close to your body as possible
- Consider weight of the patient and consider the need for additional help
- Know your physical limitations and the limitations of the equipment
- Communicate

## Principles of Moving Patients

A patient should only be moved by First Responders prior to the arrival of the transporting unit when:

There is an immediate danger to the patient if he or she is not moved

**or**

Life-saving interventions cannot be performed because of the patient's location or position

**The greatest danger in performing an emergency move is the possibility of aggravating an injury to the patient's spine.**

To minimize this risk, make every effort to move the patient in the direction of the long axis of the body (towards the head or feet).

## Patient Positioning

An unresponsive patient without trauma or risk of spinal injury should be moved into the **recovery position**

A patient with trauma or a suspected spinal injury should not be moved prior to the arrival of EMS

A patient experiencing pain or discomfort or breathing difficulty should be allowed to maintain a **position of comfort**

A patient who is nauseated or vomiting should be allowed to remain in a position of comfort but the CFR must be positioned to monitor and manage the airway.

# Medical / Legal

## LEGAL DUTIES OF THE FIRST RESPONDER:

A CFR must provide for the well-being of the patient by rendering care and providing necessary interventions as outlined by the **Scope of Practice / Scope of Care** of the CFR.

The Scope of Practice is enhanced by state and local protocols and by the direction of medical control.

The Scope of Practice of a CFR operating in the FDNY is defined by:

- **New York State Public Health Laws**

  - **Article 30**

  - **Part 800**

- New York City REMSCO
- FDNY Rules & Regulations
- FDNY Medical Director

## ETHICAL DUTIES OF THE FIRST RESPONDER:

- Making the physical / emotional needs of the patient a priority
- Practicing skills to the point of mastery
- Attendance at continuing education & refresher programs
- Reviewing performance
- Honesty in reporting & documentation

## **CONSENT:**

**A patient must give consent for any and all medical care.**

A CFR must obtain some form of consent prior to initiating ANY treatment. Consent may be **informed** (expressed) or may be **implied**.

**Competence** = the ability to understand the questions a CFR asks and to understand the implications of decisions made. To be competent, a person must be of legal age (18 or an emancipated minor) and be alert.

### **Informed (Expressed) Consent:**

A competent patient has the right to make decisions regarding care.

**Prior to initiating care, a CFR MUST obtain informed consent from ANY patient who is competent.**

The patient must be informed of the CFR's level of training, the intended treatment, any risks and benefits associated with treatment and any risks and benefits of refusing that treatment.

### **Implied Consent:**

A CFR may initiate necessary care of a patient who is not competent to give actual, informed consent based on the assumption that the patient would consent to life-saving intervention if he or she were able.

In this case, consent is implied.

### **Consent for Children & Mentally Incompetent Adults:**

Informed consent must be obtained from the parent or legal guardian prior to initiating care.

If a parent or guardian is not present, necessary emergency medical care should be rendered based on implied consent.

### **Assault & Battery:**

Assault: Unlawfully placing a patient in fear of bodily harm

Battery: Touching a patient or providing care without consent

## **Refusal of Care:**

Competent patients have the right to refuse emergency medical treatment provided the rules of informed consent apply. The patient must be informed of and fully understand all risks and consequences associated with the refusal of care.

**First Responders DO NOT accept refusals.** The CFR must ensure that additional EMS resources will evaluate the patient.

While awaiting the arrival of EMS, the CFR should:

- Attempt to persuade the patient to accept care
- Determine competency
- Consult Medical Control
- Consider requesting the assistance of law enforcement
- DOCUMENT all actions

## **Advance Directives & DNRs:**

**Advance Directives** are legal documents that indicate the patient's wishes regarding care while he or she is still alive. They are not honored by CFRs in the pre-hospital setting.

**Do Not Resuscitate (DNRs) / Do Not Attempt Resuscitation Orders (DNARs)** are legal documents indicating the patient's desire not to have resuscitation attempted when he or she is clinically dead.

DNRs / DNARs may be honored by CFRs in the field, providing:

- They are on an approved NY State DOH form or Medic Alert Tag and
- They are physically present and
- They are valid

Once CPR has been initiated, if a valid DNR is presented Direct Medical Control (telemetry) must be contacted for approval to discontinue resuscitative efforts.

DNRs may be verbally revoked at any time.

# MOLST

- An alternative form for patients to provide their end of life care preference
- Accepted by EMS Agencies, Hospitals, Nursing Homes, and Hospices
- Section A
  - For Patients in Cardiopulmonary Arrest
- No Resuscitation
- Full Resuscitation
- Section E
  - For Patients NOT in Cardiopulmonary Arrest
- Do Not Intubate
- Mechanical Ventilation Instruction

**When in doubt, DO CPR!**

## **Abandonment:**

Once care has been initiated, a CFR may not leave the scene until patient care has been transferred to another healthcare provider with equal or higher training and capabilities. To avoid committing patient abandonment, the CFR must ensure that patient care will continue at an equal or higher level.

## **Negligence:**

Deviation from the accepted standard of care that results in harm or injury to the patient

### **Components of negligence:**

- **Duty to Act**
  - A contractual or legal obligation exists*
- **Breach of Duty**
  - Failure to act or failure to act appropriately*
- **Injury or Damages occurred**
  - May be physical or psychological*
- **Proximate Cause**
  - The actions or lack of actions directly caused the injury / harm*

## Crime Scene Preservation:

- Request police if not already notified / present – **Do not enter an unsafe scene**
- Emergency medical care of the patient is the priority for First Responders
- Do not disturb any items or evidence at the scene unless treatment of the patient requires it
- Observe and document anything unusual
- Avoid cutting through holes in clothing from gunshots or stabbings

## Confidentiality and Patient Health Information

- Patient Health Information (PHI)
  - Information obtained by FDNY employees as a result of performing Patient Care Duties
  - Includes, but not limited to:
    - Personal Information
    - Medical History and Medications
    - Current Illness or Injury
- EMS personnel are only allowed to have access to, use or disclose patient information in connection with their duties as an EMT or Paramedic.
- Any other access, use or disclosure of patient information is **not** authorized.
- Treatment and Transport of Patients:
  - On-scene communications with EMS and CFR personnel
  - Incident commanders
  - With limitations:
    - on-scene police personnel
    - on-scene person/caregiver involved in patient care
      - Minimum needed to conduct treatment and effect transport
- New York State Public Health Law
  - Requires confidentiality of all patient health information, including 911 System patient records.

- Health Insurance Portability and Accountability Act (HIPAA)
  - Refers to privacy and security regulations
  - Applies to “protected health information” (PHI) of health care providers and certain other healthcare entities who are “covered entities” that engage in electronic transactions
  - The Fire Department is a covered entity with respect to its EMS operations
  
- On-scene disclosure of patient information to law enforcement personnel should be limited to:
  - Date and Time of Treatment
  - Name and Address
  - Date of Birth
  - Social Security #
  - Type of injury
  
- Physical description of body type
  
- All relevant PHI may be disclosed as necessary to alert law enforcement to the:
  - Commission and nature of a crime
  - Location of a crime
  - Description of an alleged perpetrator
  
- Posting patient information on social media
  
- Responding to requests for a copy of the PCR
  
- Discussing patient information with any non-FDNY person or any FDNY personnel not authorized to discuss patient information

# The Human Body

## The Respiratory System

### Function:

- Delivers oxygen to the cells of the body
- 
- Removes carbon dioxide from the body

### Anatomy:

- **Nose and Mouth**
- **Pharynx**
  - Oropharynx
  - Nasopharynx
  - Laryngopharynx
- **Epiglottis** = a leaf-shaped structure that prevents food and fluid from entering the trachea during swallowing
- **Trachea** = (windpipe) passageway from pharynx (upper airway) to lungs (lower airway)
- **Larynx** = voice box
- **Lungs** = site of gas exchange
- **Diaphragm** = main muscle of the respiratory system

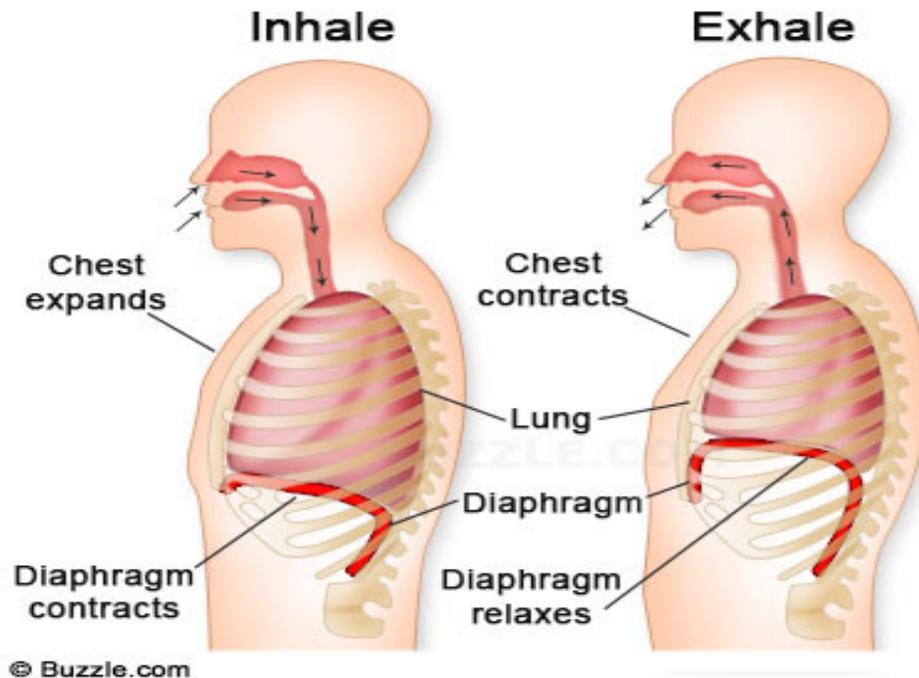
## Physiology:

**Ventilation** (breathing) = the mechanical process of moving air in and out of the airways.

**Ventilation** is achieved through muscle work.

The **diaphragm** is a muscle located at the base of the chest cavity. When relaxed, it is dome-shaped, extending up towards the lungs and chest cavity. When the diaphragm contracts, it flattens out, moving downwards, causing the lungs to expand. At the same time, muscles located in the chest wall contract and lift the ribcage up and out, further increasing the size of the chest cavity. When the size of the chest cavity increases, the gas pressure within that cavity decreases, causing air to move into the lungs (inspiration/inhalation). The diaphragm then relaxes and moves upwards while the chest cavity moves downwards, causing a rise in pressure and air to be exhaled.

**Inhalation** is an active process, while **exhalation** is passive.



# The Circulatory System

## Function:

- Delivers oxygen and nutrients to the tissues of the body
- Removes waste products from the tissues

## Anatomy:

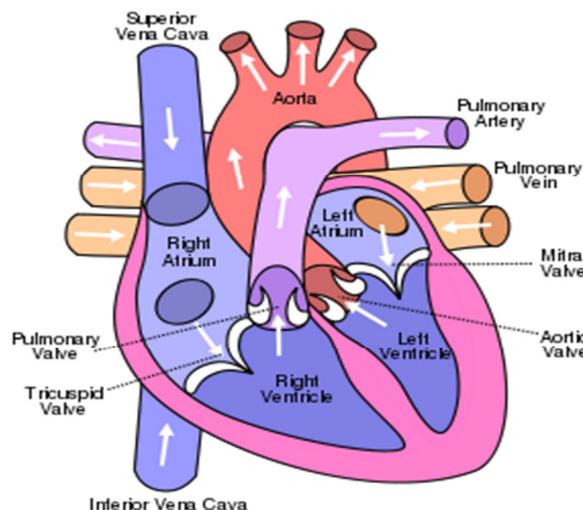
The Heart = the pump of the system

The heart is actually two separate pumps, and each pump is further divided into two chambers.

The chambers which receive blood are called **atria** (single = atrium), and the chambers which pump blood away from the heart are called **ventricles**. The atria and ventricles are divided by one-way **valves** which prevent the backflow of blood.

The **right atrium** receives blood that has been depleted of oxygen from the body. This oxygen-poor blood is pumped to the **right ventricle**, which then pumps it to the lungs where it picks up more oxygen and deposits the waste product of respiration, carbon dioxide, to be exhaled.

The newly-oxygenated blood from the lungs returns to the heart and enters the **left atrium**. The left atrium pumps the oxygenated blood to the **left ventricle**, and the left ventricle then pumps the blood to the body to deliver oxygen to all of the tissues and cells.



## The Blood Vessels

**Arteries = Blood vessels traveling away from the heart**

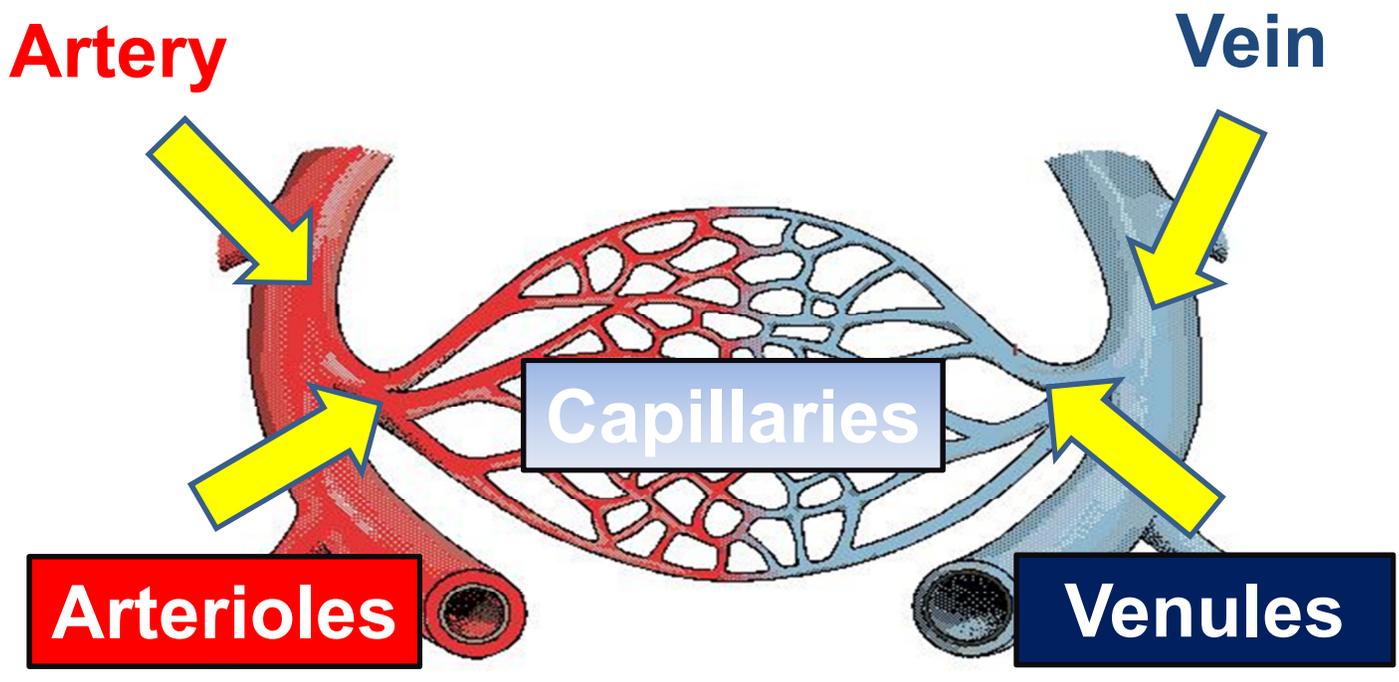
**Veins = Blood vessels traveling to the heart**

Blood travels from the heart through **arteries**. The arteries branch off into smaller vessels, or **arterioles**, which lead to the tiniest blood vessels, the **capillaries**. The capillaries connect arterioles to **venules** and are the site of gas exchange.

Because the walls of the capillaries are so thin, gases are able to move across the walls. When blood that is rich in oxygen moves into a capillary that is surrounded by oxygen-poor tissue, the oxygen moves from that blood into the surrounding tissue. At the same time, the carbon dioxide in the surrounding tissue moves in the reverse direction, from the tissue through the capillary wall into the blood that had previously had a low level of carbon dioxide.

The blood, which now contains high levels of CO<sub>2</sub> and low levels of O<sub>2</sub>, returns to the heart via smaller **venules** and larger **veins**.

This exchange of oxygen for carbon dioxide is reversed in the lungs, where blood that is high in CO<sub>2</sub> but low in O<sub>2</sub> enters the capillaries surrounding the air sacs (alveoli) of the lungs. The CO<sub>2</sub> moves from the blood out into the lungs and the O<sub>2</sub> from the lungs moves into the bloodstream.



## **Blood:**

The fluid of the circulatory system

Carries oxygen and carbon dioxide

**Plasma** = the liquid portion of the blood

**Red blood cells** = responsible for carrying oxygen

**White blood cells** = fight infections

**Platelets** = involved in the formation of clots

The average 150 lb. adult has 6 liters of blood

# The Musculoskeletal System

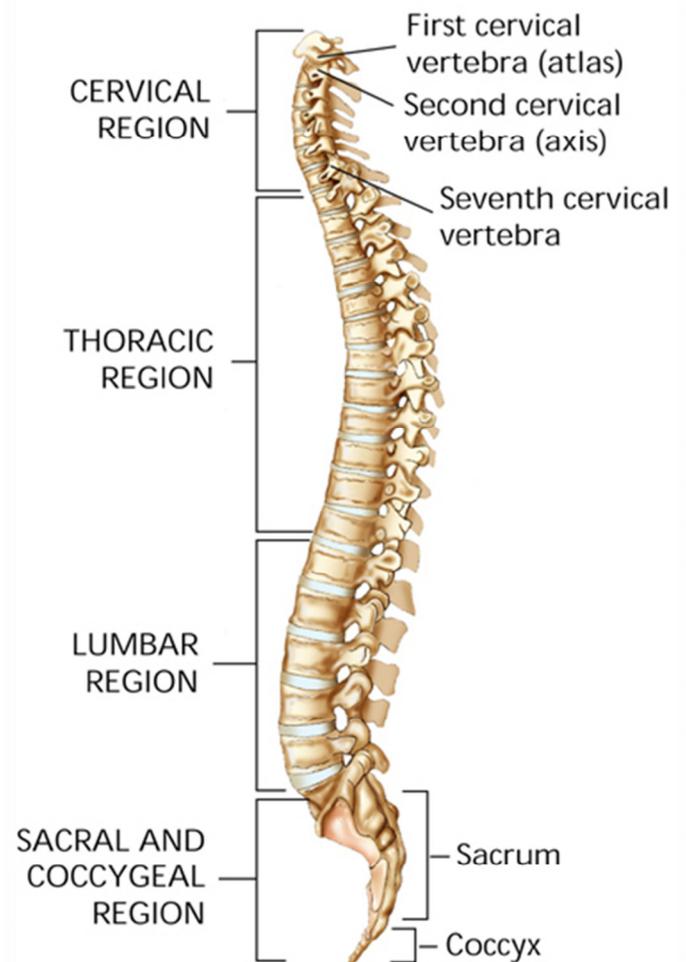
## The Skeletal System

### Function:

- Gives shape to the body
- Provides protection for vital organs

### Components:

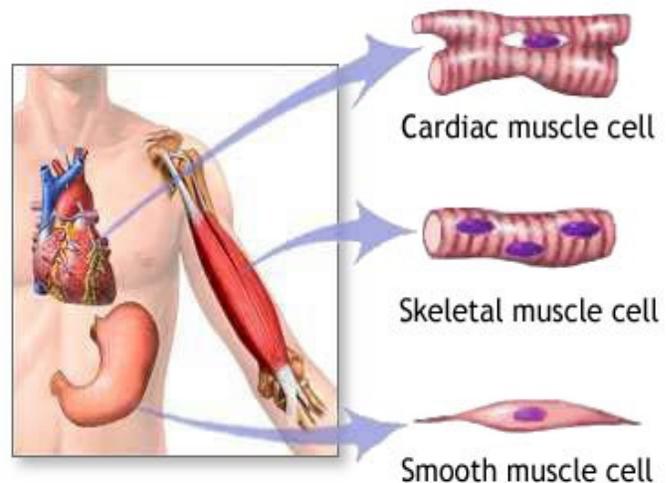
- Cranium – houses and protects the brain
- Face
- Spinal column
- Thorax
  - Ribs
  - Sternum (breastbone)
- Pelvis
- Lower extremities
  - Femur (upper leg)
  - Patella (kneecap)
  - Tibia / Fibula (lower leg)
  - Ankle, Feet & Toes
- Upper extremities
  - Clavicle (collar bone)
  - Scapula (shoulder blade)
  - Humerus (upper arm)
  - Radius / Ulna (forearm)
  - Wrist, Hand & Fingers
- Joints = connections from bone to bone



# The Muscular System

## Function:

- Gives shape to the body
- Provides protection for vital organs
- Allows movement



## Components:

ADAM.

