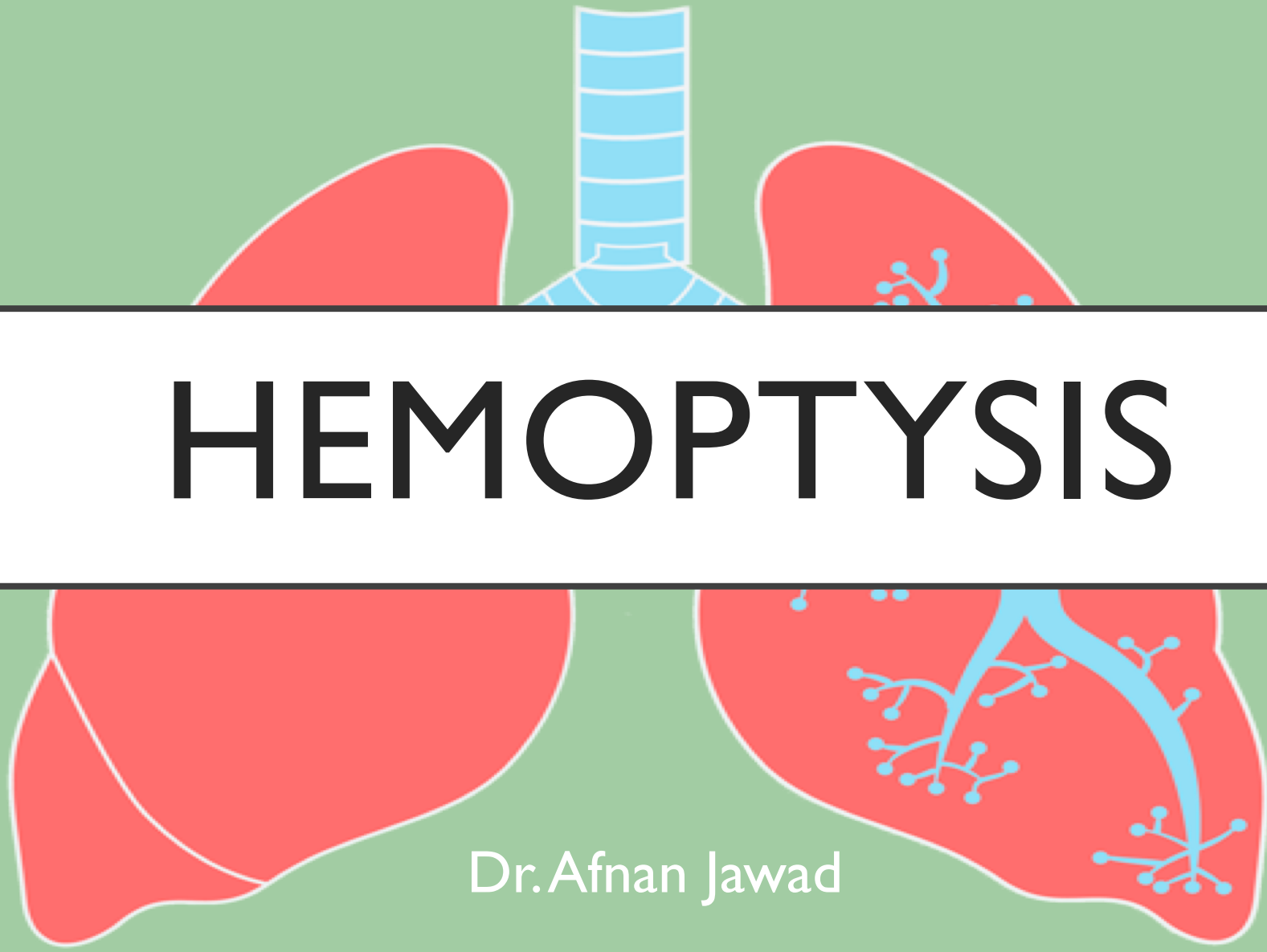


HEMOPTYSIS

Dr. Afnan Jawad

OBJECTIVES

- Definition
- Differential diagnosis
- History, physical examination and laboratory
- Management

HEMOPTYSIS

Hemoptysis is defined as the spitting of blood derived from the lungs or bronchial tubes as a result of pulmonary or bronchial hemorrhage.

