

Lesson 7: Respiratory and Skeletal Systems and Tuberculosis

Glossary

1. **asthma:** when the airways of the lungs narrow, making breathing difficult
2. **bacteria:** tiny living creatures that can only be seen with a microscope; some bacteria help the human body, and other bacteria cause illness
3. **bones:** protect organs and store minerals that are necessary for the body to function
4. **cartilage:** a “soft” kind of bone that is semi-solid (found in ears and nose, for example)
5. **Chronic Obstructive Pulmonary Disease (COPD):** respiratory disease in which people breathe in less air because of respiratory damage
6. **cilia:** tiny hairs that line the nose, parts of the throat, trachea and lungs; the cilia trap dirt to clean air for the lungs
7. **dislocated bone:** dislocation means that the bone has moved out of its normal position in a joint
8. **joints:** spaces between the bones that allow movement to happen
9. **ligaments:** connect bone to bone
10. **lungs:** two organs, located in the chest, that take in air to give the body oxygen
11. **osteoporosis:** a condition in which a person’s bones weaken
12. **oxygen:** part of the air we breathe; necessary so the body can make energy
13. **tendons:** connect bone to muscle
14. **tissues:** fill the space at joints
15. **Tuberculosis (Active):** the person has symptoms of TB may be able to spread it to others
16. **Tuberculosis (Latent):** TB bacteria are present in the body, but the person isn’t sick and can’t spread it to others

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Reading and True or False

Tuberculosis treatment and prevention

Why is it important to know about TB treatment and prevention?

People with active TB who do not take TB medicines may have permanent damage to their body and might die. They will also keep spreading the disease to other people.

How do I get tested for TB?

There are two common ways to be tested for TB:

1. TB blood test. Your blood is tested in a laboratory.
2. TB skin test. A small amount of fluid is injected into the skin on your arm. After 2-3 days, a nurse or doctor checks your arm to see if there is a reaction.

Understanding results (for both types of test):

Negative: A negative test means that you probably do not have TB bacteria in your body.

Positive: A positive result shows that you probably have TB bacteria in your body. If a test result for TB is positive, the doctor may do other tests such as x-rays or sputum (phlegm) samples.

Is there a treatment for TB?

People with latent or active TB can be treated. The TB germs are very powerful, so it is very important to follow the doctor's instructions EXACTLY to kill all of the germs.

Who gets TB?¹

Anybody can get TB. Some people are more likely to get TB:

- People who were born in a part of the world where TB is common
- People with HIV/AIDS
- Those who have been exposed to other TB patients. If you have been exposed to someone with TB, talk to your doctor
- People who inject illegal drugs
- Babies and young children

¹

http://www.cdc.gov/tb/publications/factseries/prevention_eng.htm

- Elderly people
- Individuals who were not correctly treated for TB
- People with medical conditions, such as diabetes, cancer and kidney problems

How do I learn more about tuberculosis?

- Talk to your doctor
- Web resources:
www.mayoclinic.com/health/tuberculosis/DS00372
www.cdc.gov/tb/education/patient_edmaterials.htm
www.health.state.mn.us/divs/idepc/diseases/tb/ed/index.html

Read each sentence. Then circle True or False.

1. People with TB who do not take their medicine could damage their body. True False
2. A TB skin test is one way to check for tuberculosis. True False
3. A negative test means that you have TB in your body. True False
4. It is possible to treat active TB. True False
5. People with HIV/AIDS cannot get TB. True False
6. No treatment is available for latent TB. True False
7. Anybody can get TB. True False
8. People with TB who do not take their medicine may be able to spread the disease to other people. True False

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Reading Comprehension

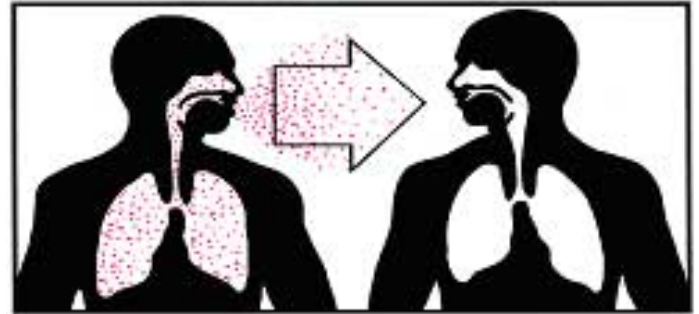
Tuberculosis

Tuberculosis, also called TB, is an illness that can be prevented, treated and cured.