### **Voluntary (skeletal) Muscle:**

- Attached to bones
- Under conscious control by the nervous system
- Can be contracted and relaxed at will
- Responsible for movement

### **Involuntary (smooth) Muscle:**

- Cannot be controlled at will
- Found in the walls of the tubular structures of the GI tract, urinary system, in blood vessels and certain airway structures (bronchi)

### **Cardiac Muscle:**

- Found only in the heart
- Can tolerate interruptions of blood supply for only very short times

# The Nervous System

## Function:

- Controls both the voluntary and involuntary activity of the body
- Provides for higher mental function (thoughts and emotions)

## Components:

### Central Nervous System

- Brain
- Spinal cord

### Peripheral Nervous System

All the nerves that branch off from the Central Nervous System and innervate the body

**Motor nerves** = nerves which travel from the brain to the body and carry messages that induce movement

**Sensory nerves** = nerves traveling from the body back to the brain and carry messages regarding sensation

Motor nerve function is assessed by asking the patient if he or she is able to move a limb or extremity (“Can you wiggle your toes?”). Sensory nerve function is assessed by asking the patient if he or she is able to feel a specific stimulus (“Which toe am I touching?”)

# The Skin

The largest organ in the body

## Function:

- Protects the body from the environment, bacteria and other organisms
- Helps regulate the temperature of the body
- Prevents dehydration
- Senses heat, cold, touch, pressure and pain

Changes in skin color, temperatures and condition (wet or dry) are important diagnostic signs and can be extremely informative concerning patient's condition.

## Skin color changes:

**Skin color should be assessed in the mucous membranes** - conjunctiva (inside the eyelids), nailbeds and inside of the lips / mouth. Regardless of a person's normal skin tone, mucous membranes are pink when perfusion is adequate.

**Pale mucous membranes indicate poor perfusion.**

## Other abnormal skin color findings:

**Cyanosis** (blue-gray discoloration) → hypoxia (low levels of oxygen)

**Jaundice** (yellow discoloration) → liver disorders

**Flushed skin** (reddened) → exposure to heat, fever, CO

Skin will normally feel warm to the touch. Temperature should be assessed on the core of the body (face, neck, torso).

Cool or cold skin indicates possible shock or exposure to cold

Hot skin indicates fever, infection, burns or a heat emergency

# Medical Terminology

## **Common Terms**

- Lateral: Away from the midline
- Medial: Toward the midline
- Anterior: Toward the front of the body
- Posterior: Toward the rear of the body
- Superior: Toward the head
- Inferior: Toward the feet
- Proximal: Toward the trunk of the body
- Distal: Away from the trunk of the body

## **Medical Prefixes**

- Cardio- (Heart)
- Neuro- (Nerves)
- Hyper- (Above Normal)
- Hypo- (Below Normal)
- Naso- (Nose)
- Oro- (Mouth)
- Arterio- (Arteries)
- Hemo- (Blood)
- Therm- (Heat)
- Vaso- (Blood Vessel)
- Tachy- (Rapid)
- Brady (Slow)

# Pathophysiology

## THE NEED FOR OXYGEN

- Humans are oxygen dependent.
- Cells die when deprived of oxygen
- Brain cells are among the first.
  - Biological Death begin 4-6 minutes after the onset of hypoxia

- **INHALED AIR**

21 %      Oxygen

78 %      Nitrogen

1 %      Carbon Dioxide & Moisture

- **EXHALED AIR**

16 %      Oxygen

78 %      Nitrogen

>6 %      Carbon Dioxide & Moisture

## **HEART – LUNG - BRAIN RELATIONSHIP**

• Three systems work together to ensure adequate oxygenation of the brain and other cells of the body

–**Respiratory** system - delivers oxygen

–**Cardiovascular** system - circulates oxygen

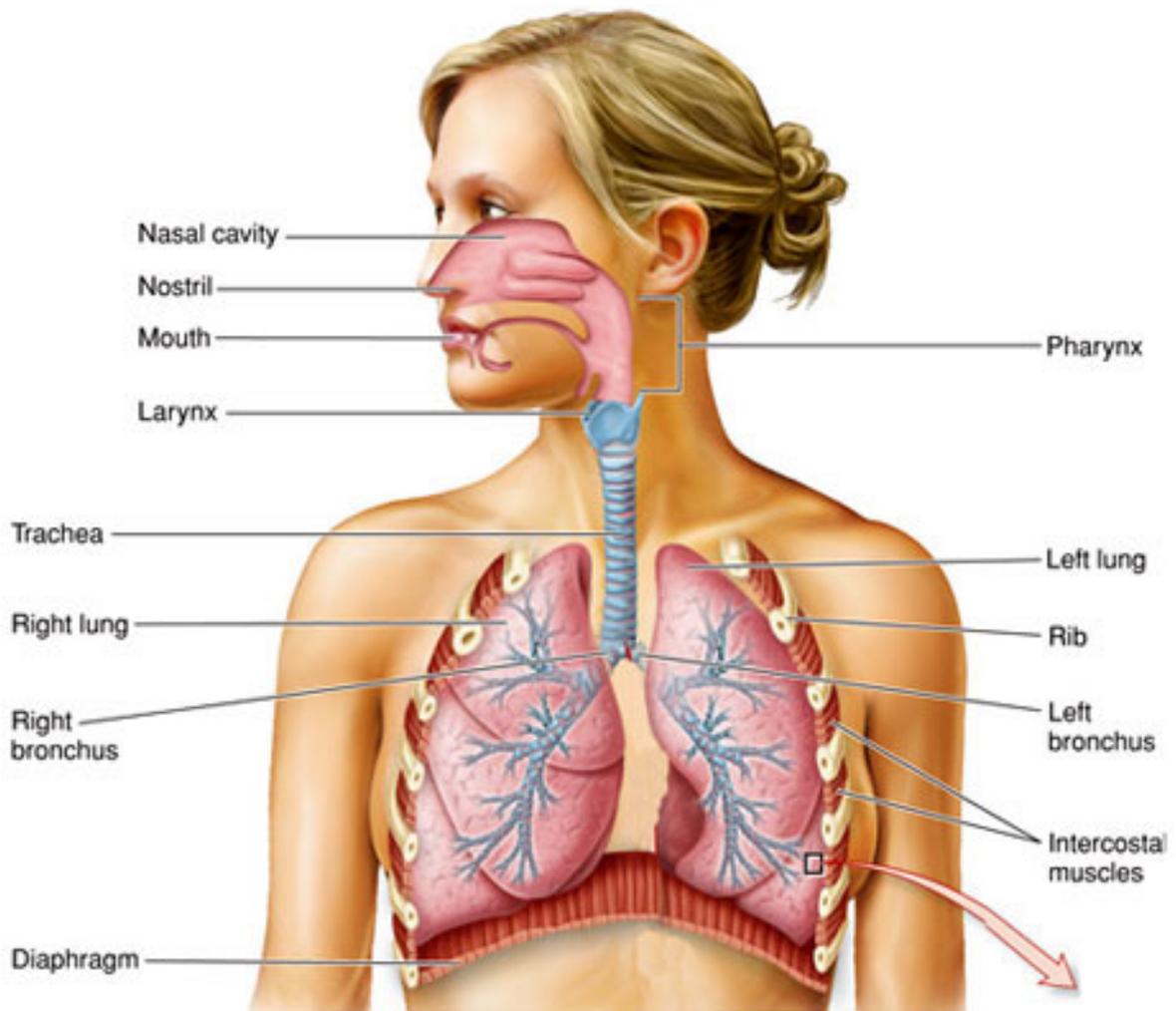
–**Central Nervous** system - regulates both

- ABC's **MUST** be managed properly to ensure brain viability.

Airway patency is of primary concern for the CFR.

It can be compromised along any of these airway structures.

- Nasopharynx
- Oropharynx
- Pharynx
- Larynx
- Trachea
- Bronchi



## **Airway compromise**

- Movement of oxygenated air into the lungs is blocked
- Removal of carbon dioxide from the lungs is also blocked
- Foreign body
- Tongue blocks the airway in an unresponsive patient
- Blood or other secretions
- Swelling due to trauma or infection
- Trauma to the neck

## **Inadequate Respiration**

Occurs when the air that is inhaled has an inadequate concentration of oxygen for the body

- Environment with low oxygen content
- Poisonous gases
- Infections of the lungs
- Narrowing of the airway due to illness
- Excess fluid in the lungs
- Excess fluid between the lungs and blood vessels
- Poor circulation
- Inadequate rate or depth of breathing
- Insufficient volume of air moved into and out of the lungs caused by:
  - Unconscious or altered mental status
  - Injury to the chest
  - Poisoning or overdose
  - Diseases

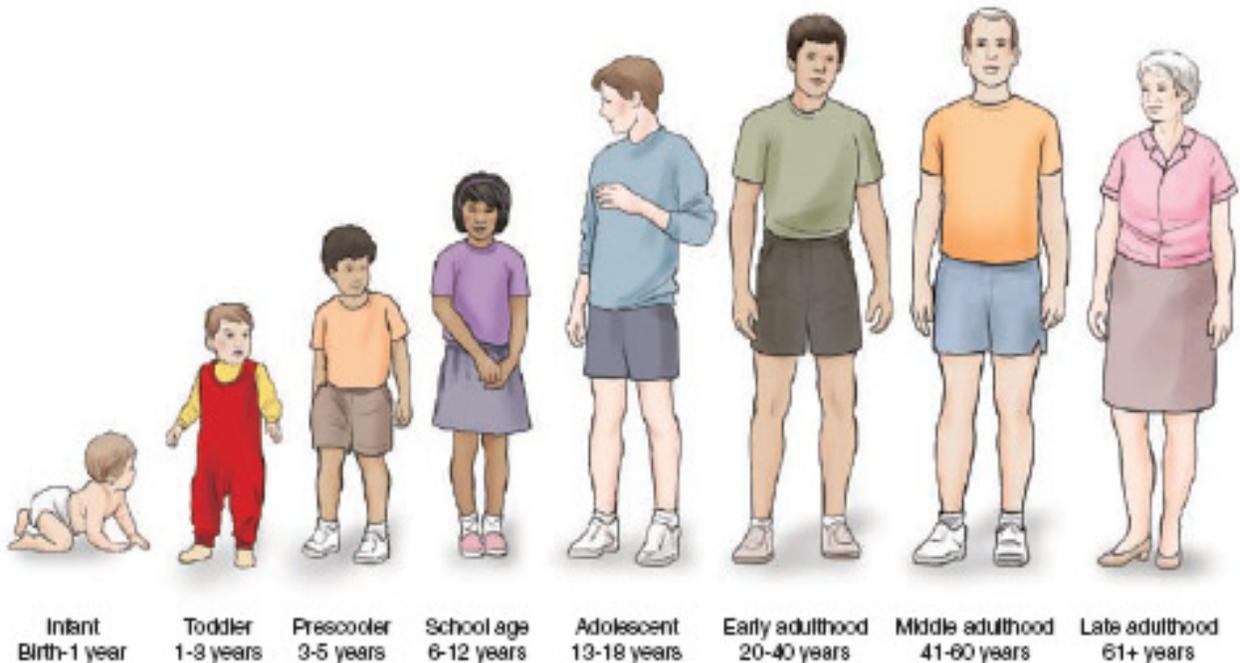
## **Shock**

- Inadequate circulation to vital tissues
- Results in diminished perfusion of blood through the capillaries and inadequate oxygenation of organs
- Referred to as hypo-perfusion

## **Causes of Shock**

- Heart
  - Rate is too fast or slow
  - Contractions are ineffective
  - Related to heart disease, poisoning, excessive rate, or depth of artificial ventilation
- Blood vessels
  - Inability to constrict
  - Related to spinal cord injury, infection, or anaphylaxis
- Blood
  - Decrease in the amount of blood or blood components in the blood vessels
  - Related to bleeding, vomiting, diarrhea, or burns

# Life Span Development



## Infants:

- Newborn  
Few hours old
- Neonates  
Until 1 month old
- Infant  
1-12 months old
- Heart Rate  
140-160 bpm during first 30mins
- Respiratory Rate  
Initially 40-60 breaths/min  
Drop to 30-40 breaths/min few min after birth

- Blood pressure
  - Average of 70 mm Hg systolic at birth
  - Increases to 90 mm systolic Hg by age 1
  
- Temperature
  - 98 to 100 degrees Fahrenheit
  
- Weight
  - Normally 3-3.5 kg (6-8 lb) at birth
  - Initially drops 5-10% in the first week of life
    - Gain of 30 g/day 1st month
    - Doubling by 4-6 months
    - Tripling at 9-12 months
  
- Head accounts for 25% of total body weight
  
- Airways
  - Shorter and Narrower
  - More easily obstructed
  - Tongues are very large in relation to the mouth
    - Can become an obstruction
  - Primarily nose breathers until 4 weeks old
  - Rapid respiratory rates lead to heat and fluid loss

## **Toddlers & Preschoolers**

- Toddler
  - 12-36 months
  
- Preschooler
  - 3-5 years old
  
- Heart Rate
  - 80-130 beats/min for toddlers
  - 80-120 beats/min for preschoolers

- Respiratory rate  
20-30 breaths/min for both groups
- Blood pressure
  - Systolic blood pressure determination
    - $70 + (2 \times \text{age in years})$
    - 70-100 mm Hg for toddlers
    - 80-110 mm Hg for preschoolers
- Temperature 96.8° to 99.6° normal for both
- Brain grows faster than other parts of body
- At age 2, brain weighs 90% of adult brain
- Effortless walking and gains in basic motor skills
- Fine motor skills developing
- Preschoolers understand written symbols
- Vision completes development

## **School Age Children**

- 6-12 years old

Heart rate – 70-110 beats/minute

Respiratory rate – 20-30/minute

Systolic blood pressure – 80-120 mmHg

Temperature – 98.6 degrees Fahrenheit

## **Adolescence**

- 13-18 years
- HR: 55-105 beats/min
- RR: 12-20 breaths/min
- Systolic BP:80-120 mm Hg

## **Early Adulthood**

- Age 20 to 40
- Heart Rate: 70 beats/min
- Respiratory Rate: 16-20 breaths/min
- Blood Pressure
  - average BP: 120/80 mm Hg
- Temperature
  - Core temp: 98.6°F

## **Middle Adulthood**

- Age 41-60
- Heart Rate: 70 beats/min
- Respiratory Rate: 16-20 breaths/min
- Blood Pressure
  - average BP: 120/80 mm Hg
- Temperature
  - Core temp: 98.6°F

## **Late Adulthood**

- Over 61 years old
- Heart Rate, Respiratory Rate, Blood Pressure
- All depends on the patient's physical and health status
- Temperature
  - Core temp: 98.6°F

# **AIRWAY & OXYGEN**

## **Normal Breathing Rates:**

**Adult: 12 – 20 / minute**

**Child: 15 – 30 / minute**

**Infant: 25 – 50 / minute**

} **Range**

## **Adequate Breathing Rates:**

**Adult: 8 - 24 /minute**

**Child: 10 – 30/40 / minute**

**Infant: 20 - 60 / minute**

} **Range**

### **HOWEVER**

**rate alone is not sufficient to determine adequacy of breathing !**

**ADEQUATE BREATHING** is characterized by a respiratory rate within the normal range and:

- A regular breathing pattern
- Breath sounds that are present and equal and free of unusual noises (gurgling, gasping, crowing, wheezing)
- Chest expansion that is adequate and equal with minimum effort

**INADEQUATE BREATHING** is characterized by a rate outside of the adequate range and:

- Inadequate chest wall movement / shallow respirations
- **Cyanosis** or pallor
- **Mental status changes**
- Increased effort of breathing / accessory muscle use
- Gasping / grunting

Slow heart rate associated with slow respirations or agonal respirations

It is possible to be breathing at a rate that is not “normal” but is still adequate to sustain life. This likely indicates the need for supplemental oxygen administration by a passive method (NRB).

# AIRWAY MAINTENANCE

Opening the airway of an unresponsive patient is one of the most important actions that the CFR can perform. When a patient's mental status decreases, so does his or her ability to control his or her airway. An unresponsive patient loses muscle tone and if he or she is not properly positioned the tongue is likely to fall back in the throat and occlude the airway.

**The tongue is the most common cause of airway obstruction in an unresponsive patient.**

Since the tongue is attached to the lower jaw, moving the jaw forward will lift the tongue from the back of the throat and prevent airway occlusion. This is achieved by performing either the **head-tilt chin-lift** or **jaw thrust without head-tilt**.

## Head-Tilt Chin-Lift:

**The head-tilt chin-lift is the preferred method for opening the airway in an uninjured patient.**

Technique: place your hand that is closer to the patient's head on his/her forehead and apply firm backward pressure to tilt the head back. Place the fingers of your hand that is closer to the patient's feet on the bony part of his/her chin. Lift the chin forward and support the jaw.

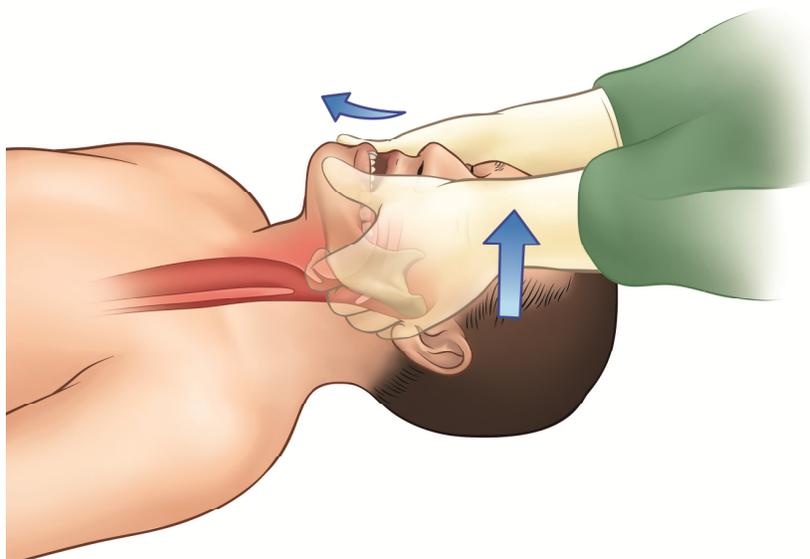


## **Jaw-Thrust without Head-Tilt:**

**The jaw thrust is the safest method for opening the airway of a patient with a possible spinal injury.**

It is effective but fatiguing and technically difficult.

