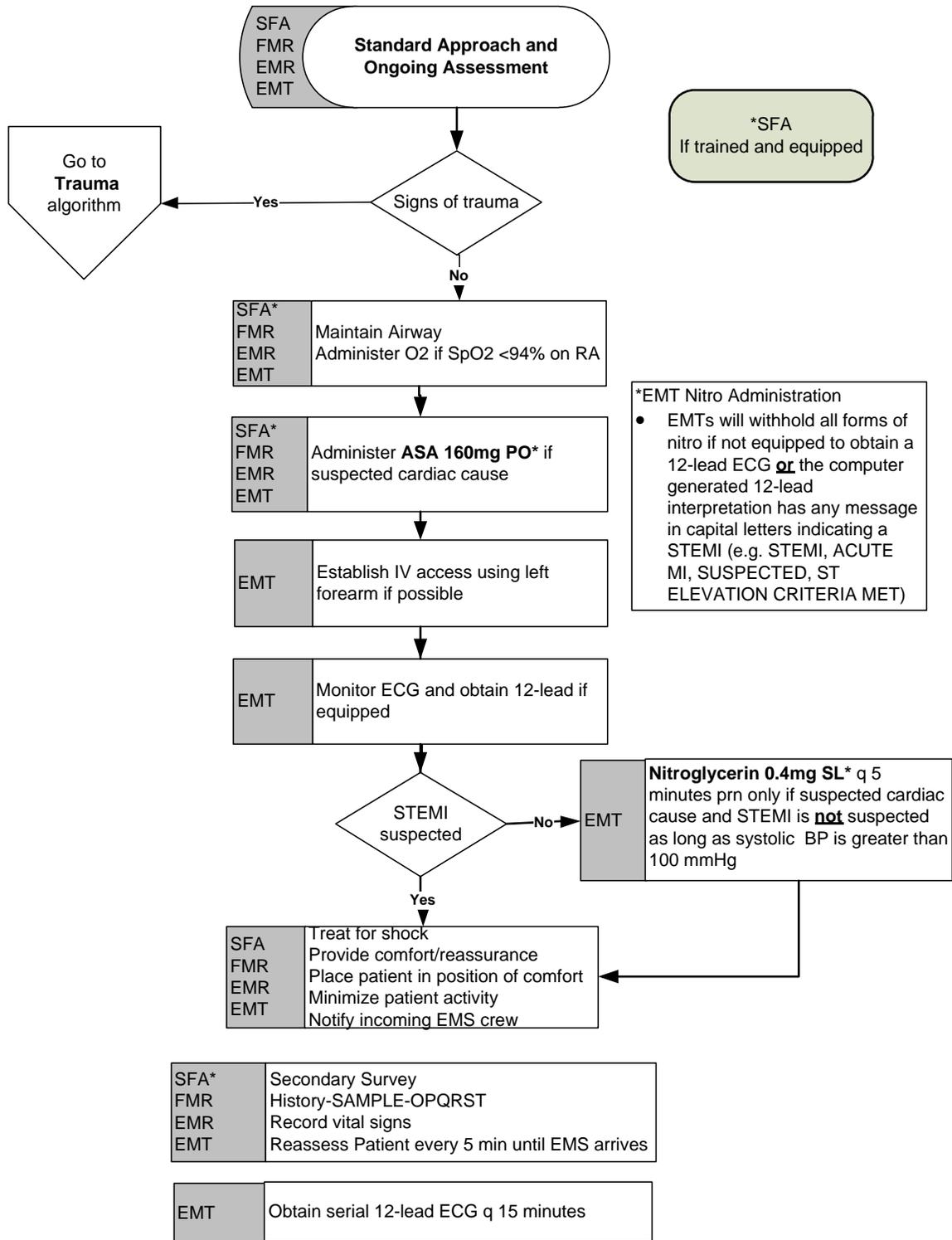


Algorithm 7 Chest Pain



Chest Pain (Algorithm 7)

Although there are many potential causes of chest pain, all patients with acute onset chest pain should be approached as having a myocardial infarction. Some of the life-threatening causes of chest pain are:

- Unstable angina
- Acute myocardial infarction
- Aortic dissection
- Pulmonary embolus
- Spontaneous pneumothorax
- Esophageal rupture

Symptom Recognition

Prompt recognition that a **acute myocardial infarction (AMI)** or heart attack is occurring is critical, since most deaths associated with acute myocardial infarction (AMI) are due to electrical instability and occur suddenly, often before arrival at the hospital. It is important to aggressively treat patients with symptoms of myocardial infarction since ventricular fibrillation is fifteen times more likely to occur during the first hour after onset of symptoms than at any other time.

Angina Pectoris (Chest Pain)

Is induced by exertion, usually lasts 5 to 15 min and is relieved by rest or by nitroglycerine.

The pain of **AMI** generally lasts longer than 15 - 30 min. The pain of AMI typically builds to its maximum, whereas pain from **aortic dissection or pulmonary embolus** is usually severe from the onset.

Any angina pain that lasts longer than 15 min, is not relieved by the patient's own nitroglycerine, or is accompanied by diaphoresis, dyspnea, nausea, or vomiting, suggests an AMI.

About 20% of AMI's are not accompanied by chest pain, especially in elderly persons, females, and/or diabetic patients. When pain is present, it generally has a retro-sternal component; and it may radiate to the neck, shoulders, lower jaw, back, or down the inside of the left or both arms. This pain is typically described as a heavy or squeezing sensation. It may be mild to severe, but it tends to increase in severity over a period of minutes. In some patients, high epigastric discomfort may be a symptom of AMI and is often dismissed by the patient as indigestion.

