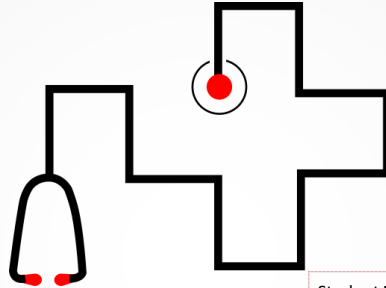




**Prifysgol Cymru**  
Y Drindod Dewi Sant  
**University of Wales**  
Trinity Saint David

# Case Study based on Lifestyle Questionnaire



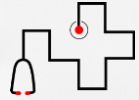
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|-----------------|----------------------------|
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| Module No:      | BMHP5003                   |
| Module Title:   | Introduction to Physiology |
| Lecturer:       | Laila Surani               |



## Patient A – health condition

- ✓Female aged 65.
- ✓Active smoker (15 – 20 cigarettes per day for the last 40 years).
- ✓Low to moderate levels of drinking – 300ml per week.
- ✓No medical history of heart attacks in the family.
- ✓ Ethnicity – white European.
- ✓Level of physical activity – former office worker with a sedentary life, walks between one to three hours a day mainly for shopping or pleasure. No physical exercises, gardening or cycling.
- ✓Does housework for about 1 to 3 hours weekly.
- ✓No strong drinking habits.

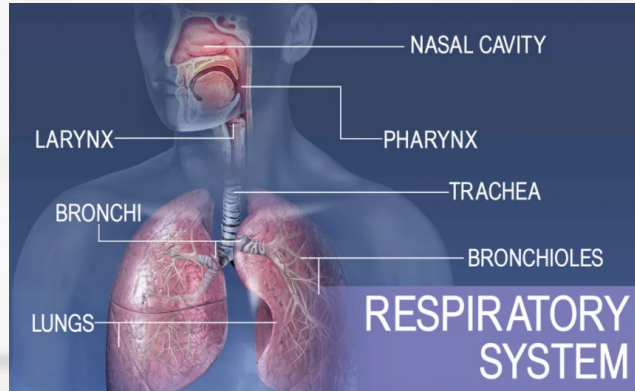
# Respiratory system



Breathing, inhalation and exhalation are the processes that are performed by the respiratory system. Its main function is to exchange gases between the air and the blood and between the blood and the body's cell.

The respiratory system has five main functions:

- ✓ Pulmonary ventilation
- ✓ External respiration
- ✓ Internal respiration
- ✓ Air vibration and sounds creation
- ✓ Olfaction or smell (Argosy Publishing, Inc, 2018)



(Argosy Publishing, Inc, 2018)

**The respiratory system consists of the following:** mouth, nasal cavity, pharynx, larynx, trachea, bronchi which divide into bronchioles and then into alveoli, lungs and diaphragm.

**Mouth and Nasal Cavity** filter and warm the incoming air.

**The pharynx** is behind the larynx. It can open in two directions – to the oesophagus and to the trachea.

**The larynx** connects the pharynx with the trachea and keeps the incoming air warm.

**Trachea:** The trachea is a 10-centimetre-long tube that transfers the incoming air from the larynx to the bronchi.

**Bronchi:** right and left part. Further, divide into bronchioles.

**Bronchioles:** The bronchi are further divided into finer branches – bronchioles.

**Alveoli:** these are the circular sacks at the end of bronchioles. Surrounded by blood vessels and responsible for the oxidising of the blood.

**Diaphragm:** a muscle that separates the two large cavities - chest and abdomen.

**Pulmonary ventilation** - the process of breathing in and out. During it, the inhaled air goes through the nasal and oral cavities to the pharynx, larynx and trachea and finally reaches the lungs. After that, the air is exhaled and taken out of the body, following the same pathway backwards.

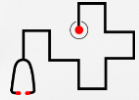
**External respiration** –a process in the alveoli. The oxygen from the inhaled air is diffused from the alveoli into the pulmonary capillaries around them.

