



# Chemistry of pills and medicines

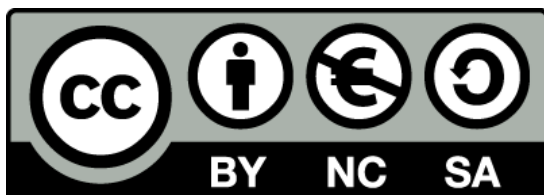
*BRinging STEM into Active agING – BRAIN*

*Erasmus+ 2020-1-PL01-KA204-081805*

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Open Educational Resources



*This material is created in the framework of BRAIN project “BringING STEM into Active AgING” (GRANT AGREEMENT 2020-1-PL01-KA204-081805. This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.*



## MODULE'S STRUCTURE

### **1. What are medicines?**

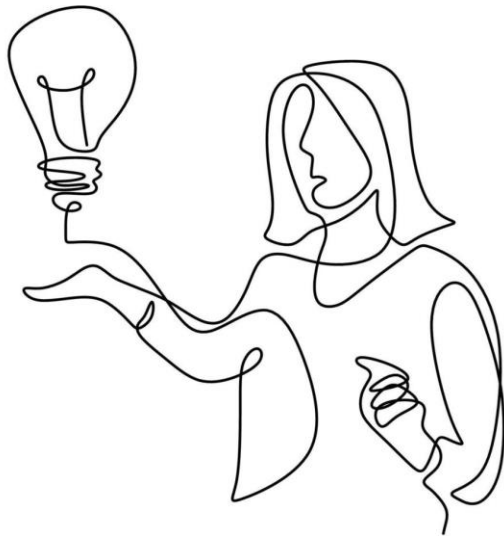
- How medicines are composed?
- Medicines shapes
- Types of medicines

### **2. TIPS: How to use your medicines more safely**

- Know your medications
- Take your medicine!
- Keep your medications safe
- When you are in the hospital
- Other tips

### **3. Quiz time**

### **4. Team work**





## ***What are medicines?***

Medicines are chemicals or compounds used to:

- cure halt, or prevent disease;
- ease symptoms;
- help in the diagnosis of illnesses;
- cure many diseases and save lives.



## *How medicines are composed?*

- Medicines come from a variety of **sources**: many were developed from substances found in nature, and even today many are extracted from plants.
- Some medicines are made in labs by **mixing together a number of chemicals**. Others, like penicillin, are byproducts of **organisms** such as fungus.
- And a few are even **biologically engineered** by inserting genes into bacteria that make them produce the desired substance.



## *Medicines shapes*

When we think about taking medicines, we often think of pills. But **medicines can be delivered in many ways**, such as:

- liquids that are swallowed;
- drops that are put into ears or eyes;
- creams, gels, or ointments that are rubbed onto the skin;
- inhalers (like nasal sprays or asthma inhalers);
- patches that are stuck to skin (called transdermal patches);
- tablets that are placed under the tongue (called sublingual medicines; the medicine is absorbed into blood vessels and enters the bloodstream);
- injections (shots) or intravenous (inserted into a vein) medicines.

## *Types of medicines*

Medicines act in a variety of ways. Some can **cure an illness** by killing or halting the spread of invading germs, such as bacteria and viruses.

Others are used to **treat cancer** by killing cells as they divide or preventing them from multiplying. Some drugs **replace missing substances or correct low levels of natural body chemicals** such as some hormones or vitamins.

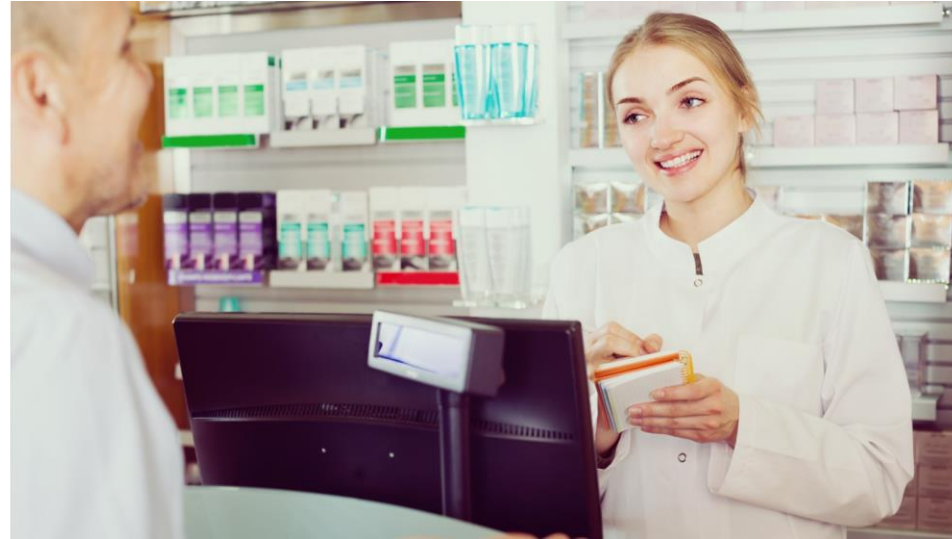
Medicines can even **affect parts of the nervous system** that control a body process.





