**SECTION:** Adult General Medical Emergencies

**REVISED:** 06/2017

Section 3

ADULT MEDICAL EMERGENCIES

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Protocol
3-1

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** General – Universal Patient Care/Initial Patient Contact
*(Medical Patient Assessment)*
**REVISED:** 06/2015

MEDICAL ASSESSMENT

**OVERVIEW:**
The ability to perform an accurate assessment is one of the most important skills in EMS. The information gained during the assessment is used to make decisions regarding emergency interventions, such as the need for immediate airway management and ventilation; to formulate a differential field diagnosis; and to provide continued and advanced pre-hospital care enroute to a receiving facility. Since this information is used in clinical decision-making, it is important that the assessment findings are interpreted correctly and efficiently.

**SCENE SURVEY:**
Scene evaluation is one of the most important parts of pre-hospital EMS. Maintaining you and your crew's safety is paramount, and begins from the moment of dispatch to a call. The communications center begins obtaining information with each 911 call about possible problems and circumstances the pre-hospital provider may confront. The general rule is to never compromise the rescuers to aid the victim.

| Summary of Scene Survey and Management |
|---|
| • Obtain overview and evaluate situation / scene for potential safety hazards.<br>• Wear personal protective equipment (PPE) appropriate to hazards of the scene and / or patient.<br>• Gain access to the patient.<br>• Determine the number of patients and additional resources needed.<br>• Provide life-sustaining care to the patient.<br>• Prepare and remove the patient from the incident scene.<br>• Prepare the patient for transport to the hospital.<br>• Provide the patient with treatment enroute.<br>• Notify the intended receiving facility in a timely manner to prepare for patient arrival. |

Upon entering a scene, a general impression should be formed, typically prior to any physical contact with the patient. Patients are usually categorized as either medical or trauma during the scene survey and general impression. At times, a patient may be both, as one may have led to the other. Until the condition is identified or the possibility of spine injury is ruled out, manual in-line spinal stabilization must be established and maintained.

**PRIMARY ASSESSMENT:**
The primary assessment is based on assessment of the patient's airway, breathing, circulation, neurologic disability, and exposure. During the primary assessment, as patient problems are identified, critical interventions are initiated. The basic steps remain the same, whether at a scene or during an inter-facility transport.

**AIRWAY:**
The patient's airway should be assessed to determine whether it is patent, maintainable, or not maintainable. For any patient who may have a traumatic injury, cervical spine precautions should be utilized while the airway is evaluated. Assessment of the patient's

level of consciousness, in conjunction with assessment of the airway status, provides an impression of the effectiveness of the patient's current airway status. If an airway problem is identified, the appropriate intervention should be initiated. The decision to use a particular intervention depends on the nature of the patient's problem and the potential for complications during transport. The ability of patient to speak with a clear unobstructed voice is strong evidence of both airway patency and protection. However, if the patient that has lost protective airway reflexes, the assessment stops, and immediate action should be taken to establish airway patency. Supplemental oxygen, per assessment, should be given to all patients before transport. Specific equipment, such as a pulse oximeter or $CO_2$ detector, help provide continuous airway evaluation during transport.

| Summary of Primary Airway Assessment |
|---|
| • Airway: Patent, maintainable, un-maintainable<br>• Level of consciousness<br>• Skin appearance: Ashen, pale, gray, cyanotic, or mottled<br>• Preferred posture to maintain airway<br>• Airway clearance<br>• Sounds of obstruction |

**BREATHING:**
The assessment of ventilation begins with noting whether the patient is breathing. If the patient is either apneic or in severe respiratory distress, immediate interventions are required. If the patient has any difficulty with ventilation, the problem must be identified and the appropriate intervention initiated. Emergent interventions may include manual ventilation of the patient via bag valve mask, endotracheal intubation, and / or needle thoracentesis.

| Summary of Primary Breathing Assessment |
|---|
| • Rate and depth of respirations<br>• Cyanosis<br>• Position of the trachea<br>• Presence of obvious injury or deformity<br>• Work of breathing<br>• Use of accessory muscles<br>• Flaring of nostrils<br>• Presence of bilateral breath sounds<br>• Presence of adventitious breath sounds<br>• Asymmetric chest movements<br>• Palpation of crepitus<br>• Integrity of chest wall<br>• Oxygen saturation measured with pulse oximetry |

**CIRCULATION:**
Palpation of both the peripheral and the central pulse provides information about the patient's circulatory status. The quality, location, and rate of the patient's pulses should be noted along with the temperature of the patient's skin being assessed while obtaining the pulses. Observation of the patient's level of consciousness may also help evaluate the patient's perfusion status initially.

Active bleeding should be quickly controlled with direct pressure and/ or tourniquet per assessment. The patient should also be observed for indications of circulatory compromise. Skin color and temperature, diaphoresis, and capillary refill are all indicators of circulatory compromise during an assessment.

Intravenous access should be obtained for administration of fluid, blood, or medications per assessment. Depending on the patient's location and the accessibility veins, peripheral, central, or intraosseous access may be used as necessary. Regardless of type of access, fluid resuscitation must always be guided by the patient's response.

| Summary of Primary Circulation Assessment |
|---|
| • Pulse rate and quality<br>• Skin appearance: Color<br>• Peripheral pulses<br>• Skin temperature<br>• Level of consciousness<br>• Urinary output<br>• Blood Pressure<br>• Cardiac monitor<br>• Invasive monitor |

**DISABILITY:**
The basic, primary neurological assessment includes assessment of the level of consciousness; the size, shape, and response of the pupils; and motor sensory function. The simple method if AVPU should be used to evaluate the patient's overall level of consciousness.

The Glasgow Coma Scale (GCS) provides assessment of the patient's level of consciousness and motor function and may serve as a predictor of morbidity and mortality after brain injury.

If the patient has an altered mental status, it must be determined whether the patient has ingested any toxic substances, such as alcohol or other drugs, or may be hypoxic because of illness or injury. A patient with an altered mental status may pose a safety problem during transport. Use of chemical sedation, or physical restraint, may be necessary to ensure safe transport of the patient and EMS providers.

## Summary of Primary Disability (Neurological) Assessment

| A.V.P.U. | Glasgow Coma Scale (GCS) | | |
|---|---|---|---|
| **A - Alert**<br>**V - Responds to verbal stimuli**<br>**P - Responds to painful stimuli**<br>**U - Unresponsive** | Eye Opening: | Spontaneous<br>To voice<br>To pain<br>No response | 4<br>3<br>2<br>1 |
| | Verbal Response: | Oriented<br>Confused<br>Inappropriate words<br>Incomprehensible<br>No response | 5<br>4<br>3<br>2<br>1 |
| | Motor Response: | Obeys commands<br>Localizes (pain)<br>Withdraws (pain)<br>Flexion (pain)<br>Extension (pain)<br>No response | 6<br>5<br>4<br>3<br>2<br>1 |

**EXPOSURE:**
As much of the patient's body as possible should exposed for examination, depending on complaint. Keep in mind the effects of the environment on the patient. Discovery of hidden problems before the patient is loaded for transport may allow time to intervene and avoid disastrous complications. Although exposure for examination is emphasized most frequently in care of the trauma patient, it is equally important in the primary assessment of the patient with a medical illness.

The pre-hospital provider should always look under dressings or clothing, which may hide complications or potential problems. Clothing may hide bleeding that occurs as a result of thrombolytic therapy or rashes that may indicate potentially contagious conditions. During inter-facility transport, intravenous access can be wrongly assumed underneath a bulky cover. Once patient assessment has been completed, keep in mind that the patient must be kept warm. Hypothermia can cause cardiac arrhythmias, increased stress response, and hypoxia.

### Summary of Primary Exposure Assessment

- Identification of injury, active bleeding, or indication of a serious illness.
- Appropriate tube placement: Endotracheal tubes, chest tubes, feeding tubes, naso-gastric or oro-gastric tubes, and urinary catheters.
- Intravenous access: Peripheral, central, and Intraosseous.

**SECONDARY (FOCUSED) ASSESSMENT:**
The secondary (focused) assessment is performed after the primary assessment is completed and involves evaluation of the patient from head to toe. Illness specific information is collected by means of inspection, palpation, and auscultation during the secondary assessment. Whether the patient has had an injury or is critically ill, the pre-hospital provider should observe, and listen to the patient.

The secondary (focused) assessment begins with an evaluation of the patient's general appearance. The pre-hospital provider should observe the surrounding environment and evaluate its effects on the patient. Is the patient aware of the environment? Is there appropriate interaction between the patient and the environment?

Determination of the amount of pain the patient has as a result of illness or injury is also an important component of the patient assessment. Baseline information should be obtained about the pain the patient has so that the effectiveness of interventions can be assessed during transport. Pain relief is one of the most important interventions for pre-hospital patient care providers.

**Assessment Acronyms:**

| S.A.M.P.L.E. | |
|---|---|
| **S** | **Signs and Symptoms** |
| **A** | **Allergies** |
| **M** | **Medications** |
| **P** | **Pertinent past medical history** |
| **L** | **Last oral intake** |
| **E** | **Events leading up to the event** |

| O.P.Q.R.S.T. | |
|---|---|
| **O** | **Onset:** *(When did the problem / pain begin?)* |
| **P** | **Provocation:** *(What makes the problem / pain worse?)* |
| **Q** | **Quality:** *(Can you describe the problem / pain?)* |
| **R** | **Radiation:** *(Does the pain move anywhere?)* |
| **S** | **Severity:** (*On a scale of 1-10, how bad is the pain?)* |
| **T** | **Time:** *(Does the condition come and go? Duration?)* |

MEDICAL ASSESSMENT

| Summary of Secondary Assessment | |
|---|---|
| Skin | • Presence of petechia, purpura, abrasions, bruises, scars, or birthmarks<br>• Bite / Sting marks<br>• Rashes<br>• Abnormal skin turgor<br>• Temperature<br>• Color: Jaundice, pallor, etc. |
| Head and Neck | • Pupillary reflex / Size of pupils<br>• Gross visual examination<br>• Abnormal extra-ocular movements<br>• Assessment of mental status / Short & Long term memory assessment<br>• Neck veins<br>• Swallowing difficulties<br>• Nuchal rigidity<br>• Presence of lymphadenopathy or neck masses<br>• Scars |
| Ears, Nose, and Throat | • Hemorrhage<br>• Drainage<br>• Sunken eyes<br>• Gross assessment of the hearing<br>• Obstruction<br>• Foreign body |
| Mouth and Throat | • Mucous membranes<br>• Drooling<br>• Breath odor<br>• Drainage<br>• Inspection of tongue (i.e., laceration / bite marks indicate possible seizure activity)<br>• Airway obstruction<br>• Scars |
| Thorax, Lungs, and Cardiovascular System | • Breath sounds<br>• Heart Sounds<br>• Peripheral vs. Central Pulse Comparison<br>• Scars |
| Abdomen | • Shape and size<br>• Bowel sounds<br>• Tenderness / Rigidity / Guarding<br>• Masses (i.e., suprapubic masses)<br>• Pelvic tenderness, crepitus, or instability<br>• Scars |

| | |
|---|---|
| Genitourinary | • Rectal bleeding<br>• Color of urine<br>• Frequency / Urgency of urination<br>• Stools – Normal / Color |
| Extremities and Back | • Gross motor and sensory function<br>• Peripheral pulses<br>• Lack of use of an extremity<br>• Deformity, angulation<br>• Wounds, abrasions<br>• Vertebral column, flank, buttocks |

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**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Abdominal Pain