Technique: Grasp the angles of the patient's lower jaw and lift with both hands, displacing the mandible forward. If the lips close, open the lower lip with your thumb



## **Airway Adjuncts:**

### **Oropharyngeal Airway (OPA):**

An OPA may be used to assist in maintaining an open airway in an unresponsive patient without a gag reflex.

An OPA is likely to induce vomiting in a patient with a gag reflex.

### **Sizing:**

**Measure from the corner of the patient's lips to the earlobe, or center of the lips to the angle of the jaw**

**Insert upside-down, with the tip facing the roof of the patient's mouth. Advance gently until resistance is met. Then begin to turn the airway 180 degrees while continuing to insert it, so that it comes to rest with the flange on the patient's teeth.**

**The OPA should be removed immediately if the patient begins to gag.**

### **Nasopharyngeal Airway (NPA):**

NPAs are less likely to stimulate vomiting and therefore may be used on patients who have a gag reflex but still require assistance maintaining an airway.

### **Sizing:**

**Measure the length from the tip of the nose to the tip of the patient's ear. The diameter should not be so large as to cause blanching of the nostril.**

**The NPA is inserted posteriorly, with the bevel towards the septum.**

**Prior to insertion the NPA must be lubricated with a water soluble lubricant.**

Despite the use of lubrication, insertion of an NPA is a painful stimulus.

The right nostril is preferred. If resistance is met the airway should be removed and inserted in the left instead. Do not force the airway.

**The NPA must not be used on a patient with suspected head or facial trauma!**

## **Suction:**

**The use of a mechanical suction device is only indicated if the recovery position and finger sweeps are ineffective in draining the airway, or if trauma is suspected and therefore the patient cannot be placed in the recovery position!**

**Mechanical suction devices are used for the removal of blood, vomitus and other liquids from the airway. Suction units are inadequate for removing solid particles from the airway. These should be removed by the use of finger sweeps.**

The mechanical suction device in use by the FDNY is functioning properly when it is capable of generating a minimum of 300 mmHg vacuum power.

A rigid suction catheter should be used and the tip of the catheter should not be inserted deeper than the base of the patient's tongue.

Because oxygen is also removed during suctioning, it is best to **suction for a maximum of 15 seconds** at a time in adults.

Children: maximum of 10 seconds

Infants: maximum of 5 seconds

Suction power should be on only during withdrawal from the airway

## **Oxygen Delivery Devices:**

Full oxygen cylinder = approximately 2,000 psi  
Replace at 200 psi

## **Supplemental Oxygen Administration in Adequately Breathing Patients:**

### **Non-Rebreather Mask:**

- Preferred device for administering supplemental oxygen to patients in the pre-hospital setting
- Can deliver up to 90% oxygen
- Non-rebreather bag must be filled prior to placing the mask on the patient's face
- Liter flow rate should be adjusted so that when the patient inhales the bag does not collapse (15 LPM)

### **Nasal Cannula:**

- Used only on patients who will not tolerate a non-rebreather mask despite encouragement from the First Responder
- Rarely the best method of oxygen delivery
- Does not deliver high concentration oxygen: low flow rate device with a maximum liter flow of 6 LPM

**ANY PATIENT REQUIRING OXYGEN SHOULD RECEIVE HIGH CONCENTRATION IN THE PRE-HOSPITAL SETTING!!!**

**Ventilation Devices for Patients Who Are Not Breathing Adequately:**

## **Bag-Valve-Mask:**

- **The bag-valve-mask device is most effective and is the preferred device when two rescuers are available to ventilate. One rescuer can maintain an airtight seal using both hands and the other rescuer should squeeze the bag**
- Maintaining an adequate seal is difficult with a single rescuer
- Cannot be used by a single rescuer while performing a jaw-thrust
- When using a bag-valve-mask it is always preferred that supplemental oxygen be attached

## **Mouth-to-Mask:**

- Preferred, most effective device for the single rescuer as it allows for a two-handed seal
- Can be used with or without supplemental oxygen

## **Flow Restricted, Oxygen-Powered Ventilation Devices**

(manually triggered positive pressure devices):

- **The only devices capable of delivering approximately 100% oxygen**

While still permitted for use when ventilating an adult patient as per NY State protocols, NY City protocols prohibit the use of manually triggered positive pressure devices due to the danger of over-inflating the patient's lungs.

## **Mask-to-Stoma Ventilations:**

A stoma is a surgical opening in the front of the neck that leads directly to the trachea. Rescue breathing of this patient requires mask-to-stoma ventilations.

- Use the infant or child mask to create an airtight seal around the stoma.
- The patient's head and neck **do not** need to be positioned for airway maintenance
- If air escapes through the nose and mouth while attempting to ventilate the stoma, close the mouth and pinch the nostrils. Otherwise it is not necessary to do so.

# Intranasal Naloxone Administration for CFR's



## Nasal Naloxone

- Molecular medication which can cross the nasal membrane
- Combats effects of an opiate or opioid overdose
- Action Duration is approximately 30 – 45 minutes

# **Six Rights of Administration**

Make sure you have the right:

- Patient (Symptoms)
- Medication (Naloxone)
- Expiration (Non Expired)
- Route (Intra Nasal Delivery)
- Dose (1 to 2 mg based on patient age)
- Time (Administered)

## **Relative Contraindications**

- Cardiac Arrest
- Seizure Activity
- Nasal Trauma
- Epistaxis or other Nasal Obstruction

# Opioids

- Narcotics which cause Central Nervous System Depression
- Can be of natural or synthetic origin
- The most commonly abused opioid is Heroin
- Others include: Codeine, Fentanyl, OxyContin, Morphine, Hydrocodone, Oxycodone, and Methadone



# Indications of an Overdose

- Altered Mental Status
- Inadequate Respirations
  - Less than 10 breaths per minute
- Pinpoint or Constricted Pupils
- Drug Paraphernalia
  - Pills
  - Empty Prescription Bottles – Needles

## FDNY Naloxone Kits

- 2 doses of Naloxone



- 2 Mucosal Atomizers



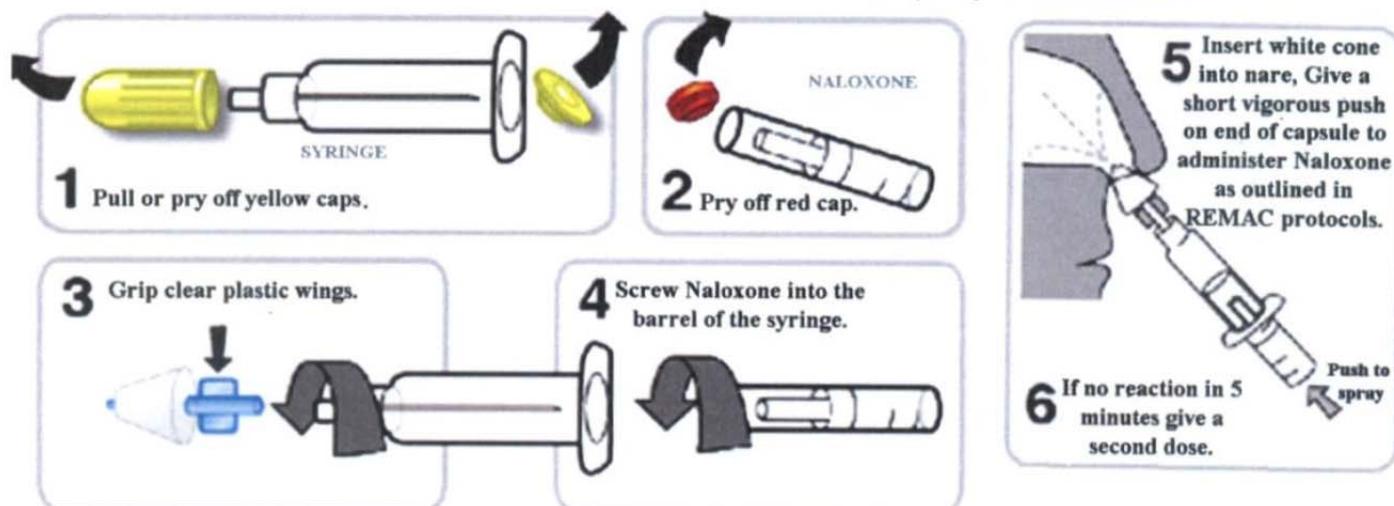
# Administering Nasal Naloxone

- Assemble the pre filled syringe and expel any air
- Attach the mucosal atomizer device to the luer lock of the syringe
- Insert the mucosal atomizer until flush with the external nare
- Briskly depress the plunger to deliver naloxone to the first nasal passage as indicated:
  - Adult: 15 yrs of age and older: 1 mg
  - Pediatric: 14 yrs of age and younger: 0.5 mg

- Remove the syringe and place into the opposite nare
- Briskly depress the plunger to deliver naloxone to the second nasal passage as indicated:
  - Adult: 15 yrs of age and older: 1 mg
  - Pediatric: 14 yrs of age and younger: 0.5 mg
- Dispose of syringe in the Department Issued Sharps Container
- Repeat the procedure with a second dose of naloxone if there is no improvement after 5 (five) minutes

- Be aware of possible reactions:
  - Withdrawal type symptoms
  - Agitation, combative
  - Nausea and vomiting
  - Seizures

### How to Administer Intranasal (IN) Naloxone



# Shock and Resuscitation

**Cardiac Arrest = the heart has stopped, no pulse can be felt**

**Cardiac Arrest does NOT mean the patient is having a heart attack; it means the patient's heart has stopped beating altogether (i.e. they are dead).**

Brain damage begins within 4 – 6 minutes following cardiac arrest and becomes irreversible in 8 – 10 minutes.

Cardio-pulmonary resuscitation (CPR) is performed to oxygenate and circulate blood.

To be effective, CPR must be started immediately following cardiac arrest, and the effectiveness decreases over time. It cannot sustain life indefinitely.

## **Reasons the heart may stop beating:**

- Sudden death or disease
- Respiratory arrest, especially in children
- Medical emergencies (stroke; epilepsy; diabetes; allergic reactions; poisoning)
- Drowning or suffocation
- Electrocution
- Trauma

**Regardless of the cause, a CFR's primary treatment of cardiac arrest is to perform CPR according to the current nationally accepted guidelines.**

In many cases defibrillation is necessary in order for the patient to survive. CPR increases the amount of time that defibrillation will be effective.

## **Automated External Defibrillation (AED)**

- Used to correct electrical abnormalities in the heart
- Cannot detect mechanical function (a pulse)
- Is to be used in conjunction with CPR
  - Perform CPR after each shock is administered
  - Perform CPR anytime a shock is not indicated after analysis

## **AED Safety**

- DO NOT use the AED in a moving vehicle or unstable environment
- DO NOT touch the patient while the AED is analyzing or delivering a shock
- Prior to applying the electrodes ensure that the patient's chest is dry

Remove any medication patches and wipe any medication paste from the patient's skin

## **Reasons to Withhold CPR:**

- Obvious advanced stage of death: rigor mortis, extreme dependant lividity
- Obvious mortal injury
- The presence of a valid DNR

## **Reasons to Terminate CPR after it has been initiated:**

- Rescuers become exhausted and unable to continue
- Telemetry MD orders (Online Medical Control)
- The scene becomes unsafe for the rescuers
- A return of a spontaneous pulse

## **Special Considerations**

- Apply pads at-least one inch away from a pacemaker
- LVAD (Left Ventricular Assist Device)
- Wet patient
- Trans-dermal medication patch

## **Left Ventricular Assist Device**

- Mechanical circulatory device
- Draws blood from the left ventricle to a pump which circulates it to the aorta and then the rest of the body
- Patients will have a wire protruding from the abdomen to a battery pack
- Pulses may not be palpable
- Blood pressure may be detectable to only 70-80 mmHg.  
Assessing the LVAD Patient
- Assess airway and breathing steps as normal.
- When assessing circulation, be mindful of the lower blood pressure and lack of a pulse.
- AMS may be the only reliable indicator of impaired circulation

## **Treating the LVAD Patient**

- Unresponsive with no detectable blood pressure:
  - Apply the AED, placing the pads as usual
  - DO NOT begin chest compressions
- May cause fatal internal hemorrhaging
- Analyze rhythm and shock if indicated
- All other injuries and illness should be treated in accordance with REMSCO protocols

AHA 2015 Standards	<b>ADULT</b> Puberty and Older	<b>CHILD</b> 1 year – about 12-14 yrs	<b>INFANT</b> (<1 year)
Open Airway	Head tilt-Chin lift (Jaw Thrust as needed)	Head Tilt-Chin Lift (Jaw Thrust as needed)	Neutral (Jaw Thrust as needed)
Rescue Breathing <i>each lasting 1 sec</i>	Initial 2 breaths 10-12 breaths/minute 1 every 5 - 6 seconds	Initial 2 breaths 12 - 20 breaths/min 1 every 3 - 5 seconds	Initial 2 breaths 12 - 20 breaths/min 1 every 3 -5 seconds
FBAO Conscious Victim	Abdominal Thrusts ( Heimlich Maneuver )	Abdominal Thrusts ( Heimlich Maneuver )	Back Slaps/Chest Thrusts (no abdominal thrusts)
FBAO Unconscious Victim	For Known Choking Patients (Responsive then Unresponsive) : Begin CPR, Looking for Objects Prior To Ventilating. For Patients Who Are Initially Found Unresponsive,: Initiate the CAB Sequence		
Pulse Check	Carotid No More than 10 Seconds	Carotid No More than 10 Seconds	Brachial No More than 10 Seconds
Compression Site	Lower Half of the Breastbone	Lower Half of the Breastbone	Just below nipple line
Compression Technique	2 hands interlaced	Heel of one hand or same as adult (size dependant)	2 fingers or 2 thumbs with hands encircling
Compression Depth	At least 2" but no more than 2.4 " ( 5-6 cm)	At least 1/3 the depth of chest <i>Or 2 Inches ( 5 cm )</i>	At least 1/3 the depth of chest <i>Or 1½ Inches ( 4 cm )</i>
Compression Rate	100 - 120 / min	100 - 120 / min	100 - 120 / min
Compression/Ventilation Ratio	1 or 2 Rescuers = 30:2 If an advanced airway is in place do not pause to ventilate, one breath every 6 seconds	1 Rescuer = 30:2 2 Rescuers = 15:2 If an advanced airway is in place do not pause to ventilate	1 Rescuer = 30:2 2 Rescuers = 15:2 If an advanced airway is in place do not pause to ventilate

**“Push Hard, Push Fast”**

## **THINGS TO REMEMBER**

**ADULT CHAIN OF SURVIVAL**- EARLY ACCESS, EARLY CPR, EARLY DEFIBRILLATION AND EARLY ADVANCED CARE.

**TRAUMA PATIENTS** ALWAYS USE A JAW THRUST TO OPEN THE AIRWAY.

### **RESCUE BREATHING:**

- ADULT-1 BREATH EVERY 5-6 SECONDS
- CHILD-1 BREATH EVERY 3-5 SECONDS
- ADULT, CHILD OR INFANT- ADVANCED AIRWAY IN PLACE (INTUBATED), 1 BREATH EVERY 6-8 SECONDS

BAG VALVE MASK IS THE RECOMMENDED DEVICE FOR **2** PEOPLE WHEN VENTILATING A PATIENT. THE MOUTH TO MASK TECHNIQUE IS RECOMMENDED FOR **SINGLE** RESCUER.

**PULSE CHECK** IS NO MORE THAN 10 SECONDS

- ADULT-CAROTID
- CHILD-CAROTID
- INFANT-BRACHIAL

### **HAND PLACEMENT FOR CPR:**

- ADULT-CENTER OF CHEST BETWEEN NIPPLES (LOWER HALF OF BREASTBONE)
- CHILD-CENTER OF CHEST BETWEEN NIPPLES (LOWER HALF OF BREASTBONE)
- INFANT-JUST BELOW NIPPLE LINE

### **DEPTH OF COMPRESSIONS:**

- ADULT-2 INCHES to 2.4 INCHES (5-6 CM)
- CHILD- 1/3 DEPTH OF CHEST OR 2 INCHES
- INFANT- 1/3 DEPTH OF CHEST OR 1 1/2 INCHES

### **RATIO OF COMPRESSIONS TO VENTILATIONS:**

30 COMPRESSIONS TO 2 VENTILATIONS, ONLY TIME IT CHANGES IS IF 2 PEOPLE ARE DOING CHILD OR INFANT CPR THEN IT IS 15 COMPRESSIONS TO 2 VENTILATIONS

### **FOREIGN BODY AIRWAY OBSTRUCTION:**

ADULT- THAT CAN MAKE NOISE (COUGH) MONITOR THE PATIENT DO NOT INTERFERE WITH THEIR EFFORTS TO CLEAR THEIR OWN AIRWAY.

### **USING THE AED:**

PATIENT MUST HAVE **NO** PULSE  
AFTER SHOCK START CPR

# SHOCK (Hypoperfusion)

The condition resulting from the inadequate delivery of oxygenated blood to body tissues

The function of the circulatory system is to deliver oxygen and nutrients to all of the tissues of the body, and remove wastes. If the oxygen demands of the body are being sufficiently met, the body is in a state of **perfusion**.

**Hypoperfusion, or shock, is the result of a failure of the circulatory system to meet the demands of the body for oxygen.**

Shock can be a result of:

- Heart failure
- Abnormal dilation of the blood vessels
- Loss of blood or body fluid
- Infection
- Trauma
- Allergic Reactions (Anaphylaxis)

## **Signs & Symptoms:**

- Extreme thirst
- Pale, cool, moist skin
- Restlessness / anxiety
- Rapid, weak pulse
- Rapid, shallow respirations
- Mental status changes → coma
- Dropping blood pressure

## **Management:**

- Administer oxygen
- DO NOT allow patient to eat or drink anything
- Maintain normal body temperature / prevent heat loss
- Elevate lower extremities if possible without aggravating injuries
- Prevent further blood loss

# PATIENT ASSESSMENT

## Scene Size-Up:

Begins with dispatch information. En route to and upon arrival on the scene, consider issues affecting:

**Scene Safety:** En route to the scene, consider the possibility of any hazards that may exist. While approaching and upon arrival at the scene, assess the surroundings for any potential hazards to safety of self, crew, patient and bystanders.

**BSI** – gloves at a minimum; consider the need for additional measures based on the specific conditions

### **Mechanism of Injury (MOI) or Nature of Illness (NOI)**

Obtain information from patient, family, bystanders, scene  
Consider forces involved to predict injuries

**Number of Patients** – if necessary, call for additional help prior to initiating care

**Additional Resources** – determine need based on survey of scene, hazards, number of patients, etc.

**IF THE SCENE IS NOT SAFE, MAKE IT SAFE OR DO NOT ENTER!**

## **Primary Assessment:**

**Performed to identify and immediately correct life-threatening illness or injuries**

Initial Assessment Includes:

- forming an immediate **general impression**
- assessing for and treating any existing life threats
- determining patient priority

**Life-threatening conditions must be corrected immediately upon their discovery, prior to proceeding with the assessment.**

Other injuries (not immediately life-threatening) should be noted, but not addressed until the primary assessment has been completed and all life-threats have been dealt with.

