

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

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

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| --- | --- | --- | --- |
| Name: Xuan Dao | | | |
| 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: Pneumonia

**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.

Lung Disease and Treatments

Cystic Fibrosis

Cause

Cystic fibrosis (CF) is a genetic disease that causes severe damage to the lungs, digestive system, and other organs in the body. 

Cystic fibrosis affects cells that produce mucus, sweat, and digestive juices. These discharges are usually thin and slippery. However, in people with CF, a genetic defect causes secretions to be sticky and thick. Instead of acting as a lubricant, the secretions plug up tubes, ducts, and passageways, especially in the lungs and pancreas.

Symptoms

Cystic fibrosis signs and symptoms change, depending on the seriousness of the illness. Indeed, within the same individual, side effects may decline or move forward as time passes. A few individuals may not be involved in indications until their adolescent years or adulthood. Individuals who are not analyses until adulthood ordinarily have milder infection and are more likely to have atypical indications, such as repeating bouts of an inflamed pancreas (pancreatitis), barrenness and repeating pneumonia. They can be such as:

* Persistent cough with phlegm
* Postnasal drip
* Salty tasting skin
* Wheezing
* Shortness of breath
* Sinusitis
* Inability to exercise
* Male infertility
* Repeated lung infections
* Foul-smelling, bulky greasy stools
* Poor growth and low body weight despite a good appetite
* Blockage in the intestinal especially in newborns
* Diarrhea/constipation

Individuals with cystic fibrosis have a higher than typical level of salt in their sweat. Parents regularly can taste the salt when they kiss their children. Most of the other signs and indications of cystic fibrosis influence the respiratory system and digestive system.

Respiratory signs and symptoms

The thick and sticky bodily fluid related to cystic fibrosis clogs the tubes that carry air in and out of your lungs. This could cause signs and side effects such as:

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

Digestive signs and symptoms

The thick mucus can also block tubes that carry digestive enzymes from your pancreas to your small intestine. Your intestines cannot completely absorb the nutrients in the food you eat without the digestive enzymes. The result is often:

* 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).

Treatments

There is no cure for cystic fibrosis, but treatment can ease side effects, decrease complications, and progress quality of life. Near observing and early, aggressive intervention is prescribed to moderate the movement of CF, which can lead to a longer life. Overseeing cystic fibrosis is complex, so consider getting treatment at a center with a multispecialty group of specialists and therapeutic experts trained in CF to assess and treat your condition. The objectives of treatment incorporate:

* Preventing and controlling diseases that happen within the lungs.
* Evacuating and extricating bodily fluid from the lungs.
* Treating and avoiding intestinal blockage.
* Providing adequate nutrition.

Medications

Choices incorporate:

* Drugs that target quality changes, counting a new medicine that combines three drugs to treat the foremost common hereditary transformation causing CF and is considered a major accomplishment in treatment.
* Antibiotics to treat and avoid lung diseases.
* Anti-inflammatory medications to reduce swelling within the aviation routes in your lungs.
* Mucus-thinning drugs, such as hypertonic saline, to assist you cough up the bodily fluid, which can improve lung work.
* Breathed in medicines called bronchodilators that can help keep your aviation routes open by relaxing the muscles around your bronchial tubes.
* Oral pancreatic enzymes assist your digestive tract retain supplements.
* Stool softeners to avoid obstruction or bowel obstacles.
* Acid-reducing medicines to assist pancreatic chemicals work superior.
* Drugs for diabetes or liver disease when fitting.

Medications that target the faulty genes

For those with cystic fibrosis who have certain gene mutations, specialists may prescribe cystic fibrosis transmembrane conductance controller (CFTR) modulators. These more current medicines help progress the work of the defective CFTR protein. They may progress lung work and weight and decrease the sum of salt in sweat.

Example:

* The newest combination medication containing elexacaftor, ivacaftor and tezacaftor (Trikafta) is approved for people aged 12 years and older and considered a breakthrough by many experts.

Airway clearance techniques

Airway clearance procedures — also called chest physical treatment (CPT) — can soothe bodily fluid obstacles and help reduce infection and irritation within the aviation routes. These procedures loosen the thick bodily fluid within the lungs, making it simpler to cough up.

Airway clearing methods are ordinarily done a few times a day. Distinctive sorts of CPT can be utilized to extricate and expel bodily fluid, and a combination of methods may be prescribed.

* A common strategy is clapping with cupped hands on the front and back of the chest.
* Certain breathing and coughing procedures moreover may be utilized to assist release the bodily fluid.
* Mechanical gadgets can help in releasing lung bodily fluid. Devices include a tube that you simply blow into and a machine that pulses air into the lungs (vibrating vest). Energetic work out moreover may be utilized to clear bodily fluid.

