STUDENT WORKBOOK
IN PULMONOLOGY

Department of Medicine
Faculty of Medicine
Sabaragamuwa University of Sri Lanka

First Edition 2021

2021 Department of Medicine
Faculty of Medicine
Sabaragamuwa University of Sri Lanka

ISBN 978-624-97640-3-3

CLINICAL APPOINTMENT IN PULMONOLOGY

1. Name of the student:

……

2. Year passed GCE Advanced level Examination:

……

3. Duration of the appointment:

From……/……/……. To ……../……/…….

4. Name of the consultant:

……

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PREFACE

Students of the Faculty of Medicine, Sabaragamuwa University of Sri Lanka, study Pulmonology as a separate appointment of 2 weeks, at the Respiratory Unit, Teaching Hospital, Rathnapura and District Chest Clinic, Rathnapura During this period, they will be supervised by the Consultant Pulmonologist appointed to Teaching Hospital, Rathnapura by the Ministry of Health.

This workbook in Pulmonology is compiled to help students achieve essential knowledge and skills in Respiratory Medicine expected from an undergraduate when they qualify to work in medical wards as intern house officers. Thus, the workbook will guide the student during their chest medicine appointment.

This Workbook is a joint effort between academic staff of the Department of Medicine, SUSL and the current Consultant Pulmonologist of the Teaching Hospital Rathnapura.

Students are expected to organize their classes and do self-studies in order to complete the tasks set out in the Workbook.

We value your feedback to improve the Workbook.

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CHAPTER 1

INTRODUCTION

Dear Students,

We have prepared a series of workbooks to guide you during your medical appointments. These include 3rd year workbook, 4th year workbook and workbook for each short appointment and a workbook for the professorial appointment.

The appointments in finer specialties are organized based on the University Grants Commission guidelines and according to the needs of the Ministry of Health.

The short appointment in Pulmonology will give you the opportunity to study Pulmonology with exposure to specific case scenarios in more detail. This workbook is prepared to provide guidance to the students during the Pulmonology appointment to cover the essential areas expected from an undergraduate. You are expected to learn the management plans in further detail. This includes the investigation, treatment of common medical conditions, management of common emergencies, which are essential clinical topics for an intern medical officer. This knowledge, skills and experience you gather during the short appointments will help you to understand patient problems in greater depth.

Your continuous assessments will be based on these workbooks.

Learning Outcomes in Chest Medicine

At the end of the appointment students should be able to do the following:

1. Describe the anatomy and physiology of the respiratory system, pathogenesis of its disorders and scientific basis of their management.

2. Obtain histories, elicit physical signs and interpret physical signs, describe pathophysiology, principles of management and prognosis of patients having the following conditions.
    a. Bronchial Asthma
    b. Chronic Obstructive Pulmonary/ Airways Disease (COPD/ COAD)
    c. Pneumonia- typical and atypical
    d. Tuberculosis
    e. Bronchiectasis
    f. Lung abscess
    g. Tumors of the Respiratory System
    h. Interstitial Lung Diseases (ILD) including Idiopathic Pulmonary Fibrosis (IPF)
    i. Pneumothorax
    j. Co-pulmonale
    k. Pleural effusion
    l. Obstructive Sleep Apnea (OSA)

3. Arrive at a clinical diagnosis of disorders of the respiratory system.

4. Understand the basis of Oxygen therapy and be able to select the appropriate source, interphase and targets for a critically ill patient and a patient on long term oxygen therapy (LTOT)

5. Describe the indications, limitations and be able to interpret findings of investigations that are relevant:
    a. arterial blood gas (ABG)
    b. pleural fluid
    c. lung function tests (spirometry and diffusion studies) and peak expiratory flow rates (PEFR)

6. Describe the anatomical-radiological correlation on the chest radiograph, interpret the abnormalities seen in common respiratory conditions on the chest radiograph and describe the uses of special studies such as CT scan and Ultrasound scan of the chest

7. Explain the principles of advanced investigation techniques in respiratory medicine such as fiber optic Bronchoscopy (FOB), fiber optic Thoracoscopy, Non Invasive Ventilation(NIV) and understand the indications, patient preparation, procedure and interpretation of findings.

8. Identify the indications, describe the necessary preparations and perform the following procedures under supervision,
    - Direct smear examination of the sputum (collection and ZN stain)
    - Mantoux test
    - Technique of use of different inhalers in asthma and COPD
    - Using a nebulizer
    - Pleural aspiration
    - Lung function test (spirometry and using the peak flow meter)
    - Management of an Inter Costal tube
    - Chest physiotherapy for COPD and bronchiectasis
    - Non-Invasive Ventilation
    - High Flow Oxygen Therapy
    - Pulmonary Rehabilitation

8. Describe the principles of diagnosis prevention and treatment strategies of tuberculosis of Sri Lanka including Directly Observed Treatment, screening, follow-up, contact tracing, management of complications and multi drug resistant TB (tuberculosis)