What is TB? Tuberculosis is a disease caused by a type of bacteria. TB often affects the lungs, but it can also affect all other parts of the body. There are two stages of TB:

Latent (TB infection): A person has TB bacteria in his or her body, but it is latent (the germs are "sleeping"). The person does not have symptoms but can become sick with TB sometime in the future. Someone with latent TB cannot spread the bacteria to others. People with latent TB can take special TB medicine to kill the TB germs so they don't become sick in the future.

Active (TB disease): A person who has active TB has symptoms of the disease and usually feels sick. In the active state, TB bacteria multiply and destroy tissues in the body. Someone with active TB in his or her lungs or throat can spread TB to others. People with active TB must take special TB medicines to be cured.



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What are some symptoms of TB?

- Bad cough that lasts for three weeks or longer
- Losing weight
- Sweating at night or during sleep
- Chest pain
- Coughing up blood or phlegm
- Weakness or tiredness
- Loss of appetite
- Chills and fever

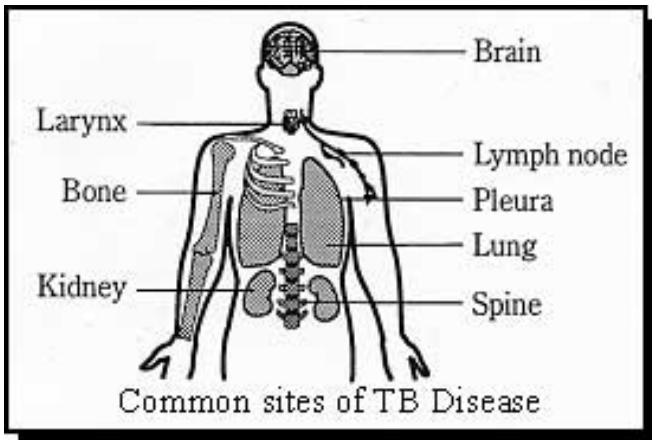
Write short answers based on the reading.

1. What is latent TB?

2. What is active TB?

3. How does someone get TB?

4. Name 3 symptoms of TB.



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How does someone get TB?

TB is spread through the air when somebody with active TB coughs, sneezes, talks or sings. Other people near them can breathe the TB germs into their own lungs. Sharing food and clothes does NOT spread TB germs.

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Vocabulary Card Match and Writing

Chronic Obstructive Pulmonary Disease (COPD)	asthma	Respiratory disease in which less air is inhaled because of respiratory damage	When the airways of the lungs narrow, making breathing difficult
tuberculosis	cilia	Disease caused by bacteria, often affecting the lungs - can be latent or active	Tiny hairs that line the nose, trachea and lungs; they trap dirt to clean air for lungs
skeletal system	bones	Framework of the body; makes movement possible; protects organs	Protect organs and store minerals that are necessary for the body to function
joints	tissues	Spaces between the bones enabling movement to happen	Fill the space at joints

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Vocabulary Card Match and Writing

tendon	ligament	Connects bone to muscle	Connects bone to bone
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Read the following information about bone problems.

What are some examples of bone problems?

- **Osteoporosis** is a condition in which a person’s bones weaken. Osteoporosis patients are more likely to break their bones, especially in the hip, wrist and spine.¹ This condition is common in the elderly, especially women.² Eating enough calcium and other nutrients helps to prevent osteoporosis. Exercise is also good for strengthening bones.
- **Broken bones:** Sometimes a bone breaks. This can happen because of accidents, such as falls. Broken bones can also occur if malnutrition makes the bones weak.
- **Dislocated bone:** Dislocation means that the bone has moved out of its normal position in a joint.

Talk with a partner. What could be some ways to prevent osteoporosis?

¹ <http://www.cdc.gov/nutrition/everyone/basics/vitamins/calcium.html>

² <http://www.nlm.nih.gov/medlineplus/osteoporosis.html>

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Sequencing and Writing

Why is the respiratory system important?

The main job of the respiratory system is to give oxygen to your body. The body needs oxygen so that it can make energy.

Oxygen is found in the air we breathe. When we breathe, the oxygen enters our lungs and then moves into our blood. The blood delivers oxygen to the rest of the body.

When we breathe in oxygen, we exhale carbon dioxide. If carbon dioxide is not removed from the body, severe health problems can occur.

The primary job of the respiratory system is to supply the body with oxygen and get rid of carbon dioxide.

How does the respiratory system work?

Oxygen gets traded for carbon dioxide. Oxygen travels through the blood and is shared throughout the body. Carbon dioxide makes its way back through the respiratory system and is exhaled through the mouth and nose.