Pulmonary rehabilitation

Your specialist may prescribe a long-term program that will improve your lung work and overall well-being. Aspiratory restoration is ordinarily done on an outpatient premise and may incorporate:

* Physical exercise may improve your condition.
* Breathing techniques that may help loosen mucus and improve breathing.
* Nutritional counseling.
* Education about your condition.

Surgical and other procedures

**Nasal and sinus surgery:** Your specialist may suggest surgery to evacuate nasal polyps that discourage breathing.

**Oxygen therapy:** If your blood oxygen level decays, your specialist may prescribe that you just breathe pure oxygen to anticipate tall blood weight within the lungs (aspiratory hypertension).

**Non-invasive ventilation**: Extensively used while resting, non-invasive ventilation uses a nose or mouth mask to supply positive weight within the aviation route and lungs after you breathe in. It`s frequently utilized in combination with oxygen treatment. Non-invasive ventilation can increase discuss trade within the lungs and diminish the work of breathing.

**Feeding tube:** Your specialist may recommend employing a nourishing tube to convey additional sustenance.

**Bowel surgery**: If a blockage is created in your bowel, you will require surgery to expel it.

**Lung transplant:** In case you have serious breathing issues, life-threatening lung complications or expanding resistance to anti-microbials for lung contaminations, lung transplantation may be an alternative. Since microbes line the aviation routes in maladies that cause permanent broadening of the large aviation routes (bronchiectasis), such as cystic fibrosis, both lungs require to be supplanted. Cystic fibrosis does not repeat in transplanted lungs.

**Liver transplant**: For serious cystic fibrosis-related liver infection, such as cirrhosis, liver transplant.

Prevention

The condition cannot be prevented as it is a gene mutation being passed down from the guardians. It can be minimized and controlled in several ways such as:

1. Paying attention to fluid and nutrition intake.
2. Exercising.
3. Do not smoke.
4. Attend medical appointments.

Pneumonia

Cause

Pneumonia is caused by an infection of the lung. Most infections are caused by bacteria or viruses, although often a cause is never found. It can be triggered by a cold or the flu, which allows the germs to gain access to the lungs (Healthdirect,2021). Pneumonia can be a mild illness or a more serious illness. Pneumonia can be life-threatening, especially in infants, young children, and people over the age of 60.  Bacterial pneumonia can be caused by a pneumococcus bacterium called Streptococcus pneumoniae. It is one of the most serious and potentially life-threatening types of pneumonia. Other types of bacteria that cause pneumonia include Hemophilus influenzae and Moraxella catarrhalis. Viral pneumonia is caused by various viruses. The most common are influenza virus, human adenovirus, and respiratory syncytial virus. Half of pneumonia cases are caused by viruses.   
   
Another common cause of pneumonia is infection with mycoplasma, a type of bacteria. Mycoplasma pneumonia is usually mild, but recovery may take a long time.   
   
Other organisms, such as fungi, can also cause pneumonia. This is common in people with a malfunctioning immune system such as people with HIV or undergoing cancer treatment.

Symptoms

Very often, pneumonia patients have cold or flu symptoms that have lasted for days or weeks and have worsened and not improved.

Health direct (2021) states that the most common symptoms are:

* Cough — can be dry or may produce thick mucus (cough can last for several weeks after pneumonia has been treated successfully).
* Fever (a temperature of 38°C or higher), sweating and shivering — though in older people it can cause lower than normal body temperature.
* Difficulty breathing or rapid breathing (especially in young children) or shortness of breath. In children, the ribs or the skin under the neck can suck in, or babies may bob their heads while breathing.
* Feeling tired and unwell.
* Loss of appetite.

They may also experience:

* Headache.
* Chest pain gets worse when you breathe or cough.   
  Vomit blood.
* Stomachache.
* Nausea and sometimes vomiting.
* Ache all over.
* Confused or disoriented (especially in older people).
* A blue appearance around the mouth (cyanosis), more severely due to lack of oxygen.

Treatments

Treatment will depend on whether the pneumonia is caused by bacteria or a virus.

If bacteria cause an infection, the main treatment is antibiotics. In mild cases, you can take antibiotics. In more severe cases, it should be injected at least initially. Antibiotics are usually given at the first sign of pneumonia, but before it is known whether the pneumonia is viral or bacterial. Some require hospital treatment. This is common in people who are old, young, or have other medical conditions. People hospitalized with pneumonia may need oxygen therapy and other more intensive care.

Prevention

Vaccination can prevent certain types of pneumonia. We recommend that you consult your doctor about whether vaccinations are recommended for you or your child. A vaccine that reduces the risk of pneumonia is the pneumococcal vaccine. Influenza vaccination may also be considered. Pneumonia is one complication of influenza. New influenza vaccines are available each year. Having a healthy diet and lifestyle will also help improve your health and decrease the chance of your getting the infection.