9. Describe the emergency and where relevant intensive care management of following conditions,
    a. Acute severe asthma
    b. Acute exacerbation of COPD
    c. Pneumothorax
    d. Massive haemoptysis
    e. Respiratory failure

10. Communicate effectively with patients from different social and cultural backgrounds and with their families with particular reference to giving information on
    a. Inhaler medication
    b. Using the peak flow meter
    c. Pulmonary tuberculosis with regards to treatment and prevention
    d. Chronic Asthma
    e. COPD
    f. Indoor and outdoor air pollution including occupational exposure

11. Communicate effectively with patients from different social and cultural backgrounds and with their families with particular reference to giving information and breaking serious news in relation to
    a. Terminal respiratory failure
    b. Advanced lung malignancies
    c. Advanced fibrosis
    d. Multi-drug resistant TB
    e. COVID related illness
    f. Prognosis of common disorders

12. Write case notes, daily status, referrals, discharge summaries, clinic notes and prescriptions.

13. Demonstrate empathy and maintain high ethical standards

14. Be an effective member of the healthcare team and know the health facilities and social support available to care for respiratory diseases in Sri Lanka.

CHAPTER 2

CORE CLINICAL KNOWLEDGE AND SKILLS

At the end of the chest medicine, you should be competent in the technique of history taking, physical examination (general examination and examination of respiratory system) and clinical reasoning at a level of a student about to enter the Final Year.
In addition to the cases you are allocated during the apppointment, you are adviced to see the following presentations given in the next section on “Topics to cover during Chest Medicine Appointment”

2.1 Common Clinical Presentations in Pulmonology:

These are some of the key presentations, with diverse underlying etiologies that ought to be ‘covered’ during the Chest medicine Appointment.

- Cough
- Nasal congestion and rhinorrhea
- Wheezing
- Shortness of breath
- Haemoptysis
- Pleuritic type chest pain

The student should be able to analyze these common complaints, perform a relevant physical examination and be able to come up with reasonable differential diagnoses.
The ability to write up a management plan to arrive at a diagnosis, detect and manage complications and short and long-term follow-up is expected.

2.2 Emergencies in Pulmonology

It is mandatory for a student to be able to recognize, know the appropriate initial management and have the skills to perform necessary procedures at the level of a new House Officer.

- Acute severe asthma
- Acute exacerbation of COPD
- Acute respiratory failure
- Severe respiratory infections
- Acute pneumothorax
- Large pleural effusion

2.3 Topics in Chest Medicine

These topics are often termed as the theoretical aspects of respiratory medicine and require instructive teaching (e.g., lectures) or self-studies using standard textbooks.

1. Analysis of respiratory symptoms and special investigations
2. Upper and lower respiratory tract infections and Pneumonia in adults
3. Asthma in adults: Acute severe asthma
4. Chronic obstructive pulmonary disease
5. Clinical application of lung function tests
6. Tuberculosis
7. Bronchiectasis
8. Obstructive sleep apnea
9. Chronic lung infections and suppurative lung disease
10. Interstitial lung diseases (ILD))
11. Acute lung injury and Acute Respiratory Distress Syndrome
12. Pleural disease, pneumothorax, pleural effusion and neoplasms
13. Ethical issues related to ventilation (Removal of ventilatory support; when to commence ventilation in a person having respiratory failure; prioritization to provide ventilatory care)

CHAPTER 3

HISTORY TAKING

Patients with respiratory disorders would present with a variety of symptoms. These symptoms are very common in our day-to-day practice. While some symptoms, like cough, may indicate mild pathologies that can be easily managed (viral bronchitis), but the same symptom might be the first presentation of a sinister pathology like cancer or a life-threatening condition such as pulmonary embolism.
Some symptoms like shortness of breath, that might attribute to the respiratory system, might actually indicate a pathology elsewhere, such as the cardiovascular system.
Hence, a thorough detailed analysis of these symptoms as well as the other associated symptoms are paramount in arriving at a scientifically differential diagnosis or a diagnosis.

PRESENTING COMPLAINT

Use an open-ended question to find out what made the patient come to the hospital. Allow the patient to describe his symptom. Ask more open-ended questions to identify key components of the history and to get the story of the symptom in chronological order.

HISTORY OF PRESENTING COMPLAINT

Recall the pathogenesis of the symptom and ask closed questions to identify the likely underlying cause. Symptoms need to be analyzed to arrive at a diagnosis.

For example, if the patient complains of shortness of breath:

Onset- Whether the shortness of breath is acute onset or gradual onset. Whether this is the very first experience or whether the patient has had shortness of breath for a while and if so, for how long?

Severity- Whether the patient can speak in full sentences without stopping to take a breath in between. Ask questions to find out how far a patient can walk (either on the flat or at an incline) without having to stop due to breathlessness. Ask about possibility of getting done activities of daily living (ADL).

Time course- Ask how the shortness of breath changed over time, what measures taken to relieve symptoms, including home remedies, any medication given by a doctor.

