

Unit 4

THE RESPIRATORY SYSTEM

Vocabulary

respiratory oddechowy
take sth for granted przyjąć coś za pewnik
get short of breath mieć zadyszkę
be overwhelmed być przytłoczonym
subconsciously podświadomie
survival przeżycie; utrzymanie się przy życiu

A. Warm-up

We tend to take breathing for granted until we get short of breath one day. And when we cannot restore proper breathing fast, we are overwhelmed by fear as if we subconsciously realized that inhaling air is essential to our survival.

Working in pairs or threes try to answer the questions given below.

1. Why is respiration of vital importance for our organism?
2. What structural elements does the respiratory system consist of?
3. What other systems does the respiratory system cooperate with, why and how?

Compare and discuss your answers to sum up the information gathered.

B. Reading and Vocabulary Practice

Task 1

Study the respiratory system anatomy related text. Complete the text with the words given in the box and then answer the questions below the text.

takes • passes • performs • communicates (3) • includes • lines • terminate • open (2) • equipped • divided (3) • covered • separated • situated • located • prevent • formed • surrounded

The respiratory system can be into the upper respiratory tract and the lower respiratory tract. The former the nose, the mouth, the pharynx and the larynx while the latter the trachea, the bronchial tree and the lungs. The nasal cavity with the external environment via the external nares and with the pharynx via the internal nares. There are four airfilled cavities called sinuses which into the nasal cavity which is from the oral cavity by the palate. The pharynx is into three segments – the nasopharynx, the oropharynx and the laryngopharynx. The nasopharynx with the organ of hearing via the auditory tubes which into it while the oropharynx communicates with the oral cavity. As the pharynx also with the oesophagus, it is with a flap of tissue called the epiglottis which closes to food from entering the next structure of the respiratory tract, the larynx which is by cartilages, muscles and ligaments. It is here that the vocal cords are From the larynx, air passes into the trachea. The mucous membrane of the trachea with its goblet cells and cilia a filtering and cleansing action with respect to particles inhaled with the air. The trachea air to the lungs. Air into the right and left primary bronchi and then into secondary and tertiary bronchi, branching into smaller and smaller passages, the bronchi which in very small air sacs called alveoli within the lungs. The alveoli are by a dense network of capillaries, ultimate branches of the pulmonary artery.

Vocabulary

palate podniebienie
a flap of tissue płat tkanki
epiglottis nagłośnia
communicate with połączyć się z
vocal cords fałdy głosowe
nares nozdrze
nares nozdrza
larynx krtań
trachea tchawica
goblet cell komórka kubkowa
cilia rzęski
alveolus pęcherzyk
bronchus oskrzele
visceral pleura opłucna trzewna
parietal pleura opłucna ścienna
surfactant czynnik
powierzchniowo czynny

The lungs are a paired structure in the thorax, on either side of the heart, above the diaphragm. The right lung is into three lobes – upper, middle and lower – while the left lung into two lobes – upper and lower. The surface of the lungs is by the visceral pleura while the parietal pleura the walls of the thoracic cavity. The space between the two is called the pleural cavity.

Answer the following questions concerning the anatomy of the respiratory tract.

1. How is the respiratory system divided?
2. What are the main components of the two subdivisions?
3. What other structures does the nasal cavity communicate with?
4. How is the pharynx built and how does it relate to the neighbouring structures?
5. What is the function of the epiglottis?
6. What specialized structure does the larynx contain?
7. What is the trachea equipped with and what functions does it perform?
8. What are the bronchi and where are they located?
9. Where do the respiratory and the circulatory system come into direct contact?
10. Where are the lungs located and how are they built?

C. More Vocabulary Work

Study the respiratory system physiology related text.

Task 2

Complete the text with the vocabulary given below and answer the questions below.

PART ONE

supply • volume (2) • tension • muscles • walls • flow • gases • removal • stimulus • pressure (2) • action • diaphragm • movement

The respiratory system is concerned with the of the body with oxygen and the of carbon dioxide from the body. The process of inspiration and expiration is dependent on the of respiratory muscles of the thorax and the diaphragm which increase and decrease the thoracic Pressure differences between the atmosphere and the inside the lungs make air in and out. Air flows into the lungs when the diaphragm and intercostals muscles contract in response to a sent from the brain and the of the thoracic cavity increases which makes in the thoracic cavity lower than atmospheric The phase of inspiration is followed by the phase of expiration. As the and the intercostal relax, a decrease in thoracic volume increases the intrapulmonary pressure and air flows out. The of the surfactant produced by cells present in the of the alveoli reduces surface and keeps the alveoli inflated and prevents them from collapsing.