## **General Impression:**

The CFR's immediate assessment of the environment and the patient's **chief complaint** or appearance / positioning / apparent severity of condition

**If any obvious life-threats are noted (i.e. - arterial bleeding, airway compromise) they should be dealt with immediately, prior to continuing with the assessment.**

Includes the approximate age and gender of patient

Determine if the patient is ill (medical) or injured (trauma).

**If it is unclear whether the patient is ill or injured, assume and treat as trauma.**

**Based on the general impression, consider the need for spinal stabilization prior to proceeding.**

## **Mental Status:**

Assess the patient's mental status. Begin by speaking to the patient. Determine level of responsiveness using **AVPU** scale:

**A = alert**

**V = responds to verbal stimulus**

**P = responds to painful stimulus only**

**U = unresponsive**

## **AIRWAY:**

Responsive patient – Is the patient talking or crying?

Unresponsive patient – Is the airway open and will it stay open?

**Open** the airway with a jaw thrust or head-tilt chin-lift as necessary

Inspect for any obstructions, unusual noises, etc. **Clear** and suction as needed

Once opened and cleared, **maintain** with adjunct (OPA or NPA) as needed

## **BREATHING:**

**Is the patient breathing adequately** to sustain life?

If yes: administer oxygen via non-rebreather at 15 LPM

If No: ventilate with supplemental oxygen

Assess the chest for and treat signs / symptoms of chest injuries that will impair breathing.

**Seal any open wounds** to the chest with an occlusive dressing taped on 3 sides.

**Impaled objects** should be stabilized in place.

## **CIRCULATION:**

### **Assess for the presence and quality of pulse**

Responsive adult – assess radial pulse

Unresponsive adult – assess carotid pulse

Responsive child – assess brachial or radial

Unresponsive child – assess carotid or femoral

Infants – assess brachial pulse

Assess for and **control any major bleeding.**

**Assess for shock by evaluating color, temperature and condition of skin.**

**Treat as needed.**

## **Determine Patient Priority:**

Update incoming EMS unit with information pertaining to patient's **age / gender; chief complaint; mental status / level of responsiveness; airway, breathing and circulatory status.** Obtain ETA if possible

## Secondary Assessment:

A complete **head-to-toe physical exam** should be performed on any patient who has sustained a **significant mechanism of injury**.

Briefly **inspect** (look) and **palpate** (feel) for any signs of injury, or:

**D – Deformities**

**O – Open injuries**

**T – Tenderness**

**S – Swelling**

Assess the body in a logical manner:

Head



Neck



Chest



Abdomen



Pelvis



Lower extremities (legs)



Upper extremities (arms)

Secondary Injuries discovered during the physical exam can be treated as time permits.

An injury-specific exam may be performed on alert patients with a minor isolated injury



## **Blood Pressure:**

A measurement of the force being exerted by the heart when it pumps

Blood pressure is measured using an inflatable cuff that is placed on the patient's upper arm. The cuff is inflated and blood pressure is determined by measuring the pressure required to occlude blood flow through the brachial artery and the release of pressure required to allow it to resume. When conditions permit, blood pressure is measured by **auscultation** – listening with a stethoscope for the sounds associated with blood flow through the brachial artery.

When noisy scenes prohibit auscultation, a blood pressure may be assessed by **palpation** – feeling for the return of a pulse to the radial pulse site.

## **Skin:**

The patient's skin **color** should be assessed in the nail beds, oral mucosa (lips, gums) and conjunctiva (inside eyelids).

Normal = pink

Abnormal = pale, cyanotic, flushed or jaundiced

The patient's skin **temperature** should be assessed by placing a gloved hand on the patient's skin, preferably centrally located (face, neck, torso).

Normal = warm

Abnormal = cool, cold, hot

The patient's skin **condition** should be assessed by observing for moisture and sweating.

Normal = dry

Abnormal = wet, moist, clammy

# History & Physical Exam:

## **MEDICAL HISTORY:**

Obtain pertinent medical history from patient, family or friends if possible

**S = signs/symptoms** – *“Is anything else bothering you?”*

**A = allergies** – foods, medications, environmental

**M = medications** – *“Are you taking any medications?”*

**P = past pertinent history** - *“Are you seeing a doctor?”*

**L = last oral intake** – *“When was the last time you ate or drank anything?”*

**E = Events leading to the injury or illness** – *“What were you doing when this began?”*

**Sign** = something which can be verified (seen, heard, felt, smelled, etc) by the rescuer (ex. - fever, cyanosis, noisy breathing)

**Symptom** = something that the patient reports (ex. - nausea, pain)

## **Reassessment:**

While awaiting additional EMS resources, the First Responder should continually monitor the patient

**The Initial Assessment should be repeated:**

**Every 15 minutes for a stable patient**

**Every 5 minutes for an unstable patient**

The **physical exam** should be repeated as needed.

**Interventions** should be checked for effectiveness.

**Vital signs** should be re-assessed.

The CFR should comfort, calm and reassure the patient.

Upon arrival of the EMS unit, the CFR should provide a **hand-off report** consisting of:

- Age and sex
- Chief complaint
- Mental status/responsiveness
- Airway, breathing & circulatory status
- Physical findings
- SAMPLE history
- Interventions provided

**If at any time during the assessment the patient's mental status changes, begin the primary assessment over, starting with the "AVPU" step**

# Pt. Assessment Flow Sheet

## **Scene Size-up: Ask 5 questions**

- Is the scene safe?
- Do I have enough BSI?
- What is the MOI/NOI?
- How many patients are there?
- Do I need additional resources?

## **Primary Assessment**

- L** – Are there any obvious, immediate **L**ife threats?
- I** – “**I** see...” (general impression)
- S** – Consider the need for **S**pinal **S**tabilization
- A** – **A**VPU

### **A – Airway (OSO)**

- O**pen the airway (jaw thrust or head-tilt chin lift)
- S**uction and clear the airway if needed
- O**PA/NPA

### **B – Breathing (O-IPASS)**

- O**xygen: “*Is the patient breathing adequately?*”  
If yes, oxygen via NRB. If no, oxygen via BVM
- I**nspect (look)
- P**alpate (feel)
- A**uscultate (listen for the lungs sounds, mid-axillary)
- S**eal any open wounds with an occlusive dressing
- S**tabilize any impaled objects with a bulky dressing

### **C – Circulation (VCRSS)**

- V**oids – assess for major bleeding and treat if found
- C**arotid pulse – assess presence and quality
- R**adial pulse - assess presence and quality
- S**kin - assess color, temperature and condition
- S**hock – treat as necessary

### **D – Determination of patient’s status and update**

- (Age/sex; MOI, mental status, airway, breathing & circulatory status, request ETA)

## **Secondary Assessment and History**

- E** – Exam (head-to-toe)
- F** – Full set of vital signs
- G** – Get a **S**A**M**P**L**E and HPI history

## **Reassessment**

- Repeat **Vital Signs**
- Repeat **Primary Assessment**
- Repeat **Secondary Exam**

# Medicine

## Respiratory Distress

### Signs & Symptoms:

- Shortness of breath (SOB)
- Restlessness/anxiety
- Increased pulse rate (tachycardia)
- Increased breathing rate (tachypnea)
- Decreased breathing rate (bradypnea)
- Skin color changes
  - Cyanotic
  - Pale
  - Flushed
  - Mottled
- Noisy breathing
  - Wheezing
  - Stridor
  - Snoring
  - Gurgling
- Inability to speak due to breathing effort
- Retractions and use of accessory muscles
- Coughing
- Irregular breathing rhythm
- Positioning – tripod

### Signs & Symptoms of Inadequate Breathing:

- Rate outside of normal range
- Inadequate chest wall motion
- Cyanosis
- AMS
- Gasping / Grunting
- A slowing pulse rate associated with slow respirations

## **Management:**

Complete primary assessment

### **If patient is breathing adequately:**

- Administer high-concentration oxygen via NRB.
- Allow patient to maintain a position of comfort
- Comfort, calm and reassure the patient while awaiting EMS
- Monitor for change in mental status

### **If patient is breathing inadequately to sustain life:**

- Assist ventilations with a BVM and supplemental oxygen
- Monitor airway for patency

## **Chest Pain**

A complaint of chest pain must always be considered to be potentially life-threatening

### **Common Causes of Chest Pain:**

- Muscle strain
- Respiratory – related (pneumonia, respiratory infection)
- Trauma
- **Angina**
- **Heart Attack**

## **Management:**

Complete the patient assessment including a thorough medical history and history of present illness (OPQRST)

- Administer oxygen
- DO NOT permit any physical exertion or activity
- Comfort, calm and reassure the patient
- Monitor vital signs
- Monitor for cardiac arrest

# Altered Mental Status (AMS)

A sudden or gradual decrease in the patient's level of responsiveness and understanding, ranging from disorientation to complete unresponsiveness which may be a brief period or prolonged.

## **Common Causes of AMS:**

- Fever
- Infections
- Poisonings – including drug & alcohol
- Low blood sugar
- Head trauma
- Hypoxia
- Psychiatric disorders

## **Management:**

- CFR's role is to support the patient, regardless of the cause of AMS
- Maintain scene safety, retreat if necessary
- Complete the Patient Assessment and administer oxygen
- Monitor airway carefully, have suction available
- Place patient in **recovery position** unless possibility of spinal injury exists

# AMS With a History of Diabetes

Diabetes is a disease that results in an inability to process and use the type of sugar that is carried by the bloodstream. Patients with a history of diabetes can suffer a rapid onset of AMS due to a drop in blood sugar levels.

## **Signs & Symptoms:**

- Intoxicated appearance: staggering, slurred speech → coma
- Elevated heart rate
- Cold, pale moist skin
- Hunger
- Seizures

NY State: Management of a diabetic patient with an altered mental status is the same as for any patient suffering AMS.

**NY City protocols allow the administration of glucose or a sugar-sweetened solution to a patient with an altered mental status provided that patient has an intact gag reflex and is able to swallow and drink without assistance.**

# Seizures

A sudden attack, usually related to a malfunction of the nervous system.

## **Common causes:**

- Chronic medical conditions (epilepsy)
- Fever
- Infections
- Poisonings
- Alcohol / Drugs
- Low blood sugar
- Head trauma
- Hypoxia
- Brain tumors
- Complication of pregnancy

Seizures are rarely life-threatening but are a serious emergency. They may be brief (less than 5 minutes) or prolonged

Most patients are unresponsive and may vomit following a seizure.

**Following a seizure patients are usually very sleepy & confused. They may also become combative.**

## **Management:**

### **Of an actively seizing patient:**

- **DO NOT ATTEMPT TO RESTRAIN THE PATIENT**
- **DO NOT PUT ANYTHING IN THE PATIENT'S MOUTH**
- Attempt ventilations; may be impossible
- Protect the patient from harm as best as possible
- Observe and record seizure activity

### **Of a patient following a seizure:**

- Complete a patient assessment and administer oxygen
- Monitor airway carefully, be prepared to suction
- Complete a physical exam as needed
- Place in the recovery position if no possibility of spinal trauma
- Comfort, calm and reassure the patient while awaiting additional EMS

# **Stroke (Cerebro-Vascular Accident)**

A sudden interruption of blood flow to a portion of the brain resulting in tissue death

## **Signs & Symptoms:**

Dependent upon what portion and how much brain matter is affected, and may include:

- Severe headache
- Lack of speech
- Difficulty swallowing
- Facial droop
- Unequal pupils
- Paralysis/numbness
- Loss of bowel or bladder control
- AMS/unresponsiveness

## **Management:**

- Complete a patient assessment and administer oxygen
- Complete a physical exam as needed
- Monitor airway carefully, have suction available
- Do not put anything in the patient's mouth
- Place in the recovery position if no possibility of spinal trauma
- Comfort, calm and reassure the patient while awaiting additional EMS

## **REQUEST RAPID TRANSPORT!**

Patients who have suffered a stroke can often be treated by medications which significantly reduce the effects of the stroke. These medications may only be given for a short period of time following the onset of symptoms. It is therefore essential that the First Responder attempt to ascertain the time of onset, and that they request immediate transport.

# **Abdominal and Gastrointestinal**

## **Abdomen:**

- A term used to describe a sudden onset of abdominal pain
- May be medical or trauma related
- Pain may be “referred” to different parts of the body

## **Treatment**

- Perform a complete assessment
- Administer O2 and treat for shock as needed
- Palpate the abdomen in all 4 quadrants
  - Should be soft and non-tender

## **Special Considerations**

- Evisceration:
  - Do NOT replace the protruding organ
  - Position the patient with the knees slightly bent
  - Place sterile, saline moistened dressings over the organ.  
Do not pour fluids over the wound
  - Secure dry, bulky dressings over the moist
  - Place an occlusive dressing as the final layer
- Impaled Object:
  - Do NOT remove the object
  - Support and secure with bulky dressings

# Gastrointestinal Distress

- Signs and Symptoms:
  - Bloody vomit ( the color red or it has the look of coffee grounds)
  - Blood in the stool (red or black in color)
  - Signs of Shock

## Treatment

- Perform a complete assessment
- Monitor the airway and suction as needed
- O2 via NRB or BVM if indicated
- Position of comfort

# Genitourinary and Renal Emergencies

- Genitourinary System
  - Incorporates all of the organs responsible for reproduction and urinary excretion
- Renal System
  - Organs responsible for the elimination of urine
  - Kidneys, ureters, bladder, and the urethra

# Hemodialysis

- Eliminates water and waste when the kidneys fail
- Dialysis machine is connected to an access port or shunt
- Blood pressure should not be obtained on the arm containing the shunt

# Hemodialysis Emergencies

- Low blood pressure
- Nausea and vomiting
- Irregular pulse, cardiac arrest
- Bleeding from the access site
- Difficulty breathing

## Treatment

- Maintain an airway
- Administer oxygen
- Ventilate if indicated
- Control bleeding from the shunt
- Position:
  - Flat if showing signs of shock
  - Upright if having difficulty breathing

# Gynecological Emergencies

- Polyps or lesions
- Cancer
- Cysts
- Fibroids
- Infection
- Trauma

## Treatment

- Administer oxygen
- Treat as any soft tissue injury
- Apply external pads; never pack the vagina
- Treat for shock if indicated

# Immunology

- Allergic reaction
  - Response by the body to a foreign substance
  - Can be as simple as a rash and hives or as complex as respiratory distress
- Anaphylaxis
  - When the body's immune system has been overwhelmed in response to an allergic reaction
  - Can lead to shock

## **Common Allergens**

- Insect venom
- Food
- Medication
- Animal dander
- Pollen

## **Assessment**

- Respiratory system
  - Severe respiratory distress
  - Wheezing
  - Constriction of the airway
- Cardiovascular system
  - Rapid pulse
  - Low blood pressure

- Skin
  - Pale, red, or cyanotic
  - Hives
  - Itching
  - Swelling around the eyes, mouth, and tongue
  
- Other findings may include:
  - Altered mental status
  - Nausea
  - Vomiting
  - Shock

## **Management**

- Airway is of prime importance
- Administer oxygen
- Position of comfort
- Take and monitor vital signs
- Remove the allergen if possible
- Ask if the patient has used a prescribed epinephrine auto-injector

# **Behavioral Emergencies**

**Behavior** = manner in which a person acts or performs; any and all activities of a person, including physical and mental activity.

**Behavioral emergency** = a situation where the patient exhibits abnormal behavior that is unacceptable or intolerable to the patient, family or community.

May be due to extremes of emotion leading to violence or other inappropriate behavior, or may be due to a psychiatric condition. However, behavior alteration may also be caused by a physical condition such as **low blood sugar, hypoxia, head trauma, exposure to heat or cold, or drug or alcohol overdose.**

**Always consider the possibility of an underlying medical cause!**

## **Role of the CFR**

- Complete a scene size-up before approaching, consider potential for violence
- Do not approach if scene is unsafe
- Consider the need for PD

## **Assessing the patient experiencing a behavioral emergency:**

- Identify yourself and that you are there to help
- Keep the patient informed of your activities and intentions
- Maintain a calm, reassuring voice and attitude
- Allow the patient to tell you what happened
- Avoid being judgmental
- Acknowledge the patient's feeling and show that you are listening by repeating / rephrasing what he or she says
- Watch for any indications of potential violence

## **Methods to calm the patient:**

- Maintain a comfortable distance
- Encourage the patient to state what is upsetting him
- Do not make quick moves
- Involve trusted family members or friends
- Respond honestly to patient's questions
- DO NOT leave the patient alone
- DO NOT threaten, challenge or argue with disturbed patients
- Do NOT "play along" with patient's hallucinations

## **Restraining patients:**

Restraint should be avoided unless patient is a danger to self or others. Have police present if possible and get approval from medical control.

# Toxicology

## **Poison**

–Any substance which can be harmful to the body

- Four routes of entrance
  - Ingestion: through the digestive system
  - Inhalation: through the respiratory system
  - Absorption: Absorbed through the skin
  - Injection: bites or other punctures

- National Poison Control Center
  - 1-800-222-1222

## **Carbon Monoxide**

- Colorless, odorless gas
- Leading cause of poisoning in the U.S.
- Results from the incomplete oxidation of the combustion process
- Exposure can lead to permanent brain damage
- Produced by common household appliances such as:
  - Water heaters
  - Space heaters
  - Grills
- Also present from:
  - Fire
  - Vehicle exhaust
- Symptoms include:
  - Headache
  - Dizziness
  - Nausea
  - vomiting
- Management:
  - Remove the patient(s) from the environment
  - Perform a complete assessment
  - Administer high concentration oxygen
  - Patient may need to go to the hyperbaric chamber

# **NERVE AGENTS**

- Attack respiratory and nervous systems within seconds to minutes
- Extremely toxic lethal agents
- Similar to pesticides in function
  - Tabun (GA)
  - Sarin (GB)
  - Soman (GD)
  - V agent (VX)

## **Signs and Symptoms**

- **S**alivation
- **L**acrimation or tearing
- **U**rination
- **D**efecation
- **G**astrointestinal Cramps
- **E**mesis
- **M**uscle Twitching and Myosis - Pupil constriction
  
- Blurred or dim vision
- Slow or fast heart rate
- Muscle weakness or paralysis
- Slurred speech
- Sweating
- Loss of consciousness
- Death

## **Management**

- Scene safety including specialty units
- Appropriate BSI and PPE
- Remove patient from contaminated environment
- Decontamination from trained personnel
- Airway maintenance
- Oxygenate and ventilate
- Administer nerve agent auto injector kit to self or other rescuer if indicated and available

# Medical Treatment for Chemical Nerve Agents

Mark I Antidote Kit - (2) Auto-Injectors

600 mg. Pralidoxime

2 mg. Atropine

DuoDote Antidote Kit

- Single auto Injector

- Dual Chambered

- Contains:

  - 2.1 mg of Atropine and 600 mg of 2-PAM

## Using an Auto Injector

- Wear appropriate PPE
- Confirm that there are serious signs and symptoms of nerve agent poisoning
- Confirm the correct drug
- Check the expiration date
- Grasp the atropine syringe
- Remove the protective cap
- Press the end of the injector against the outer aspect of the patient's upper leg firmly, at a 90 degree angle
- Hold in place for 10 seconds
- Check for the presence of a needle at the tip to ensure that the medication was delivered
- Dispose of the syringe accordingly

## REMAC Exposure Protocol Initial Treatment

Tag Color	Signs & Symptoms	Auto Injector Administration	Atropine Dose & Monitor Interval
<b>RED</b>	<b>Severe Respiratory Distress, Agitation, SLUDGEM</b>	<b>3 Auto – Injector Kits</b>	<b>6 mg Monitor every 5 min</b>
<b>ORANGE or YELLOW</b>	<b>Respiratory Distress, SLUDGEM</b>	<b>2 Auto - Injector Kit</b>	<b>4 mg Monitor every 10 min</b>
<b>GREEN</b>	<b>Asymptomatic</b>	<b>None</b>	<b>None Monitor every 15 min</b>

## REMAC Exposure Protocol Re-Evaluation and Treatment

Tag Color	Signs & Symptoms	Monitor Interval	Auto Injector Admin.	Atropine Repeat Dosing Freq.
RED	Severe Respiratory Distress, Agitation, SLUDGEM	5 minutes	Up to maximum of 3 auto injectors	2 mg every 3-5 minutes as needed
ORANGE or YELLOW	Respiratory Distress, SLUDGEM	10 minutes	Up to maximum of 2 auto injectors	2 mg every 5-10 minutes as needed
GREEN	Asymptomatic	15 minutes	None	None

## REMAC Exposure Protocol Pediatric Patients

Tag Color	Exposure and / or signs of SLUDGEM, Agitation, and Respiratory Distress	Atropine and Antidote Kit Doses & Monitor Interval		Atropine Dose & Monitor Interval
<b>RED</b>	<b>Yes</b>	<b>Less than 1 years old</b>	<b>1 PEDS Atropine Auto-Injector, No Antidote Kit, Monitor every 3 minutes</b>	<b>Atropine every 3 minutes as needed</b>
		<b>1 - 8 years old</b>	<b>1 Antidote Kit, Monitor every 3 minutes</b>	
<b>GREEN</b>	<b>No</b>	<b>None, Monitor every 10 minutes for evidence of exposure</b>		

# Trauma

## BLEEDING

Bleeding can be internal or external. Uncontrolled bleeding, either internal or external can lead to significant blood loss, shock and death.