**REVISED:** 06/2017

Protocol 3-2

ABDOMINAL PAIN

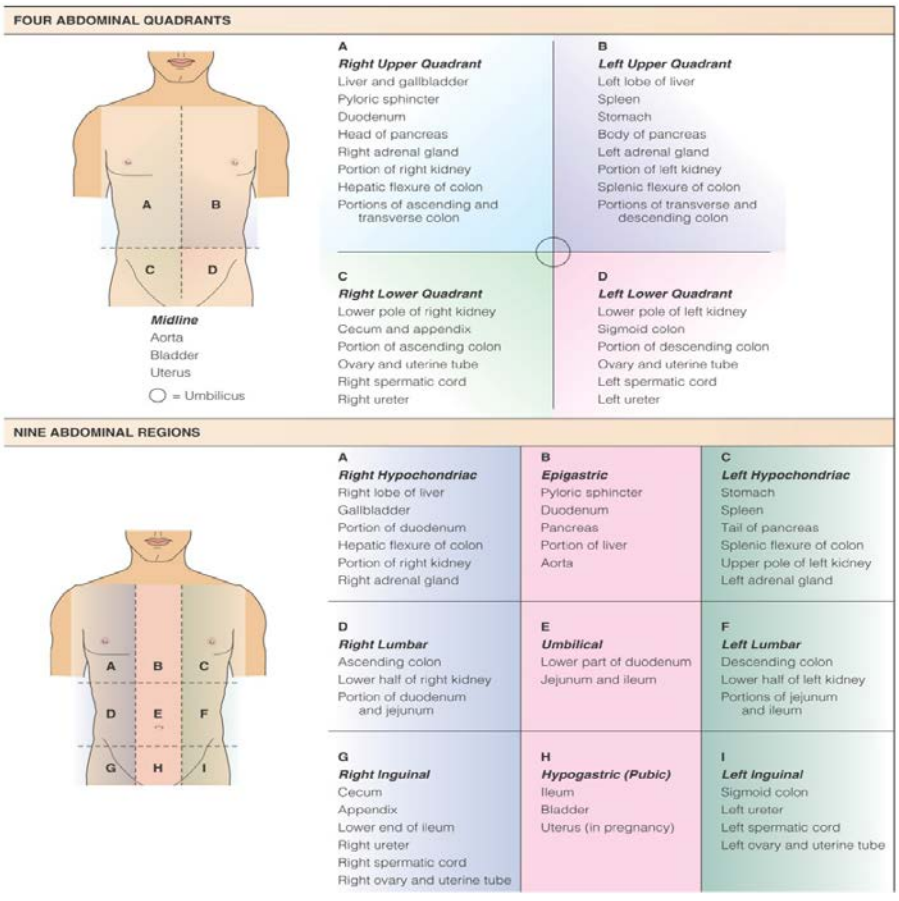
**OVERVIEW:**
Abdominal pain is one of the most common presenting complaints in emergency medicine. In nearly half the patients, the etiology remains obscure. Recalling the differences between generalized types of pain can be helpful diagnostically. Visceral abdominal pain results from stretching of the autonomic nerve fibers. The pain may be described as cramp like, colicky or gaseous and is often intermittent. Obstruction can be a serious cause of visceral pain. Somatic pain occurs when pain fibers located in the parietal peritoneum are irritated by chemical or bacterial inflammation. The pain is described as sharp, more constant, and more precisely located. Referred pain is any pain felt at a distance from a diseased organ. Referred pain generally follows certain classic patterns, for example, diaphragmatic irritation often radiates to the supra-clavicular area.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Age<br>• Past medical, surgical history<br>• Medications<br>• Time of onset<br>• Palliation, provocation<br>• Quality (cramping, constant, sharp, dull, etc)<br>• Region, radiation, referred<br>• Severity (1 - 10)<br>• Duration, repetition<br>• Fever<br>• Last meal<br>• Last bowel movement, consistency<br>• Menstrual history, pregnancy | • Pain (location, migration)<br>• Distension, rigidity<br>• Unequal, absent femoral pulses<br>• Diaphoresis<br>• Orthostatic changes<br>• Tenderness<br>• Nausea, vomiting, diarrhea<br>• Dysuria<br>• Constipation<br>• Vaginal bleeding, discharge<br>• Pregnancy<br>• Associated symptoms (helpful to localize source)<br>• Fever, headache, weakness, malaise, myalgias, cough, mental status changes, rash | • Pneumonia, HF<br>• Pulmonary embolus<br>• Liver (hepatitis)<br>• Peptic ulcer disease, gastritis<br>• Gallbladder<br>• Myocardial infarction<br>• Pancreatitis<br>• Kidney stone<br>• Abdominal aneurysm<br>• Mesenteric Arterial Tear<br>• Appendicitis<br>• Bladder, prostate disorder<br>• Pelvic (PID, ectopic pregnancy, ovarian cyst)<br>• Spleen enlargement<br>• Bowel obstruction<br>• Gastroenteritis (infectious) |

# Protocol 3-2 Continued

# ABDOMINAL PAIN

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | ● | ● | ● | ● | ● |
| 2. Assess mechanism of injury and / or nature of illness. | ● | ● | ● | ● | ● |
| 3. Administer Oxygen to maintain *SPO2* 94 - 99% | ● | ● | ● | ● | ● |
| 4. Allow the patient to lie in a comfortable position. | ● | ● | ● | ● | ● |
| 5. If shock is present, without pulsating masses, refer to *Shock protocol.* | ● | ● | ● | ● | ● |
| 6. Place patient on cardiac monitor and obtain a *12 lead ECG* if indicated. | | ● | ● | ● | ● |
| 7. Initiate IV of Normal Saline KVO. | | | ● | ● | ● |
| 8. Administer *ONDANSETRON* (Zofran) per *Medical – Nausea/Vomiting* protocol. | | ● | ● | ● | ● |
| 9. Treat pain if indicated. Refer to *General – Pain Control* protocol. | | | | ● | ● |
| 10. Transport and perform ongoing assessment as indicated. | | ● | ● | ● | ● |






**PEARLS:**

1. Abdominal pain may be the first sign of an impending rupture of the appendix, liver, spleen, ectopic pregnancy, or aneurysm. Monitor for signs of hypovolemic shock.
2. If a pulsating mass is felt, suspect an abdominal aneurysm and discontinue palpation.
3. Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
4. Appendicitis can present with vague, periumbilical pain that migrates to the RLQ over time.
5. Kidney stones can present with flank pain that migrates to the lower quadrants.
6. Ask the patient to point to the pain. The further from the umbilicus the patient points, the more likely the pain is to be organic in origin.
7. Simple pain management techniques include speaking in calm, reassuring voice, and placing the patient in a position of comfort.

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**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Allergic Reaction and Anaphylaxis

**REVISED:** 06/2017

Protocol 3-3

ALLERGIC REACTION

**OVERVIEW:**
Anaphylaxis allergic reactions and are serious and potentially life-threatening medical emergencies. It is the body's adverse reaction to a foreign protein, (i.e., food medicine, pollen, insect sting or any ingested, inhaled, or injected substance). Patients with allergic reactions frequently present only with local or generalized swelling; in contrast, anaphylaxis is characterized by wheezing, significant airway compromise, and / or systolic BP < 90 mmHg. Common to both disorders are urticaria and Angioedema, which when isolated are best treated with simple antihistamine therapy. It is when respiratory symptoms, such as upper airway edema, dyspnea, and wheezing are present EMS personnel should attribute these findings to anaphylaxis, and subsequently move to more aggressive therapy. Cardiovascular collapse may occur abruptly, without the prior development of skin or respiratory symptoms. **Constant monitoring of the patient's airway and breathing is mandatory.**

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Onset and location<br>• Insect sting or bite<br>• Food allergy / exposure<br>• New clothing, soap, detergent<br>• Past history of reactions<br>• Medication history | • Itching or hives<br>• Coughing, wheezing, or respiratory distress<br>• Chest or throat constriction<br>• Difficulty swallowing<br>• Hypotension or shock<br>• Edema | • Urticaria (rash only)<br>• Anaphylaxis (systemic effect)<br>• Shock (vascular effect)<br>• Angioedema (drug induced)<br>• Aspiration / airway obstruction<br>• Vaso-vagal event<br>• Asthma or COPD<br>• Heart failure |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| 3. Administer oxygen to maintain *$SPO_2$* 94 - 99% | • | • | • | • | • |
| 4. If signs of anaphylaxis, and if available, administer epinephrine via an epinephrine autoinjector. | | • | • | • | • |
| 5. If signs of anaphylactic shock and autoinjector has not been administered, administer *EPINEPHERINE 1 mg/ml* 0.01 mg / kg up to 0.5 mg IM. | | | • | • | • |
| 6. If the patient is experiencing respiratory distress with wheezing, refer to the *Respiratory Distress protocol.* | • | • | • | • | • |
| 7. Transport as soon as possible. | | • | • | • | • |
| 8. Establish an IV of normal saline at KVO. | | | • | • | • |

Protocol
3-3
Continued

ALLERGIC REACTION

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 9. If hypoperfusion persists following the first dose of epinephrine, consider administration of 20 mL / kg normal saline IV. While administering a fluid bolus, frequently reassess perfusion for improvement. If perfusion improves, slow the IV to KVO and monitor closely. If patient develops fluid overload respiratory distress (dyspnea, crackles, rhonchi, decreasing $SpO_2$), slow the IV to KVO. | | | • | • | • |
| 10. Administer *DIPHENHYDRAMINE* 1 mg / kg up to 50 mg IM or IV. The IV route is preferred for the patient in severe shock. If an IV cannot be readily established, give diphenhydramine via the IM route. | | | • | • | • |
| 11. Transport and perform ongoing assessment as indicated. | | • | • | • | • |

**PEARLS:**

1. A thorough assessment and a high index of suspicion are required for all potential allergic reaction patients.
2. Individuals with asthma, atopic dermatitis (eczema), prior anaphylactic history, and those who delay treatment can be at greater risk for a fatal reaction.
3. It is strongly recommended that all patients receiving anti-cholinergic medications should be transported for observation following treatment for return of symptoms.
4. Gastrointestinal symptoms occur most commonly in food-induced anaphylaxis, but can occur with other causes. Oral pruritus is often the first symptom observed in patients experiencing food-induced anaphylaxis. Abdominal cramping is also common, but nausea, vomiting, and diarrhea are frequently observed as well.
5. Contrary to common belief that all cases of anaphylaxis present with cutaneous manifestations, such as hives or mucocutaneous swelling, a significant portion of anaphylactic episodes may not involve these signs and symptoms on initial presentation. Moreover, most fatal reactions to food-induced anaphylaxis in children were not associated with cutaneous manifestations.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** General – Behavioral/Patient Restraint

**REVISED:** 06/2017

Protocol 3-4

BEHAVIORAL EMERGENCIES

**OVERVIEW:**
Psychiatric patients may have an illness that presents with symptoms such as delusions, hallucinations, depression, or significant trauma. The patient's symptoms demand immediate response as they may appear intense, raise the anxiety levels of those around the patient to an intolerable level, or create problems in the immediate environment. The patient may perceive their life to be at immediate risk, either from suicide or their current inability to make logical decisions. Remember that **personal safety takes priority over patient intervention**. Patient care should be focused with preventing / mitigating hyperthermia, agitated delirium, positional asphyxia, hypoxia, and physical harm.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Situational crisis<br>• Psychiatric illness / medications<br>• Injury to self or threats to others<br>• Plan<br>• History of suicide attempts<br>• Substance abuse / overdose<br>• Diabetes | • Anxiety, agitation, and / or confusion<br>• Affect change<br>• Auditory and / or visual hallucinations<br>• Delusional thoughts, bizarre behavior<br>• Combative and / or violent<br>• Expression of suicidal / homicidal thoughts | • See *Unconscious / Syncope / AMS Patient Care Protocol*<br>• Diabetic<br>• Hypoxia<br>• Stroke<br>• Brain trauma<br>• Alcohol intoxication<br>• Toxin / substance abuse<br>• Medication effect / overdose<br>• Withdrawal Syndromes<br>• Depression<br>• Bipolar (manic-depressive), schizophrenia, anxiety disorders |