**Internal respiration** –delivering oxygen to the cells and taking out the carbon dioxide. The red blood cells release the oxygenated blood in the capillaries and from there it goes to the body tissues. The carbon dioxide goes from the tissues to the red blood cells and plasma and back to the lungs to be exhaled.

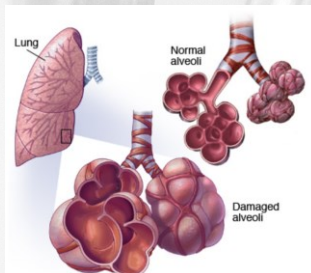
**Air vibration** The inhaled air pushes the vocal cords together and they vibrate, creating sound.

**Olfaction** - starts in the nasal cavity. Air enters the nose and the chemicals in it activate the receptors on the cilia there and this sends signals to the brain. The signal goes to the olfactory bulbs in the brain and then to the cerebral cortex and the olfactory area there.

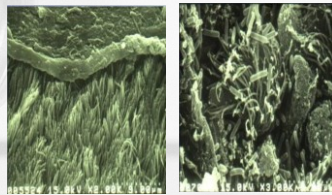
# Smoking and the respiratory system



- ✓ Lung has the natural ability to recover but smoking will destroy it.
- ✓ Cilia and mucus will be damaged so they wouldn't be able to delete the cancerogenic chemicals and they will be trapped in the lungs' tissues.
- ✓ Alveoli will not be able to stretch and taking a breath will become very hard and respectively taking oxygen to your body organs.



(Santos, 2017)



Healthy and damaged mucosa under a microscope  
(mrmahadevprasad, 2014)

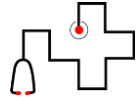


(Badburn, 2009)

Smoking can cause serious problems to the lungs. The natural ability of the lungs to recover is damaged by smoking and it leads to slow and serious destruction of the organ.

Smoking can damage three important parts of the lungs – alveoli, mucosa and cilia. The cilia and mucus will be damaged to the level that they will not be able to delete the cancerogenic chemicals and the lung tissue will be damaged by them. Alveoli are the most important parts of the lungs which are responsible for the oxidation of the blood. Smoking will make them hard and not able to stretch anymore. This will make the breathing very hard and the body will suffer of lack of oxygen.

## Anatomy and physiology-related information to the patient's condition



### The possible illnesses from smoking :

- ✓ Emphysema (COPD) (80% of all diseased)
- ✓ Lung cancer (72% of all diseased)



(Parry, 2018)

### Signs of Lung Damage from Smoking:

- diseased is out of breath during minor physical activities.
- Persistent cough (smokers cough)
- Spitting up flams
- Often chest infections

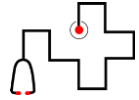
(CDCTobaccoFree, 2021)

According to the wellbeing test, my Patient A has a serious problem with smoking so I presume that in the nearest future she might have two serious health problems:

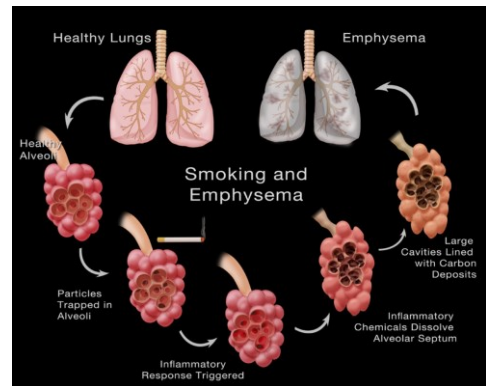
Emphysema and in the distant future she might have lung cancer. Emphysema is part of the so-called COPD disease (Chronic Pulmonary Obstructive Disease).

These diseases are easy to recognise because the patient is usually out of breath and have difficulties in climbing stairs or doing simple physical exercises. These kind of diseases are always accompanied by cough and flams that are mucus. Regular chest infections are also a sign that there is a damage from smoking and that the lungs are suffering damage.