An initial task is differentiating between

hemoptysis,

pseudohemoptysis (i.e., the spitting of blood that does not come from the lungs or bronchial tubes),

and hematemesis (i.e., the vomiting of blood).

HEMOPTYSIS VS HEMATEMESIS

Hemoptysis	*Hematemesis*
History	
Absence of nausea and vomiting	Presence of nausea and vomiting
Lung disease	Gastric or hepatic disease
Asphyxia possible	Asphyxia unusual
Sputum examination	
Frothy	Rarely frothy
Liquid or clotted appearance	Coffee ground appearance
Bright red or pink	Brown to black
Laboratory	
Alkaline pH	Acidic pH
Mixed with macrophages and neutrophils	Mixed with food particles

DIFFERENTIAL DIAGNOSIS

Cardiovascular

- Pulmonary embolism
- Heart failure
- Vasculitis
- Valvular disease
- Arteriovenous malformation

Pulmonary

Airway

- Bronchitis
- Bronchiectasis
- Malignancy
- Foreign body
- Iatrogenic
- Bronchovascular fistula

Parenchyma

- Pneumonia
- Lung abscess
- Tuberculosis
- Fungal infection
- Paragonimiasis

Other

- Catamenial hemoptysis
- Idiopathic pulmonary hemosiderosis

INFECTION

Infection is the **most common cause of hemoptysis**, accounting for 60 to 70 percent of cases.

Infection causes superficial mucosal inflammation and edema that can lead to the rupture of the superficial blood vessels.

Invasive bacteria (e.g., Staphylococcus aureus, Pseudomonas aeruginosa) or fungi (e.g., Aspergillus species) are the most common infectious causes of hemoptysis.

Viruses such as influenza also may cause severe hemoptysis.

HIV infection predisposes patients to several conditions that may produce hemoptysis, including pulmonary Kaposi's sarcoma.

CANCER

Bleeding from malignant or benign tumors can be secondary to superficial mucosal invasion, erosion into blood vessels, or highly vascular lesions.

Primary lung cancers account for 23 percent of cases of hemoptysis in the United States.

Bronchogenic carcinoma is a common lung cancer responsible for hemoptysis in 5 to 44 percent of all cases.

Obstructive lesions may cause a secondary infection, resulting in hemoptysis

PULMONARY VENOUS HYPERTENSION

Cardiovascular conditions that result in pulmonary venous hypertension can cause cardiac hemoptysis.

The most common of these is **left ventricular systolic heart failure.**

Other cardiovascular causes include severe mitral stenosis and pulmonary embolism.

IDIOPATHY

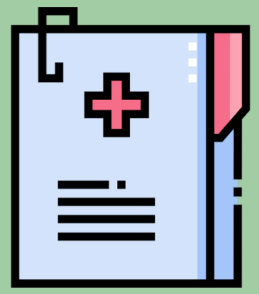
In 7 to 34 percent of patients with hemoptysis, no identifiable cause can be found after careful evaluation.

Prognosis for idiopathic hemoptysis usually is good, and the majority of patients have resolution of bleeding within six months of evaluation.

Another important cause is **bronchiectasis,** which often is secondary to cystic fibrosis.

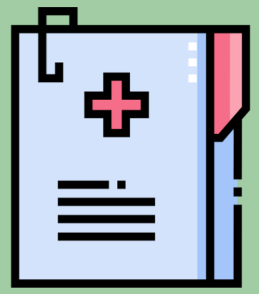
Blunt-force trauma may result in hemoptysis secondary to pulmonary contusion and hemorrhage.