# BEHAVIORAL EMERGENCIES

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| **For Non-violent and Non-aggressive Patients:** | | | | | |
| 1. Scene safety is a priority. Maintain scene and provider safety. Request police if indicated. | • | • | • | • | • |
| 2. Perform general patient management. | • | • | • | • | • |
| 3. Develop rapport with the patient. Speak in a calm, non-judgmental / non-confrontational manner. Be aware of your own and the patient's posture, body language, and position. | • | • | • | • | • |
| 4. Remove disturbing persons and / or objects from the environment. | • | • | • | • | • |
| 5. Encourage the patient to sit, relax, and talk. Do not touch the patient without permission. | • | • | • | • | • |
| 6. Transport and Reassess if indicated. | | • | • | • | • |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| **For Violent or Aggressive Patients:** | | | | | |
| 1. Assure scene safety. Request Police department if needed. Do not engage patient without police unless benefits outweigh risks to patient and providers. | • | • | • | • | • |
| 2. Perform general patient management. | • | • | • | • | • |
| 3. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| 4. Assess for signs of trauma. | • | • | • | • | • |
| 5. Administer oxygen to maintain *$SPO_2$* 94 - 99% | • | • | • | • | • |
| 6. For altered mental status, perform rapid glucose determination. | • | • | • | • | • |
| 7. Control environmental factors; attempt to move patient to a private area free of family and bystanders. MAINTAIN ESCAPE ROUTE. | • | • | • | • | • |
| 8. Attempt de-escalation, utilize an empathetic approach. Ensure patient safety and comfort. AVOID CONFRONTATION. | • | • | • | • | • |
| 9. Ensure patient capacity to make decisions. If patient has capacity, consent to treat is required. If patient lacks capacity, consent to treat is not required. | • | • | • | • | • |
| 10. Physically restrain. Refer to *Clinical Procedures: Patient Restraint.* | • | • | • | • | • |
| 11. Chemical Restraint: | | | | | |
| a. If chemical agitation or alcohol withdrawal is suspected, refer to the appropriate *Medical – Overdose/Poisoning* protocol. | • | • | • | • | • |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| b. If behavioral or alcohol related agitation is suspected, give *MIDAZOLAM* 0.1 mg / kg IV / IM (max single dose of 5 mg). If midazolam is unavailable, administer *DIAZEPAM* 0.25 mg / kg IV / IM (max single dose of 5 mg or a max dose of 10 mg). Contact Medical Control for repeat dosing. | | | | • | • |
| c. In adult patients, if behavioral or alcohol related agitation continues or escalates, give *GEODON* 20 mg IM if greater than 50 kg weight (10 mg IM if weight less than 50 kg). | | | | • | • |
| 12. Transport as soon as possible. | | • | • | • | • |

**PEARLS:**

1. Do not leave patient alone once patient contact has been made unless your safety has been compromised. Your safety is the primary concern. If necessary, leave equipment on scene.
2. Every suicide act, gesture, or verbal threat must be taken seriously. In the Commonwealth of Virginia, patients are unable to refuse care under these circumstances and shall be placed in emergency custody as needed with police assistance, *VA Code 37.2-808*.
3. Always have police search patient for weapons or items that could be used as weapons prior to placing patient in ambulance. Patient belongings that are secured should be transported in the front of the ambulance, or an outside compartment, for safety and given to hospital staff on arrival.
4. If a patient must be transported using handcuffs or police flexible wrist restraints, a police officer should ride in the ambulance with the patient to the receiving hospital.

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**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Stroke/TIA

**REVISED:** 07/2017

Protocol 3-5

STROKE

**OVERVIEW:**
Stroke is a major cause of disability and a leading cause of death in the U.S. There are two main mechanisms of stroke: (1) Blood vessel occlusion and (2) Blood vessel rupture. Ischemic strokes are most often caused by large vessel thrombosis, although embolism or hypoperfusion can cause them. Causes of thrombosis include atherosclerosis, vessel dissection, and some infectious diseases. Hemorrhagic strokes are divided into intracerebral (ICH) and subarachnoid (SAH) hemorrhages. Risk factors for ICH include heart disease, hypertension, smoking, diabetes, elevated cholesterol, older age, prior stoke, family history, and cocaine use. Stroke symptoms will present according to which area of the brain is being inadequately perfused.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Previous CVA/ TIA's<br>• Previous cardiac / vascular surgery<br>• Associated diseases; diabetes, hypertension, CAD, atrial fibrillation<br>• Medications (blood thinners)<br>• History of trauma | • Altered mental status<br>• Weakness, paralysis<br>• Blindness or other sensory loss<br>• Aphasia, dysarthria<br>• Syncope<br>• Vertigo, dizziness<br>• Vomiting<br>• Headache<br>• Seizures<br>• Respiratory pattern change<br>• Hypertension, hypotension | • TIA<br>• Seizure<br>• Hypoglycemia<br>• Stroke<br>• Thrombotic<br>• Embolic<br>• Hemorrhagic<br>• Tumor<br>• Trauma |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. *Be alert for aspiration, upper airway obstruction and hypoventilation*. | • | • | • | • | • |
| 3. Administer oxygen to maintain $SPO_2$ 94 - 99%. Support respirations as necessary with a BVM. | • | • | • | • | • |
| 4. Perform and document Cincinnati or FAST stroke evaluation and if positive, perform VAN | • | • | • | • | • |
| 5. Determine last known well time | • | • | • | • | • |
| 6. If positive Cincinnati or FAST, notify hospital of stroke alert. If positive VAN test, notify hospital of stroke alert with positive VAN. | | • | • | • | • |

# Protocol 3-5 Continued

## STROKE

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 7. Perform rapid glucose determination. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia, refer to the *Medical – Diabetic – Hypoglycemia* protocol. | | • | • | • | • |
| 8. Ensure that a witness accompanies the patient to the hospital or obtain contact telephone for the hospital | • | • | • | • | • |
| 9. Establish an IV of normal saline at KVO. If possible, establish secondary IV as well. | | | • | • | • |
| 10. Place patient on cardiac monitor and obtain 12 lead ECG (and interpret if ALS) within 10 minutes of patient contact. | | • | • | • | • |
| 11. Perform ongoing assessment as indicated. | | • | • | • | • |
| 12. Transport to closest appropriate hospital with capabilities to provide the appropriate level of treatment based on time from last known well to estimated time of arrival at facility and positive stroke scale<br>a. less than 3.5 hrs with weakness and negative VAN – transport to any stroke certified hospital or stroke capable facility<br>b. less than 3.5 hrs with weakness and positive VAN (or any wake up stroke) – transport to comprehensive stroke center or primary stroke center with endovascular capabilities<br>c. between 3.5 hrs and 24 hours (any stroke)– transport to comprehensive stroke center or primary stroke center with endovascular capabilities<br>d. greater than 24 hours (any stroke) – transport to any stroke certified hospital or stroke capable facility | | • | • | • | • |
| 13. Consider not bypassing stroke capable/primary stroke centers if time to higher level of care is greater than 15 minutes | | • | • | • | • |
| 14. Consider air medical transport if ground transport time >30 minutes | • | • | • | • | • |

| FAST Stroke Scale[2] |
|---|
| **F - Face. Does one side of the face droop?**<br>• Normal — both sides of face move equally<br>• Abnormal — one side of face does not move as well as the other side<br>**A - Arm. Does one arm drift downward?**<br>• Normal — both arms move the same or both arms do not move at all (other findings, such as pronator drift, may be helpful)<br>• Abnormal — one arm does not move or one arm drifts down compared with the other<br>**S - Speech. Are the words slurred? Is speech confused?**<br>• Normal — patient uses correct words with no slurring<br>• Abnormal — patient slurs words, uses the wrong words, or is unable to speak<br>**T - Time. What time did the symptoms begin? When was the person last seen looking or acting normally?** |

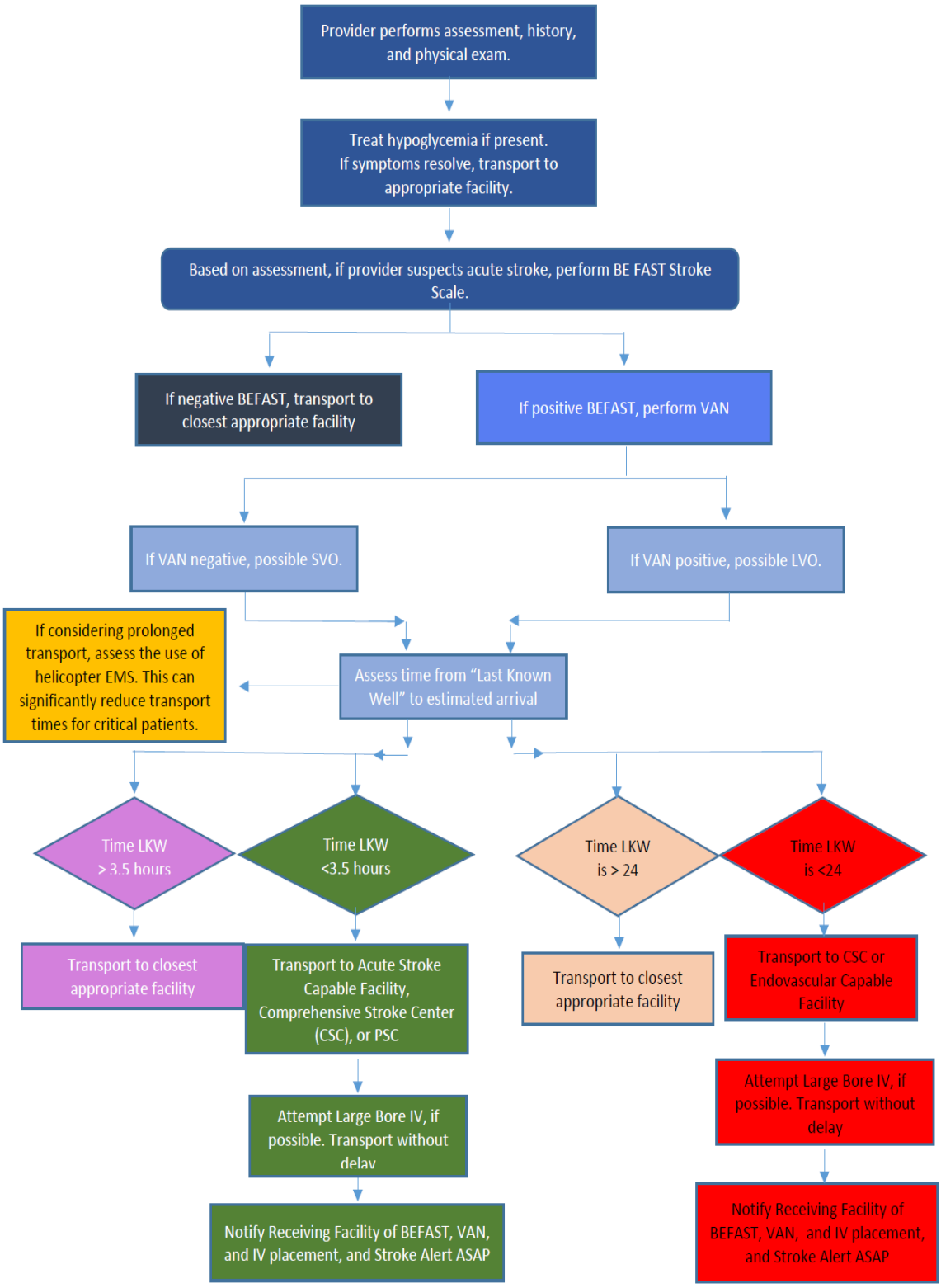
| VAN Stroke Scale |
|---|
| **V – Vision. Ask the patient to look left, right, up, and down**<br>• Normal – No changes in vision<br>• Abnormal – Field cut (which side) (4 quadrants), double vision, blind new onset<br>**A – Aphasia. Can the patient understand and speak coherently?**<br>• Normal – Patient can understand language<br>• Abnormal – inability to speak or periphrastic errors, unreceptive (not understanding or following commands such as close eyes, make fist)<br>**N – Neglect. Is the patient forcibly gazing to the right or left and not acknowledging the other side**<br>• Normal – Able to maintain vision fields<br>• Abnormal – Forced gaze or inability to track to one side, unable to feel both sides at the same time, or unable to identify own arm, Ignoring one side |

