

***Human Biology ATAR – Task 3: Extended Response***

***Lung diseases and treatments (7.5%)***

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| --- | --- | --- | --- |
| Name: Soi Tar | | | |
| Time allowed: 1 Lessons | | | |
| **Section** | Your Mark | Marks available | Percentage |
| **Section 1:**  Report |  | 10 | 18.5% |
| **Section 2**:  Validation Test |  | 44 | 81.5% |
|  |  | **54** | **100%** |

**Declaration of Authenticity**

I (Student Name) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ declare that this work is my own and I have not plagiarised from any source.

Signature:  
  
Date:

**Lung disease and treatments**

You are to choose **one** lung disease from List A and **one** disease from List B to research and find information about the named aspects of each disease. You will then complete an in-class validation assessment on your research without notes.

DISEASES

|  |  |
| --- | --- |
| **LIST A** | **LIST B** |
| Chronic bronchitis | Pneumonia |
| Emphysema | Pleurisy |
| Cystic fibrosis | Tuberculosis |

Check list

* Cause, or main causes
* Symptoms and diagnosis
* Current treatments…how they work and what they do
* Prevention

Write the names of the diseases you have chosen here:

Disease A: Emphysema

Disease B: Tuberculosis

**Marks Table**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Report** | **Cause** | **Symptoms** | **Treatments** | **Prevention** | **Marks** | Your mark |
| **Disease A** | 1 | 1 | 1 | 1 | 5 |  |
| **Disease B** | 1 | 1 | 1 | 1 | 5 |  |

This sheet is to be the cover page of your report

# Introduction:

# The respiratory system is a specialised system in the body that facilitates the intake of oxygen and the removal of carbon dioxide; this process of inspiration and expiration is called breathing. The human body needs oxygen to function and maintain the body. It includes the airways, pharynx, larynx, trachea, bronchus, lungs, bronchioles, alveoli’s, and diaphragm. One of the most important organs is the lungs; filling almost all of the chest cavity, structures within the lungs facilitate the exchange of gases so that a continual supply of oxygen is available for the body to function. A combination of lifestyle choices and genetics can compromise the functioning of the lungs in short and long term, this can lead to disorders and diseases.

Lung disease is any problem in the lungs that prevent the lungs from working properly. Anyone can get lung diseases. The seven most common lung diseases are asthma, chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, lung cancer, cystic fibrosis/bronchiectasis, pneumonia, pleural effusion. Emphysema and tuberculosis are two of many lung diseases.

# Disease A: Emphysema

Emphysema is a form of chronic lung disease that causes shortness of breath. This and chronic bronchitis are the two main types of chronic obstructive pulmonary disease (COPD). These conditions are called “obstructive” because it is as though something is blocking the smooth flow of air in and out of the lungs. According to (Mayo Clinic, 2020), "In people with emphysema, the air sacs in the lungs (alveoli) are damaged. Over time, the inner walls of the air sacs weaken and rupture — creating larger air spaces instead of many small ones. This reduces the surface area of the lungs and, in turn, the amount of oxygen that reaches your bloodstream."

**Cause:**

The leading causes of emphysema are long-term exposure to airborne irritants. Including:

- Smoking: cigarette smoking not only destroys lung tissue it also irritates the airways. Repeated irritation by smoke causes inflammation and leaves chemical deposits in the very delicate and vulnerable alveoli. Eventually, the thin cell walls in the alveoli are destroyed; this is where gas is exchanged, so breathing becomes much more challenging.

- Air pollution: breathing in air pollutants can irritate your airways and may cause shortness of breath, coughing, wheezing, asthma/COPD episodes and chest pains.

- Chemical fumes and dust: being around second-hand smoke or occupational exposure to fumes or dust can increase a person’s risk of emphysema. Mineral dust causes collagen and elastin breakdown in the rut lung, a potential mechanism of dust induced emphysema.

- Alpha-1 antitrypsin deficiency (AATD): is a condition where the liver makes too little AAT. As a result, the level in the lungs is too low to protect against damage, potentially leading to the development of lung diseases such as COPD.

**Symptoms:**

A person can have emphysema for many years without noticing any symptoms. A primary symptom of emphysema is shortness of breath, which begins slowly.