Associated symptoms- find out any associated symptoms such as fever, cough, haemoptysis, chest pain.

Exacerbating and relieving factors- Ask whether there is anything which make shortness of breath worse (e.g., exertion, exposure to allergen or cold air, lying down) or better (inhaler, rest, propped up position)

Evaluation of risk factors- Whether there is preexisting risk factors such as asthma, COPD, smoking, occupational exposure. However, when you work through the patient's history further you can find more information (e.g., Past medical history, Family history, social history)

SYSTEMIC INQUIRY

The lungs and the rest of the respiratory system may get involved in many systemic diseases. Sometimes, the pulmonary manifestation might be the first presentation of a particular systemic illness. Furthermore, pathologies in other organ systems might exacerbate the pulmonary condition. In other instances, when deciding on treatment modalities, we might have to consider the effects of these modalities on pathologies of other systems.
Hence it is important to identify any ailments in other systems, when analyzing the presenting complaint.
Systemic inquiry is a brief screening of problems in other systems related to the presenting problem.
Ask general problems such as weight loss, sleep pattern and fatiguability. Then proceed with specific questions from each system

- Cardiovascular- palpitations, ankle oedema, chest pain, faintness, orthopnea
- Gastro intestinal- vomiting, nausea, difficulty in swallowing, abdominal pain
- Neurological- headache, confusion, motor, sensory and visual changes, changes of voice
- Musculoskeletal- Chest wall pain, injury to chest wall
- Dermatological- rashes

PAST MEDICAL HISTORY

Ask if the patient has any medical conditions: (e.g., asthma, COPD, tuberculosis, bronchiectasis, lung fibrosis, congestive cardiac failure, lung cancer), and how well controlled all these diseases and the complications, including life threatening conditions which needed hospital admissions. Any procedures patient has undergone (e.g., bronchoscopy, pneumonectomy)
Any special investigations undergone such as bronchoscopy, CT chest and if possible, the results.

ALLERGIES

Ask if the patient has any allergies and if so, clarify what kind of reaction (e.g., mild rash or anaphylaxis) they had to the substance (e.g., mild rash vs anaphylaxis).

DRUG HISTORY

Ask if the patient is currently taking any medications or past medications used. Especially about use of steroids, inhalers, bronchodilators. Find out whether the inhaler usage and technique are correct and the compliance of medications.

FAMILY HISTORY

Ask the patient if there is any family history of respiratory diseases (e.g., Asthma, eczema, tuberculosis), and the age that they have detected and the complications.

PERSONAL AND SOCIAL HISTORY

Explore the patient's social history such as occupation, hobbies, recreational activities, income, habits to understand their social context and identify potential risk factors for respiratory diseases such as smoking, occupational and recreational exposures.
Identify their personal supportive network. Capacity to continue the current occupation. Find out the impact of the illness for the occupation.
Find out the location of home, the distance between the home and the closest hospital and the mode of transport in an emergency, the type of accommodation (e.g., house, bungalow) and if there are any adaptations to assist them (e.g., stairlift, home oxygen). Find out the ventilation of the house and how may resides in one room.
It is important to find out the level of education and whether the patient is able to handle medications. (e.g., use of warfarin, insulin injections)
You need to assess the capacity to get the activities of daily living done and the ability to get the work in instrumental activities done in the daily living (e. g. Personal hygiene, cooking, house hold work and shopping). Find out the stresses and needs of carers and impact of role changes in the family.

Smoking

Record the patient's smoking history, including the type and amount of tobacco used. Calculate the number of 'pack-years 'the patient has smoked for to determine their cardiovascular risk profile:

Alcohol

Record the frequency, type and volume of alcohol consumed on a weekly basis.
Ask the patient if they use recreational drugs and if so, determine the type of drugs used and their frequency of use. Recreational drugs may be the underlying cause of a patient's presentation with cardiovascular symptoms:

Diet

Ask if the patient as to how diet looks like on an average day. Specially whether patients with chronic respiratory diseases take a high protein det.

Exercise

Ask if the patient regularly exercises (including frequency and exercise type).

Occupation

Identify potential exposure to occupational agents which lead to respiratory disease such as coal mining, farming, plumbing, construction and working in ship yards; suspecting conditions such as pneumoconiosis, extrinsic allergic alveolitis and mesothelioma

Pets and hobbies

Allergies to pets are common. Bird keeping has risk of bird fancier's lung

SYMPTOM ANALYSIS

Symptom	Causes	Describe symptoms which helped you to differentiate each cause
Cough	1.	
	2.	
	3.	
Wheezing	1.	
	2.	
	3.	
Shortness of Breath	1.	
	2.	
	3.	
Haemoptysis	1.	
	2.	
	3.	