| POSSIBLE CAUSES OF UNCONSCIOUSNESS | | | |
|---|---|---|---|
| **A** | Alcohol, Abuse, Acidosis | **T** | Toxidromes, Trauma, Temperature, Tumor |
| **E** | Endocrine, Electrolytes, Encephalopathy | **I** | Infection, Intussusception |
| **I** | Insulin | **P** | Psychogenic, Porphyria, Pharmacological |
| **O** | Oxygenation, Overdose, Opiates | **S** | Space occupying lesion, Sepsis, Seizure, Shock |
| **U** | Uremia | | |

**PEARLS:**

1. Every hospital and free standing emergency department in the region is an "Acute Stroke Capable Hospital." Primary Stroke Centers (PSC) are (in alphabetical order): Chippenham, HDH-F, Johnston-Willis, JRMC, MRMC, PDH, Richmond Community Hospital, SRMC, SFMC, VCU Medical Center.
2. Onset of symptoms is defined as the last **witnessed** time the patient was symptom free (i.e., a patient awakening with stroke symptoms would be defined as an onset time of the previous night when the patient was symptom free).
3. The differentials listed in the Unconscious / Syncope / AMS Patient Care Protocol should also be considered.
4. Be alert for airway problems (difficulty swallowing, vomiting, aspiration, etc).
5. Hypoglycemia can present as a localized neurological deficit in the elderly.
6. There is an increased risk of stroke after a myocardial infarction (MI). Positive predictors of stroke after MI include: advanced age; diabetes; hypertension; history of prior stroke; anterior location of index MI; prior MI, atrial fibrillation; heart failure; and nonwhite race.[1]
7. Scene and transport times should be minimized so the patient may receive the maximum benefit of intravenous thrombolytic therapy or endovascular intervention.
8. Wake up strokes may be treated as acute strokes, even up to 24 hrs. Studies indicate improvement with intervention.

[1] Am J Med. 2006 Apr;119(4):354.e1-9.
The incidence of stroke after myocardial infarction: a meta-analysis.
Witt BJ, Ballman KV, Brown RD Jr, Meverden RA, Jacobsen SJ, Roger VL.


Provider performs assessment, history, and physical exam.
Treat hypoglycemia if present. If symptoms resolve, transport to appropriate facility.
Based on assessment, if provider suspects acute stroke, perform BE FAST Stroke Scale.
If negative BEFAST, transport to closest appropriate facility
If positive BEFAST, perform VAN
If VAN negative, possible SVO.
If VAN positive, possible LVO.
If considering prolonged transport, assess the use of helicopter EMS. This can significantly reduce transport times for critical patients.
Assess time from "Last Known Well" to estimated arrival
Time LKW > 3.5 hours
Time LKW <3.5 hours
Time LKW is > 24
Time LKW is <24
Transport to closest appropriate facility
Transport to Acute Stroke Capable Facility, Comprehensive Stroke Center (CSC), or PSC
Transport to closest appropriate facility
Transport to CSC or Endovascular Capable Facility
Attempt Large Bore IV, if possible. Transport without delay
Attempt Large Bore IV, if possible. Transport without delay
Notify Receiving Facility of BEFAST, VAN, and IV placement, and Stroke Alert ASAP
Notify Receiving Facility of BEFAST, VAN, and IV placement, and Stroke Alert ASAP

# Protocol 3-5 Continued

STROKE

| Hospital | Acute Stroke capabilities with cardiac surgery capabilities | Acute Stroke Capable Hospitals | Primary Stroke Centers (PSC) | Comprehensive Stroke Center (CSC) |
|---|---|---|---|---|
| Bon Secours/Memorial Regional Med Center | ✓ | ✓ | ✓* | |
| Bon Secours/Richmond Community Hospital | | ✓ | ✓ | |
| Bon Secours/St Francis Medical Center | | ✓ | ✓ | |
| Bon Secours/St Mary's Hospital | ✓ | ✓ | ✓ | ✓ |
| Centra/Southside Community Hospital | | ✓ | | |
| CHS/Southern Virginia Regional Med Center | | ✓ | | |
| CHS/Southside Regional Medical Center | ✓ | ✓ | ✓ | |
| HCA/CJW Medical Center- Chippenham | ✓ | ✓ | ✓ | |
| HCA/CJW Medical Center- Johnston Willis | ✓ | ✓ | ✓ | ✓ |
| HCA/Henrico Doctor's Hospital - Forest | ✓ | ✓ | ✓* | |
| HCA/John Randolph Medical Center | | ✓ | ✓ | |
| HCA/Parham Doctor's Hospital | | ✓ | ✓ | |
| HCA/Retreat Doctor's Hospital | | ✓ | ✓ | |
| McGuire VA Medical Center | | ✓ | | |
| Sentara Halifax Regional Hospital | | ✓ | | |
| SOVAH Health-Danville | | ✓ | ✓ | |
| VCU Community Memorial Hospital | | ✓ | ✓ | |
| VCU Health System | ✓ | ✓ | ✓ | ✓ |
| **Free-Standing Emergency Departments – Acute Stroke Capable ONLY** | | | | |
| Bon Secours - Westchester Emergency Center | | ✓ | | |
| HCA – Hanover Emergency Department | | ✓ | | |
| HCA – West Creek Emergency Department | | ✓ | | |
| HCA – TriCities Emergency Center | | ✓ | | |
| HCA – Chippenham Hospital Swift Creek ER | | ✓ | | |

*This facility is a Primary Stroke Center with endovascular surgery capabilities.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Dystonic/Extrapyramidal Reaction

**REVISED:** 06/2017

Protocol 3-6

# DYSTONIC REACTION

**OVERVIEW:**
Dystonic or extra-pyramidal reactions are characterized by an unusual posture, change in muscle tone, drooling, and / or uncontrolled movements. Although dystonic reactions are occasionally dose related these reactions are more often idiosyncratic and not predictable. Dystonia results from drug-induced alteration of the dopaminergic-cholinergic balance in the basal ganglia. Risk factors include, but are not limited to, family history of dystonia, recent history of cocaine or alcohol use, or treatment with a potent dopamine $D_2$ receptor antagonist such as fluphenazine and almost every anti-psychotic medication. Diphenhydramine, when administered, usually causes marked improvement, if not total resolution of symptoms.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Onset of symptoms<br>• Medications<br>• Illicit drug use<br>• History of past reaction | • Eye deviation in all directions<br>• Protrusion of the tongue<br>• Forced jaw opening or spasms<br>• Facial grimacing<br>• Deviation of the head<br>• Difficulty speaking | • Conversion disorder<br>• Mandible dislocation<br>• Hypocalcemia<br>• Hypomagnesemia<br>• Meningitis<br>• Status Epilepticus<br>• Stroke<br>• Tetanus<br>• Drug toxicity (Anticholinergic, Carbamazepine, Phenytoin, Valproate) |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Administer oxygen to maintain *SPO$_2$* 94 - 99% | • | • | • | • | • |
| 3. If patient is having a seizure, refer to the *Seizure protocol.* | • | • | • | • | • |
| 4. Obtain a blood glucose sample. If < 60 mg / dl or > 300 mg / dL, refer to *Hypoglycemia or Hyperglycemia protocol.* | | • | • | • | • |
| 5. Place patient on cardiac monitor and obtain *12 lead ECG* if indicated. | | • | • | • | • |
| 6. Establish IV of Normal Saline, titrate to maintain systolic BP > 90 mmHg; alternatively may establish NaCl lock. | | | • | • | • |
| 7. Administer *DIPHENHYDRAMINE* (Benadryl) 25 - 50 mg IV or IM. | | | • | • | • |
| 8. Transport in position of comfort and reassess. | | • | • | • | • |

# DYSTONIC REACTION

| Common Types of Dystonia |
|---|
| **Spasmodic Torticollis** – Commonly called wry neck or cervical dystonia, is the most common form of focal dystonia. This form affects the muscles in the neck, causing the head to assume unnatural postures or turn uncontrollably. The head may turn (laterocollis), twist to one side (rotational torticollis), tilt forward (anterocollis), or tilt backward (retrocollis). |
| **Blepharospasm** – This is the second most common form of focal dystonia causing involuntary contraction of the eyelids, leading to uncontrollable blinking and closure of the eyes. |

| Common Medications Causing Dystonia | | |
|---|---|---|
| **Anti-depressants** | **Neuroleptic Agents** | **Miscellaneous Agents** |
| • Amitriptyline<br>• Amoxapine (Asendis)<br>• Bupropion<br>• Clomipramide (Anafranil)<br>• Doxepin (Sinequan)<br>• Trimipramine (Surmontil)<br>• Trazadone (Desyrel) | • Chlorpromazine (Largactil)<br>• Clozapine (Clozaril)<br>• Fluphenazine (Prolixin)<br>• Haloperidol (Haldol)<br>• Perphenazine (Fentazin)<br>• Promazine<br>• Trifluoperazine (Stelazine) | • Lithium (Priadel)<br>• Midazolam<br>• Phenytoin (Dilantin)<br>• Promethazine (Phenergan)<br>• Verapamil (Calan) |

| **Anti-anxiety Agents** | **Anti-nausea / vomiting agents** |
|---|---|
| • Alprazolam (Xanax)<br>• Buspirone (Buspar) | • Metoclopramide (Reglan)<br>• Prochlorperazine (Stemetil) |

**PEARLS:**

1. Incidence of acute dystonic reactions vary according to individual susceptibility, drug identity, dose, and duration of therapy.
2. A small population of all patients on neuroleptic medications have dystonic reactions.
3. In rare instances, although abnormal, airway management may be needed.
4. Dystonic reactions are rarely life threatening and result in no long-term effects.
5. Risk of reaction typically decreases with age and tends to be most common in children, teens, and young adults (< 45 years old).

