Advanced Medical English
Final Exam - December 2024

Read the study summary and complete the activities below.

History of Antibiotics Research

For thousands of years people were delivered helplessly to various kinds of infections, which often reached epidemic proportions and have cost the lives of millions of people. This is precisely the age since mankind has been thinking of infectious diseases and the question of their causes. However, due to a lack of knowledge, the search for strategies to fight, heal, and prevent the spread of communicable diseases was unsuccessful for a long time. It was not until the discovery of the healing effects of (antibiotic producing) molds, the first microscopic observations of microorganisms in the seventeenth century, the refutation of the abiogenesis theory, and the dissolution of the question "What is the nature of infectious diseases?" that the first milestones within the history of antibiotics research were set. Then new discoveries accelerated rapidly: Bacteria could be isolated and cultured and were identified as possible agents of diseases as well as producers of bioactive metabolites. At the same time the first synthetic antibiotics were developed and shortly thereafter, thousands of synthetic substances as well as millions of soil borne bacteria and fungi were screened for bioactivity within numerous microbial laboratories of pharmaceutical companies. New antibiotic classes with different targets were discovered as on assembly line production. With the beginning of the twentieth century, many of the diseases which reached epidemic proportions at the time-e.g., cholera, syphilis, plague, tuberculosis, or typhoid fever, just to name a few, could be combatted with new discovered antibiotics. It should be considered that hundred years ago the market launch of new antibiotics was significantly faster and less complicated than today (where it takes 10-12 years in average between the discovery of a new antibiotic until the launch). After the first euphoria it was quickly realized that bacteria are able to develop, acquire, and spread numerous resistance mechanisms. Whenever a new antibiotic reached the market it did not take long until scientists observed the first resistant germs. Since the marketing of the first antibiotic there is a neck-on-neck race between scientists who discover natural or develop semisynthetic and synthetic bioactive molecules and bacteria, which have developed resistance mechanisms. The emphasis of this chapter is to give an overview of the history of antibiotics research. The situation within the pre-antibiotic era as well as in the early antibiotic era will be described until the Golden Age of Antibiotics will conclude this time travel. The most important antibiotic classes, information about their discovery, activity spectrum, mode of action, resistance mechanisms, and current application will be presented.

LIVEWORKSHEETS

1. What was one big problem before antibiotics were discovered?

a) People didn't have hospitals
b) Doctors didn't know what caused infections
c) There were no vaccines

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2. When did scientists first look at tiny organisms under a microscope?

a) In the 1600s
b) In the 1700s
c) In the 1800s

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3. What helped scientists start finding antibiotics?

a) The discovery of molds that could fight infections
b) The discovery of germs
c) The invention of vaccines

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4. Which of these diseases could be treated with antibiotics by the early 1900s?

a) The flu
b) Tuberculosis
c) The common cold

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5. How quickly were new antibiotics introduced in the early 20th century?

a) A few years
b) Many decades
c) 10-12 years

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6. What helped scientists develop antibiotics faster?

a) Learning how to grow bacteria in labs
b) Learning how to grow viruses in labs
c) Discovering antibiotics in plants

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7. What did scientists notice shortly after new antibiotics were sold?

a) Antibiotics worked for every disease
b) Bacteria started becoming resistant
c) Antibiotics had no side effects

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8. Why is it harder to launch new antibiotics today?

a) It takes much longer to find new antibiotics
b) There are no new diseases to fight
c) All bacteria are now resistant

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9. What does "Golden Age of Antibiotics" refer to?

a) The time when antibiotics were discovered quickly and helped many people
b) The time when antibiotics were used only for infections
c) The time when scientists first saw bacteria resistance

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10. What is the main topic of this chapter?

a) The history of antibiotics and their discoveries
b) The role of antibiotics in treating cancer
c) The development of vaccines for infections

LIVEWORKSHEETS

Choose the correct option:

1. The patient **has been / is being t**reated with antibiotics for two weeks.
2. Doctors **have discovered / discovered** a new antibiotic that can treat resistant bacteria.
3. The patient **is taking / takes** antibiotics every day to prevent infection.
4. The medical team **is studying / studies** the effects of the new drug on bacteria.
5. The doctor **prescribed / has prescribed** the antibiotics after the infection was diagnosed.
6. The infection **improved / has improved** after the antibiotics were administered.
7. The nurse **administers / is administered** the antibiotic every six hours.
8. The new antibiotic **was developed / developed** to combat antibiotic resistance.
9. The antibiotic treatment will last **for / during** 10 days.
10. The patient has been taking antibiotics **since / for** last Monday.
11. The infection has persisted **for / since** several weeks despite treatment.
12. The patient feels **amazed / amazing** at how quickly the infection improved after treatment.
13. The new antibiotic is **excited / exciting** because of its effectiveness against resistant bacteria.
14. The doctor is **concerned about / concerned with** the side effects of the new antibiotic.
15. Many patients are **sensitive to / sensitive for** certain antibiotics.
16. The scientist is **working on / working in** a new antibiotic formulation.
17. The doctor **did / made** a recommendation for a different antibiotic based on the test results.
18. The medical team **did / made** a study on the efficacy of the antibiotic.
19. The patient **must / should** have been given the wrong antibiotic, as their condition worsened.
20. The bacteria **might / can** be resistant to the antibiotic, considering the lack of improvement.

LIVEWORKSHEETS