CHAPTER 4

EXAMINATION OF THE RESPIRATORY SYSTEM

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The following are important features in the General Examination commonly relevant to the Respiratory system. You should have a sequence of examination that is efficient (For example, begin with the face, neck, outstretched hands, detailed examination of hands, sacral area and lower limbs)

- General impression (ill and emaciated, extreme emaciation may suggest tuberculosis of bronchial malignancy)
- Dyspnea and evidence of respiratory distress with the use of accessory muscles of respiration.
- Temperature (i.e., presence or absence of fever)
- Pallor (conjunctival pallor, tongue and mucous membrane of lips)
- Cyanosis (seen with advanced respiratory failure or with pulmonary fibrosis)
- Lymphadenopathy (neck and axillary)
- Clubbing (associated with respiratory disease such as bronchial carcinoma, lung abscess, bronchiectasis and interstitial lung disease)
- Nicotine stains of the finger
- Hands for asterixis, warm palms and bounding pulses (evidence of carbon dioxide retention)
- Ankle edema (seen with associated cor-pulmoale)

Respiratory system proper

Examine the respiratory system both from the anterior aspect and the posterior aspect

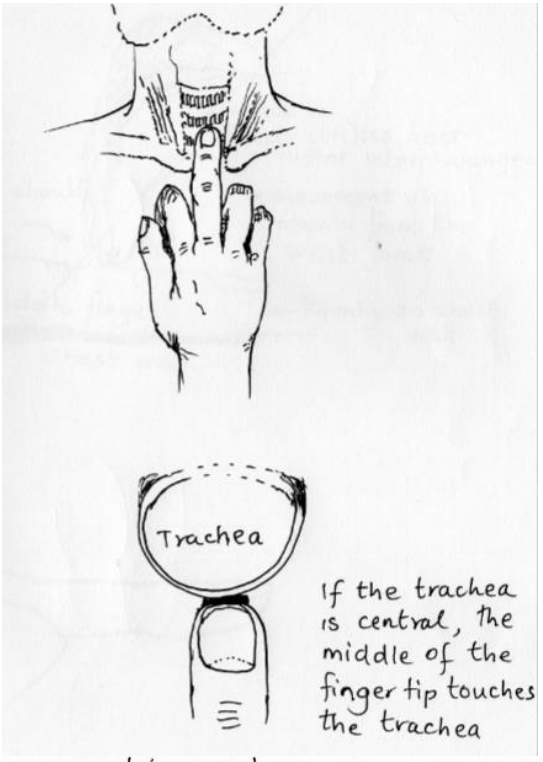
Inspection

- Go to the foot end of the bed and observe for symmetry of chest wall movements
- Apical flattening (due to fibrosis- common with advanced fibrosis from TB)
- Count the respiratory rate (keep hand on abdomen and count for at least 30 seconds)
- Use of accessory muscles during respiration such as the sternocleidomastoid muscles. Look for intercostal, subcostal and suprasternal recessions.
- Surgical scars including thoracotomy scars and intercostal tube insertion sites
- Look for chest wall deformities (barrel chest in COPD) while in a seated position

Palpation

Examine the position of the mediastinum (whether trachea is in the midline and the apex beat is shifted).

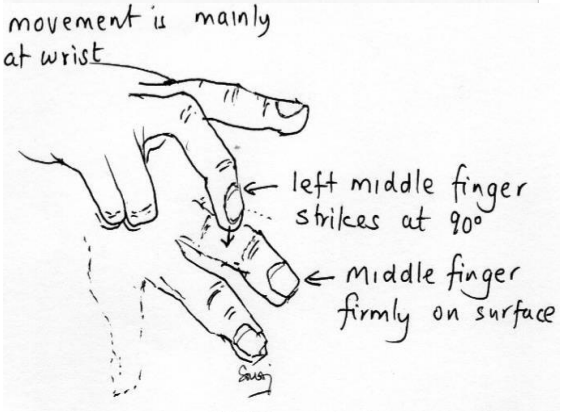
Feel for a tracheal tug and measure the crico-sternal distance (this distance is reduced in patients with COPD due to hyperinflation of the lungs). Normal 3 finger breaths.
Assess the chest wall movements with palpation. Focus on the symmetry of movement in upper, mid and lower zones.
Palpate for tactile vocal fremitus. This is an adjunct to vocal resonance.