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Diabetic – Hyperglycemia

**REVISED:** 06/2017

Protocol 3-7

HYPERGLYCEMIA

**OVERVIEW:**
Symptomatic hyperglycemia can be described as an elevated blood glucose level with signs of severe dehydration, altered mental status, and / or shock. For the purpose of these protocols, the glucose level for symptomatic hyperglycemia is 300 mg / dL. Hyperglycemia is usually the result of an inadequate supply of insulin to meet the body's needs. Most pre-hospital care should be focused around the treatment of severe dehydration and support of vital functions.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • History of diabetes<br>• Onset of symptoms<br>• Medications | • Anxiety, agitation, and / or confusion<br>• Dry, red, and / or warm skin<br>• Acetone (fruity) smell on breath<br>• Kussmaul respirations<br>• Dry mouth, intensive thirst<br>• Abnormal / hostile behavior<br>• Tachycardia<br>• Dizziness / headache | • Hypoxia<br>• Stroke<br>• Brain trauma<br>• Alcohol intoxication<br>• Toxin / substance abuse<br>• Medication effect / overdose |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| 3. Assess for signs of trauma. Provide spinal immobilization as necessary. | • | • | • | • | • |
| 4. Administer oxygen to maintain *$SPO_2$* 94 - 99% | • | • | • | • | • |
| 5. For altered mental status, perform rapid glucose determination. | | • | • | • | • |
| 6. If glucose greater than 300 mg / dL, start an IV of normal saline. | | | • | • | • |
| 7. For signs and symptoms of hypovolemic shock or dehydration, follow the *Medical – Hypotension/Shock (non-trauma)* protocol. | • | • | • | • | • |
| 8. Place on cardiac monitor and obtain / interpret *12 lead ECG* as indicated. | | • | • | • | • |
| 9. Transport and perform ongoing assessment as indicated. | | • | • | • | • |

# HYPERGLYCEMIA

| POSSIBLE CAUSES OF PULSELESS ARREST | | | |
|---|---|---|---|
| **A** | Alcohol, Abuse, Acidosis | **T** | Toxidromes, Trauma, Temperature, Tumor |
| **E** | Endocrine, Electrolytes, Encephalopathy | **I** | Infection, Intussusception |
| **I** | Insulin | **P** | Psychogenic, Porphyria, Pharmacological |
| **O** | Oxygenation, Overdose, Opiates | **S** | Space occupying lesion, Sepsis, Seizure, Shock |
| **U** | Uremia | | |

**PEARLS:**

1. Use aseptic techniques to draw blood from finger.
2. Allow alcohol to dry completely prior to puncturing finger for blood glucose level. Alcohol may cause inaccurate readings. Do not blow on, or fan site, to dry faster.
3. After puncturing finger, use only moderate pressure to obtain blood. Excessive pressure may cause rupture of cells causing inaccurate results.
4. Know your specific agency's glucometer's parameters for a "HI" and "LO" reading.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Diabetic - Hypoglycemia

**REVISED:** 06/2017

Protocol 3-8

HYPOGLYCEMIA

**OVERVIEW:**
Symptomatic hypoglycemia is defined as a blood glucose level < 60 mg / dL with signs of altered mental status and/or unconsciousness. The many signs and symptoms that are associated with hypoglycemia can be divided into two broad categories: adrenergic and neurologic. Adrenergic stimulation is due to the increased epinephrine levels and neurologic is due to central nervous system dysfunction from the decreased glucose levels.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • History of diabetes<br>• Onset of symptoms<br>• Medications<br>• Fever or recent infection<br>• Alcohol consumption<br>• Last meal | • Anxiety, agitation, and / or confusion<br>• Cool, clammy skin<br>• Diaphoresis<br>• Seizure<br>• Decreased visual acuity, blindness<br>• Abnormal/ hostile behavior<br>• Tachycardia<br>• Hypertension<br>• Dizziness, headache, weakness | • Hypoxia<br>• Seizure<br>• Stroke<br>• Brain trauma<br>• Alcohol intoxication<br>• Toxin / substance abuse<br>• Medication effect / overdose |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems. | • | • | • | • | • |
| 3. Assess for signs of trauma. Provide spinal immobilization as necessary. | • | • | • | • | • |
| 4. Administer oxygen to maintain $SPO_2$ 94 - 99% | • | • | • | • | • |
| 5. For altered mental status, perform rapid glucose determination. | | • | • | • | • |
| 6. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia and the patient is awake and able to swallow: | | | | | |
| a. If the patient can protect airway, give Oral Glucose15 grams. Repeat in 15 minutes if necessary. | | • | • | • | • |
| 7. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia and oral glucose is contraindicated: | | | | | |
| a. Establish an IV of normal saline at KVO. | | | • | • | • |

# Protocol 3-8 Continued

# HYPOGLYCEMIA

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| b. *Patient > 40 kg:* Give *DEXTROSE* 10% 100mL bolus. Repeat once in 2 minutes if altered mental status persists. | | | • | • | • |
| c. If *DEXTROSE 10%* is unavailable, administer *DEXTROSE 50%* 1G / kg up to 25 G IV | | | • | • | • |
| d. If unable to establish an IV, alternatively administer *GLUCAGON* 1 mg IM / IN. | | • | • | • | • |
| 8. For signs and symptoms of hypovolemic shock or dehydration, follow the *Medical – Hypotension/Shock (Non-trauma)* protocol. | • | • | • | • | • |
| 9. Place on cardiac monitor per patient assessment. | | | | • | • |
| 10. Transport and perform ongoing assessment as indicated. | | • | • | • | • |

**POSSIBLE CAUSES OF PULSELESS ARREST**

| | | | |
|---|---|---|---|
| **A** | Alcohol, Abuse, Acidosis | **T** | Toxidromes, Trauma, Temperature, Tumor |
| **E** | Endocrine, Electrolytes, Encephalopathy | **I** | Infection, Intussusception |
| **I** | Insulin | **P** | Psychogenic, Porphyria, Pharmacological |
| **O** | Oxygenation, Overdose, Opiates | **S** | Space occupying lesion, Sepsis, Seizure, Shock |
| **U** | Uremia | | |

**PEARLS:**

1. Use aseptic techniques to draw blood from finger. Allow alcohol to dry completely prior to puncturing finger for blood glucose level. Alcohol may cause inaccurate readings. Do not blow on, or fan site, to dry faster.
2. Blood glucose levels should be taken from extremity opposite IV and medication administration for most accurate reading.
3. After puncturing finger, use only moderate pressure to obtain blood. Excessive pressure may cause rupture of cells causing inaccurate results. Know your specific agency's glucometer parameters for a "HI" and "LO" reading.
4. When administering IV fluids, a minimum amount should be delivered as large amounts may lower blood glucose level and impede original goal of administering Dextrose.
5. An inadequate amount of glucose for heat production, combined with profound diaphoresis, may place a hypoglycemic patient at greater risk for hypothermia. Keep patient warm as needed.
6. Patients who are consuming aspirin, acetaminophen, anti-psychotic drugs, beta-blockers, oral diabetic medications, or antibiotics such as sulfa-based, tetracycline, and amoxicillin that experience a hypoglycemic episode are at a greater risk for relapse. These patients should be strongly encouraged to seek

additional medical intervention and, as such should be transported. If you (and / or Medical Control) are unable to influence the patient into accepting transport, to, the extent practical, advise the patient to stay with a responsible party who can remain with the patient for several hours.

7. Glucagon causes a breakdown of stored glycogen to glucose. Glucagon may not work if glycogen stores are previously depleted due to liver dysfunction, alcoholism, or malnutrition. Effects of Glucagon may take up to 30 minutes.
8. Any patient that has been administered Glucagon should be transported for further evaluation.
9. Any patient, who has had a hypoglycemic episode without clear reason / cause, should be transported for further evaluation.

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**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Nausea/Vomiting

**REVISED:** 01/2018

Protocol 3-9

NAUSEA / VOMITING

**OVERVIEW:**
The pre-hospital provider should be very careful to ensure that patients who present with vague complaints such as nausea and vomiting are thoroughly assessed. All patients presenting with nausea and vomiting should be screened for potential life-threats initially. Anti-emetic treatment should be considered a treatment of a symptom of an underlying illness or injury. The patient's symptoms and recent history must determine the most appropriate care. Frequently, treatment of an underlying cause and limiting movement may resolve or greatly reduce these complaints. However, persistent nausea and vomiting of unknown etiology may respond well to pharmaceutical therapy. Do not overlook the possibility of cardiac origin complaints, with atypical presentation of nausea/vomiting (i.e., diabetic and female patients)

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Age<br>• Time of last meal<br>• Last bowel movement, emesis<br>• Improvement, worsening with food or activity<br>• Duration of signs and symptoms<br>• Other sick contacts<br>• Past medical, surgical history<br>• Medications<br>• Menstrual history (pregnancy)<br>• Travel history<br>• Recent trauma | • Pain<br>• Character of pain (constant, intermittent, sharp, dull, etc)<br>• Distention<br>• Constipation<br>• Diarrhea<br>• Anorexia<br>• Radiation<br>• Associated symptoms (helpful to localize source): Fever, headache, blurred vision, weakness, malaise, myalgias, cough, dysuria, mental status changes, rash | • CNS (increased pressure, headache, stroke, lesions, trauma, hemorrhage, vestibular)<br>• Myocardial infarction<br>• Drugs (NSAID's, antibiotics, narcotics, chemotherapy)<br>• GI or renal disorders<br>• Gynecological disease (ovarian cyst, PID)<br>• Infections (pneumonia, influenza)<br>• Electrolyte abnormalities<br>• Food or toxin induced<br>• Medications, substance abuse<br>• Pregnancy<br>• Psychologic |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| 3. Administer oxygen to maintain $SPO_2$ 94 - 99% | • | • | • | • | • |
| 4. Allow the patient to lie in a comfortable position. | • | • | • | • | • |
| 5. Establish an IV of normal saline per patient assessment. | | | • | • | • |

Protocol
3-9
Continued

# NAUSEA / VOMITING

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 6. Assess for signs of shock. If shock is suspected, follow the *Medical – Hypotension/Shock (non-trauma)* protocol. | • | • | • | • | • |
| 7. Place the patient on the cardiac monitor and obtain / interpret *12 lead ECG*. | | • | • | • | • |
| 8. For severe nausea or vomiting, if available, give *ONDANSETRON (ZOFRAN) administer 0.1 mg / kg IV / IM up to 4 mg over 2 to 5 minutes.** | | | • | • | • |
| 9. If moderate to severe nausea or vomiting in adults only, consider administering *ONDANSETRON (ZOFRAN)* ODT 4 mg tablet. | | • | • | • | • |
| 10. May repeat *ONDANSETRON* dosing in adult after 5 minutes if needed | | • | • | • | • |
| 11. Transport and perform ongoing assessment as indicated. | • | • | • | • | • |

**PEARLS:**

1. Nausea and vomiting has many subtle, sometimes life threatening causes. Do not minimize its importance as a symptom of a serious life threatening illness or injury.
2. Atypical CVAs and vertebrobasilar artery compromise may present as benign vertigo or labyrinthitis. Therefore, it is recommended that all cases of vertigo should be transported for physician evaluation whenever possible.
3. Ondansetron (Zofran) may not be as effective for vertigo and labyrinthitis related nausea and vomiting.
4. For nausea and vomiting associated with dehydration, fluid replenishment may be sufficient in improving patient comfort and reduce the need for medication administration.
5. Performing an appropriate history and physical will identify life-threats and concerns that should receive priority over anti-emetic treatment.
6. In cases of toxic ingestion, including alcohol, poisons, and drug overdoses, vomiting is an internal protective mechanism and should not be prevented with pharmacological therapy in the pre-hospital environment. Care should be given to prevent aspiration.
7. Ondansetron (Zofran) is also safe and effective for nausea and vomiting in trauma patients and can be used in conjunction with pain management.
8. Proper documentation should include the mental status and vital signs before and after medication administration.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** General – Pain Control

