

## SYLLABUS THEME 8.2 – RESPIRATORY SYSTEM

**DEFINE THE FOLLOWING TERMS: (some will be revision from previous worksheet)**

- |               |                    |                            |
|---------------|--------------------|----------------------------|
| • Rhinorrhoea | • Expectoration    | • Respiratory failure      |
| • Epstaxis    | • Lung collapse    | • Spontaneous pneumothorax |
| • Haemoptysis | • Clubbing         | • Consolidation            |
| • Cyanosis    | • Asthma           | • Pulmonary fibrosis       |
| • Dyspnoea    | • Pleural effusion | • Opportunistic infections |
| • Tachypnoea  | • Atelectasis      | • Lung abscess             |

**PREFIXES/SUFFIXES: (some will be revision from previous worksheet)**

- |            |            |                         |
|------------|------------|-------------------------|
| • Rhino-   | • Tracheo- | • Pneumono- , pneumato- |
| • Laryngo- | • Broncho- | • -pnoea                |

Please add new terminologies to list as discovered...

**At the end of this learning area, you should be able to:**

- *DESCRIBE* the anatomic components of the respiratory system.
- *DISTINGUISH* between the results obtained and uses for the various projections of the chest.
- *DESCRIBE* the various types of tubes, vascular access lines, and catheters used in relation to the respiratory system.
- *IDENTIFY* the pathogenesis of the chest pathologies and the typical treatments for them.
- *DESCRIBE*, in general, the radiographic appearances of each of the given pathologies.
- *RECOGNISE* and *EXPLAIN* the patterns/steps required to evaluate normal and abnormal chest images (viewing practicals)

### **ANATOMY & PHYSIOLOGY OF THE RESPIRATORY SYSTEM:**

Please *REVIEW* the anatomy and physiology of the respiratory system. This is very necessary to fully appreciate the pathologies that may present in this system.

Some guidelines:

- Composition of the upper respiratory system
- Composition of the lower respiratory system
- Organs of the system that have other functions – eg. Voice production in larynx
- Role of other systems on respiratory changes – CVS, etc.

**EVALUATE** the role of imaging in the respiratory system, with respect to the following:

- Plain film/image radiography
  - Exposure factor considerations
  - Patient positioning and projections
  - Evaluation criteria and Patterns for viewing CXRs
- Contrast radiography – bronchography
- Computed Tomography (CT)
- Nuclear Medicine (NM) Procedures

**Chest tubes, vascular access lines and Catheters** – (Mace & Kowalczyk, 2004, Radiographic Pathology for Technologists, pg 67.)

“a variety of tubes, lines & catheters can be placed in relation to particular parts of the respiratory system, it is important... to be familiar with each of these and exercise caution”...when x-raying patients in critical care radiography.

**IDENTIFY and DESCRIBE** the keys tubes, lines and catheters and their importance.

**Categories of chest diseases:**

- **Respiratory Failure**
- **Congenital and Hereditary Dx**
- **Inflammatory Dx**
- **Neoplastic Dx**
- **Vascular Dx**
- **Occupational Dx**
- **Dx of the Pleura**

When working through each of these diseases, **DESCRIBE/EXPLAIN** each, in terms of:

- **Aetiology**
- **Incidence/prevalence**
- **Clinical presentations**
- **Pathological manifestations**
- **Image characteristics appearances**

**USE** clearly labelled diagrams where necessary.

**Respiratory Failure:**

“...lack of respiratory function or lack of O<sub>2</sub> and CO<sub>2</sub> exchange, which can occur within the lungs or as a result of impaired breathing.” **EXPLAIN** this condition and **DESCRIBE** its radiographic appearances.

**Congenital and Hereditary diseases:**

Lungs - **Cystic fibrosis** and **Respiratory Distress Syndrome (RDS)** or **Hyaline membrane disease**. **DESCRIBE/EXPLAIN** these disorders.

These conditions are acquired in adults also. **EXPLAIN ARDS** and **Pulmonary Fibrosis (Honeycomb Lung)**.

**Inflammatory/Infective diseases:**

Various inflammatory or infective conditions affect the upper and lower respiratory system.

**Upper respiratory system:**

Croup	Epiglottitis	Sinusitis
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**Lower respiratory system:**

Inflammatory Dx:

- **Bronchial Asthma**
- **Bronchiectasis**
- **Pneumonia**
- **Pulmonary TB**
- **Lung Abscess**
- **Fungal & Viral Infections**
- **COPD**

**DESCRIBE/EXPLAIN** the various infective disorders.

### **Neoplastic diseases:**

*These may occur in any part of respiratory system and include the following:*

Mesothelioma of the pleura  
Bronchial Adenoma  
Bronchiogenic Carcinoma  
Pulmonary metastases

**DESCRIBE/EXPLAIN** these neoplastic conditions.

### **Vascular Dx of the Lungs:**

**Pulmonary embolism** is a very serious consequence of disorders in the cardiovascular system and is dependent on size of detached fragment of thrombus which becomes arrested within the pulmonary circulation → severity extending from a **pulmonary infarct** to death.

**Pulmonary oedema** is another consequence of cardiovascular disorders.

**Briefly EXPLAIN/DESCRIBE** these conditions.

**Other vascular related conditions include:**

- Pulmonary oedema
- Pulmonary hypertension
- Pulmonary vasculitis

**EXPLAIN** each type.

### **Occupational diseases:**

*A group of pulmonary diseases caused by inhalation of harmful dusts – in the course of sufferer's daily work. Those produced by mineral dusts → pneumoconiosis:*

**3 important types:**

- **Coal workers' pneumoconiosis**
- **Silicosis**
- **Asbestosis**

**DESCRIBE** and **EXPLAIN** each type.

### **Traumatic Disorders:**

*The lungs may be damaged by both penetrating & non-penetrating chest injuries. Chest injuries may lead to **lung contusion** or a **haematoma**. Sometimes a **laceration of the pleura & lung tissue** may lead to a **pneumo- and/or haemo- thorax**, usually associated with **rib fractures**. Multiple rib fractures may result in deformity – “**stove-in-chest**” or **flail chest**.*

*Development of pneumothorax → leakage of air into soft tissues causing **surgical emphysema**.*

**DESCRIBE** these traumatic disorders (in bold), **USING** labelled diagrams (where necessary).

### **Dx of the Pleura:**

*Several conditions affect the pleura and pleural space. These include:*

**Pleurisy**

**Pleural effusion**

**Pneumothorax/Haemothorax/Hydrothorax** – see above.

**Tumour** – **mesothelioma**

**EXPLAIN** each of these conditions.