The normal response of the body to blood loss is blood vessel contractions and clotting.

A serious injury may prevent effective clotting from occurring.

The average 150 lb. adult male has approximately **6 Liters** of blood. A smaller person has less, and will therefore suffer the effects of blood loss after a smaller loss of volume.

**Severity of blood loss should be based on a general impression of the amount of blood loss and the patient's signs and symptoms.**

When signs and symptoms of shock are present it must be assumed to be a significant blood loss regardless of the amount of blood visible on the scene.

## EXTERNAL BLEEDING

### **Characteristics of Bleeding:**

Arterial bleeding:

- Bright red (due to higher oxygen content)
- spurts from the wound
- Most difficult type of bleeding to control
- Spurting may cease as blood pressure drops

Venous bleeding:

- Dark red (oxygen poor)
- Flows in a steady stream
- Can be profuse but easier to control

Capillary bleeding:

- Dark red in color
- Oozes from the wound
- Often clots spontaneously

## Control of External Bleeding:

**Dressing** = applied directly to the wound, prevents contamination

**Bandage** = holds the dressing in place, can provide pressure

- Use BSI precautions
- Don't be distracted from assessment priorities
  - Scene size-up
  - Airway and Breathing
  - Then circulation
- Direct pressure
- Apply a pressure bandage
- Apply a 1 inch wide tourniquet 2 to 3 inches proximal to the bleeding site (only if bleeding has not been controlled)
- If bleeding continues following the first application of a tourniquet:
- Apply an additional 1 inch wide tourniquet proximal to the first



**STATE:**

Turn until bleeding stops

**CITY:**

Turn until bleeding stops and distal pulses are absent

# **INTERNAL BLEEDING**

Injured or damaged internal organs often lead to concealed bleeding. Painful, swollen deformed extremities also often lead to serious internal bleeding.

## **Signs & Symptoms:**

- Discolored, tender, swollen or hard tissue
  - Rapid, shallow respirations
  - Rapid, weak pulse
  - Pale, cool, sweaty skin
  - Nausea and vomiting
  - Extreme thirst
  - Altered mental status
- ✓ ANY / ALL signs & symptoms of shock

Assume internal bleeding whenever mechanism of injury could have produced it.

Assume internal bleeding whenever signs & symptoms of shock are present with no signs of external blood loss.

## **Management:**

- Complete the patient assessment
- Apply oxygen
- Comfort, calm & reassure the patient while awaiting EMS
- Manage any external bleeding
- Keep the patient warm, treat for shock if indicated
- Position of comfort if shock is position is not indicated

# SOFT TISSUE INJURIES

## **Abrasion:**

- scrape / “road rash”
- tearing away of outermost layer of skin
- very little or no oozing of blood

## **Laceration:**

- break in skin of varying depth
- bleeding may be severe
- caused by sharp object

## **Penetration / Puncture:**

- caused by sharp pointed object
- may be little or no external damage
- internal damage may be severe
- may be entrance or exit wound

## **Management:**

- complete patient assessment
- administer oxygen
- expose the wound
- control the bleeding
- prevent further contamination
- apply sterile dressing and bandage in place

# SPECIAL CONSIDERATIONS

## **Nose Bleeds (Epistaxis)**

Pinch the nostrils closed and have the patient lean forwards to prevent the flow of blood from entering the airway.

## **Chest Injuries**

**ANY** open wound to the chest or upper back should be sealed with an occlusive dressing taped on three sides. A corner should be left unsealed to create a flutter-valve. If at any time the patient's condition deteriorates, ensure that the flutter valve is functioning properly.

Administer oxygen and assist ventilations as needed.

If no spinal injury is suspected, position of comfort may be maintained.

## **Impaled Objects**

Removal of an impaled object may lead to uncontrolled profuse bleeding.

**Do not remove an impaled object unless:**

- **it interferes with airway management or**
- **it interferes with chest compressions or**
- **it is through the facial cheek**

After removal of an impaled object from the cheek bleeding should be controlled from both sides.

OTHERWISE an impaled object should be manually secured in place. Bulky dressings can be utilized to help secure the object.

## **Eviscerations**

An evisceration is an open injury through which organs are protruding.

**DO NOT** attempt to replace the organs.

Cover wound and exposed organs with a sterile, saline – moistened dressing, followed by a dry dressing, followed by an occlusive dressing taped on all sides.

# Amputations

Complete or near-complete tearing off of a body part, most commonly extremities but may also involve an ear or the nose

Bleeding can range from limited to massive, uncontrolled blood loss.

If severed part is recovered:

- wrap in a sterile, saline-moistened dressing, *then*
- seal wrapped part in a plastic bag, *then*
- place plastic bag in a container of **ice and water**
- **DO NOT USE ICE ALONE**
- **DO NOT USE DRY ICE**

# Injuries to Muscles and Bones

## **Types of Musculoskeletal Injuries:**

- Sprains
- Strains
- Fractures
  - Open
  - Closed
- Dislocations

## **Mechanisms of Injuries:**

- Direct force – *injury occurs at the site of impact*
- Indirect force – *injury occurs away from the impact*
- Torsion – *twisting*

## **Signs and Symptoms**

- Deformity / Angulations
- Pain
- Tenderness
- Crepitation / Grating
- Swelling
- Bruising / Discoloration
- Exposed bone ends
- Locked / Immobile joint

## **Management**

Injuries to muscles and bones are managed **after** all life-threats have been addressed

Complete the patient assessment

- Manually stabilize the injury site and adjacent joints
- Cover any open wounds with a dry, sterile dressing
- Apply a cold pack
- DO NOT attempt to replace protruding bone ends
- DO NOT attempt to straighten deformed joints – stabilize in the position found
- Providing resistance is not encountered, angulated bones may be straightened into a splintable position – otherwise stabilize in the position found

# **Injuries to the Spine and Spinal Cord**

Spinal injuries may cause permanent disability or death

**Proper management in the field is essential to minimize the risk of aggravating a spinal injury.**

## **Mechanisms of Injury to the Spine**

- Motor vehicle collisions
- Pedestrian accidents
- Falls
- Blunt force trauma
- Gun shot wounds
- Penetrating trauma to the head, neck or torso
- Falls
- Hangings
- **ANY MECHANISM THAT PRODUCES SUDDEN FORCE TO THE HEAD, NECK, TORSO OR PELVIS**

## **Signs and Symptoms**

- Loss of sensation / paralysis
- Numbness, weakness or tingling in the extremities
- Pain / tenderness along the spinal column
- Respiratory impairment
- Loss of bowel / bladder control
- Soft tissue injuries to head, neck or back
- **MOI**

## **Management**

**IF ANY POSSIBILITY OF A SPINAL INJURY EXISTS:  
PRIOR TO TAKING ANY ACTION THAT MAY ALLOW / CAUSE THE  
PATIENT TO MOVE HIS OR HER HEAD, NECK OR SPINE, MANUALLY  
STABILIZE THE HEAD AND NECK IN THE POSITION FOUND**

**WHENEVER POSSIBLE, ALL PATIENT CARE SHOULD BE  
PERFORMED WITHOUT MOVING THE PATIENT'S HEAD**

# Head Injuries

Can be open or closed

Scalp injuries may bleed excessively

Bleeding within the skull or injuries to brain tissue resulting in swelling may cause an increase in pressure on the brain.

## **Signs and Symptoms**

- Loss of airway control
- Respiratory impairment: irregular breathing, respiratory arrest
- Vomiting
- Seizures
- Changes in blood pressure and pulse:
  - rising blood pressure
  - slowing pulse rate
- **Altered mental status**
- **Coma**

Altered mental status is the most definitive indication of a head injury

## **Management**

Complete the patient assessment

- Monitor and maintain airway
- Administer oxygen, ventilate as needed and monitor for respiratory arrest
- Control bleeding
  - Apply enough pressure to scalp injuries to control bleeding without disturbing the underlying tissue
  - DO NOT apply firm direct pressure to scalp / head injuries
- Monitor mental status

# Environmental Emergencies

## Exposure to Cold

### General Cold Emergencies (Hypothermia)

#### Contributing Factors:

- Cold environment
- Age (very old / very young)
- Pre-existing medical conditions
- Drug / Alcohol use

#### Signs & Symptoms:

- Obvious exposure
- Subtle exposure with contributing factors
- Cool / cold abdominal skin
- Shivering
- Poor coordination
- Confusion / memory disturbances
- Loss of sensation
- Dizziness
- Speech difficulty
- Stiff or rigid posture
- Muscular rigidity, joint pain, stiffness
- Poor judgment

Mental status and motor function decrease as hypothermia worsens

#### Management:

- Remove the patient from the cold environment, and remove any wet clothing
- Cover with a blanket, protect from further heat loss
- Handle the patient **extremely gently** – *do not allow the patient to walk or exert himself / herself*
- Do not allow the patient to eat or drink anything or to smoke
- Do not massage the extremities
- Complete a Patient Assessment, administer oxygen
- **Assess pulse for 30 – 45 seconds prior to initiating CPR**

# Local Cold Emergencies (Frostbite)

Freezing or near-freezing of a body part, usually occurring in fingers, toes, face, ears and nose.

## Signs & Symptoms:

Early or superficial injury (frost nip):

- Blanching of the skin
- Loss of feeling / sensation in the injured area
- Skin remains soft
- Tingling upon re-warming

Late or deep injury (frostbite):

- White, waxy skin
- Skin feels firm / frozen on palpation
- Swelling & blistering may be present
- If thawed – skin appears flushed with areas of purple and blanching, or may become mottled

## Management:

- Remove the patient from the cold environment
- Protect the injured extremity from further injury
- Remove wet or restrictive clothing
- Manually stabilize the extremity
- Remove jewelry
- Cover with dry dressing
- **DO NOT:**
  - Break blisters
  - Rub or massage area
  - Apply heat or attempt to re-warm
  - Allow the patient to walk on the affected extremity
  - Re-expose to the cold

# **Exposure to Heat**

## **Contributing Factors:**

- High temperatures - reduces the body's ability to lose heat by radiation
- High humidity reduces ability to lose heat by evaporation
- Exercise and activity
- Age (very old / very young)
- Pre-existing medical conditions
- Drug / Alcohol use

## **Signs & Symptoms:**

- Muscle cramps
- Weakness / exhaustion
- Dizziness or faintness
- Rapid heart rate
- Hot, flushed skin
- Altered mental status → unresponsive

## **Management:**

- Remove the patient from the hot environment
- Cool patient by fanning
- Place in recovery position

**A patient with hot, flushed skin that is dry (no longer sweating) is suffering from HEAT STROKE.**

**THIS IS A TRUE EMERGENCY. REQUEST IMMEDIATE TRANSPORT!**

# **BURNS**

Classification is done according to depth:

## **Superficial:**

- Outer layer of skin only
- Redness and swelling

## **Partial Thickness:**

- Outer and middle layer of skin
- Deep, intense pain
- Reddening and blistering

## **Full thickness:**

- Extends through all the layers of the skin
- Areas of black, charred skin
- All characteristics of partial thickness will also be present

## **Management:**

- **FIRST STOP THE BURNING PROCESS WITH WATER OR SALINE!**
- Remove any smoldering clothing or jewelry provided resistance is not met
- Continually monitor the airway for evidence of closure / swelling
- Administer oxygen
- Prevent further contamination
- Cover the burned area with dry, sterile dressing, then wrap in dry, sterile sheets
- Do not use any type of ointment, lotion or antiseptic
- Do not break any blisters

## **Thermal Burns:**

Cool hot or smoldering skin (up to 20% of body surface area at a time) with cool water, Normal Saline (0.9%NS), or saline – moistened, sterile dressings

## Chemical Burns:

- **Scene safety!**
- Brush off any dry powder, blot off any liquid prior to flushing
- Flush with copious amounts of water for a minimum of 20 minutes
- Consider possibility of splash injuries to eyes – flush with copious water from bridge of nose outwards
- Be sure to avoid run-off

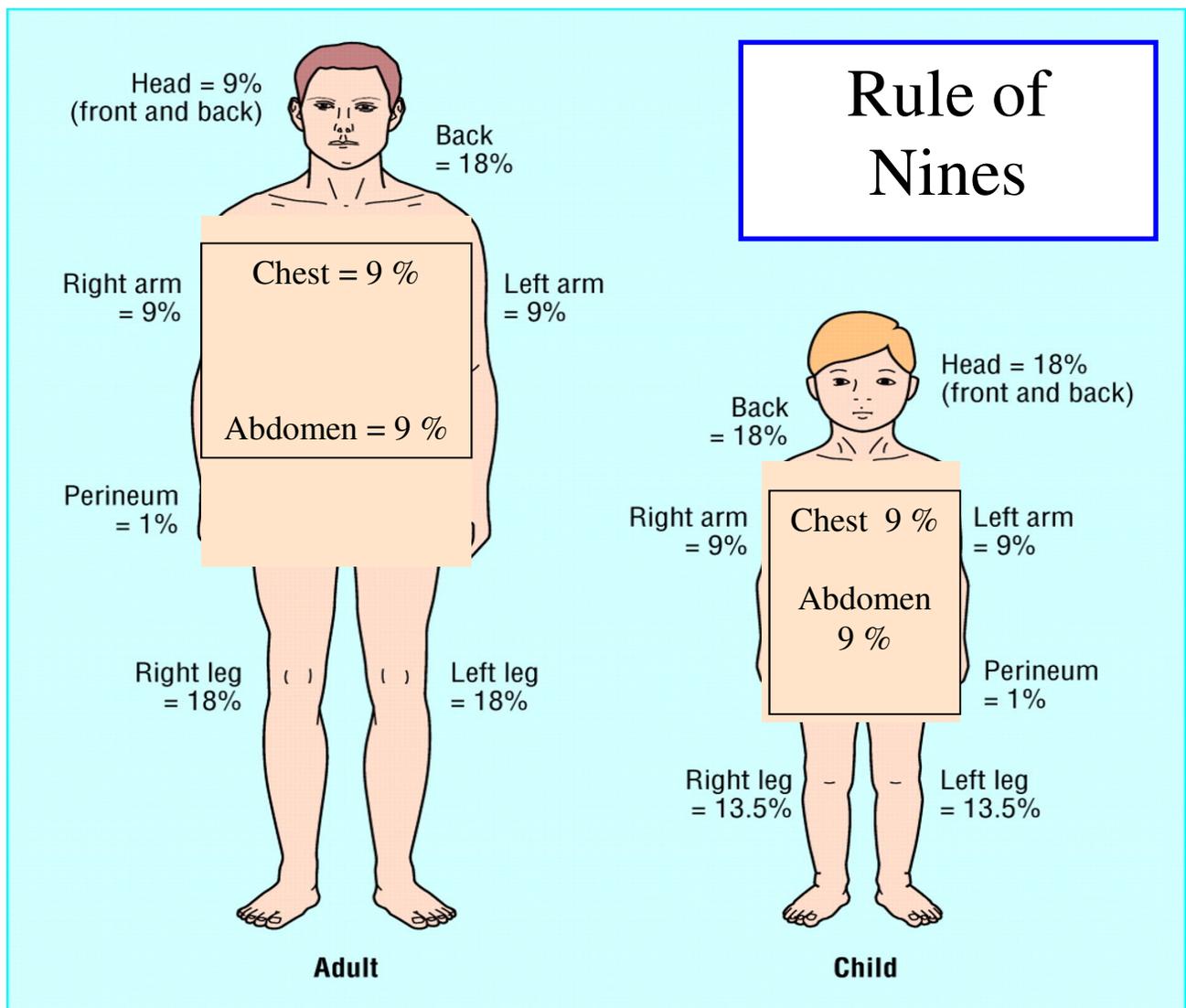
FLUSH SKIN / EYES

NY STATE: 20 MINS / 20 MINS

NY CITY: 10 MINS / 20 MINS

## Electrical Burns:

- **Scene safety - Ensure the patient is no longer in contact with source!**
- Internal damage is usually more severe than indicated by external indications
- Monitor carefully for respiratory or cardiac arrest



# Obstetrics

## ANATOMY & TERMINOLOGY

**Fetus** = developing unborn baby

**Neonate** = a newly born infant, Birth – Several hours old

**Uterus** = organ in which a fetus grows, responsible for labor and expulsion of the infant

**Birth Canal** = The lower part of the uterus (cervix and the vagina)

**Placenta** (afterbirth) = organ through which fetus exchanges oxygen, nutrients and wastes during pregnancy

**Umbilical Cord** = extension of the placenta through which nutrients, oxygen, and waste travel between the fetus and the mother

**Amniotic Sac** = the sac that surrounds the fetus inside the uterus, provides shock absorption and regulates temperature

**Crowning** = the bulging out of the vagina as the presenting part of the fetus begins to press against it

**“Bloody Show”** = mucous and blood that may be expelled from the vagina as labor begins

**Labor** = the process beginning with the onset of uterine muscle contractions and ending with delivery of the placenta

**Abortion** = termination of the pregnancy prior to the fetus being viable (may be spontaneous or induced)

# Pre-Delivery Emergencies

## Miscarriage

- Provide comfort & psychological support in addition to physical care
- Retain any expelled materials
- Assess for and treat shock as necessary

## High Blood Pressure during pregnancy

- Calm, comfort and reassure the mother
- Keep lights dim and avoid loud noises
- Monitor for onset of seizure activity

## Supine Hypotensive Syndrome

- A dangerous drop in blood pressure caused by the weight of the fetus compressing the vena cava when a pregnant woman lies supine
- Occurs in 2<sup>nd</sup> and 3<sup>rd</sup> trimester
- Place pregnant patients in left lateral recumbent position
- If necessary to immobilize, prop up long board

# Labor & Delivery

## Is delivery imminent?

- What is the due date?
- Any chance of multiple births?
- Any bleeding or discharge?
- Does the patient feel as if she has to move her bowels / experience pressure in the vaginal area?

If the patient describes strong, frequent contractions less than 1 minute apart, a feeling of pressure or the need to push, check for crowning!