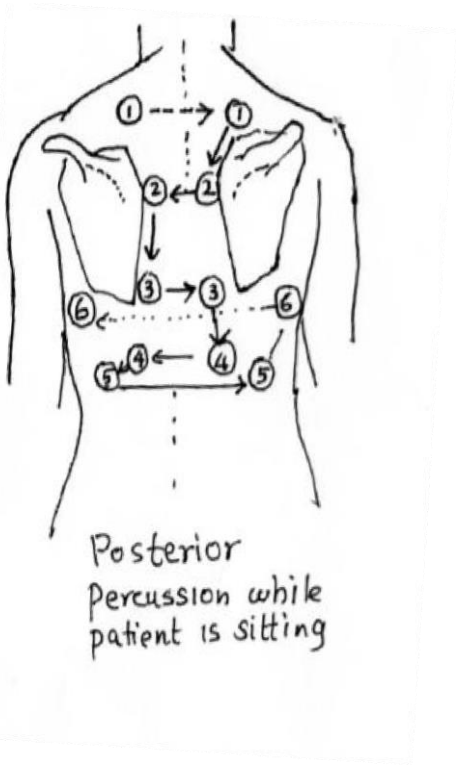


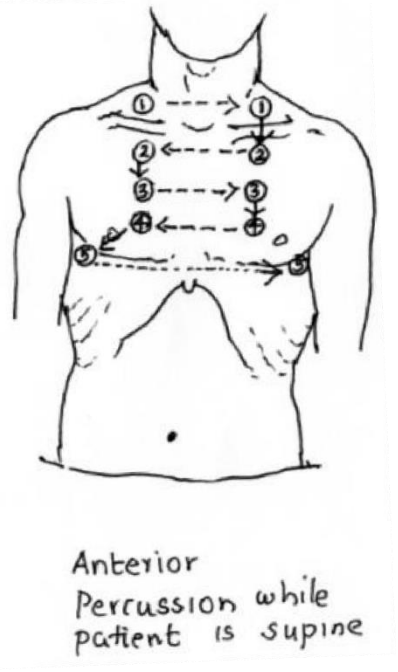
Percussion

The normal three levels of sound: normal (or resonant, the note over the normal lung tissue), impaired note/dull (=the note elicited when percussing over liver), or stony dull-similar to the sound you obtain when percussing over the thigh)

Dullness is heard, stony dullness is best felt. Compare the two sides at the same level moving to the next level.





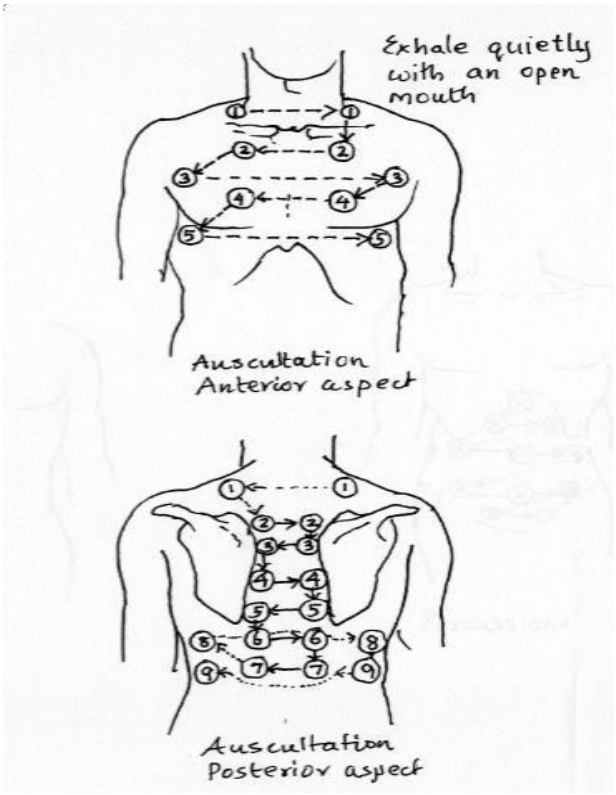


Auscultation

Listen to the intensity of breath sounds (normal, decreased or absent)
If you hear breath sounds identify the character, i.e., normal=vesicular sound. If they are harsher than normal, identify if they are “bronchial breath sounds”. (the type of breath sounds you hear when you listen to your own breath sounds over the trachea)
If they are vesicular, comment on duration of the inspiratory sounds to expiratory sound. In the case of bronchospasm, expiration is prolonged and longer than inspiration. Listen for added respiratory sounds such as rhonchi and crepitations. If there are crepitations, state if they are coarse or fine.

Time the presence of added sounds to the respiratory cycle (inspiratory, expiratory and biphasic)
The disappearance or change in crackles after coughing indicates secretions in the airways.
Pleural rubs may be heard in patients with pleurisy.
Vocal resonance: request patient to say “ninety-nine’ or similar sum with many ‘n’ sounds when auscultating over the lung fields.
Note if the words are heard louder and clearer (indicating consolidation, and usually accompanied by bronchial breath sounds)
Whispering pectoriloquy is an increased loudness of whispering noted during auscultation with a stethoscope. Usually Whispered words by the patient would not be heard.

This is supplemented by examining for loud second heart sound (P_2) from pulmonary hypertension and examining abdomen for hepatomegaly (enlarged in patients with cor-pulmonale)



An example of how to present a 'Respiratory Short Case.'

History presentation is different from history taking. You may ask various questions and system review when taking history. In contrast, you should state the important positive and negative findings when presenting the history. In the same way examination should also be carried out in details however, you may select important positive and negative findings to present.