**REVISED:** 07/2017

Protocol 3-10

PAIN MANAGEMENT

**OVERVIEW:**
The practice of pre-hospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from a myriad of injuries and illness. One of the most essential missions for all healthcare providers should be the relief and / or prevention of pain and suffering. Approaches to pain relief must be designed to be safe and effective in the organized chaos of the pre-hospital environment. The degree of pain and the hemodynamic status of the patient will determine the rapidity of care.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Age<br>• Location<br>• Duration<br>• Severity (1 - 10)<br>• Past medical history<br>• Medications<br>• Drug allergies | • Severity (pain scale)<br>• Quality (sharp, dull, etc)<br>• Radiation<br>• Relation to movement,<br>• respiration<br>• Increased with palpation of area | • Musculoskeletal<br>• Visceral (abdominal)<br>• Cardiac<br>• Pleural, respiratory<br>• Neurogenic<br>• Renal (colic) |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Administer oxygen to maintain $SPO_2$ 94 - 99% | • | • | • | • | • |
| 3. Determine patient's pain score assessment using a standardized scoring system. Refer to Universal Pain Assessment tool on this protocol. | • | • | • | • | • |
| 4. Place patient on cardiac monitor per patient assessment. | | | | • | • |
| 5. Determine if pain is acute or chronic (3 weeks or more). If chronic, attempt to identify cause (cancer/palliative care) | | • | • | • | • |

# Protocol 3-10 Continued

PAIN MANAGEMENT

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 6. If pain is mild, moderate, or chronic (cancer/palliative care excluded), *consider* use of non-opioid treatment. If age > 10 yrs, may alternatively consider one of the following, *if available*:<br>a. Nitronox (via patient administered dosing system)<br>b. Acetaminophen 650 mg PO<br>c. Nonsteroidal such as ibuprofen 400 mg PO (avoid in pts with open fractures or suspected hip/femur fractures) | | OMD Option | OMD Option | OMD Option | OMD Option |
| 7. If NO nonsteroidal administered, for mild, moderate, or chronic pain (cancer/palliative care excluded), consider TORADOL 15 mg IV or 30 mg IM. Avoid use If age less than 10 years, older than 65 years of age, or patients with history of renal disease. | | | • | • | • |
| 8. If pain rated **7 or above** and/or chronic pain from cancer/palliative car, establish IV of normal saline if indicated for medication administration. | | | • | • | • |
| 9. If pain rated **7 or above**, administer fentanyl 2 mcg / kg INTRANASAL (max first dose of 100 mcg) half dose in each nostril. May consider additional dose of up to 100mcg after 5 minutes if pain persists –OR- *fentanyl* 1 mcg / kg IV, or IM (max single dose of 100 mcg).<br>*** *There are no documented cases of chest rigidity with the administration of fentanyl INTRANASALLY* *** | | | • | • | • |
| 10. If fentanyl unavailable, administer morphine sulfate 0.1 mg / kg IV or IM (max single dose of 5.0 mg). *Sickle cell* patients may be given higher doses up to 10 mg IV or IM. | | | • | • | • |

PAIN MANAGEMENT

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 11. Repeat the patient's pain score assessment. | • | • | • | • | • |
| 12. Consider Odansetron (ZOFRAN) 0.1 mg/kg IV up to 4 mg over 2 to 5 minutes for nausea or to prevent nausea. | | | • | • | • |
| 13. If indicated based on pain assessment, repeat pain medication administration after 10 minutes of the previous dose. Maximum total dose of fentanyl is 200 mcg and morphine sulfate is 20 mg for non-sickle cell patients. Sickle cell patients may have up to a total of 400 mcg of fentanyl or 40 mg of morphine sulfate. | | | • | • | • |
| 14. Transport in position of comfort and reassess as indicated. | | • | • | • | • |

**Universal Pain Assessment Tool**

| | | | | | | |
|---|---|---|---|---|---|---|
| Verbal Descriptor Scale | 0 1 2 3 4 5 6 7 8 9 10 | | | | | |
| | No pain | Mild pain | Moderate pain | Severe pain | Very severe pain | Excruciating Pain |
| Wong - Baker Scale |  | | | | | |
| | Alert Smiling | No humor Serious, flat | Furrowed brow Pursed lips Breath holding | Wrinkled nose Raised upper lip Rapid breathing | Slow blink Open mouth | Eyes closed Moaning Crying |
| Activity Tolerance Scale | No pain | Can be ignored | Interferes with tasks | Interferes with concentration | Interferes with basic needs | Bed rest required |
| Spanish | Nada de dolor | Un poquito dedolor | Un dolor leve | Dolor fuerte | Dolor demasiado fuerte | Un dolor insoportable |

PAIN MANAGEMENT

**PEARLS:**

1. Pain severity (0 - 10) is a vital sign that should be recorded before and after IV or IM medication administration and upon arrival at destination.
2. Contraindications to narcotic medication administration include hypotension, head injury, respiratory depression, and severe COPD.
3. All patients should have drug allergies ascertained prior to administration of pain medication.
4. Patients receiving narcotic analgesics should be administered oxygen.
5. Narcotic analgesia was historically contraindicated in the pre-hospital setting for abdominal pain of unknown etiology. It was thought that analgesia would hinder the ER physician or surgeon's evaluation. Recent studies have demonstrated opiate administration may alter the physical examination findings, but these changes result in no significant increase in management errors.[1]
6. Fentanyl is contraindicated for patients who have taken MAOIs within past 14 days, and used with caution in patients with head injuries, increased ICP, COPD, and liver or kidney dysfunction.

[1]Do opiates affect the clinical evaluation of patients with acute abdominal pain?
JAMA. 2006; 296(14):1764-74 (ISSN: 1538-3598)
Ranji SR; Goldman LE; Simel DL; Shojania KG

Protocol
3-11

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical - Respiratory Distress/Asthma/ COPD/Croup/Reactive Airway
*(Respiratory Distress – Asthma / COPD)*

**REVISED:** 06/2015

RESPIRATORY DISTRESS - Asthma / COPD

**OVERVIEW:**
Respiratory distress, or dyspnea, is one of the most common medical complaints witnessed in pre-hospital medicine. Most patients describe it as a sensation of shortness of breath or a feeling of "air hunger" accompanied by labored breathing. Dyspnea may be caused by pulmonary or cardiac disease or by any mechanism that causes hypoxia. It may be mild, manifesting only on exertion, or severe, occurring at rest. The most common causes of non-cardiac dyspnea in the pre-hospital environment involve asthma, chronic obstructive pulmonary disease (COPD), pneumonia, and bronchitis. The wheezing patient may present in different ways, some may not even complain of wheezing, but rather just of shortness of breath, cough, or chest tightness. Wheezing patients are often apprehensive and distressed, at times, so severe that they may not be able to speak in complete sentences. Oxygenation may be compromised to the point that there is a decrease in the patient's level of consciousness. These signs are clues that the patient needs immediate and aggressive therapy. Treatment is aimed at maintaining the patient's $SpO_2$ to > 90%. Remember, **not all wheezing is from asthma**.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Asthma, COPD, chronic bronchitis, emphysema, heart failure<br>• Home treatment (oxygen, inhaler, nebulizer)<br>• Medications (Theophylline, steroids, bronchodilators)<br>• Toxic exposure, smoke inhalation | • Shortness of breath<br>• Purse lip respirations<br>• Decreased ability to speak<br>• Increased respiratory rate and effort<br>• Use of accessory muscles<br>• Tripoding<br>• Wheezing, rhonchi, rales<br>• Fever, cough<br>• Tachycardia | • Asthma<br>• Anaphylaxis<br>• Aspiration<br>• COPD (emphysema, bronchitis)<br>• Pleural effusion<br>• Pulmonary embolism<br>• Pneumothorax<br>• Cardiac (MI, HF)<br>• Pericardial Tamponade<br>• Upper respiratory infection<br>• Hyperventilation, anxiety<br>• Inhaled toxins |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| 3. Administer oxygen to maintain $SPO_2$ 94 - 99%. Support respirations as necessary with a BVM. | • | • | • | • | • |
| 4. Place patient in a position of comfort, typically sitting upright. | • | • | • | • | • |

Protocol
3-11
Continued

# RESPIRATORY DISTRESS - Asthma / COPD

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 5. Monitor *Capnography*, if available. | | | • | • | • |
| 6. Assist patient with prescribed BRONCHODILATOR METERED DOSE INHALER (MDI). If no dosing schedule is prescribed, repeat in 5 to 10 minutes as needed. | | • | • | • | • |
| 7. If in critical respiratory distress, provide BVM ventilation with patient's spontaneous efforts. If patient becomes unresponsive, perform BVM ventilation with an airway adjunct. If BVM ventilation is inadequate, secure airway with a definitive airway (Supraglottic / glottic / dual lumen) or ENDOTRACHEAL TUBE [Level I and P only]. | • | • | • | • | • |
| ***For patients in respiratory distress:*** | | | | | |
| 8. Give *ALBUTEROL* 2.5 to 5.0 mg and *IPRATOPRIUM* 0.5 mg via small volume nebulizer. | | • | • | • | • |
| a. Repeat *ALBUTEROL ONLY* every 10 minutes up to 4 treatments if respiratory distress persists and no contraindications develop. **Note**: *IPRATOPRIUM* bromide is only administered with the *first* treatment. | | • | • | • | • |
| 9. Establish venous access as needed. | | | • | • | • |
| 10. Administer *DEXAMETHASONE* IV / IM / PO 10 mg. | | • | • | • | • |
| 11. Administer *CPAP* with 5 – 10 cm $H_20$ PEEP for moderate to severe dyspnea. For levels I and P, if the CPAP device allows, begin at 5.0 mmHg and titrate to effect. | | • | • | • | • |
| 12. In the asthmatic patient, for severe respiratory distress that is non-responsive to standard medications, consider administration of *MAGNESIUM SULFATE* 40 mg / kg IV over 20 minutes (max dose of 2 grams). | | | | • | • |
| 13. In the asthmatic patient, for severe respiratory distress that is non-responsive to standard medications, contact Medical Control to consider administration of *EPINEPHRINE 1:1,000* 0.01 mg / kg up to 0.3 mg IM. | | | | **MC** | **MC** |
| 14. Place on cardiac monitor and obtain *12 lead ECG* per assessment. | | • | • | • | • |
| 15. Transport and perform ongoing assessment as indicated. | | • | • | • | • |

**PEARLS:**

1. Status asthmaticus is defined as a severe prolonged asthma attack, non-responsive to therapy.
2. A silent chest in respiratory distress is a pre-respiratory arrest sign.
3. Magnesium Sulfate and Epinephrine should only be used for patents in severe, non-responsive distress that is refractory to initial treatments.
4. Patients with COPD, emphysema, and chronic bronchitis usually have a lowered baseline level of pulmonary function. These patients often have a history of chronic cough, sputum production, and dyspnea on exertion.
5. The classic presentation of a patient with emphysema is the appearance of the "*pink puffer*," with rapid, shallow breathing through pursed lips, with a thin body habitus, a barrel chest, and the use of accessory muscles with respirations. The classic presentation of a patient with bronchitis is the appearance of the "*blue bloater*", with slow, deep, and labored breathing, an overweight body habitus, and, at times, cyanotic.