1. What are the two gases exchanged in the process of respiration?
2. What is the process of inspiration and expiration propelled by?

Vocabulary

inspiratory reserve volume
objętość zapasowa wdechowa
expiratory reserve volume
objętość zapasowa wydechowa
residual volume objętość
zalegająca
respiratory/vital capacity
pojemność życiowa

3. What changes take place in the thoracic cavity during the process?
4. What is the action of the surfactant?

PART TWO

tissues • capillaries • lungs • movement • artery • alveoli (2) • cells • veins • walls • expiration • organism • concentration • diffusion • oxygen • carbon dioxide

The exchange of gases within the takes place on the level of the alveoli in the Carbon dioxide carried by the pulmonary to pulmonary capillaries which surround the diffuses through the alveolar walls into the to be then expelled from the lungs on The inspired oxygen also diffuses through the of the alveoli and into where it combines with haemoglobin present in red blood to be transported as oxyhaemoglobin by pulmonary to the heart and then all cells and of the body. What allows the movement of and into and out of the bloodstream is the phenomenon of which provides for the net of molecules between areas in response to differences in their

1. Where and how does the exchange of carbon dioxide and oxygen occur?
2. How and which way is oxygen distributed throughout the body?
3. What does diffusion consist in and why is of vital importance?

PART THREE

respiratory • functional • inspiratory • age • built • maximal • vital • total • expiratory • residual • tidal • capacity • volume • after (2) • in • from •

Spirometry allows us to measure the four respiratory volumes distinguished: the tidal volume, the inspiratory reserve, the expiratory reserve volume and the residual volume. The volume is the volume of air inspired and expired in one normal cycle. The reserve volume is the amount of air that can be inhaled after the end of inspiration. The reserve volume is the maximal amount of air that can be forced the lungs normal expiration while the volume is the amount of air remaining the lungs maximal expiration. A sum of two or more volumes is referred to as a respiratory Four respiratory capacities are distinguished: the capacity, the inspiratory capacity, residual capacity and lung capacity. Lung volumes and capacities vary depending on, sex, body and physical conditioning.

1. What information can spirometry provide?
2. What are the differences between the four types of respiratory volumes distinguished?
3. What is a respiratory capacity?
4. What are the four respiratory capacities distinguished?
5. What do respiratory volumes and capacities depend on?

Task 3

Recap the contents of the passage (all the three parts).

Vocabulary

alleviate ulżyć, złagodzić
choking dławienie się
emphysema rozedma płuc, odma
exacerbate nasilać się, pogarszać się
impediment utrudnienie
impeding utrudniony, zaburzony
precipitate wywoływać
respiratory distress zespół
zaburzeń oddechowych

D. Vocabulary Practice

Study the respiratory system emergencies related vocabulary.

Task 4

Complete the text with the vocabulary given below.

PART ONE

develop • include • occur • obstruct • present • prevent • interfere
• puncture • directed • caused • precipitated • exacerbated •
swallowed

Respiratory difficulties can be by a number of medical problems or by physiological and/or psychological stress as well as physical agents. Airway obstruction with a piece of food, a object or even the tongue (in an unconscious person lying on his or her back) may or prevent the flow of air to the lungs. Potential swelling of the soft tissues of the upper airway may also as a consequence of major injuries to the head or the neck as well as an allergic reaction. Also, in an unconscious person the swallowing reflex making the epiglottis substances from entering the trachea may not be functioning and water or vomited material may be through the trachea to the lungs impairing or impeding respiration. Injuries to the thorax, fractured ribs, penetrating wounds caused by sharp objects or bullets may the lungs, disturb lung pressure and thus with proper respiration. Other, not less important causes of breathing problems injuries to the nervous system, especially the brain, cardiovascular problems, overdosing of certain drugs, poisoning and electrical shock. While some people have conditions such as asthma, emphysema or bronchitis which a constant threat to efficient supply of oxygen to their organisms, respiratory problems may even in otherwise healthy patients.