You may start avoiding activities that cause you to be short of breath, so the symptom does not become a problem until it interferes with daily tasks. However, emphysema eventually causes shortness of breath even while at rest.

**When to see a doctor**

See your doctor if you have had unexplained shortness of breath for several months, significantly if it worsens or interferes with your daily activities. Please do not ignore it by telling yourself it is because you are aging or out of shape. Seek immediate medical attention if:

· You are so short of breath; you cannot climb stairs

· Your lips or fingernails turn blue or grey with exertion

· You are not mentally alert

**Diagnosis**

COPD diseases, including emphysema, is diagnosed mainly using a lung function test called spirometry. Other tests that may help in diagnosis of emphysema include chest x-rays, CT scans, and other lung function tests. Spirometry is a method of assessing lung function by measuring the volume of air that a patient can expel from the lungs after a maximal inspiration. This is the most accurate way and reliable way to diagnose COPD.

**Treatments:**

There is no cure for emphysema, although it is treatable. However, appropriate management can reduce symptoms, improve your quality of life and help you stay out of the hospital.

**Management includes:**

* stopping smoking wholly and immediately – is the most effective treatment for COPD and emphysema
* avoid other air pollutants
* respiratory (pulmonary) rehabilitation programs
* oxygen treatment, in advanced cases
* medications such as
  + anti-inflammatory medications
  + medicine to widen the airways (bronchodilators) and loosen the phlegm
  + antibiotics
* stress management techniques
* gentle, regular exercise to improve overall fitness
* influenza vaccination (yearly) and pneumococcal vaccination to protect against certain types of respiratory infection.

**Preventions:**

To prevent emphysema, do not smoke and avoid breathing second-hand smoke. Wear a mask to protect your lungs if you work with chemical fumes or dust.

# Disease B: Tuberculosis

Tuberculosis (TB) is an infectious disease that damages the lungs or other parts of the body and can cause severe illness and death. Tuberculosis is caused by the bacterium (germ) Mycobacterium tuberculosis.

There are two types of Tuberculosis: active and inactive (latent) Tuberculosis disease.

Latent Tuberculosis is when someone is infected with TB bacteria but does not get sick because their body can fight off the infection. As a result, latent Tuberculosis is not infectious.

Active Tuberculosis is when the bacteria multiply and grow, and the immune system cannot fight them off. Active TB causes symptoms and is infectious.

**Cause:**

According to (Mayo Clinic, 2020), "Tuberculosis is caused by bacteria that spread from person to person through microscopic droplets released into the air. This can happen when someone with the untreated, active form of tuberculosis coughs, speaks, sneezes, spits, laughs or sings.

Although tuberculosis is contagious, it is not easy to catch."

**Symptoms:**

People with Tuberculosis can:

* feel tired and unwell
* have a bad cough that lasts at least three weeks
* lose weight without meaning to
* fever
* sweat in bed at night
* cough up blood in the sputum (phlegm)
* have chest pain
* have swollen lymph glands
* lose their appetite

**Diagnosis**

There are two kinds of test that are used to detect TB bacteria in the body; the TB skin test (TST) and TB blood tests. A positive result can only tell a person has been infected with TB bacteria.

**Treatments:**

For latent Tuberculosis, your doctor can prescribe tablets to reduce the risk of developing active Tuberculosis.

For active Tuberculosis, you will be prescribed a combination of special antibiotics, which you must take for at least six months.

You may need initial treatment in the hospital. However, if you complete the full treatment, you can be cured of the Tuberculosis disease.

Because Tuberculosis is a notifiable disease, doctors must report all cases to the health authorities.

Precautions for TB patients

* Finish the entire course of all Tuberculosis medicines, or you could become seriously ill or die.
* Cover mouth when coughing or sneezing.
* Ask family and close contacts to visit their doctor or clinic for Tuberculosis tests.

**Preventions:**

The vaccine for tuberculosis ­is called the Bacillus Calmette–Guérin (BCG) vaccine. The vaccine does not prevent a person from becoming infected with Tuberculosis if exposed to it, but it helps prevent severe or life-threatening Tuberculosis disease, especially in children.

Most Australian children do not need the BCG vaccine as TB rates in Australia are meagre. In addition, the vaccine is not part of the childhood immunisation program.

# Bibliography

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