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**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical - Seizure

**REVISED:** 06/2017

Protocol 3-12

SEIZURES

**OVERVIEW:**
A seizure is a period of altered neurologic function caused by abnormal neuronal electrical discharges. Generalized seizures begin with an abrupt loss of consciousness. If motor activity is present, it symmetrically involves all four extremities. Episodes that develop over minutes to hours are less likely to be seizures; generally seizures only last one to two minutes. Patients with seizure disorders tend to have stereotype, or similar, seizures with each episode and are less likely to have inconsistent or highly variable attacks. True seizures are usually not provoked by emotional stress. Most seizures are followed by a postictal state of lethargy and confusion.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Reported, witnessed<br>• Seizure activity description<br>• Previous seizure history<br>• Medic alert tag information<br>• Seizure medications<br>• History of trauma<br>• History of diabetes mellitus<br>• History of pregnancy | • Decreased mental status<br>• Sleepiness<br>• Incontinence<br>• Observed seizure activity<br>• Evidence of trauma | • CNS (head) trauma<br>• Brain tumor<br>• Metabolic, hepatic, renal failure<br>• Diabetic<br>• Hypoxia<br>• Electrolyte abnormality<br>• Drugs, medications, non-compliance<br>• Infection, fever, meningitis<br>• Alcohol withdrawal<br>• Eclampsia<br>• Stroke<br>• Hyperthermia |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| a. Suction the oro / nasopharynx as necessary. | • | • | • | • | • |
| b. Place a nasopharyngeal airway as necessary (avoid in head trauma). | • | • | • | • | • |
| 3. Administer oxygen to maintain $SPO_2$ 94 - 99%. Support respirations as necessary with a BVM. | • | • | • | • | • |
| 4. Do not restrain the patient. Let the seizure take its course but protect patient from injury. | • | • | • | • | • |
| 5. Perform rapid glucose determination. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia, refer to the *Medical – Diabetic – Hypoglycemia* protocol. | | • | • | • | • |
| 6. Establish an IV of normal saline at KVO. | | | • | • | • |

# Protocol 3-12 Continued

# SEIZURES

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 7. If the seizure persists and the rapid glucose determination is greater than 60 mg / dL, give *MIDAZOLAM* 0.2 mg / kg INTRANASAL (max single dose 10 mg) –OR- give *MIDAZOLAM* 0.1 mg / kg IV / IM (max single dose 5 mg) | | | | • | • |
| a. Repeat dose in 5 minutes if seizure persists. | | | | • | • |
| b. If midazolam is unavailable, administer, *DIAZEPAM* 0.25 mg / kg up to 5 mg slow IV push. Repeat once as necessary. | | | | • | • |
| 8. Place patient on cardiac monitor (life-threatening dysrhythmias may cause seizure-like activity). | | | | • | • |
| 9. Consider placing the patient in the recovery position during the postictal period. | • | • | • | • | • |
| 10. Transport and perform ongoing assessment as indicated. | | • | • | • | • |

| TYPES OF SEIZURES | | |
|---|---|---|
| **Generalized** | **Simple Partial** | **Complex Partial** |
| • Absence (Petit-Mal)<br>• Atonic (Drop Attack)<br>• Myoclonic (Brief bilateral jerking)<br>• Tonic-Clonic (Grand-Mal) | • Focal/ Local: Localized twitching of hand, arm, leg, face, or eyes. Patient may be conscious or unconscious | • Temporal Lobe<br>• Psychomotor |

**PEARLS:**

1. Status epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
2. Grand Mal seizures are generalized in nature and associated with loss of consciousness, incontinence, and tongue trauma.
3. Focal seizures affect only a specific part of the body and are not usually associated with loss of consciousness.
4. Jacksonian seizures are seizures that start as focal in nature and become generalized.
5. Petit Mal seizures may be localized to a single muscle group or may not involve visible seizure activity at all. Always examine pupils for nystagmus, which would alert provider to continued seizure activity.
6. Respirations during an active seizure should be considered ineffective and airway maintenance should occur per assessment.
7. Be prepared for airway problems and continued seizures.
8. Investigate possibility of trauma and substance abuse.
9. Be prepared to assist ventilations as dosage Midazolam or Valium is repeated and/or increased.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical – Hypotension/Shock (Non-trauma)

**REVISED:** 06/2017

Protocol 3-13

SHOCK

**OVERVIEW:**
Shock is defined as a state of inadequate tissue perfusion. This may result in acidosis, derangements of cellular metabolism, potential end-organ damage, and death. Early in the shock process, patients are able to compensate for decreased perfusion by increased stimulation of the sympathetic nervous system, leading to tachycardia and tachypnea. Later, compensatory mechanisms fail, causing a decreased mental status, hypotension, and death. Early cellular injury may be reversible if definitive therapy is delivered promptly.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Blood loss (vaginal or gastrointestinal)<br>• AAA, ectopic<br>• Fluid loss (vomiting, diarrhea)<br>• Fever<br>• Infection<br>• Cardiac ischemia (MI, HF)<br>• Medications<br>• Allergic Reaction<br>• Pregnancy | • Restlessness, confusion<br>• Weakness, dizziness<br>• Weak, rapid pulse<br>• Pale, cool, clammy skin<br>• Delayed capillary refill<br>• Hypotension<br>• Coffee-ground emesis<br>• Tarry stools | • Shock<br>o Hypovolemic<br>o Cardiogenic<br>o Septic<br>o Neurogenic<br>o Anaphylactic<br>• Ectopic pregnancy<br>• Dysrhythmia<br>• Pulmonary embolus<br>• Tension pneumothorax<br>• Medication effect, overdose<br>• Vaso-vagal<br>• Physiologic (pregnancy) |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Support life-threatening problems associated with airway, breathing, and circulation. | • | • | • | • | • |
| 3. Assess for signs of shock including, but not limited to:<br>• Restlessness, altered mental status, hypoperfusion (cool, pale, moist skin), tachypnea (rapid breathing), rapid, weak pulse, orthostatic hypotension (blood pressure suddenly drops on standing up), nausea and thirst. | • | • | • | • | • |
| 4. Administer oxygen per patient assessment to maintain *$SpO_2$* between 94 - 99%. Support respirations as necessary with a BVM. | • | • | • | • | • |
| 5. Transport as soon as possible. | | • | • | • | • |
| 6. Control external bleeding with direct pressure, then *tourniquet* if direct pressure is inadequate. | • | • | • | • | • |

# Protocol 3-13 Continued

SHOCK

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 7. If pregnant (uterine fundus above umbilicus), place the patient on her left side. | • | • | • | • | • |
| 8. Maintain body temperature by protecting the patient from the environment, removing wet clothing and covering the patient with a blanket. | • | • | • | • | • |
| 9. Establish a large bore IV or IO of Normal Saline. If time permits, establish second access.<br>• Do not delay transport to establish vascular access. | | | • | • | • |
| 10. Give a 20 mL / kg bolus. If no improvement after the first 20 mL / kg bolus, may repeat once. While administering a fluid bolus, frequently reassess perfusion for improvement. If perfusion improves, slow the IV to KVO and monitor closely. If patient develops fluid overload respiratory distress (dyspnea, crackles, rhonchi, decreasing $SpO_2$), slow the IV to KVO. | | | • | • | • |
| 11. If patient tachycardic and/or hypotensive after IV fluid bolus, consider<br>a. Administration of Norepinephrine Infusion 0.1-0.5 mcg / kg / minute for hypotension. Titrate to MAP > 65 mmHg.<br>b. If Norepinephrine unavailable, consider Dopamine 5 - 20 mcg / kg / min for hypotension that remains after fluid bolus. Titrate to MAP > 65 mmHg.<br>****DO NOT USE PRESSORS ON HYPOVOLEMIC PATIENTS!**** | | | | • | • |
| 12. Transport and perform ongoing assessment as indicated. | | • | • | • | • |

**PEARLS:**

1. Trendelenburg is no longer believed to increase BP and / or cardiac output in most patients, does not improve tissue oxygenation, results in displacement of only a very small amount of total blood volume, and actually decreases cardiac output in the hypotensive patient. It has also been proven to produce right ventricular stress and deterioration of pulmonary function.
2. GI bleeding may be a less obvious cause of hypovolemic shock if it has been gradual. Ask patient about possible melena, hematemesis, and hematochezia.
3. Ectopic pregnancy may be a less obvious cause of hypovolemic shock. Consider this diagnosis in all women of child bearing age if there is a complaint of abdominal, back or pelvic pain.

4. Abdominal aneurysm may be a less obvious cause of hypovolemic shock. Consider this diagnosis in patient's whose age is ≥ 50, and who have a cardiac / hypertensive history if there is a complaint of abdominal or back pain.

| Classes of Shock | | | |
|---|---|---|---|
| **Hypovolemic** | **Distributive** | **Cardiogenic** | **Obstructive** |
| Caused by hemorrhage, burns, or dehydration. | Maldistribution of blood, caused by poor vasomotor tone in neurogenic shock, sepsis, anaphylaxis, severe hypoxia, or metabolic shock. | Caused by necrosis of the myocardial tissue, or by arrhythmias. | Caused by impairment of cardiac filling, found in pulmonary embolism, tension pneumothorax, or cardiac Tamponade. |

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Protocol
3-14

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE**: Medical – Sickle Cell Anemia/Crisis
*(Sickle Cell Anemia/Crisis)*

**REVISED:** 06/2017

SICKLE CELL CRISIS

**OVERVIEW:**
Sickle cell anemia is a recessive genetic illness that primarily affects African-Americans, but also people with African, Arab, India, Greek, Italian, and Latin American heritage. Although rare, Caucasians can also have sickle cell disease or sickle cell trait. In patients with sickle cell anemia, the beta hemoglobin chain of red blood cells are produced abnormally, *hemoglobin S*, which has an inferior oxygen-carrying ability. These mutated molecules do not have the smooth motion needed for oxygenation and de-oxygenation. When these hemoglobin S cells are exposed to low-oxygen states, they crystallize, distorting the RBC into a fragile, stiff and rigid crescent (sickle) shape, stopping the smooth passage of the cell through the narrow blood vessels. As a result, blood vessels can sometimes become clogged causing occlusions within the vessels. As fewer RBCs pass through congested vessels, tissues and joints receive less oxygen, causing excruciating pain from the buildup of waste products in the hypoxic areas. Pain may range from mild transient attacks with duration of minutes to severe pain lasting days to weeks and requiring hospitalization.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Duration of current crisis<br>• Last crisis<br>• Normal crisis symptoms<br>• Medications (out of meds vs. meds no longer working)<br>• Allergies | • Increased weakness<br>• Body aches<br>• Pain<br>• Shortness of breath<br>• Abdominal pain<br>• Chest pain<br>• Back pain<br>• Extremity pain | • Angina<br>• Gout<br>• Drug abuse<br>• Fibromyalgia<br>• Lupus<br>• Electrolyte imbalance<br>• Dehydration |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Administer oxygen to maintain $SPO_2$ 94 - 99% | • | • | • | • | • |
| 3. Determine patient's pain score assessment. | • | • | • | • | • |
| 4. Consider differential diagnoses for patient's pain. | • | • | • | • | • |
| 5. Establish IV of Normal Saline per patient assessment. Administer bolus if needed. | | | • | • | • |
| 6. If significant pain, refer to *General – Pain Control* protocol. Sickle cell patients may be given higher doses of *FENTANYL* and *MORPHINE SULFATE*. | | | • | • | • |
| 7. Repeat the patient's pain score assessment. | • | • | • | • | • |
| 8. Transport in position of comfort and reassess as indicated. | | • | • | • | • |