You will be given time to examine the patient and at the end of the allocated time you will be prompted (e.g., ringing a bell) to conclude examination and present your findings to the examiner. Always remember before leaving the patient after examining them, cover the clothes that you exposed and thank the patient. Then you turn towards the examiner and make eye contact with them. It is not appropriate to look at the patient again, time to time while you present your findings to the examiner.

You may start with presenting general details of the patient like saying 'I examined this elderly cachectic patient who is kept propped up and dyspnoeic at the moment.'

Then you may start with the presentation of findings of the general examination. It may be easy for you to present in order of starting from head and proceed to hands and to legs (head to toe). As an example, you can present as "He is afebrile, not pale, breaths with pursed lips and not cyanosed. There are no clubbing or flapping tremors in his hands. There is pitting bilateral ankle oedema. His respiratory rate is 24 breaths per minute. There is no lymphadenopathy noted on neck examination. He uses accessory muscles to breath indicating the respiratory distress."

At the end of the presentation of general examination you could present findings of the chest examination. "on examination of the chest it is notable that he has a barrel shaped chest. There are no scars, lumps or dilated veins. On palpation of the chest the chest expansion is equal, and apex of the heart is in the 5^{th} intercostal space in the mid clavicular line, which is not shifted. His trachea is also in the midline". You may now preset your percussion note and auscultation findings. "on percussion, it was resonant (or hype- resonant) at all the fields bilaterally". "on auscultation I heard vesicular breathing in both lungs, with crackles and wheezes diffusely scattered bilaterally. Vocal resonance is normal".

In this case you have noted findings compatible with COPD and has bilateral ankle oedema. This suggests the possibility of co-pulmonale. Therefore, it is prudent to extend your examination to look for, features of right heart failure and present the findings as follows. "On further examination there is loud P2, parasternal heaving, elevated JVP and hepatomegaly. Together with these findings the ankle oedema indicates the presence of co- pulmonale".

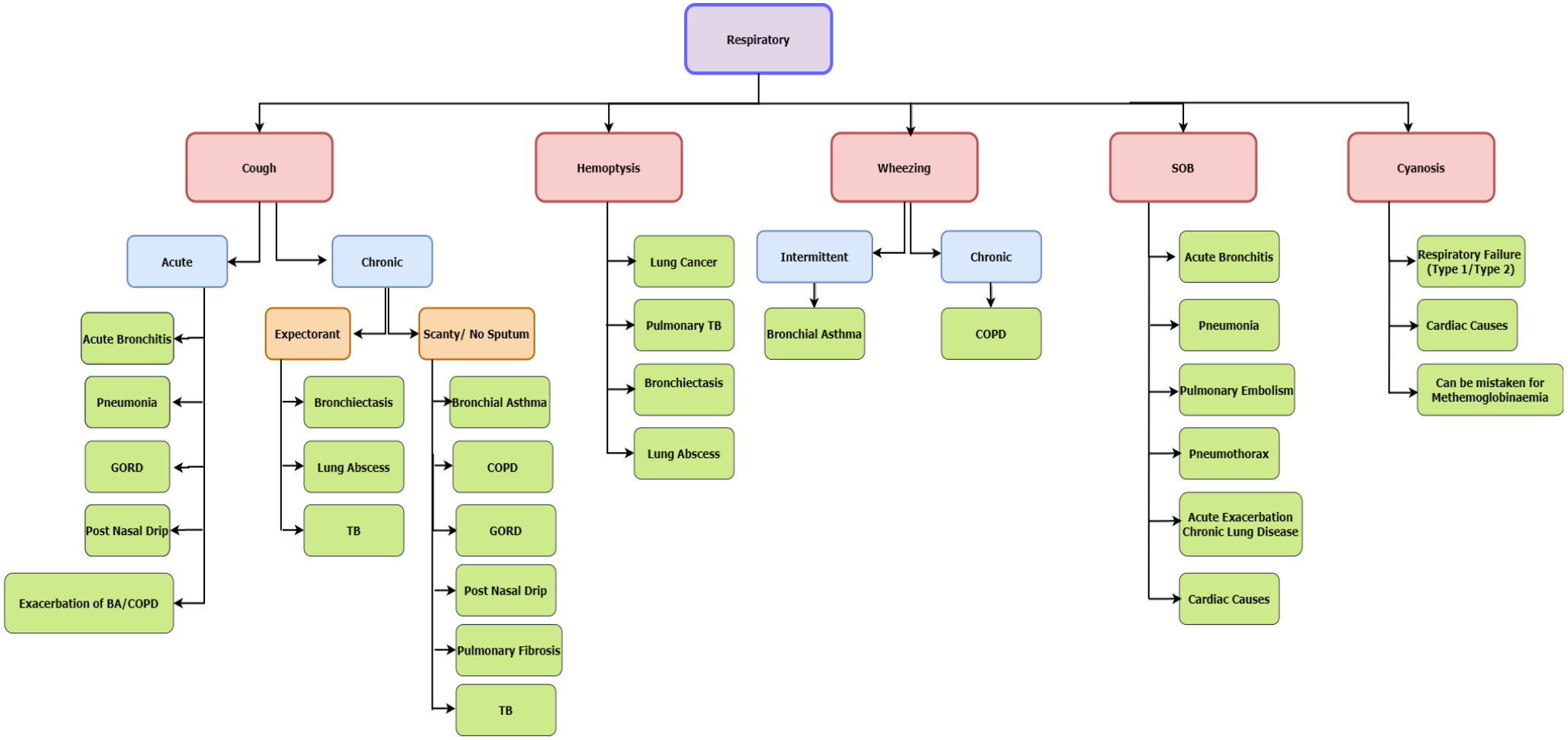
You may present your conclusion at the end of the presentation. "In conclusion, my diagnosis is COPD with co-pulmonale and cachexia and the patient is in mild respiratory distress without evidence of overt carbon dioxide retention".