PATIENT HISTORY



Clinical clues	*Suggested diagnosis**
Anticoagulant use	Medication effect, coagulation disorder
Association with menses	Catamenial hemoptysis
Dyspnea on exertion, fatigue, orthopnea, paroxysmal nocturnal dyspnea, frothy pink sputum	Congestive heart failure, left ventricular dysfunction, mitral valve stenosis
Fever, productive cough	Upper respiratory infection, acute sinusitis, acute bronchitis, pneumonia, lung abscess
History of breast, colon, or renal cancers	Endobronchial metastatic disease of lungs
History of chronic lung disease, recurrent lower respiratory track infection, cough with copious purulent sputum	Bronchiectasis, lung abscess

PATIENT HISTORY



HIV, immunosuppression	Neoplasia, tuberculosis, Kaposi's sarcoma
Nausea, vomiting, melena, alcoholism, chronic use of nonsteroidal anti-inflammatory drugs	Gastritis, gastric or peptic ulcer, esophageal varices
Pleuritic chest pain, calf tenderness	Pulmonary embolism or infarction
Tobacco use	Acute bronchitis, chronic bronchitis, lung cancer, pneumonia
Travel history	Tuberculosis, parasites (e.g., paragonimiasis, schistosomiasis, amebiasis, leptospirosis), biologic agents (e.g., plague, tularemia, T2 mycotoxin)
Weight loss	Emphysema, lung cancer, tuberculosis, bronchiectasis, lung abscess, HIV

PHYSICAL EXAMINATION

Clinical clues	*Suggested diagnosis**
Cachexia, clubbing, voice hoarseness, Cushing's syndrome, hyperpigmentation, Horner's syndrome	Bronchogenic carcinoma, small cell lung cancer, other primary lung cancers
Clubbing	Primary lung cancer, bronchiectasis, lung abscess, severe chronic lung disease, secondary lung metastases
Dullness to percussion, fever, unilateral rales	Pneumonia
Facial tenderness, fever, mucopurulent nasal discharge, postnasal drainage	Acute upper respiratory infection, acute sinusitis
Fever, tachypnea, hypoxia, hypertrophied accessory respiratory muscles, barrel chest, intercostal retractions, pursed lip breathing, rhonchi, wheezing, tympani to percussion, distant heart sounds	Acute exacerbation of chronic bronchitis, primary lung cancer, pneumonia

