Human Biology ATAR – Task 3: Extended Response

Lung diseases and treatments (7.5%)

Name: Lauren Mackay			
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: Cystic fibrosis

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

Cystic fibrosis

Cystic fibrosis or (CF) is an inherited disorder caused by someone inheriting to parts of a defective gene from both their parents, this gene is called the cystic fibrosis transmembrane conductance regulator (CFTR) gene. “This gene changes a protein that regulates the movement of salt in and out of cells.” (“Chapter 3 Review (1).docx - Exercise 1 Developmental Fact ...”) This results in a thick, sticky mucus in the respiratory, digestive, and reproductive systems, as well as increased salt in sweat. Instead of acting as lubricants, the mucus plug up tubes, ducts, and passageways, especially in the lungs and pancreas. (“Cystic fibrosis - Symptoms and causes - Mayo Clinic”) (“Cystic fibrosis - Symptoms and causes - Mayo Clinic”)

In the United States, newborn screening can diagnose cystic fibrosis within the first month of life before symptoms appear. The signs and symptoms of cystic fibrosis depend on the severity of the condition. Some people may not have symptoms until they are teenagers or adults. (“What is Farber Disease - iPain Foundation conditions ...”) People who are not diagnosed until adulthood usually have milder disease and are more likely to have atypical symptoms, such as recurring bouts of an inflamed pancreas (pancreatitis), infertility and recurring pneumonia. The thick and sticky mucus associated with cystic fibrosis clogs the tubes that carry air in and out of your lungs. (“Cystic fibrosis - Symptoms and causes - Mayo Clinic”) This can cause signs and symptoms such as:

- A persistent cough that produces thick mucus (sputum)
- Wheezing
- Exercise intolerance
- Repeated lung infections
- Inflamed nasal passages or a stuffy nose

The thick and sticky mucus associated with cystic fibrosis can also block tubes that carry digestive enzymes from someone's pancreas to their small intestine. Without these digestive enzymes, their intestines are not able to completely absorb the nutrients in the food you eat. This often result in:

- Foul-smelling, greasy stools
- Poor weight gain and growth
- Intestinal blockage, particularly in newborns (meconium ileus)
- Chronic or severe constipation, which may include frequent straining while trying to pass stool, eventually causing part of the rectum to protrude outside the anus (rectal prolapse)

Although cystic fibrosis has no cure, medication can help to alleviate symptoms, prevent complications, and enhance quality of life. To decrease the progression of CF, close monitoring and early, vigorous management are recommended, which can lead to a longer life. (“Diagnosis and treatment - Mayo Clinic”) Some treatments include preventing and controlling infections in the lungs, removing and loosening mucus from the lungs, treating and preventing intestinal blockage, and providing appropriate nourishment. There are many kinds of medication options included in treating CF, they include. Medications that target gene mutations. Antibiotics are used to treat and prevent infections in the lungs. Anti-inflammatory drugs can help reduce swelling in their lung's airways. “Mucus-thinning medications, such as hypertonic saline, can aid in coughing up mucus and enhance lung function.” (“Cystic Fibrosis: Diagnosis and Its Treatment”)

There are also airway clearance procedures used to treat CF, commonly known as chest physical therapy (CPT), they can assist to clear mucus and minimise infection and inflammation in the lungs. These

strategies help to release the heavy mucus in the lungs, making coughing easier. Airway cleaning methods must be done multiple times a day. Clapping with cupped hands on the front and rear of the chest is a typical CPT technique. Mucus can also be loosened with certain breathing and coughing motions. Mechanical devices aid in this removal of mucus from the lungs. A blowing hose and a mechanism that pumps air into the lungs are included in the gadget (vibration vest). To get rid of sputum, they could also engage in rigors activity.

The only way to prevent CF is to have a genetic test done before having children. The test, which is done in a lab on a blood sample, can help you figure out the chances of having a child with CF. If someone is already pregnant and a genetic test indicates that the baby has a chance of developing cystic fibrosis, the doctor can perform additional testing on the unborn child.

Currently, all states in the United States regularly screen newborns for cystic fibrosis. Early diagnosis means that treatment can be started immediately. Screening tests look at blood samples for elevated levels of a chemical called immune-reactive trypsinogen (IRT) that is released from the pancreas. Preterm births and stressful births can lead to high IRT levels in newborns. For this reason, other tests may be needed to confirm the diagnosis of cystic fibrosis. To determine if your baby has cystic fibrosis, your doctor may also do a sweat test when your baby is at least two weeks old. Sweat-inducing chemicals are applied to small areas of the skin. Then collect and test your sweat to see if it is saltier than usual.

Tuberculosis

Tuberculosis (TB) is an infectious disease that damages the lungs or other parts of the body and can cause serious illness and death. TB is caused by the bacterium (germ) Mycobacterium tuberculosis. “There are 2 types of TB: active and inactive (latent) TB disease.” (“Tuberculosis - healthdirect”) Latent TB is when someone is infected with TB bacteria but does not get sick because their body is able to fight off the infection, this means they cannot infect others. Active TB is when the bacteria multiply and grow in the upper part of the lungs, and the immune system is not able to fight them off, causing this type of TB to causes symptoms and become infectious.

Active tuberculosis is the only type of TB that causes symptoms, some ow which include:

- Cough for more than 3 weeks
- Cough of blood and sputum
- Chest pain and pain when breathing or coughing
- Unnecessary weight loss
- Malaise (a general feeling of discomfort, illness, or unease whose exact cause is difficult to identify) (“AILMENT: Synonyms and Related Words. What is Another Word ...”)
- Feaver
- Night sweats
- Decreased appetite

Tuberculosis can also affect other parts of the body, such as the kidneys, spine, and brain. When tuberculosis develops outside the lungs, the signs and symptoms vary depending on the organs affected.

For example, tuberculosis in the spine can cause back pain, and tuberculosis in the kidneys can cause blood in the urine.

Tuberculosis is treated using medication, the most common medications used to treat tuberculosis are, Isoniazid, Rifampin (Rifadin, Rimactane), Ethambutol (Myambutol) and Pyrazinamide. If someone has latent TB, the doctor can prescribe medication to reduce the risk of them developing active TB. If they have active TB, they will be prescribed a combination of special antibiotics, which they must take for at least 6 months.

To test for TB during the physical exam, the doctor will check the persons lymph nodes for swelling and use a stethoscope to listen to the sounds their lungs make when they breathe. (“Tuberculosis - Diagnosis and treatment - Mayo Clinic”) The most used diagnostic tool for tuberculosis is a skin test. A small amount of a substance called tuberculin is injected just below the skin on the inside someone's forearm. Within 48 to 72 hours, the doctor will check the arm for swelling at the injection site. (“Tuberculosis - Diagnosis and treatment - Mayo Clinic”) A hard, raised red bump means it is likely they have a TB infection. The size of the bump determines how significant the test results are.