Protocol
3-14
Continued

# SICKLE CELL CRISIS

**PEARLS:**

1. Oxygen should be administered if necessary to maintain an $O_2$ saturation above 94% to sickle cell patients to fully oxygenate all normal RBCs and to decrease the sickling of RBCs that occurs during hypoxic states.
2. Several factors causing sickle cell crises include an infection such as a cold or the flu, cold weather, fatigue, over exercising, and dehydration.
3. Symptoms of sickle cell disease may start in children as young as six months old. Babies suffering from sickle cell symptoms may be irritable or cranky and cry, even when their parents do everything they can to comfort them. A thorough assessment may include determining the parent's history when dispatched to a patient complaining of these vague symptoms.
4. Sickle cell disease is inherited. A patient must inherit two sickle cell genes, one from each parent, to develop sickle cell disease. When only one gene is present, the condition is known as a sickle cell trait. Patients with sickle cell trait often do not have crises.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Medical - Altered Mental Status

**REVISED:** 06/2017

Protocol 3-15

UNCONSCIOUS / SYNCOPE / AMS

**OVERVIEW:**
The unconscious patient can be a difficult patient to manage. There are many potential causes for a change in mentation or syncope. These causes range from benign problems to potentially life-threatening cardiopulmonary or central nervous system disorders. When approaching the patient that has experienced a change in mental status, or syncope, be alert for clues that may indicate the potential cause – diligently obtain a thorough patient history and perform a complete physical exam. Obtaining an adequate physical assessment and assessing for the presence of common causes of the episode can quickly aid you in determining the proper sequence of care to provide to the patient. Focus on managing any life-threatening conditions that may have led to the episode and correcting any found.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Cardiac history, stroke, seizures<br>• Occult blood loss (GI, ectopic)<br>• Females (LMP, vaginal bleeding)<br>• Fluid loss (nausea, vomiting, diarrhea)<br>• Past medical history<br>• Recent trauma<br>• Complaint prior to event | • Loss of consciousness with recovery<br>• Lightheadedness, dizziness<br>• Palpitations, slow or rapid pulse<br>• Pulse irregularity<br>• Decreased blood pressure | • Vasovagal<br>• Orthostatic hypotension<br>• Cardiac syncope / dysrhythmia<br>• Micturation / defecation syncope<br>• Psychiatric<br>• Stroke<br>• Hypoglycemia<br>• Seizure<br>• Shock<br>• GI Bleed<br>• Ectopic Pregnancy<br>• Toxicological (ETOH)<br>• Medication effect |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | • | • | • | • | • |
| 2. Maintain patient in a supine position. | • | • | • | • | • |
| 3. Administer oxygen to maintain $SPO_2$ 94 - 99% and glucose check. | • | • | • | • | • |
| 4. If the patient has altered mental status, refer to the appropriate protocol per assessment. If no obvious etiology is identified, refer to *Medical – Stroke/TIA* protocol. | • | • | • | • | • |
| 5. If the patient age is ≥ 25 years of age or has a cardiac history, place on cardiac monitor and obtain / interpret *12 lead ECG*. If interpretation is consistent with STEMI, notify and transport to the closest appropriate Emergency PCI hospital. | | • | • | • | • |

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 6. Establish IV of Normal Saline. Keep at KVO rate unless hypotensive. If hypotensive, refer to *Medical – Hypotension/Shock (Non-trauma)* protocol. | | | • | • | • |
| 7. Transport and reassess as needed. | | • | • | • | • |

| POSSIBLE CAUSES OF UNCONSCIOUSNESS/SYNCOPE/AMS | | | |
|---|---|---|---|
| **A** | Alcohol, Abuse, Acidosis | **T** | Toxidromes, Trauma, Temperature, Tumor |
| **E** | Endocrine, Electrolytes, Encephalopathy | **I** | Infection, Intussusception |
| **I** | Insulin | **P** | Psychogenic, Porphyria, Pharmacological |
| **O** | Oxygenation, Overdose, Opiates | **S** | Space occupying lesion, Sepsis, Seizure, Shock |
| **U** | Uremia | | |

**PEARLS:**

1. In patient that has experienced a syncopal episode, assess for signs or symptoms of injury and take appropriate precautions if there is reason to suspect trauma, or traumatic injury that cannot be ruled out.
2. In patients with a cardiac history, or in the elderly, be suspicious of cardiac arrhythmia as the cause of syncope.

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Airway - Failed

**REVISED:** 06/2017

Protocol
3-16

DIFFICULT AIRWAY

**OVERVIEW:**
The purpose of these guidelines is to facilitate the management of the difficult airway and to reduce the likelihood of adverse outcomes. The principal adverse out comes associated with the difficult airway include, but are not limited to, death, brain injury, myocardial injury, and airway trauma.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Age<br>• Past medical, surgical history<br>• Medications<br>• Reason for airway failure<br>• Duration of symptoms<br>• Last meal<br>• Menstrual history, pregnancy | • Hypercarbia<br>• Stridor<br>• Trismus<br>• Pooling of secretions<br>• Hypoxia | • Congenital abnormalities<br>• Previous Tracheostomy<br>• Previous neck surgeries<br>• Previous mouth / throat surgeries<br>• Known head / neck cancers and masses Trauma |

***Medication Facilitated Intubation and Surgical Airway are skills that are <u>only</u> approved when**:*

- *Proper medications and equipment are available for procedures; AND*
- *The ALS Provider has been trained in those procedures; AND*
- *The provider's OMD has authorized the performance of the procedures for the* provider.

Protocol
3-16
Continued

# DIFFICULT AIRWAY

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. | ● | ● | ● | ● | ● |
| 2. Assess mechanism of injury and / or nature of illness. Protect C-spine if necessary. | ● | ● | ● | ● | ● |
| 3. Administer Oxygen to maintain *$SPO_2$* 94 - 99% | ● | ● | ● | ● | ● |
| 4. Assess patient ability to control airway and adequacy of ventilations. Do not hypo or hyperventilate. | ● | ● | ● | ● | ● |
| 5. Use head-tilt-chin-lift or jaw thrust as appropriate to open airway. Use oral or nasal airway adjuncts to support as appropriate. | ● | ● | ● | ● | ● |
| 6. Support ventilations with two man bag-valve-mask ventilations if personnel is available. | ● | ● | ● | ● | ● |
| 7. If unable to maintain airway, consider oral (*I or P*) or nasal (*P only*) intubation. | | | | ● | ● |
| 8. If unable to successfully intubate, attempt to use an *alternative airway* to secure airway. | | ● | ● | ● | ● |
| 9. If still unable to maintain airway, consider medication facilitated intubation* or use alternative airway as a rescue device. | | | | | ● |
| 10. If still unable to maintain airway, consider *surgical airway.* | | | | | ● |
| 11. Transport promptly. | | ● | ● | ● | ● |
| 12. Continuously monitor patient's airway. | ● | ● | ● | ● | ● |

**SECTION:** Adult General Medical Emergencies

**PROTOCOL TITLE:** Sepsis

**REVISED:** 10/2017

Protocol 3-17

SEPSIS

**OVERVIEW:**
Sepsis is an illness that affects all parts of the body that can happen in response to an infection and can quickly become life-threatening. Sepsis is a systemic inflammatory response syndrome or (SIRS) caused by severe infection**.** In severe cases of sepsis, one or more organs fail. In the worst cases, sepsis causes the blood pressure to drop and the heart to weaken, leading to septic shock. Once this happens, multiple organs may quickly fail and the patient can die. Sepsis is a serious illness that is very difficult to predict, diagnose, and treat. Patients who develop sepsis have an increased risk of complications and death and face higher healthcare costs and longer treatment. The mortality rate can range from 10% to 60%. Early recognition combined with aggressive fluid resuscitation and finding the source of infection are the keys to greatly reducing the mortality rate.

| HPI | Signs and Symptoms | Considerations |
|---|---|---|
| • Fever, chills, sweats<br>• Recent antibiotic use<br>• Cough<br>• SOB<br>• Rash<br>• Headache, neck pain | • Restlessness, confusion<br>• Weakness, dizziness<br>• Weak, rapid pulse<br>• Pale, cool, clammy skin<br>• Delayed capillary refill<br>• Difficulty breathing<br>• Hypotension<br>• Febrile | • Shock<br>• Hypovolemic<br>• Cardiogenic<br>• Septic<br>• Neurogenic<br>• Anaphylactic<br>• Ectopic pregnancy<br>• Dysrhythmia<br>• Pulmonary embolus |

| General inclusion criteria | At least two of the following specific findings |
|---|---|
| • 18 years old and NOT pregnant<br>• History consistent with infection;<br>• Signs of hypoperfusion or hypotension | • Temperature greater than 38ºC (100.4ºF) or lower than 36ºC (96ºF)<br>• Pulse greater than 90 bpm<br>• Respiratory rate greater than 20/min<br>• Known abnormal white blood cell count (>12,000 or <4,000 cells/mm)<br>• Hypoperfusion, as manifested by one of the following:<br>1. Systolic BP less than 90 or MAP less than 65<br>2. If known, Lactate level greater than 4 mmol/L<br>3. Altered mental status<br>4. Pulse Ox <94% despite high flow oxygen |

# Protocol 3-17 Continued

## SEPSIS

| | EMR | EMT | A | I | P |
|---|---|---|---|---|---|
| 1. Perform general patient management. Obtain patient's temperature, if possible | • | • | • | • | • |
| 2. Identify criteria for sepsis. If meets general inclusion criteria and two or more specific findings, continue with this protocol. If not, refer to appropriate protocol. | • | • | • | • | • |
| 3. Administer oxygen to maintain $SPO_2$ 94-99%. | • | • | • | • | • |
| 4. Obtain 12 lead ECG. | | • | • | • | • |
| 5. Interpret 12 lead ECG and place on cardiac monitor | | | | • | • |
| 6. Initiate IV of Normal Saline KVO. Establish second IV if time permits. | | | • | • | • |
| 7. Administer Normal Saline 30 mL / kg bolus. | | | • | • | • |
| 8. If patient is hypotensive after IV initial fluid bolus, consider<br>a. Administration of Norepinephrine (13-27) infusion 0.1-0.5 mcg / kg / minute for hypotension. Titrate to MAP > 65 mmHg.<br>b. If Norepinephrine unavailable, consider Dopamine (13-14) infusion 5 - 20 mcg / kg / min for hypotension that remains after fluid bolus. Titrate to MAP > 65 mmHg. | | | | • | • |
| 9. If patient is tachycardic and/or hypotensive after initial bolus, administer bolus of Normal Saline 20 ml / kg bolus. | | | • | • | • |
| 10. Notify receiving hospital of potential of "sepsis alert" patient | | • | • | • | • |
| 11. Transport promptly in position of comfort. Reassess as needed. | | • | • | • | • |

| Classes of Shock | | | |
|---|---|---|---|
| **Hypovolemic** | **Distributive** | **Cardiogenic** | **Obstructive** |
| Caused by hemorrhage, burns, or dehydration. | Maldistribution of blood, caused by poor vasomotor tone in neurogenic shock, sepsis, anaphylaxis, severe hypoxia, or metabolic shock. | Caused by necrosis of the myocardial tissue, or by arrhythmias. | Caused by impairment of cardiac filling, found in pulmonary embolism, tension pneumothorax, or cardiac tamponade. |

**PEARLS:**

1. Sometimes patients may present with complaints of weakness, malaise, altered mental status, or simply "not eating." The source of infection may be readily apparent (cellulitis), may require extensive testing (intra-abdominal abscess), or may be completely obscure (subacute endocarditis).
2. Up to 15% of infected elderly patients with normal oral temperatures will have an elevated rectal temperature.
3. Norepinephrine reference is available at 13-27.
4. Dopamine reference is available at 13-14

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