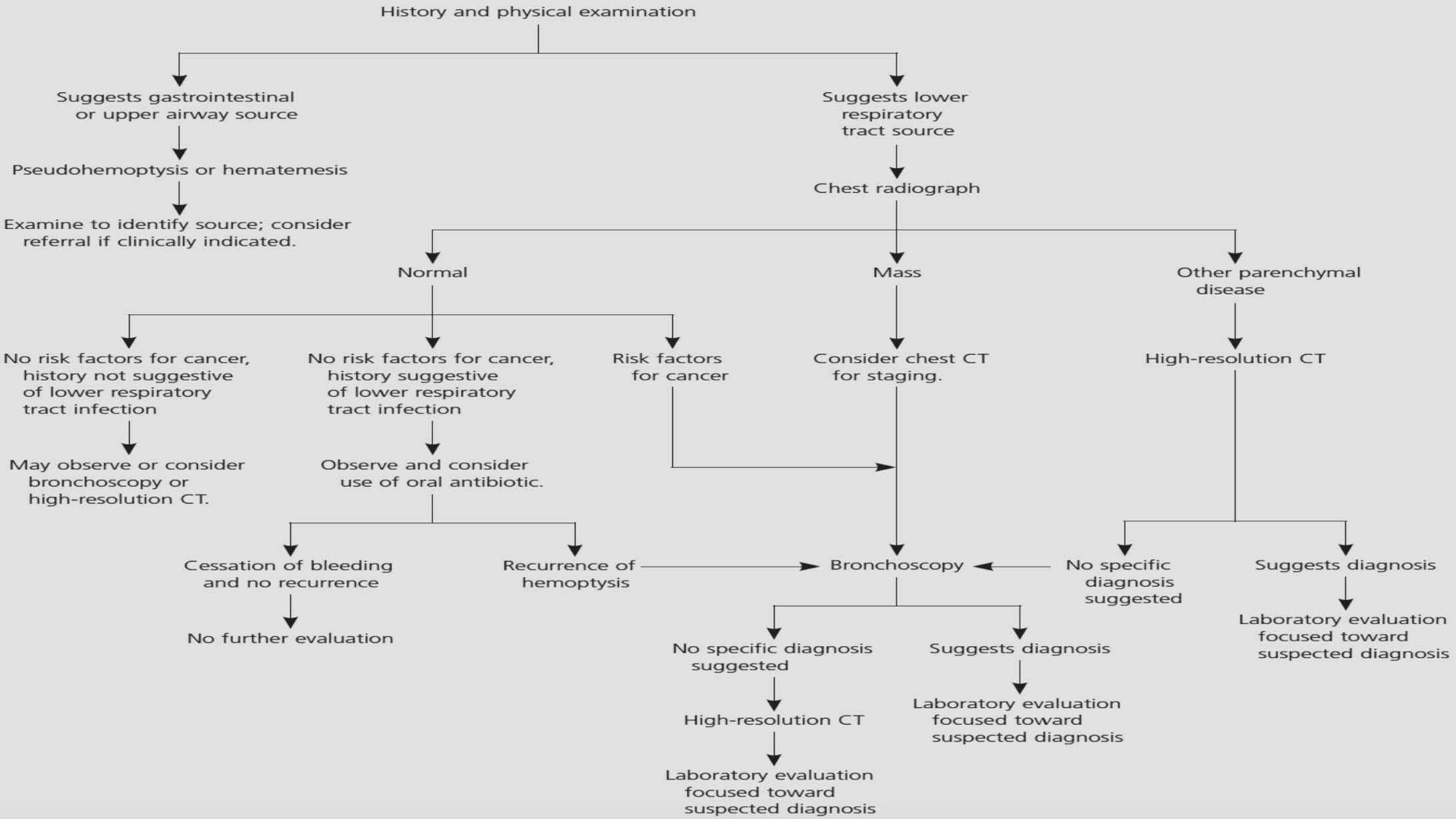
PHYSICAL EXAMINATION

Gingival thickening, mulberry gingivitis, saddle nose, nasal septum perforation	Wegener's granulomatosis
Heart murmur, pectus excavatum	Mitral valve stenosis
Lymph node enlargement, cachexia, violaceous tumors on skin	Kaposi's sarcoma secondary to human immunodeficiency virus infection
Orofacial and mucous membrane telangiectasia, epistaxis	Osler-Weber-Rendu disease
Tachycardia, tachypnea, hypoxia, jugulovenous distention, S3 gallop, decreased lung sounds, bilateral rales, dullness to percussion in lower lung fields	Congestive heart failure caused by left ventricular dysfunction or severe mitral valve stenosis
Tachypnea, tachycardia, dyspnea, fixed split S2, pleural friction rub, unilateral leg pain and edema	Pulmonary thromboembolic disease
Tympani to percussion over lung apices, cachexia	Tuberculosis

LABORATORY TEST

Test	*Diagnostic findings*
White blood cell count and differential	Elevated cell count and differential shifts may be present in upper and lower respiratory tract infections
Hemoglobin, hematocrit	Decreased in anemia
Platelet count	Decreased in thrombocytopenia
Prothrombin time, International Normalized Ratio, partial thromboplastin time	Increased in anticoagulant use, disorders of coagulation
Arterial blood gases	Hypoxia, hypercarbia
D-dimer	Elevated in pulmonary embolism
Sputum Gram stain, culture, acid-fast bacillus smear and culture	Pneumonia, lung abscess, tuberculosis, mycobacterial infections
Sputum cytology	Neoplasm
Purified protein derivative skin test	Positive increases risk for tuberculosis
Human immunodeficiency virus test	Positive increases risk for tuberculosis, Kaposi's sarcoma
Erythrocyte sedimentation rate	Elevated in infection, autoimmune disorders (e.g., Wegener's syndrome, systemic lupus erythematosus, sarcoid, Goodpasture's syndrome), may be elevated in neoplasia

Diagnosing Nonmassive Hemoptysis



MANAGEMENT: MASSIVE HEMOPTYSIS

The overall goals of management of the patient with hemoptysis are threefold:

- bleeding cessation, aspiration prevention, and treatment of the underlying cause.

Hemoptysis greater than 1,000 mL per 24 hours in the presence of malignancy carries a mortality rate of 80 percent.

These patients require intensive care and early consultation with a pulmonologist.

In cases of massive or life-threatening hemoptysis, diagnosis and therapy must occur simultaneously.