Note that when you conclude findings it has different components to present for it to be complete.

- Your diagnosis or differential diagnosis
- Complications and any adverse effects of medications
- Functional status of the patient

At the end of your presentation either the examiner will start asking questions, or you may suggest your plan of investigations.

See the mind map below relating the important differential diagnosis for the key symptoms in pulmonology



SOB-Shortness of Breath, GORD-Gastro-oesophageal Reflux Disease, BA-Bronchial Asthma, COPD-Chronic Obstructive Pulmonary Disease, TB-Tuberculosis

CHAPTER 5

COMMON INVESTIGATIONS

1) Pulse oximetry

a) Check your saturation with a pulse oximeter and check on few other patients (young patient, old patient, an obese patient, a patient with COPD, a patient with pneumonia etc.) as well.

Person	Saturation

b) Chest X-ray

During your attachment you may observe and study the chest x-rays of following conditions

(1) Pneumonia (consolidation) – lobar pneumonia and bronchopneumonia
(2) Pleural effusion
(3) Lung fibrosis
(4) Interstitial Lung Diseases (ILD)
(5) Bronchiectasis
(6) Lung abscess
(7) COPD and bronchial asthma
(8) Pneumothorax
(9) Lung carcinoma
(10) Metastatic deposits in the lung
(11) Congestive cardiac failure
(12) Massive cardiomegaly
(13) Pulmonary embolism
(14) Pulmonary infarction

c) Peak expiratory flowmetry

(1) Observe and learn how to use the Peak Flow Meter and check your own Peak Expiratory Flow Rate (PEFR). (Write the value)

(2) Explain the procedure to one of your patients, without lung disease and measure their PEFR and record it.

(3) Measure PEFR in a patient with exacerbation of bronchial asthma. Analyze the differences with the normal patient.

(4) Maintain a PEF chart of a patient with acute exacerbation of bronchial asthma from admission to recovery of exacerbation.

(5) Check the pre and post nebulization PEFR in a patient with bronchial asthma and mention the observations.

d) Arterial blood gas analysis (ABG)

(1) Take the consent from a patient for ABG. Outline the consenting process below.

(2) Observe how the ABG is done in the ward and write the steps in brief

(3) Take the collected ABG sample and carry it to the lab and observe how it is performed. Paste a sample blood gas result (you may photocopy one)

(4) Collect sample ABGs of following conditions and paste below.

(i) COPD patient with type II respiratory failure

(ii) Pneumonia with type I respiratory failure

(iii) Acute Lung Injury (ALI) or Adult Respiratory Distress Syndrome (ARDS)

e) Lung Function Test (LFT)

(1) Observe and learn how to use the Spirometer.

(2) Paste a picture of the Spirometer.

(3) Draw the Flow Volume Loops and Time Volume Curve and explain the findings of Lung Function Tests (LFTs) in following conditions.

(i) Bronchial asthma

(ii) COPD

(iii) Pulmonary fibrosis

f) CT chest - HRCT/ CECT and CTPA of Chest

(1) What are the indications to request an HRCT and CECT of chest?

(2) What are the adverse effects of contrast given for CECT and CTPA?

(3) What are the precautions taken to prevent contrast nephropathy?

CHAPTER 6

EXERCISES

1. Acute severe asthma
   a. Take history and examine a patient with acute exacerbation bronchial asthma
      i. Describe your history in the same language used by the patient *(Sinhala, Tamil or English)*

      ii. What are the symptoms and signs that suggest bronchial asthma in your patient?

      iii. What is the reason for acute exacerbation?

      iv. How do you stage the severity of acute exacerbation?

      v. Prescribe the immediate management of acute exacerbation for your patient.

vi. What are the features that may suggest you that the patient needs immediate intubation and mechanical ventilation?

vii. What are the parameters that you assess in your patient when you record the daily status during daily ward round?

viii. Enumerate the different groups of drugs used to treat asthma and briefly mention their mechanism of action.

2. Acute exacerbation of COPD
   i. Write a summary of the clinical presentation of a COPD patient that you encountered.

   ii. Outline the immediate management of a patient presented with the acute exacerbation of COPD.

iii. What is the cause for the acute exacerbation?

iv. Briefly discuss the options available for ventilatory support for patients with COPD (NIV, Invasive ventilation)

v. How do you decide on providing long term oxygen therapy for COPD patients?