**Crowning is the most definitive indication that birth is imminent. If crowning is present, prepare for a pre-hospital delivery!**

## **Assisting With the Delivery**

Only touch the vaginal area during actual delivery

As the head emerges, apply gentle pressure with your hand to prevent an explosive delivery. Use other hand to support the perineum to prevent it from tearing.

If the amniotic sac has not broken, immediately tear it and clear it away from the baby's nose and mouth.

**Immediately following delivery of the head, check for the presence of the umbilical cord around the baby's neck.** If the cord is looped around the neck, attempt to slip it over the baby's head.

**NY City** – if you are unable to slip the cord over the baby's head, immediately clamp and cut the cord between the clamps

**NY City:**

**After delivery of the head, suction first the mouth and then the nose using a bulb syringe, or clear the mouth and nose with gauze**

**NY State:**

**DO NOT suction unless there is an obstruction or ventilations are required.**

Support the baby as the torso is delivered. Do not pull on the baby; grasp the feet as they are delivered.

Keep the newborn at about the level of mom's vagina until cord is clamped

**NY City:** after pulsating stops, clamp and cut the umbilical cord: fasten 1<sup>st</sup> clamp 8 – 10 inches away from newborn, 2<sup>nd</sup> clamp approximately 4 inches from newborn. Cut between the clamps

**NY State:** 1st clamp 8 to 10 inches, 2nd clamp is 3 more inches towards the mother

Warm, dry and stimulate the newborn, keeping the newborn's head slightly lower than the torso. Record time of delivery and monitor the newborn's condition closely.

# **Assessment and Care of the Newborn**

Spontaneous respirations should begin within 30 seconds of birth

**Normal vital signs: Heart rate > 100 / minute**

**Respirations > 30 / minute**

**If the neonate is not responding normally** (does not cry vigorously, is limp, is not breathing spontaneously, has persistent cyanosis or a respiratory rate of less than 30 breaths / minute):

→Stimulate by warming, drying, and lightly flicking the soles of the feet or rubbing the back

**If the neonate's condition does not improve within one minute despite stimulation** (respirations remain depressed or cyanosis is present):

→begin oxygen administration via blow-by

**If the neonate's condition does not improve with the administration of oxygen:**

→begin assisting ventilations

- ensure that the airway is open & clear of fluids
- ventilate at rate of 40 – 60 / minute

**If the newborn's heart rate drops below 100 beats per minute at any time, begin assisted ventilations.**

**If the newborn's heart rate drops below 60 beats per minute at any time, begin CPR.**

## **Newborn Resuscitation**

Perform CPR with a compression to ventilation ratio of 3:1 with a compression rate of 120 compressions / minute.

Once the heart rate is greater than 100, stop CPR and continue assisted ventilations at a rate of 40 – 60 breaths / minute.

Continue ventilations until the heart rate is greater than 120 beats / minute, respirations are greater than 30 breaths / minute and central cyanosis disappears. Continue oxygen administration via blow-by.

## **Special Considerations**

### **Prolapsed Cord**

- Condition where the cord presents before delivery of the head, compression of the cord will cut off blood and oxygen supply to baby.
- Immediately notify incoming EMS unit; elevate mother's hips / buttocks; advise her not to push

### **Multiple Births**

- will need to prepare for the delivery of a second infant in addition to caring for the first and the mother
- usually smaller, often premature and at risk for complications
- delivery of subsequent newborn(s) is handled in the same manner as the first

### **Premature Births**

- always at greater risk for hypothermia
- usually require resuscitation
- attempt resuscitation unless physically impossible

### **Presence of Meconium**

- discolored greenish-brownish amniotic fluid
- may indicate fetal distress
- newborn requires thorough suctioning of oropharynx prior to stimulating
- advise EMS and document

# **Abnormal Presentations**

## **Breech**

- poses greater risk of delivery trauma to mother and newborn
- Immediately notify incoming EMS unit upon recognition.
- If breech does not deliver, elevate mother's hips / buttocks and advise her not to push.
- Apply high concentration O2

## **Limb Presentation**

- a limb (most commonly a foot) is the presenting part
- Cannot deliver in pre-hospital setting
- Immediately notify incoming EMS unit, elevate mother's hips / buttocks and advise her not to push.
- Apply high concentration O2

## **Post-Delivery Care of the Mother**

- Keep contact throughout
- Monitor vital signs
- Observe for delivery of the placenta, may take up to 30 minutes
- If placenta delivers, retain all expelled materials
- Apply external vaginal pad
- Replace any blood-soaked sheets and blankets while awaiting transport

## **Vaginal Bleeding & Gynecological Emergencies**

- Trauma to the external genitalia should be treated as any other soft tissue injury
- Never pack the vagina

If alleged or suspected sexual assault:

- Maintain a professional, non-judgmental attitude
- Only examine genitalia if profuse bleeding is present
- Limit hands-on assessment to that which is absolutely necessary
- Preserve crime-scene and evidence as possible
- Discourage patient from bathing, voiding or cleaning wounds
- Document carefully and objectively

# Pediatrics

## Anatomical Differences

### **Airway**

- All structures are smaller and more easily obstructed
- Narrower trachea
- Easily blocked by secretions or swelling
- Tongue is large relative to lower jaw and can block airway easily in an unresponsive child / infant
- Soft trachea → hyperextension of neck will block airway rather than open it
- Infants rely heavily on nose-breathing; adequate suctioning of nasopharynx is critical
- OPA should only be used when ventilations are unsuccessful without one
- OPA is inserted anatomically to depress the tongue down and out of the way
- NPAs are not used in children by CFRs

### **Physiological**

- Compensate for respiratory problems or shock VERY well
  - Increased respiratory rate
  - Increased breathing effort
- Compensation is followed rapidly by decompensation due to fatigue from work at compensating
- Greater risk of hypothermia – lose heat more quickly

# Assessment of the Pediatric Patient

Sick, injured child = frightened child

Cannot necessarily be assessed in same manner as adult

Form General Impression based on:

- Overall appearance
- Mental status
- Breathing effort
- Skin color
- Quality of speech / cry
- Interaction with environment / parents / rescuers
- Emotional state
- Body position

Be sure to involve the parents in the assessment

Agitated parent = Agitated child / Calm parent = Calm child

## Assessing Mental Status

- Observe interactions with the environment
- Consider appropriateness of behavior for age

## Assessing Respiratory Status

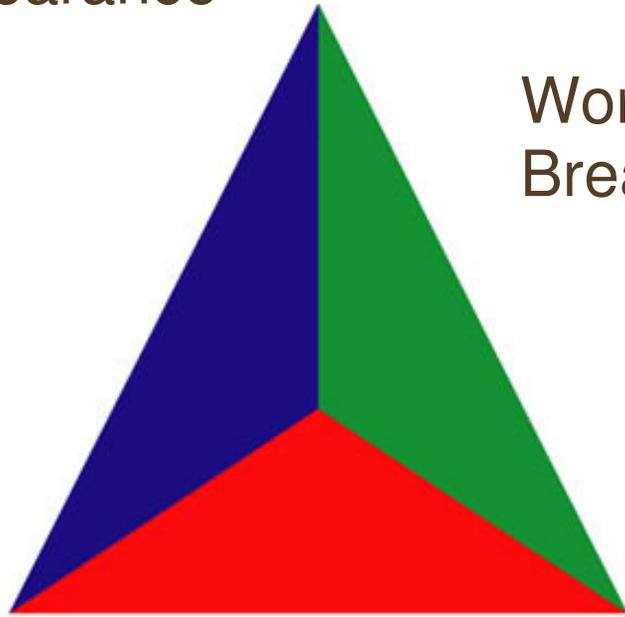
- Breathing effort
- Chest movement / expansion / symmetry
- Retractions
- Nasal flaring
- Stridor or other noisy breathing
- Respiratory rate

## Assessing Circulatory Status

- Infants and toddlers – palpate brachial pulse
- Older children – radial or carotid pulse
- Assess skin color, temperature and condition

Cap Refill  
for 72  
seconds

Appearance



Work of Breathing

Pediatric Assessment Triangle

Circulation to the Skin

- T** – Tone: flaccid, limp, listless ?
- I** – Interactiveness: alert, grasping at objects ?
- C** – Consolability: crying uncontrollably ?
- L** – Look or gaze: glassy-eyed ?
- S** – Speech or cry: appropriate or confused ?

# Common Problems in Pediatrics

## Airway Compromise:

### Foreign Body Airway Obstruction (FBAO)

#### Partial (incomplete) FBAO

##### Signs & Symptoms

- Stridor, crowing or noisy breathing
- Retractions on inspiration
- Normal skin color, **NO CYANOSIS**
- Good peripheral perfusion (strong distal pulses)
- Child is alert, sitting up, responsive

##### Management

- Allow position of comfort
- Offer oxygen via NRB or blow-by
- DO NOT AGITATE

#### Complete FBAO (FBAO with cyanosis or AMS)

##### Signs & Symptoms

- Ineffective cough, weak cry or inability to speak
- Increased respiratory difficulty
- Loss of or decreasing responsiveness
- Any indication of a FBAO with cyanosis or associated AMS

##### Management

Manage airway in accordance with current AHA guidelines

# **Respiratory Distress**

## **Signs & Symptoms**

- Nasal flaring
- Retractions
- Stridor
- Cyanosis
- Altered mental status
- Grunting
- INCREASED respiratory rate:

**Infants: Respirations > 60 breaths / minute**  
**Children: Respirations > 30 – 40 breaths / minute**

## **Management:**

Offer supplemental oxygen via NRB

**If uncorrected, respiratory distress may lead to respiratory failure and respiratory arrest!**

# **Respiratory Failure**

## **Signs & Symptoms**

- Limp muscle tone
- Slower or absent heart rate
- Weak or absent distal pulses
- Cyanosis
- coma
- DECREASED respiratory rate:

**Infants: Respirations < 20 breaths / minute**  
**Children: Respirations < 10 breaths / minute**

## **Management:**

Assist ventilations with a bag-valve mask device with supplemental oxygen

# Circulatory Failure

## **Signs & Symptoms**

- Increased heart rate
- Central pulses stronger than peripheral pulses
- Signs of poor perfusion (pale, cool, mottled)
- Altered mental status

## **Management:**

Uncorrected circulatory failure is also a common cause of cardiac arrest in infants and children. Support oxygenation and ventilation and monitor closely for cardiac arrest

# Seizures

## **Common causes:**

- **Fever = most common cause of seizures in children**
- **Trauma**
- Infections
- Poisonings
- Low blood sugar
- Hypoxia

## **Management:**

Seizures should be considered potentially life-threatening in pediatrics

### Actively seizing patient:

- Protect the patient from harm and secure airway as best is possible.
- Have suction and ventilation equipment available
- DO NOT put anything in mouth
- DO NOT attempt to restrain the patient

### Following seizure:

- assure patency of airway
- assist ventilations as needed
- place in recovery position if no concern of spinal injury

## Altered Mental Status

### **Common causes:**

- low blood sugar
- high blood sugar
- poisoning
- post seizure
- infection
- head trauma
- hypoxia

**Management:** complete a patient assessment, support airway, breathing and circulatory status. Monitor airway and be prepared to suction / assist ventilations. Place in recovery position if no concern for spinal injury

## Sudden Infant Death Syndrome (SIDS)

Sudden death of an infant within the first 5 months of life

Causes are not fully understood & SIDS cannot be prevented  
Baby is most commonly found in the morning

Management should center on emotional support for parents / caregiver

## Trauma

Injuries are the leading cause of death in children and infants

Blunt injury is the most common, often from motor vehicle collisions, falls, burns, sports injuries or child abuse / neglect

### **Specific Body Systems:**

- **Head Trauma** is common as the head is proportionately larger and more easily injured.
- **Chest Trauma** – soft, pliable ribs: internal trauma can occur with little or no obvious deformity to the chest wall on inspection
- **Abdomen** – often a site of hidden injury, more commonly injured in children than adults

# Child Abuse & Neglect

**Abuse** = improper or excessive action so as to cause injury or harm

**Neglect** = giving insufficient attention or respect to someone who has a right to that attention

## **Signs & Symptoms suggesting abuse**

- Multiple bruises in various stages of healing
- Injuries inconsistent with mechanism described by child or parent
- Conflicting stories
- Injuries with specific patterns (whip marks, handprints, cigarette burns)
- Repeated calls to the same address
- Burns (dip patterns, scalding)
- Fear on the part of the child to convey story
- Parent inappropriately concerned / unconcerned
- Shaken baby syndrome

## **Signs & Symptoms suggesting neglect**

- Lack of adult supervision
- Malnourished appearing child
- Unsafe living environment
- Untreated chronic illness
- Untreated injuries

## **Role of the CFR**

### **Assess and treat the patient!!!!**

- DO NOT make accusations in the field; accusations and confrontation delay patient care and transport.
- Report information to responding unit
- **Document thoroughly and objectively**

Especially in cases of child abuse / neglect or serious injury to or death of a child, consider the need for CFR Debriefing.

Keep in mind that many of these same situations, signs, and symptoms may also be applied to the elderly patient as well.

# Geriatrics

## **Age Associated Changes**

- Age dependent
  
- Fastest growing population in the US
  
- Experience changes in
  - Physical structure
  - Body composition
  - Organ function
- Sensory changes
  - Vision
- Decreased vision (day and night)
  
- Difficulty differentiating colors
  
- Decreased ability to see close up
  
- Decreased depth perception
  
- Hearing
  - Inability to hear high frequency sounds
  - Many require the use of hearing aids
  
- Sense of touch and pain
  - Decreased sense of balance
  - Diminished pain perception
  - Difficulty telling hot from cold
  - Decreased tolerance of hot and cold environments
  
- Heart and Blood Vessels
  - High blood pressure
  
- Decrease in the elasticity of the arteries
  
  
- Narrowing of the blood vessels due to atherosclerosis

- Increased risk of stroke and shock
- Heart is less able to beat faster when it needs to
  
- Lungs and Breathing
  - Diminished breathing capacity
  - Increased risk of lung infections such as pneumonia
  - Decreased cough
  
- Chest wall stiffens, limiting expansion and contraction
  
- Spinal curvature may compress the lungs
  
- Stomach and Intestines
  - Digestive difficulties are common
  - Difficulty chewing
  - Greater risk for foreign body obstructions
  
- Decrease in gag reflex
  
- Brain and Nervous System
  - Slower reflexes
  - Decreased memory
  - Brain mass decreases as does the speed of the impulses
  
- Muscles and Bones
  - Decreased bone density
  
- Fractures more easily and frequent
  - Loss of strength and size of bone and muscle
  
- Other Changes
  - Increased risk of infections
  
- Compromised immune system
  - Decreased signs and symptoms when infections are present

# Assessment and Care Implications

- Classic illness presentation is often altered by chronic illnesses and the physiology of aging
- Communicating with the patient may also be challenging due to hearing and visual deficits
- Airway, Breathing, Circulation
  - Airway may be difficult to assess because of arthritis in the neck
  - Dentures should be removed if ventilations are required
  - Increased risk for foreign body obstruction
  - Irregular pulses are common
- Speak slowly and clearly
- Eye level
- Ensure good lighting
- Give the patient time to respond
- Severe symptoms may not appear severe
- Use family members to determine a base line mental status
- Reassess frequently as condition may deteriorate quickly
- Care
  - Reassurance is important
  - Express compassion and empathy
  - Handle gently as the skin is fragile and may tear easily

# **EMS Operations**

## **Phases of a Response**

### **Preparation**

Begins at the start of every tour with equipment check / restock  
Medical equipment  
Non-medical equipment  
Compliance with Part 800 of NY State Public Health Law

### **Dispatch**

Receive information including nature of call, location, number of patients, special circumstances

### **En Route**

Respond quickly and safely  
Consider time of day, traffic patterns, etc

### **Arrival**

Advise dispatch of arrival  
Survey scene for potential hazards  
Determine MOI / NOI  
Request needed resources prior to initiating care  
Operate in an organized / efficient manner

### **Transfer of Patient Care**

Assist transporting unit in packaging the patient for transport  
DO NOT leave the scene without assuring that patient care will continue at an equal or higher level

### **Post-Run Activities**

Prepare for next run  
Clean, restock and replace equipment  
Complete all documentation thoroughly and honestly

## **Air Medical Consideration**

In the event that a helicopter is to be used for removal / transport of a patient, identify a safe landing zone that is free and clear of overhead wires, trees and debris.

Never approach a helicopter without being directed to do so by the crew onboard.

## **Extrication**

**Extrication** = removing a patient from that in which they are entrapped (the vehicle, machinery, etc)

**Disentanglement** = removing the material that is entrapping the patient

**Simple access** = gaining access to a patient through an open door or window

**Complex access** = access requiring the use of tools

A patient should only be extricated from a vehicle prior to the arrival of EMS if the patient's condition warrants it (necessary care cannot be administered unless the patient is moved) or if it is unsafe to leave the patient in the vehicle.

Otherwise, if the scene is safe and the patient is stable, the patient should be stabilized in the position found until EMS arrives and immobilizes the patient.

If the decision is made to rapidly extricate the patient it must be done in a manner that minimizes risk of further injury to the patient.

Patient care precedes extrication unless delay would endanger the life of the patient or rescuers.

If at all possible, patient care and any critical interventions should be initiated and the patient should be manually stabilized prior to extrication.

# **Hazardous Materials**

The priority when a suspected hazardous material incident is encountered

## **SCENE SAFETY**

Park and remain **uphill, upwind and upstream** at a safe distance from the scene

DO NOT enter or approach the scene unless you are trained and equipped to do so!

Isolate the area and keep unnecessary people away

Avoid contact with the material

Refer to Hazardous Materials, The Emergency Response Handbook

## **Mass Casualty Incidents**

An incident that overwhelms the resources immediately available for patient care

**Upon arrival at the scene of an established MCI, all responding personnel should report to the **COMMAND POST** and follow the directions of the **INCIDENT COMMANDER**.**

**The first unit to arrive and recognize the existence of an MCI must first advise the dispatcher and request additional resources prior to initiating any care.**

The most highly trained medical provider then assumes the role of **Triage Officer** and initiates START.

**The aim of triage = Do the greatest good for the greatest number**

# **START:**

## **Simple Triage and Rapid Treatment**

- A systematic way of assigning treatment priorities to all patients so that the greatest number can be saved
- Based on breathing, circulation and mental status
- Each patient can be assessed in approximately 60 seconds or less

### **PROCEDURE:**

Direct all walking wounded to a designated safe location and assign them **GREEN** tags

Begin triage of all remaining victims:

Assess Respirations:

**If absent:** make one attempt to reposition airway. If they remain inadequate, assign BLACK tag and continue on to next victim.

If present following airway maneuver, assign RED tag

**If respirations are initially present:** determine adequacy

If inadequate (> 30 breaths / minute) assign RED tag

If adequate (< 30 breaths / minute) continue assessment of this patient:

### **Children found not to be breathing are given 5 rescue breaths.**

- If they resume breathing after 5 breaths, they are red tagged
- If they do not, then they are black tagged

## Assess Circulation:

If radial pulse is absent, assign **RED** tag and continue to next victim  
If radial pulse is present, continue assessment of this patient

## Assess Mental Status:

If patient is unable to follow simple verbal command, assign **RED** tag  
If patient is able to follow command, assign **YELLOW** tag

**RED** = Highest priority, immediate treatment

**ORANGE**= In the opinion of the EMT or Paramedic the pt.'s signs or symptoms suggest the need for urgent treatment and transport

**YELLOW** = Delayed, treatment can be delayed up to 1 hour

**GREEN** = Low priority, treatment can be delayed up to 3 hours

**BLACK** = Non-viable

Life threats (blocked airways and arterial bleeding) are addressed during triage. All other treatment is delayed until triage is complete and all patients have been assigned a treatment priority.