PART TWO

cyanosis • supply • absence • expansion • rate (2) • shortness •
distress • discomfort • provision • appearance • suspension •
position • compressions • action

Any episode of respiratory must be treated as serious and prompt should be taken to help solve or alleviate it. The signs and symptoms of respiratory distress are related to the and character of breathing, the and temperature of the patient's skin, pain and tightness in the chest, increased chest, hypopnoea or laboured and shallow breathing, paraesthesia and or bluish colouring of the hands, feet and even lips. Dyspnea or of breath, tachypnea or increased of breathing, hyperpnoea or laboured and deep breathing, bradypnoea or unusually slow breathing, apnoea or of breathing, orthopnoea or breathing experienced in a horizontal or abnormal breath sounds are but a few signals of potential or impending problem in the of the body with oxygen.

As insufficient oxygen to the brain affects this organ within minutes, the victim may appear confused, unresponsive or unconscious. Therefore chest and rescue breaths (CPR) should be started without delay once the of normal breathing is determined.

Task 5

Mark the statements T (true) or F (false). Justify your opinion.

1. Respiratory problems are caused only by diseases of the respiratory tract.
2. In some circumstances the likelihood of impaired supply of oxygen to the lungs is increased.
3. The efficiency of the respiratory system is related to the efficiency of other systems.

4. The thoracic cavity and the organs of respiration it contains are well protected against physical injury.
5. The supply of oxygen may be compromised by the existence of some chronic conditions or predispositions.
6. Breathing difficulties need not cause particular concern.
7. Symptoms and signs of respiratory distress manifest themselves only in the rate of breathing.
8. Regular oxygen supply is vitally important to life.
9. Inadequate oxygen supply does not produce any changes in behaviour or communication.
10. Restoration of breathing comes first in all rescue actions.

Task 6

Answer the following questions concerning the respiratory system emergencies.

1. What factors might bring about an exacerbation in respiratory difficulties?
2. What are the main causes of airway obstruction? What may cause airway obstruction in a conscious and an unconscious casualty?
3. Can you think of a number of injuries that might impair proper respiration?
4. Can you mention a few examples of medical conditions that are a constant threat to efficient supply of oxygen?
5. What is usually the most reliable indicator of the patient's severity of respiratory distress?
6. What are common signs and symptoms associated with respiratory distress?
7. What steps should be taken to help the casualty in a respiratory distress?
8. What are treatment priorities in case of respiratory distress?

9. How may impaired oxygenation affect the casualty?
10. What does CPR stand for?

E. Vocabulary in Action

Task 7

Ask the right question to obtain the given information.

1.
I woke because I couldn't catch my breath. My heart was beating like mad. I was really frightened.
2.
My husband is short of breath. He can hardly say a word. His hands are very cold and sort of bluish.
3.
His chest is moving up and down very fast. He's also very pale.
4.
Yes. The victim seems to have hit the steering wheel.
5.
He can only breathe through the mouth. I'm afraid there's something in his nose.
6.
No. I've never had any problems with breathing.
7.
No. I'm afraid he's not breathing as far as I can tell.
8.
I was going upstairs when I suddenly felt I was choking. I felt very weak. I leaned on the railing. It passed but my wife insisted on calling an ambulance.

9.
My daughter experienced her first asthmatic attack when she was five. This morning she started to wheeze and her breathing has progressively become worse.

10.
A male is sitting in a tripod position at his kitchen table. He is struggling to breathe and can speak only in one word sentences. His extremities are pale and his face is flushed.

Task 8

Replace colloquial expressions with medical terms.

- The patient's rate of breathing is very fast.
Severe is present.
- The patient's hands are slightly bluish in colour.
A mild degree has been observed.
- The patient can't breathe with ease unless he sleeps on a few pillows.
There is a history of
- The patient has recently been short of breath a few times.
There is a recent history of
- I cannot communicate with the patient.
The patient is
- The patient does not seem to know where he is and what has happened.
The patient is
- The victim complains of dull chest pain.
The victim reports
- The victim's chest is evidently rising.
Chest is increased.