3. Acute respiratory failure

i. How do you diagnose acute respiratory failure?

ii. Write the possible etiologies that could cause type I and type II respiratory failure.

iii. Explain the pathophysiological basis for the difference between the type I and type II respiratory failure.

4. Pneumonia
   i. Define pneumonia.

   ii. Explain the development of bronchial breathing in pneumonia.

   iii. Classify pneumonia into different types and mention common etiologies for each.

   iv. How do you assess the severity of pneumonia to decide on the place of care?

   v. What are the complications of pneumonia?

5. Acute pneumothorax
   i. Mention the types of Pneumothoraces and explain how they are formed.

   ii. Briefly outline the management of acute pneumothorax

6. Large pleural effusion
   i. Briefly describe the presentation (history and examination) of a patient with a large pleural effusion that you encountered.

   ii. What are the differential diagnoses you suggest for your patient? Give clinical reasons for each.

iii. How do you plan your investigations to find the aetiology of the pleural effusion?

iv. How do you narrow down the differentials using by examining the pleural fluid?

v. Outline the steps in consenting a patient for pleural fluid aspiration.

vi. Outline the steps in aspiration of a pleural fluid and mention the investigations you request.

vii. Observe how the aspiration of pleural fluid is performed under ultrasound guidance.

7. Chronic cough
   i. How do you define 'chronic cough'

   ii. What are the common differentials for chronic cough in adults?

   iii. Briefly mention the chest X-ray findings of each differentials that you have mentioned above.

   iv. What are the methods to collect sputum samples for investigations?

   v. Draw or paste a picture of acid-fast bacilli as seen under the light microscope.

   vi. Briefly explain the pathogenesis of pulmonary tuberculosis in adults with an illustrated flow diagram.

vii. What are the main groups of medications used to treat tuberculosis, mention them with examples?

viii. Outline how you would advice a patient who is, about to start the Anti-Tuberculosis Therapy (ATT)

8. Haemoptysis

i. Write the common differentials for haemoptysis.

ii. Outline your investigation plan.

iii. Outline the management of a patient with haemoptysis that you encountered.

CHAPTER 7

CASE BASED SCENARIOS

In this section we expect you to write histories (minimum of 5 cases as complete documentations) of patients that you encountered during your pulmonology appointment.

CHAPTER 8

PREPARATION FOR THE PULMONOLOGY SHORT APPOINTMENT

1) The short appointment of Pulmonology will be conducted at ward 24 and 25 (Respiratory Cubicle), Teaching Hospital Rathnapura, District Chest Clinic, Rathnapura and the Endoscopy room at Teaching Hospital Rathnapura, for 12 days (Monday to Saturday)
2) Students are expected to refresh their knowledge by revisiting their notes on Respiratory Physiology, Respiratory Anatomy, Respiratory Pathology, Respiratory Pharmacology and Clinical Diseases of the Respiratory System.
3) The schedule will be as follows: *(Please note that this schedule is developed considering current circumstances and liable to adaptive changes depending on the changes in the system)*
    a) Monday: 7.00 am.: Ward 24/25 – (divide into two groups: group 1 Wd. 24/group 2. Wd 25) – the groups will be changed after the first week)- History taking from patients (monitor should allocate and maintain a list) and examining patients. Write a summary and a problem list for each of your patients. The Consultant will conduct a ward round in each ward.
    b) Tuesday: 8.00 am: District Chest Clinic, Rathnapura. Group 1 will take histories of two patients with tuberculosis each and group 2 will take two histories each from the Consultants Visits, and present them to the Consultant.
    c) Wednesday: 7.30am: Respiratory Clinic, Room 57, Teaching Hospital, Rathnapura. Each student will take 3 histories each from the patients that are to be seen by the Consultant and present them.
    d) Thursday: 8.00AM As on Tuesday, the tasks of the groups will change. They will participate in the Journal Club at 9.00AM. Two students will briefly present a patient each.
    e) Friday: 7.30 AM Endoscopy room, Teaching Hospital, Rathnapura. Obtain histories of patients awaiting Bronchoscopy and Thoracoscopy and accompany the patient during the procedure and then to the ward and maintain observation after the procedure.
    f) Saturday: Ward round at ward 24/25 and group discussion on patients.
4) The students are expected to be punctual and appropriately dressed.
5) Should follow the normal infection prevention protocols in the Hospital.
6) Leave of any sort will not be accepted, and the missed days should be repeated.

7) It is expected that you will be courteous to the patients and staff and will leave a good impression about you and your faculty when you leave the unit.

This book is peer reviewed and recommended as a teaching and learning material for the Department of Medicine, Faculty of Medicine Sabaragamuwa University of Sri Lanka, by the following experts,

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ISBN 978-624-97640-3-3