Cilia are tiny hairs in the nose, throat, trachea and lungs. Cilia trap dirt. This helps clean the air before air enters the lungs.

After reading the passage above, read and think about the sentences below. Then number the sentences in order (1-7) to describe the cycle in which oxygen is delivered to the body.

- _____ Then the air travels down the throat and trachea.
- _____ Next the air goes into the lungs.
- _____ Finally, the air is breathed out through the nose or mouth.
- _____ Then the oxygen is delivered to the body.
- _____ When air is exhaled, it is expelled from the lungs.
- __1__ First the nose or mouth breathes in air, which contains oxygen.
- _____ Then the air passes out of the trachea and throat.

Now write the sentences from above in the correct order.

1. First the nose or mouth breathes in air, which contains oxygen.
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

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Conversation

Lee is going to the doctor to get a new inhaler for his asthma. Please read the conversation between Lee and his doctor. Practice with a partner.

Doctor: Lee, I know you have had some asthma attacks lately. I want you to try this new inhaler to see if it makes a difference.

Lee: Thank you. I hope it helps.

Doctor: There are also things you can do to improve the health of your lungs, in general.

Lee: Like what?

Doctor: You should start by stopping smoking. Smoking damages cilia, the little hairs in your lungs that remove dust and other particles. Smoking also damages other parts of the lungs, so the heart has to pump harder to deliver oxygen throughout the body. Over time, smoking leads to chronic obstructive pulmonary disease (COPD) and heart disease. Smokers are also more likely to get tuberculosis.

Lee: Hmm. I don't want to get those diseases. Maybe I'll try to stop smoking.

Doctor: That's a great first step. I can tell you about a program that will help you quit smoking. Lee, you should also avoid other air pollutants, like smoke from fires, car exhaust, paint and cleaning supplies. If you have to be around these chemicals, breathing through your nose will help filter the air and protect your lungs.

Lee: That's good to know. I'm the caretaker of an apartment building, so I have some exposure to chemicals. I'll make sure the area is well ventilated and use my face mask.

Doctor: That will help. I also encourage you to exercise more. Exercising improves your body's ability to take in air. Let's work together to manage your asthma so you're able to do whatever kind of exercise you like.

Lee: OK! I just joined my local fitness center.

Doctor: Well, Lee, it sounds like you are well on your way to improving your lung function and overall health!

Lee: Thank you for your advice!

Talk with your partner and discuss the answers to the following questions.

1. What did the doctor recommend for Lee to improve his lung health?
2. Why is smoking dangerous for your health?
3. How can Lee help protect his lungs at his job?

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Quiz

Read the questions. Then circle A, B, C or D.

1. What does the respiratory system do?
 - A. delivers blood to the body
 - B. gives oxygen to the body
 - C. digests food
 - D. none of these
2. Tuberculosis (TB) can spread by...
 - A. coughing
 - B. speaking
 - C. sneezing
 - D. all of these
3. What is the main cause of Chronic Obstructive Pulmonary Disease (COPD)?
 - A. exercise
 - B. smoking
 - C. drinking
 - D. diabetes
4. What is osteoporosis?
 - A. a condition in which a person's bones strengthen
 - B. a condition in which a person's bones weaken
 - C. a digestive condition
 - D. a heart problem
5. What does NOT help improve lung function?
 - A. exercise
 - B. smoking
 - C. avoiding air pollutants
 - D. stopping smoking
6. What type of Tuberculosis (TB) causes symptoms?
 - A. latent
 - B. active
 - C. lazy
 - D. activity
7. Who is especially at risk for TB?
 - A. babies and young children
 - B. people with HIV/AIDS
 - C. people born in a part of the world where TB is common
 - D. all of the above
8. What does the skeletal system do?
 - A. provides a framework for other body structures to attach to
 - B. works with other body systems to make body movement possible
 - C. protects your organs
 - D. all of the above

Student Survey: Respiratory System Unit

1. Did you learn more information about TB and respiratory health from studying this lesson?

1	2	3	4	5
no		some		yes

2. Would you share this information with family and friends?

1	2	3	4	5
no		maybe		yes

3. After studying this lesson, are you more likely to ask your health care provider about respiratory health?

1	2	3	4	5
no		somewhat		yes

4. Do you know where to find more information about TB and respiratory health if you have more questions?

1	2	3	4	5
no		somewhat		yes

5. Did you like the class activities?

1	2	3	4	5
no		somewhat		yes

We value your opinions! Could you tell us what you liked or give us some suggestions on how to improve this lesson?

Thank you!