The following are at highest risk for sudden death:

Patients with a new onset of chest pain either at rest or with ordinary or usual activity.

Patients who experience a sudden change in a previously stable pattern of angina pain, such as an increase in frequency or severity, or occurrences at rest for the first time.

Patients who are experiencing chest pain and have known coronary heart disease

Chest pain or discomfort that is unrelieved by rest and/or nitro-glycerine.

Oxygen Instructions (if trained and equipped)

Oxygen should be administered as early as possible. Supplemental oxygen helps reduce both the magnitude and extent of damage in patients with AMI. Patients should be allowed to remain in the position of greatest comfort and ease of breathing.

O₂ is indicated in acute coronary syndrome if oxygen saturations are less than 94% and the patient is short of breath. O₂ delivery should start with nasal cannula at 2 - 4 LPM and progress to higher concentrations as required.

Early Defibrillation

Providing early CPR and defibrillation in the event of cardiac arrest is recognized as the highest priority in cardiac care.

Questions to Consider

- Did the pain/discomfort begin suddenly?
- What was the patient doing when the pain/discomfort began?
- Has the patient ever had the pain/discomfort before?
- Has the pain/discomfort become better or worse?
- Has the patient ever had a heart attack?

***EMT Nitro Administration**

Administration of Nitroglycerine **WILL NOT** be performed if a 12 lead ECG is unavailable. This is due to the increased risk of creating profound hypotension in patients experiencing a Right Ventricular Infarct (RVI).

EMTs will withhold all forms of nitro if not equipped to obtain a 12-lead ECG or the computer generated 12-lead interpretation has any message in capital letters indicating a STEMI (e.g. STEMI, ACUTE MI, SUSPECTED, ST ELEVATION CRITERIA MET)

Establish IV access prior to administration of Nitro. If possible start IV in patient's left forearm.

Refer to the History Taking Guidelines

Myocardial Infarction

| Signs and Symptoms of Myocardial Infarction | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <i>Ischemia Signs</i> | | |
| <ul style="list-style-type: none"> • Tachypnea • Dysrhythmias • Cyanosis • Diaphoresis • Vomiting • Agitation • Cardiac arrest • Cardiogenic shock • Chest and/or abdominal pain | <ul style="list-style-type: none"> • Palpitations • Shortness of breath • Sweating • Nausea • Light-headedness / Pre-syncope • Confusion • Weakness • Anxiety / Feeling of fear or impending • Feeling of impending doom | |
| Differential Diagnosis | | |
| Limited differential diagnoses for chest pain include: | | |
| <ul style="list-style-type: none"> • Angina • Pulmonary embolism • Dissecting thoracic aortic aneurysm • Gastrointestinal cause (e.g. esophageal spasm) • Hyperventilation • Musculoskeletal cause (e.g. chest wall pain) | <ul style="list-style-type: none"> • Myocardial infarction • Pericarditis • Pneumonia • Pneumothorax • Pleurisy • Dermatologic cause (e.g. shingles) | |
| Life Threatening and Serious Causes of Non-ACS Chest Pain | | |
| Life Threatening | Potential Life-threatening | Less Serious |
| Aortic dissection Acute pericardial effusion and tamponade Acute pulmonary embolism Tension pneumothorax | Peptic ulcer, perforated Esophageal rupture Acute pneumonia Aortic stenosis (chest pain, syncope, exertional dyspnea) Acute cholecystitis, cholelithiasis, ruptured gall bladder Acute pancreatitis | Gastroesophageal reflux disease (GERD) Esophagitis, gastritis Hiatal hernia Musculoskeletal chest pain Costochondritis |

Patient Safety Considerations

25% of AMI patients present with reproducible chest wall tenderness.

The patient may be encouraged to take their own ASA medication and nitro-glycerine as prescribed by a physician.

First Aiders are not to provide some else's medication or any medication carried in their kit.

Control of External Bleeding (Algorithm 8)

Management

Direct targeted pressure to the bleeding area with elevation of the limb if possible.

*Consider application of tourniquet as indicated.

Elevation

If a fracture is suspected in an extremity, do not elevate the limb or subject the patient to unnecessary motion until the fracture has been immobilized in a splint.

Note: Maintain as clean a technique as possible. NEVER expose a patient to the blood or body fluids of another patient. Put on a new set of gloves for each patient.

Epistaxis (Nosebleed)

Nosebleeds are quite common and are usually controlled with manual, external compression, and tend to be self-limited.

Severe nosebleeds can be profuse, persistent, and life threatening. They are complicated by airway compromise and vomiting of swallowed blood.

Caution

Anyone in close proximity must be aware that this patient they may be spitting up blood which could splatter. Bodily fluid precautions are required.

Management of Epistaxis

- Have adequate PPE on.
- Keep the patient sitting up and leaning slightly forward unless there are signs of shock.
- If blood is flowing from the nostrils, pinch the entire soft part of the nose right under the nasal bone and hold for 10 minutes. If the patient is still bleeding, repeat this step once. Then if the patient continues to bleed, maintain pressure until EMS arrives.
- Instruct the patient not to swallow blood and have the patient spit his/her blood into a container.
- If blood has been swallowed, the patient may vomit.
- Maintain a clear airway and carefully suction the mouth if required.