# ABC-DIVERS

## Primary Assessment

- AIRWAY
- BREATHING
- CIRCULATION
- DECISION

## Secondary Assessment

- INTERVIEW
- VITAL SIGNS
- EXAM
- REASSESSMENT
- SUMMARY

## Patient Assessment Flow Sheet- CFR - Trauma

**Scene Size Up** Is the scene safe?  
Do I have enough BSI?  
MOI (mechanism of injury)?  
How many patients are there?  
Do I need additional resource?

### **Primary Assessment:**

Life Threats: Are there any immediate life threats to the patient?  
Impression: appearance, position, level of consciousness  
Stabilize: C-spine precaution as necessary  
AVPU: assess patient's mental status

**Airway:** Open the airway (jaw-thrust, head-tilt/chin-lift)  
Suction as needed  
OPA or NPA

**Breathing:** Oxygen: is the patient breathing adequately? NRB/ BVM?  
Inspect the chest  
Palpate the chest  
Auscultate (Mid-Axillary at the nipple line)  
Seal any open wounds (Occlusive dressing)

**Circulation:** Voids (assess for and control major bleeding)  
Carotid Pulse (presence and quality)  
Radial Pulse (presence and quality)  
Skin (color, temperature, and condition)  
Shock (assess for and treat as needed)

**Decision/Dispatch:** Determine pt. priority/ update EMS/ obtain ETA

### **History-Secondary Assessment:**

**Exam:** **Head to Toe:**  
Inspect and palpate for DOTS, manage secondary injuries  
(scalp, ears, eyes, nose, mouth, trachea, JVD, L/S, genitalia,  
PMS)  
**Log-roll** patient (Inspect/palpate spine, buttocks)  
**Full set of vital signs:** Blood pressure (systolic/diastolic)  
Pulse & Respirations ( Rate, Rhythm and Quality)  
Skin: Color, Temperature, and Condition  
**Sample History:** Information pertaining to the patient

**Reassessment:** Repeat:  
Primary Assessment  
Secondary Assessment  
2<sup>nd</sup> set of vital signs  
Interventions  
Every 5 minutes- critical patients  
Every 15 minutes- stable patients

## Patient Assessment Flow Sheet- CFR - Medical (cardiac condition)

### **Scene Size Up:**

Is the scene safe?  
Do I have enough BSI?  
NOI (nature of illness)?  
How many patients are there?  
Do I need additional resources?

### **Primary Assessment:**

Life Threats: Are there any immediate life threats to the patient?  
Impression: appearance, position, level of consciousness  
Stabilize: consider spinal stabilization  
AVPU: assess patient's mental status

**Airway:** Assess and maintain airway as needed (open, suction, OPA, NPA)

**Breathing:** Oxygen  
Inspection (visual inspection checking for inadequate respirations)  
Auscultate (Mid-Axillary at the nipple line)

**Circulation:** Is the patient bleeding?  
Carotid Pulse: unresponsive patients  
Radial Pulse: responsive patients  
Skin: Color, Temperature, and Condition  
Shock: treat as necessary

**Decision/Dispatch:** Determine pt. priority/ update EMS/ obtain ETA

### **History-Secondary Assessment:**

#### **Cardiac Patient-O,P,Q,R,S, T**

(Onset, Provocation/Palliates, Quality, Radiation, Severity, Time

#### **Sample History:**

(S/S, Allergies, Medications, Past/pertinent history, Last oral intake, events)

**Physical exam-**vectoring on presenting problem

(Central cyanosis, accessory muscle use, retractions, L/S, edema, Ascites)

#### **Full set of vital signs:**

Blood Pressure (systolic/diastolic)  
Pulse & Respirations (Rate, Rhythm, Quality)  
Skin: Color, Temperature, Condition

### **Reassessment:**

**Repeat:** General impression  
Primary assessment  
Secondary assessment  
Vital signs  
Intervention (treatment)  
Assess critical patients every 5 minutes  
Assess stable patients every 15 minutes

# PATIENT ASSESSMENT FLOW SHEET-CFR - MEDICAL (RESP.)

## **Scene Size Up:**

Is the scene safe?  
Do I have enough BSI?  
What's the NOI (nature of illness)?  
How many patients are there?  
Do I need additional resources?

## **Primary Assessment:**

Life Threats: Are there any immediate life threats to the patient?  
Impression: Appearance, position, level of consciousness  
Stabilize: Consider spinal stabilization  
AVPU: Assess patient's mental status

**Airway:** Assess and maintain airway as needed (open, suction, OPA, NPA, prn)

**Breathing:** Oxygen  
Inspect (visual inspection checking for inadequate respirations)  
Auscultate (mid-axillary at the nipple line)

**Circulation:** Is the patient bleeding?  
Carotid pulse: unresponsive patients  
Radial pulse: responsive patients  
Skin: Color, temperature, and condition  
Shock: treat as necessary

**Decision/Dispatch:** Determine pt. priority/update EMS/ obtain ETA

## **History-Secondary Assessment:**

### **Respiratory Patients: O.P.Q.S.T**

(Onset, Provocation/Palliates, Quality, Severity, Time)

### **Sample History:**

(S/S, Allergies, Medications, Past/pertinent history, Last oral intake, Events)

### **Physical Exam-vectoring on presenting problem**

(Central cyanosis, Pupillary reaction, accessory muscle use/retractions, L/S, equal chest expansion, Skin color, pedal edema)

**Vital Signs:** Blood pressure: Systolic/diastolic  
Pulse: Rate & quality  
Respirations: Rate & quality  
Skin: Color, temperature, and condition

## **Reassessment:**

Repeat Primary assessment  
Secondary assessment  
Vital signs  
General impression  
Interventions  
Reassess: Every 5 minutes for critical patients  
Every 15 minutes for stable patients

**Hand-off:** Verbalize report to arriving ambulance crew

# TRAUMA ASSESSMENT (SIGNIFICANT TRAUMA)

## Scene Size-Up

BSI	Gloves, goggles, mask, gown, prn
Scene safety	Is the scene safe for you, your partner, & the patient?
MOI/NOI	Determine mechanism of injury
Number of patients	MCI ? Is one crew enough to handle the job?
Need for additional resources	PD ? FD ? Additional BLS ? ALS ? Etc.

## Primary Assessment:

Life threats/chief complaint:	Correct any obvious life threats
Impression (general)	Age, sex, position, apparent level of consciousness
Stabilize	C-spine PRN
AVPU	Assess mental status

<b>Airway:</b>	Open PRN	Manual jaw thrust or head-tilt/ chin-lift
	Suction PRN	any audible noises, FBAO maneuvers
	OPA	secure airway

<b>Breathing:</b>	Oxygen:	Adequate or inadequate respirations (NRB/BVM)
	Inspect	The chest visually for any abnormalities, equal chest rise/fall
	Palpate	Chest for abnormalities (flail segments, swelling, deformities)
	Auscultate	Mid-axillary for presence of lung sounds
	Seal	Sucking chest wounds (occlusive dressings x3 sides)

<b>Circulation:</b>	Voids	Control serious bleeding
	Carotid pulse	If unresponsive
	Radial pulse	Compare with central pulse
	Skin	Color, temperature & Condition
	Shock	Elevate legs, maintain body temperature

**Decision/dispatch:** Identify priority patients, update EMS, obtains ETA

## Secondary Assessment (History)

<b>History:</b>	<b>Sample history</b>	
	<b>S-</b> Signs and Symptoms	Is there anything else bothering you?
	<b>A-</b> Allergies	Do you have any allergies?
	<b>M-</b> Medications	Prescription/over-the-counter
	<b>P-</b> Past/pertinent history	Do you have any medical problems?
	<b>L-</b> Last oral intake	When was the last time you ate/drank?
	<b>E-</b> Events	What happened prior to the problem?

<b>Assess:</b>	<b>Assess for D.O.T.S. (Deformities, Open wounds, Tenderness, Swelling)</b>	
	<u>Head:</u>	Palpate scalp, inspect-eyes, ears, nose, mouth
	<u>Neck:</u>	Palpate trachea/cervical spine, check for jugular vein distention
	<u>Chest:</u>	Inspect, palpate & auscultate right/left lung mid-axillary
	<u>Abdomen/Pelvic:</u>	Inspect/palpate abdomen and Assess pelvis
	<u>Lower Extremities:</u>	Inspect, palpate, and check pulse, motor and sensory
	<u>Upper Extremities:</u>	Inspect, palpate and check pulse, motor and sensory
	<u>Posterior:</u>	Log-roll patient-inspect/palpate thorax, lumbar & buttocks
<b>Vital signs:</b>	Blood pressure:	Systolic/diastolic
	Pulse:	Rate & quality
	Respirations:	Rate & quality
	Skin:	Color, temperature and condition
<b>Secondary injuries:</b>		Manage secondary injuries if time permits

## Reassessment:

Repeat-  
Primary Assessment  
Secondary Assessment  
Vital signs  
Interventions Every 5 minutes for critical patients & Every 15 minutes for stable patients

**Hand-off:** Verbalize report to arriving ambulance crew

# MEDICAL ASSESSMENT (CONSCIOUS) - CARDIAC

## Scene Size-Up

BSI	Gloves, goggles, mask, gown, prn
Scene safety	Is the scene safe for you, your partner, & the patient?
NOI/MOI	Determine nature of illness or mechanism of injury
Number of patients	MCI ? Is one crew enough to handle the job?
Need for additional resources	PD ? FD ? Additional BLS ? ALS ? Etc.

## Primary Assessment:

Life threats/chief complaint: complaint?	Correct any obvious life threat. What is the patient's most serious
Impression (general)	Age, sex, position, apparent level of consciousness
Stabilize	Consider C-Spine precautions PRN
AVPU	<b>A</b> Patient is oriented to person, place, time <b>V</b> Patient response to verbal stimuli <b>P</b> Patient response to painful/physical stimuli (gag reflex) <b>U</b> Unresponsive
<b>Airway:</b>	Head-tilt/ chin-lift
Open PRN	
Suction PRN	any audible noises, FBAO maneuvers
OPA	OPA/NPA PRN
<b>Breathing:</b>	Adequate or inadequate respirations (NRB/BVM)
Oxygen:	Chest wall visually –use discretion
Inspect	Chest-PRN (use discretion)
Palpate	Mid-axillary for presence of lung sounds x2
Auscultate	Control obvious bleeding. Assess for internal bleeding
<b>Circulation:</b>	If unresponsive
Bleeding	Compare peripheral with central pulses
Carotid pulse	Color, temperature & Condition
Radial pulse	Maintain body temperature
Skin	Identify priority patients, update EMS, obtains ETA
Shock	
<b>Decision/dispatch:</b>	

## Secondary Assessment (History) - History of Present Illness Questions

<b>O</b> (Onset)	“What were you doing when the symptoms began?”
<b>P</b> (Provokes/Palliates)	“Is there anything that makes it feel better or worse?”
<b>Q</b> (Quality)	“Can you describe the symptoms?”
<b>R</b> (Radiation)	“Does the pain/symptoms travel anywhere? Do you feel it anywhere else?”
<b>S</b> (Severity)	“On a scale of 0-10, 10 being the worse pain you've ever had, how bad is this?”
<b>T</b> (Time)	“When did the symptoms begin? How long did they last?”
<b>History:</b>	<b>Sample historyS-</b> Signs and Symptoms      Is there anything else bothering you?
	<b>A-</b> Allergies      Do you have any allergies?
	<b>M-</b> Medications      Prescription/over-the-counter
	<b>P-</b> Past/pertinent history      Do you have any medical problems?
	<b>L-</b> Last oral intake      When was the last time you ate/drank?
	<b>E-</b> Events      What happened prior to the problem?

**Physical Exam:** Vector physical exam to patient's medical problem or condition

### Cardiovascular

	Central cyanosis, pursed lips
	Pupillary reaction
	Accessory muscle use/ retractions, lung sounds, equal chest expansion
	Skin color, conjunctiva
	JVD
	Ascites, carpal/pedal edema
<b>Vital signs:</b>	Blood pressure:      Systolic/diastolic
	Pulse:      Rate & quality
	Respirations:      Rate & quality
	Skin:      Color, temperature and condition

## Reassessment:

<u>Repeat-</u>	General Impression
	Primary assessment and Secondary Assessments
	Vital signs
	Intervention - Every 5 minutes for critical patients & Every 15 minutes for stable

# MEDICAL ASSESSMENT (CONSCIOUS) - RESPIRATORY

## Scene Size-Up

BSI	Gloves, goggles, mask, gown, prn
Scene safety	Is the scene safe for you, your partner, & the patient?
NOI/MOI	Determine nature of illness or mechanism of injury
Number of patients	MCI ? Is one crew enough to handle the job?
Need for additional resources	PD ? FD ? Additional BLS ? ALS ? Etc.

## Primary Assessment:

Life threats/chief complaint: complaint?	Correct any obvious life threat. What is the patient's most serious
Impression (general)	Age, sex, position, apparent level of consciousness
Stabilize	Consider C-Spine precautions PRN
AVPU	<b>A</b> Patient is oriented to person, place, time <b>V</b> Patient response to verbal stimuli <b>P</b> Patient response to painful/physical stimuli (gag reflex) <b>U</b> Unresponsive
<b>Airway:</b>	Head-tilt/ chin-lift
Open PRN	
Suction PRN	any audible noises, FBAO maneuvers
OPA	OPA/NPA PRN
<b>Breathing:</b>	Adequate or inadequate respirations (NRB/BVM)
Oxygen:	Chest wall visually –use discretion
Inspect	Chest-PRN (use discretion)
Palpate	Mid-axillary for presence of lung sounds x2
Auscultate	Control obvious bleeding. Assess for internal bleeding
<b>Circulation:</b>	If unresponsive
Bleeding	Compare peripheral with central pulses
Carotid pulse	Color, temperature & Condition
Radial pulse	Maintain body temperature
Skin	Identify priority patients, update EMS, obtains ETA
Shock	
<b>Decision/dispatch:</b>	

## Secondary Assessment (History) - History of Present Illness Questions

<b>O</b> (Onset)	“What were you doing when the symptoms began?”
<b>P</b> (Provokes/Palliates)	“Is there anything that makes it feel better or worse?”
<b>Q</b> (Quality)	“Can you describe the symptoms?”
<b>S</b> (Severity)	“On a scale of 0-10, 10 being the worse difficulty breathing you’ve ever had, how bad is this?”
<b>T</b> (Time)	“When did the symptoms begin? How long did they last?”
<b>History:</b>	<b>Sample historyS-</b> Signs and Symptoms Is there anything else bothering you?
	<b>A-</b> Allergies Do you have any allergies?
	<b>M-</b> Medications Prescription/over-the-counter
	<b>P-</b> Past/pertinent history Do you have any medical problems?
	<b>L-</b> Last oral intake When was the last time you ate/drank?
	<b>E-</b> Events What happened prior to the problem?

**Physical Exam:** Vector physical exam to patient's medical problem or condition

### Respiratory

Central cyanosis, pursed lips  
Pupillary reaction  
Accessory muscle use/ retractions, lung sounds, equal chest expansion, shape of chest  
Skin color,  
Pedal edema,

<b>Vital signs:</b>	Blood pressure: Systolic/diastolic
	Pulse: Rate & quality
	Respirations: Rate & quality
	Skin: Color, temperature and condition

## Reassessment:

Repeat- General Impression  
Primary assessment  
Secondary assessment  
Vital signs  
Intervention - Every 5 minutes for critical patients & Every 15 minutes for stable

## **RAPID TRANSPORT**

Actual or impending cardiorespiratory arrest  
Cardiorespiratory instability, such as respiratory distress  
Respiratory failure  
2 or more long bone fractures  
Severe upper respiratory difficulties  
Trauma with associated burns  
Rising intracranial pressure  
Amputation proximal to wrist & ankle  
Decompensated shock (hypoperfusion)  
Chest pain with B/P < 100/Palp  
Severe pain  
Poor general impression  
Unresponsive patients  
Patient responsive but unable to follow commands

Penetrating injury to the head, neck, chest, abdomen, pelvis

Uncontrolled external bleeding  
Compensated shock (hypoperfusion)

## **DELAYED TRANSPORT**

Low potential for cardiorespiratory instability  
MOI suggest hidden injuries  
Low grade fever  
Major isolated injury  
Minor illness  
General medical illness  
Minor isolated injury  
Uncomplicated childbirth  
Uncomplicated extremity injury

## **SECONDARY ASSESSEMENT-FOCUSED (VECTORED) EXAM FOR THE MEDICAL PATIENT**

<b><u>CARIOVASCULAR</u></b>	<b><u>RESPIRATORY</u></b>	<b><u>NEUROLOGICAL</u></b>	<b><u>ABDOMINAL</u></b>
Skin color	Skin color	Pupillary reaction	Pulsating mass
Pupillary reaction	Pupillary reaction	Facial droop	Ascites
Conjunctiva	Pursed lipped breathing	Incontinence	Skin color (Jaundice)
JVD	Clubbed fingers	Unilateral weakness	Urine/stool
Lung sounds (Rales)	Pedal edema	Unilateral paralysis	Vomiting
Pedal edema	Lung sounds	Breath odors	
Ascites	Chest shape		
Pulsating mass	Nicotine stains		
Pulse presence	Intercostal retractions		
Pulse quality	Sternal retractions		
	Accessory muscle use		

## HISTORY OF THE PRESENT ILLNESS (HPI) QUESTIONS

### **RESPIRATORY OR CARDIAC**

Onset	“What were you doing when the symptoms began?”
Provokes (or Palliates)	“Is there anything that makes it feel better or worse?”
Quality	“Can you describe the symptoms?”
Radiates (or Refers)	“Does the pain travel anywhere? Do you feel it anywhere?”
Severity	“On a scale of 1-10, 10 being the worst, how bad is it?”
Time	“When did the symptoms begin? How long did they last?”
Interventions	“Have you done anything to try to correct the problem?”

### **AMS**

Description of the episode	“What happened?”
Onset	“What was the patient doing when the symptoms began?”
Duration	“How long did it last?” or “How long has it been going on?”
Associated symptoms	“Is there anything else bothering the patient?”
Evidence of trauma	“Did you injure yourself?” or verbalize looking for injuries
Interventions	“Have you done anything to try to correct the problem?”
Seizures	“Did you have a seizure?” “Did the patient have a seizure?”
Fever	“Do you have a fever?” “Does the patient have a fever?”

### **ALLERGIC REACTION**

History of allergies	“Do you have allergies?”
What were you exposed to?	“What were you exposed to?”
How were you exposed?	“How were you exposed? (ingestion, infection, inhalation)”
Effects	“What are your symptoms?”
Progression	“How fast did the symptoms come on?”
Interventions	“Have you done anything to try to correct the problem?”

### **POISONING/OVERDOSE**

Substance	“What did you take?”
When did you ingest/become exposed?	“When did you ingest/become exposed?”
How much did you ingest?	“How much did you ingest?”
Over what time period?	“Did you take it/were you exposed all at once?”
Interventions	“Have you done anything to try to correct this?”

### **ENVIRONMENTAL EMERGENCY**

Source	Identify the source of the patient’s exposure
Environment	Verbalize identification of the type of exposure
Duration	“How long were you exposed?”
Loss of consciousness	“Did you lose consciousness?”
Effects of general or local	Verbalize identification of local injury or systemic problem

### **OBSTETRICS**

Are you pregnant?	“Are you pregnant?”
How long have you been pregnant?	“How long have you been pregnant?”
Pain or contractions	“Are you having pain or contractions?”
Bleeding or discharge	“Is there any bleeding or discharge?”
Has water broken?	“Has your water broke?”
Do you feel the need to push?	“Do you feel the need to push/move your bowels?”
Last menstrual period	“When did your last menstrual period begin?”