***Do you take medicines? If yes, which one/ones?***

Share your experience with us if you want!



## ***How to use your medicines more safely***

Medicines improve the lives of many people: they can help us get healthy and stay healthy. Anyway, no matter what type of medicine your doctor prescribes, it's always important to be safe and follow some basic rules.





## *Know your medications*

- Know the name and doses of your medicines.
- Know why the medicine is important and what it treats.
- Read your labels to learn what you are taking, how and when to take it, etc.
- Know side effects.
- Know how your medications interact with each other and any nonprescription drugs you may take, including pain killers, cold remedies and alcohol.
- Know what to do if you miss a dose.
- Know if you are allergic to any medicines.



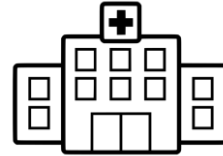
## *Take your medicine*

- Make sure you take your medicine in the correct dose. Use the measuring cup that comes with liquid medicines.
- Take capsules or tablets whole, unless otherwise instructed.
- Take your medicines at the right time(s).
- Renew your medications in advance so you don't run out.



## *Keep your medications safe*

- Keep your medications out of direct sunlight and heat.
- Keep your medicine away from pets and children.
- Don't store your medications with other family member medicines or household cleaners.
- Keep medicines in their original bottles.



## *When you are in the hospital*

- Identify yourself to the nurse before you take given medications.
- Make sure your health care providers know all the medications you are taking.
- Make sure your care providers know any medication allergies you may have.
- Know which medicines you will need to take once you leave the hospital.



## *Other tips*

- Tell your doctor or pharmacist if you have a problem taking the drug for any reason, including cost.
- Ask if there is a generic brand available.
- Make sure you got the right medicine from the pharmacy.
- Keep a list of all medications you take.
- Know your medicine allergies.
- Report unusual side effects.
- Ask if lower doses might be helpful depending on your age or any kidney or liver problems.



## ***QUIZ TIME!***

Instructions:

1. Read the questions
2. Take note of the correct answer on paper



## **1. Which statement is true?**

- a) All pills expire after 1 year.
- b) The label tells you when your medicine expires.
- c) You have to ask the pharmacist to figure out when your medicine expires.
- d) Liquid medicines expire after 8 months.

## **2. Why is it important to know if a medicine should be taken with food or not?**

- a) Some medicines get into your body better when you take them without food.
- b) Food can sometimes be used to mask the taste of medicines.
- c) Some medicines are easier on your stomach when you take them with food.
- d) All of the above.



### ***3. What is the right way to take a twice-a-day medicine?***

- a) Take two doses in the morning.
- b) Take one dose in the morning and one at lunch.
- c) Take one dose in the morning and one dose in the evening.
- d) Take one dose in the middle of the day and wake up to take one dose in the middle of the night.

### ***4. Why is it important to tell your doctor when you take two medicines at the same time of day?***

- a) Some medicines taste bad when you take them together.
- b) Some medicines interact with other medications and may make you sick.
- c) People aren't supposed to take two medicines at the same time.
- d) All of the above.





### ***5. How do you know if you are allergic to a medicine?***

- a) You lose your hair.
- b) You get a rash, swelling, or breathing problems.
- c) You vomit up the medicine.
- d) You get a bruise.

### ***6. If you go to the emergency room, why do you need to tell the doctor about the medications you are on?***

- a) To make sure you don't miss a dose.
- b) To help the doctor figure out exactly what you are taking.
- c) To make sure the doctor doesn't give you a medication that will cause problems if taken with the medicines you are on.
- d) All of the above.



## ***7. If you lose your medicine, what should you do?***

- a) Call the doctor's office or clinic and ask for advice on how to get more.
- b) Discuss it the next time you see the doctor.
- c) Take more of your other medicines.
- d) Call the pharmacy and ask for your refill early.

## ***8. What information can you find on your medicine label?***

- a) How many pills are in the bottle when you first get the medicine.
- b) The date when you can get a refill.
- c) How much the medicine costs.
- d) All of the above.



### *ANSWERS*

1 – B, 2 – D, 3 – C, 4 – B,  
5 – B, 6 – D, 7 – A, 8 – A



## ***ROLE PLAY***

Instructions:

1. Pretend to be a patient, a doctor or a nurse
2. If you are the patient, communicate to the medical staff your health problem
3. If you are a doctor or a nurse, elaborate a plan to cure the patient in order to save his/her life taking into account the above mentioned tips and what you have just learnt with the quiz
4. Debate about what emerged during the team work both inside your virtual room and then in this shared one



**QUESTIONS?**



***THANK YOU FOR YOUR ATTENTION***