# Smoking and Emphysema



- ✓ Alveoli walls break down and the chambers join into larger air spaces than normal.
- ✓ The gas exchange becomes inefficient, and the body suffers from a lack of oxygen.
- ✓ People with emphysema find every physical exercise extremely difficult. (Life coach to quit smoking, 2019)



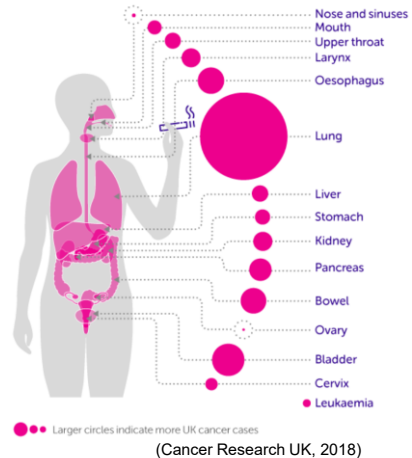
(PRE-TEND, 2015)

What is emphysema? It is the damage of the alveoli. As I already mentioned smoking makes the alveoli walls hard and they are not able to stretch anymore. With the progression of the disease the chambers of the alveoli break down and they join into one large chamber which is not normal. The exchange of the gas between alveoli and the pulmonary capillaries becomes inefficient and the body suffers from a lack of oxygen. People with emphysema are not able to do even simple physical exercises and because of the lack of sufficient levels of oxygen, the diseased find and physical activity hard and exhausting.

# Smoking and cancer

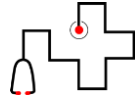
- ✓ Cigarettes contain over 4,000 chemicals of which at least 60 are carcinogenic.
- ✓ Most smoking-related deaths are from the lung.  
(Lewis, 2010)
- ✓ The chemicals in the smoke damage the DNA, which is responsible for the production of new cells and directs their function in the body. Damaged DNA creates unusual cells which can turn cancerous.  
(CDC, 2020).

Being smoke free  
can prevent 15 types of cancer



As I already mentioned at a distant period Patient A might suffer from lung cancer. As it is seen from the diagram, smoking can be a cause of 15 different kinds of cancer but most of the cases are lung cancer. The chemicals in cigarettes are carcinogenic and they damage the DNA of the human body so that it is not able to produce genetically healthy cells. There are some which can grow differently and turn into cancerous cells.

## Recommendations of improvement



Encourage and refer the patient to the NHS Stop Smoking Service. Their services vary from place to place but the main ones are:

- Access to ongoing support and consultations with a trained advisor
- Advice on and supply of stop smoking medicines if they're suitable for the individual (Boots, 2022)



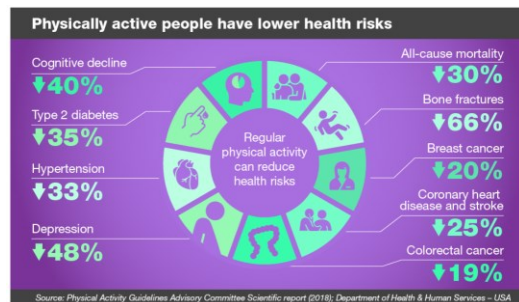
Encourage involvement of the GP and family members.

Update the health history regularly and alert the GP to any new condition.

(Centers for Disease Control and Prevention, 2019)



(Public Health England, 2020)



Patient A should be referred to the NHS programme for quitting smoking. Across the country, there are Stop Smoking Services where a specialist will work with the smoker individually, consulting them for the risks and offering advisor and on-group support. The smokers are given advice on a different technique for quitting and if they are suitable, they will be prescribed medicines to help them.

The GP should be aware of the process and provide monitoring and consultations about the results. It is a good practice to involve the family of the smoker because they might be serious support and encouragement. The encouragement for physical activity and going out in nature could also help quit smoking. The open and clear conversation between the patient and the GP could be a stimulus for significant improvement in her life. The patient should be clearly informed about the consequences of her lifestyle and referred to the best solution for her.

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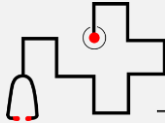
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