### **BEHAVIORAL**

How do you feel?	“How do you feel?”
Determine suicidal tendencies	“Have you ever tried to hurt yourself?”
Is the patient a threat to self or others?	“Do you feel the desire to hurt yourself or anyone else now?”
Is there a medical problem?	Verbalize eliminating the possibility of medical problem
Interventions	Have you done anything to try to correct the problem



PATIENT ASSESSMENT  
MEDICAL

Pass \_\_\_\_\_  
Fail \_\_\_\_\_

*Please Print*

Candidate \_\_\_\_\_  
Examiner \_\_\_\_\_ Initials \_\_\_\_\_  
Date \_\_\_\_\_ Start Time \_\_\_\_\_ Stop Time \_\_\_\_\_

		Points:	Possible	Awarded	Comments
<b>SCENE SIZE-UP</b>	<b>Takes, or verbalizes, body substance isolation precautions</b>		C		
	<b>Determines the scene is safe</b>		C		
	Determines the mechanism of injury / nature of illness		1		
	Determines the number of patients		1		
	Requests additional help if necessary		1		
	Considers stabilization of spine		1		
<b>PRIMARY ASSESSMENT</b>	Verbalizes general impression of the patient		1		
	Determines responsiveness/level of consciousness (AVPU)		1		
	Determines chief complaint/apparent life threats		1		
	<b>Airway and Breathing</b>	<b>Assess and maintains airway</b>		C	
		<b>Initiates appropriate oxygen therapy</b>		C	
		<b>Assures adequate ventilation</b>		C	
		<b>Manages life threats to airway/breathing</b>		C	
	<b>Circulation</b>	<b>Assesses/controls major bleeding</b>		C	
		<b>Assesses pulse</b>		C	
		<b>Assesses skin (color, temperature, and condition)</b>		C	
		<b>Assesses airway, breathing &amp; circulation prior to physical exam</b>		C	
	<b>Identifies priority patient/updates responding EMS units with brief report</b>		C		
<b>HISTORY SECONDARY ASSESSMENT</b>	Obtain baseline vital signs	Pulse Rate (1) & Quality (1) (+/- 10) [1]		3	
		Respirations Rate (1) & Quality (1) (+/- 4) [1]		3	
		Blood Pressure Systolic (1) (+/- 10) Diastolic (1) (+/- 10)		2	
		Skin (color [1], temperature [1] & condition [1])		3	
		Onset (1), Provocation (1), Quality (1), Radiation (1), Severity (1), Time (1)		6	
		Allergies (1), Medications (1), Pertinent Past History (1), Last oral intake (1), Events(1)		5	
	Assesses appropriate body system	Cardiovascular, Pulmonary, Neurological, Musculoskeletal, Integumentary, GI/GU, Reproductive, Psychological/Social		C	
		States general impression		1	
		Verbalizes appropriate interventions and treatment		1	
	<b>REASSESSMENT</b>	States when will do reassessment/how often		1	
	Appropriately verbalizes report to arriving ambulance crew		1		
	<b>Candidate completed station within 10 minute time limit</b>		C		
<b>Note: Candidate must complete all critical criteria and receive at least 23 points to pass this station.</b>			<b>33</b>		



## PATIENT ASSESSMENT - MEDICAL

### INSTRUCTIONS TO THE CANDIDATE

This station is designed to test your ability to perform a patient assessment of a patient with a chief complaint of a medical problem and “voice” treat all conditions discovered. You must conduct your assessment as you would in the field including communicating with your patient. You may remove the patient’s clothing down to shorts or swimsuit if you feel it is necessary. As you conduct your assessment, you should verbalize everything you are assessing. Clinical information not obtainable by visual or physical inspection will be given to you after you demonstrate how you would normally gain that information. You may assume that you have two CFRs working with you and that they are correctly carrying out the verbal treatments you indicate. You have ten (10) minutes to complete this skill station. Do you have any questions?

### NOTES

Please Print



**PATIENT ASSESSMENT  
TRAUMA**

Pass _____
Fail _____

Candidate \_\_\_\_\_

Examiner \_\_\_\_\_ Initials \_\_\_\_\_

Date \_\_\_\_\_ Start Time \_\_\_\_\_ Stop Time \_\_\_\_\_

Points: \_\_\_\_\_ Comments \_\_\_\_\_

		Points:	Comments	
<b>SCENE SIZE-UP</b>	Takes, or verbalizes, body substance isolation precautions	C		
	Determines the scene is safe	C		
	Determines the mechanism of injury / nature of illness	1		
	Determines the number of patients	1		
	Requests additional help if necessary	1		
	Considers stabilization of spine	C		
<b>PRIMARY ASSESSMENT</b>	Verbalizes general impression of the patient	1		
	Determines responsiveness/level of consciousness (AVPU)	1		
	Determines chief complaint/apparent life threats	1		
	<b>Airway and Breathing</b>	<b>Assess and maintains airway</b>	C	
		<b>Initiates appropriate oxygen therapy</b>	C	
		<b>Assures adequate ventilation</b>	C	
		<b>Manages life threats to airway/breathing</b>	C	
	<b>Circulation</b>	<b>Assesses/controls major bleeding</b>	C	
		<b>Assesses pulse</b>	C	
		<b>Assesses skin (color, temperature, and condition)</b>	C	
		<b>Assesses airway, breathing &amp; circulation prior to physical exam</b>	C	
		<b>Identifies priority patient/updates responding EMS units with brief Report</b>	C	
	<b>HISTORY SECONDARY ASSESSMENT</b>	History	Attempts to obtain SAMPLE	1
Head		Inspect mouth and nose	1	
		Inspect & palpate scalp, ears and facial area	1	
Neck		Assesses eyes	1	
		Palpates trachea for position	1	
		Checks jugular veins	1	
Chest		Palpates cervical spine	1	
		Inspects chest (1) and Palpates chest (1)	2	
		Auscultates chest – Left side (1), Right side (1)	2	
Abdomen/Pelvis		Inspects (1) & palpates (1) abdomen	2	
		Assesses pelvis	1	
		Verbalizes assessment of genitalia/perineum	1	
Lower Extremities		Inspects (1) palpates (1) motor/sensory/pulses (1) ea leg	6	
Upper Extremities		Inspects (1) palpates (1) motor/sensory/pulses (1) ea arm	6	
Posterior		Inspects (1) palpates (1) thorax	2	
Posterior		Inspects (1) palpates (1) lumbar and buttocks	2	
Vital Signs		Pulse Rate (1) & Quality (1) (+/- 10) [1]	3	
		Respirations Rate (1) & Quality (1) (+/- 4) [1]	3	
		Blood Pressure Systolic (1) (+/- 10) Diastolic (1) (+/- 10)	2	
		Skin (color [1], temperature [1] & condition [1])	3	
		Manages secondary injuries and wounds appropriately	1	
	Verbalizes appropriate interventions and treatment	1		
<b>REASSESSMENT</b>	States when will do reassessment/how often	1		
	Appropriately verbalizes report to arriving ambulance crew	1		
	<b>Candidate completed station within 10 minute time limit</b>	C		
<b>Note: Candidate must complete all critical criteria.</b>			<b>52</b>	

**Total to pass: 37**

## PATIENT ASSESSMENT - TRAUMA

### INSTRUCTIONS TO THE CANDIDATE

This station is designed to test your ability to perform a patient assessment of a victim of multi-system trauma and “voice” treat all conditions and injuries discovered. You must conduct your assessment as you would in the field including communicating with your patient. You may remove the patient’s clothing down to shorts or swimsuit if you feel it is necessary. As you conduct your assessment, you should verbalize everything you are assessing. Clinical information not obtainable by visual or physical inspection will be given to you after you demonstrate how you would normally gain that information. You may assume that you have two CFRs working with you and that they are correctly carrying out the verbal treatments you indicate. You have ten (10) minutes to complete this skill station. Do you have any questions?

### NOTES

**STATION**  
**2**  
**CFR**

**CARDIAC ARREST  
MANAGEMENT  
AED**

Pass \_\_\_\_\_  
Fail \_\_\_\_\_

Candidate \_\_\_\_\_ *Please Print*  
Examiner \_\_\_\_\_ Initials \_\_\_\_\_  
Date \_\_\_\_\_ Start Time \_\_\_\_\_ Stop Time \_\_\_\_\_

	Points:	Possible	Awarded	Comments
<b>ASSESSMENT &amp; INITIAL TREATMENT</b>	<b>Takes or verbalizes, body substance isolation precautions</b>	<b>C</b>		
	Appropriately assess patient and confirms no pulse	1		
	Directs rescuer to begin single rescuer CPR	1		
	Assures adequate CPR <b>and</b> adequate (visible) chest rise during ventilations	1		
	Properly attaches AED pads in the correct locations	1		
	Turns on AED	1		
	Directs rescuer to stop CPR	1		
	<b>Ensures all individuals are clear of the patient</b>	<b>C</b>		
	Initiates analysis of the patient's rhythm	1		
	<b>Delivers one (1) shock</b>	<b>C</b>		
<b>INTEGRATION</b>	<b>TRANSITION</b>			
	Immediately begins 2 rescuer CPR without performing a pulse check (candidate must be performing ventilations)(continues for 2 full minutes)	1		
	Assures adequate CPR <b>and</b> adequate (visible) chest rise during ventilations	1		
	Verbalizes insertion of a simple airway adjunct (oral/nasal airway)	1		
	Assures high concentration of oxygen is delivered to the patient	1		
	Assures CPR continues without unnecessary/prolonged interruption during the 2 minutes	1		
	Directs rescuer to stop CPR	1		
	<b>Ensures all individuals are clear of the patient</b>	<b>C</b>		
	Initiates analysis of the patient's rhythm	1		
	<b>Delivers one (1) shock</b>	<b>C</b>		
	Immediately begins 2 rescuer CPR without performing a pulse check (candidate should be performing ventilations)			
	Verbalizes transportation of patient	1		
	<b>Candidate did not initiate first shock within 90 seconds of arrival</b>	<b>C</b>		
	<b>Candidate did not initiate/resume CPR at appropriate times</b>	<b>C</b>		
<b>Candidate operated the AED improperly or unsafely</b>	<b>C</b>			
<b>Stops compressions to attach AED</b>	<b>C</b>			
<b>Candidate failed to assure appropriate compression-to-ventilation ratios</b>	<b>C</b>			
<b>Candidate completed station within 15 minute time limit</b>	<b>C</b>			
<b>Note: Candidate must complete all critical criteria and receive at least 11 points to pass this station.</b>		<b>15</b>		

**COMMENTS:**

## CARDIAC ARREST MANAGEMENT AED

### INSTRUCTIONS TO THE CANDIDATE

This station is designed to test your ability to manage a prehospital cardiac arrest by integrating CPR skills, defibrillation, airway adjuncts and patient/scene management skills. There will be an CFR assistant in this station. The CFR assistant will only do as you instruct. As you arrive on the scene you find a patient on the floor. You must immediately establish control of the scene and care of the patient. At the appropriate time, the patient's airway must be controlled and you must ventilate or direct the ventilation of the patient using adjunctive equipment. You may use any of the supplies available in this room. You have 15 minutes to complete this skill station. Do you have any questions?

### NOTES

**STATION**  
**3**  
**CFR**

**BAG-VALVE-MASK  
APNEIC WITH  
PULSE**

Pass \_\_\_\_\_  
Fail \_\_\_\_\_

*Please Print*

Candidate \_\_\_\_\_  
Examiner \_\_\_\_\_ Initials \_\_\_\_\_  
Date \_\_\_\_\_ Start Time \_\_\_\_\_ Stop Time \_\_\_\_\_

	Points:	<i>Possible</i>	<i>Awarded</i>	Comments
<b>Takes, or verbalizes, body substance isolation precautions</b>	<b>C</b>			
Opens the airway	1			
Inserts an airway adjunct	1			
Selects appropriately sized mask	1			
Creates a proper mask-to-face seal	1			
Delivers first ventilation within 30 seconds of opening the airway	1			
Ventilates patient at a rate of 10 – 12 breaths per minute (approximately once every 5 – 6 seconds), for no more than 30 – 45 seconds	1			
Connects reservoir and oxygen	1			
<b>Adjusts liter flow to 15 liters per minute or greater</b>	<b>C</b>			
The examiner indicates the arrival of a second CFR The second CFR is instructed to ventilate the patient while the candidate controls the mask and the airway	1			
Reopens the airway	1			
Creates a proper mask-to-face seal	1			
Instructs assistant to resume ventilations at an adequate volume to achieve visible chest rise.	1			
Instructs assistant to resume ventilations at a rate of 10 – 12 breaths per minute (approximately once every 5 – 6 seconds) (The examiner must witness for a minimum of 30 seconds)	1			
<b>Ventilates patient at an adequate volume to achieve visible chest rise</b>	<b>C</b>			
<b>Did not interrupt ventilations for more than 30 seconds at any time</b>	<b>C</b>			
<b>Candidate ventilated patient prior to connecting supplementary oxygen</b>	<b>C</b>			
<b>Adequate ventilation volumes (did not over or under ventilate)</b>	<b>C</b>			
<b>Allowed for adequate exhalation</b>	<b>C</b>			
<b>Candidate completed station within the 5 minute time limit</b>	<b>C</b>			
<b>Note: Candidate must complete all critical criteria and receive at least 9 points to pass this station.</b>	<b>12</b>			

**COMMENTS:**

## **BAG-VALVE-MASK APNEIC WITH PULSE**

### **INSTRUCTIONS TO THE CANDIDATE**

This station is designed to test your ability to ventilate a patient using a bag-valve-mask. As you enter the station you will find an apneic patient with a palpable carotid pulse. There are no bystanders and artificial ventilation has not been initiated. The only patient management required is airway management and ventilatory support. You must initially ventilate the patient for a minimum of 30 seconds prior to connecting to a supplementary oxygen source. You will be evaluated on the appropriateness of ventilatory volumes. I will then inform you that a second rescuer has arrived and will instruct you that you must control the airway and the mask seal while the second rescuer provides ventilations. You may use only the equipment available in this room. You have five (5) minutes to complete this station. Do you have any questions?

### **NOTES**



UPPER AIRWAY  
ADJUNCTS  
& SUCTION

Pass \_\_\_\_\_  
Fail \_\_\_\_\_

*Please Print*

Candidate \_\_\_\_\_  
Examiner \_\_\_\_\_ Initials \_\_\_\_\_  
Date \_\_\_\_\_ Start Time \_\_\_\_\_ Stop Time \_\_\_\_\_

**OROPHARYNGEAL AIRWAY**

Points:

Possible  
Awarded

Comments

	Possible	Awarded	Comments
<b>Takes, or verbalizes, body substance isolation precautions</b>	C		
Selects appropriately sized airway	1		
Measures airway	1		
Inserts airway without pushing the tongue posteriorly	1		
<b>Note: The examiner must advise the candidate that the patient is gagging and becoming conscious</b>			
Removes the oropharyngeal airway	1		

**Suction**

Points:

Possible  
Awarded

Comments

	Possible	Awarded	Comments
<b>Note: The examiner must advise the candidate to suction the patient's airway</b>			
Turns on/prepares suction device	1		
Assures presence of mechanical suction	1		
Inserts the suction tip without suction	1		
Applies suction to the oropharynx/nasopharynx	1		
<b>Candidate demonstrated acceptable suction technique</b>	C		

**NASOPHARYNGEAL AIRWAY**

Points:

Possible  
Awarded

Comments

	Possible	Awarded	Comments
<b>Note: The examiner must advise the candidate to insert a nasopharyngeal airway</b>			
Selects appropriately sized airway	1		
Measures airway	1		
Verbalizes lubrication of the nasal airway	1		
Fully inserts the airway with the bevel facing toward the septum	1		
<b>Candidate did not insert any adjunct in a manner dangerous to the patient</b>	C		
<b>Candidate completed the station within the 5 minute time limit</b>	C		
<b>Note: Candidate must complete all critical criteria and receive at least 9 points to pass this station.</b>	<b>12</b>		

COMMENTS:



## UPPER AIRWAY ADJUNCTS AND SUCTION

### INSTRUCTIONS TO THE CANDIDATE

This station is designed to test your ability to properly measure, insert and remove an oropharyngeal and nasopharyngeal airway as well as suction a patient's upper airway. This is an isolated skills test comprised of three separate skills. You may use any equipment available in this room. You have five (5) minutes to complete this station. Do you have any questions.

### NOTES



## SUPPLEMENTAL OXYGEN ADMINISTRATION

### INSTRUCTIONS TO THE CANDIDATE

This station is designed to test your ability to correctly assemble the equipment needed to administer supplemental oxygen in the prehospital setting. This is an isolated skills test. You will be required to assemble an oxygen tank and a regulator and administer oxygen to a patient using a non-rebreather mask. At this point, you will be instructed to discontinue oxygen administration by the non-rebreather mask and start oxygen administration using a nasal cannula because the patient cannot tolerate the mask. Once you have initiated oxygen administration using a nasal cannula, you will be instructed to discontinue oxygen administration completely. You have five (5) minutes to complete this station. Do you have any questions?

### NOTES



**BLEEDING CONTROL/  
SHOCK  
MANAGEMENT**

Pass \_\_\_\_\_  
Fail \_\_\_\_\_

Candidate \_\_\_\_\_ *Please Print*  
Examiner \_\_\_\_\_ Initials \_\_\_\_\_  
Date \_\_\_\_\_ Start Time \_\_\_\_\_ Stop Time \_\_\_\_\_

*Possible  
Awarded*

	Points:	Possible	Awarded	Comments
<b>Takes, or verbalizes, body substance isolation precautions</b>	C			
Applies direct pressure to the wound	1			
<b>Note: The examiner must now inform the candidate that the wound continues to bleed.</b>				
Applies a pressure dressing to the wound	1			
<b>Note: The examiner must now inform the candidate that the wound still continues to bleed.</b>				
Applies a tourniquet	1			
Verbalizes how to know when tourniquet has been adequately tightened. (until bleeding has stopped)	1			
<b>Note: The examiner must now inform the candidate that the bleeding is Controlled, but the patient is showing signs and symptoms indicative of hypoperfusion.</b>				
Properly positions the patient	1			
<b>Applies high concentration oxygen</b>	C			
Initiates steps to prevent heat loss from the patient	1			
Indicates the need for immediate transportation	1			
<b>Candidate failed to control hemorrhage appropriately</b>	C			
<b>Candidate applied a tourniquet before attempting other methods of bleeding control.</b>	C			
<b>Candidate did not complete the station within the 5 minute time limit</b>	C			
<b>Note: Candidate must complete all critical criteria and receive at least 6 points to pass this station.</b>	7			

**COMMENTS:**



## **BLEEDING CONTROL/SHOCK MANAGEMENT**

### **INSTRUCTIONS TO THE CANDIDATE**

This station is designed to test your ability to control hemorrhage. This is a scenario-based testing station. As you progress through the scenario, you will be given various signs and symptoms appropriate for the patient's condition. You will be required to manage the patient based on these signs and symptoms. A scenario will be read aloud to you and you will be given an opportunity to ask clarifying questions about the scenario, however, you will not receive answers to any questions about the actual steps of the procedures to be performed. You may use any of the supplies available in this room. You have 5 minutes to complete this skill station. Do you have any questions?

### **NOTES**