9. The casualty's rate of breathing is very slow, his RR is below 12 breaths per minute.

Paramedics report

10. A 12-year-old girl is grasping her neck. Her face is flushed. She is unable to breathe and utter even one word.

She is suspected of

Task 9

Complete the sentences with the English equivalents of the Polish words and phrases.

- There is evidence of (uraz klatki piersiowej)
- The victim may have (złamane żebro)
- The victim's respiration is and (utrudnione i płytkie)
- of hands and feet is present. (zaburzenia czucia)
- There are no (znak oddychania)
- The victim is but (zdezorientowany; przytomny z kontaktem)
- There is no (widoczna sinica)
- The patient reports and prior to the respiratory distress. (tępy ból i uczucie ucisku w klatce piersiowej)
- The casualty during a severe attack of asthma may suffer from (zaburzenia w oddychaniu) and (świszczący oddech podczas wydechu)
- The victim experienced (ostry napad astmy oskrzelowej). She had (częstość oddechowa 44 oddechy na minutę)

F. Listening Practice & Dialogue Completion

Task 10

Listen and complete the dialogues between the caller (C) and the dispatcher (D).

Dialogue 1

9

C: I need your help. There's a man here or rather on a bench. Apparently he's got problems with He's trying to breathe through his but it looks as if it's not

D: How old is the man?

C: He must be well

D: Can he speak?

C: No. I've tried to ask him but he doesn't

D: Can you smell from him?

C: No, certainly not.

D: Can you see any external?

C: No.

D: Any signs of?

C: No.

D: And who's calling? Can I have your name? And also where are you exactly?

C: I'm Ben Porter. And we're in this little park the post office in street.

Dialogue 2

10

C: I'm calling about my Something's happened to her. I can't her up.

D: Is she?

C: I think so. Her 's moving but she's very and she looks sort of You know what I mean.

D: What's your name? How old are you?

C: Jack. I'm My parents are and so is our neighbour.

D: And what's your address? I'll send somebody to help your grandmother.

C: Please, hurry.

D: We will. Just be to let us in.

Task 11

Recap the information to the ambulance crew to be sent to the site of the accident.

Task 12

Complete the dialogue between the caller (C) and the dispatcher (D) and mark the statements below T (true) or F (false). Correct the false ones.

use • speak • ask • where • puffer • exact • calling

C: I'm calling from a bus stop. There's a man here. He's gasping for breath and he seems to have a chest pain.

D: are you from? Give me the address and your name, please.

C: We're in Exeter Road near the corner of Oak Street, across the street from the ABC Hypermarket. We were both running to catch a bus. That's when it happened.

D: I see. Can the man? Can you him if he has asthma?

C: He can't speak. But ... oh ... he's fumbling for something in his pocket.

D: It may be his If it is, help him to it.
The ambulance will be with you in a few minutes.

1. The call is from the victim's relative.
2. The victim was hit by a car.
3. The victim complains of thoracic pain.
4. The victim is in near a hypermarket in Oak Street.
5. The victim has breathing difficulties.
6. It may be a chronic problem for the victim.

Recap the information to the ambulance crew to be sent to the site of the emergency.

Task 13

Complete the dialogue between the caller (C) and the dispatcher (D) and mark the statements below T (true) or F (false). Correct the false ones.

developed • given • taken • sending • come • in bed • healthy • suddenly • fever

C: My daughter's very ill. She has difficulty breathing. And she's all flushed with fever.

D: Did it on?

C: She's been since yesterday evening. I thought it was just a common cold but in the night she a very bad cough.

D: How old is your daughter?

C: She's only 2 and a half. She's always been a child.

D: Have you her any medicine?

C: Just cough syrup a few times and aspirin but they didn't help her.

D: I'm an ambulance. What's your name? And your address? What about? Have you her temperature?

C: Yes. It was mild yesterday but now she's burning up. It must be really high.

True or false?

1. The call is about a female patient.
2. The patient complains of severe dyspnoea.
3. The patient has been ill for two days.
4. The patient's mother thought it was nothing serious.
5. The patient is 12 years old.
6. The medication given to the patient has not improved her condition.

Recap the information to the ambulance crew to be sent to the site of the emergency.

G. Follow-up

Task 14

Prepare a mini-presentation on disorders and emergencies involving the respiratory system. Say what information the dispatcher and the ambulance crew should collect from the victim or witness, what they should give particular attention to.