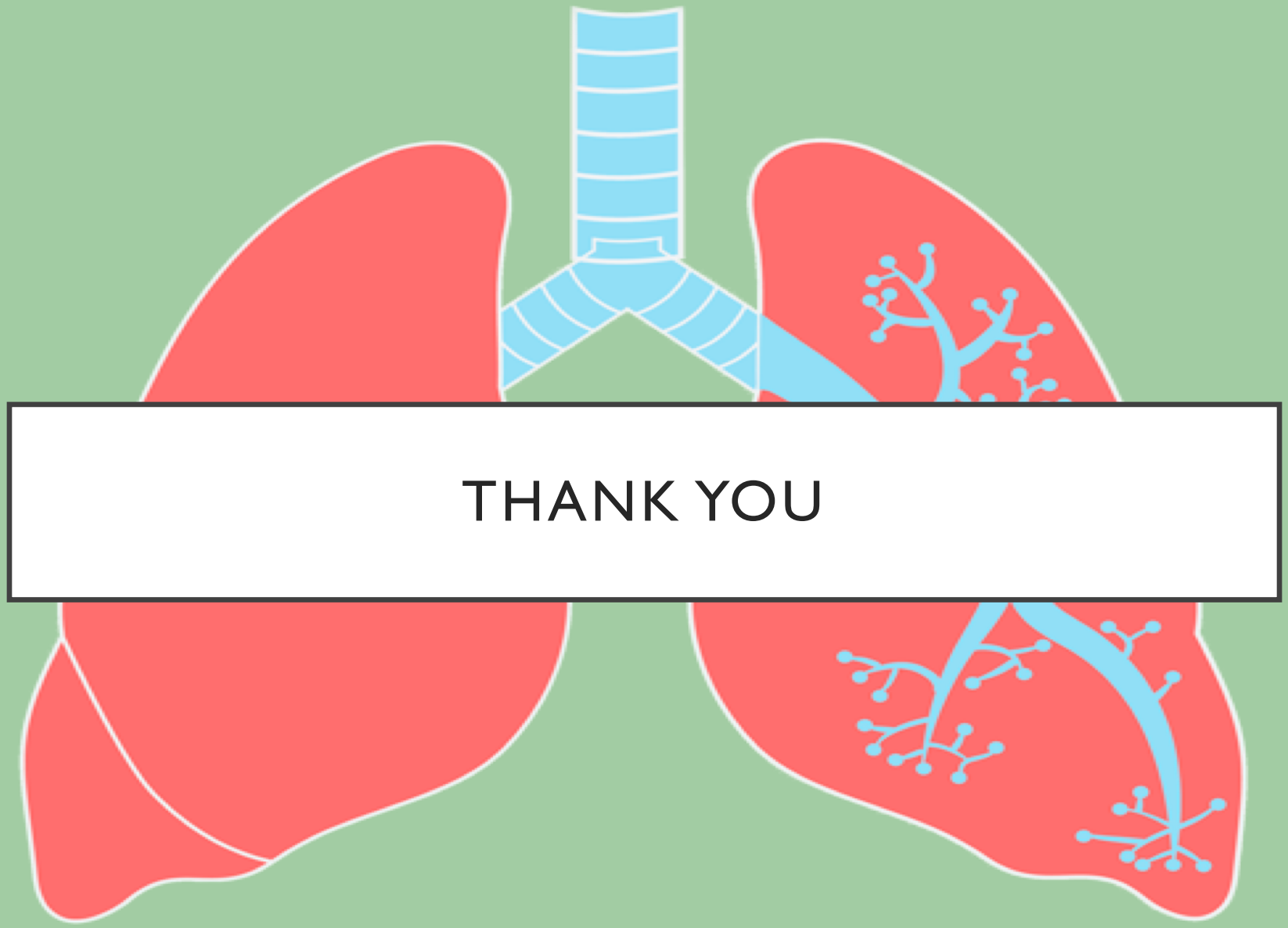
Airway maintenance is vital because the primary mechanism of death is asphyxiation, not exsanguination.

Supplemental oxygen and fluid resuscitation are essential.

Assistance by a cardiothoracic surgeon should be considered because emergency surgical intervention may be needed.

REFERENCES

- AFP
- MEDSCAPE



THANK YOU