



MINISTRY OF HEALTH OF UKRAINE  
NATIONAL UNIVERSITY OF PHARMACY  
DEPARTMENT PHARMACOLOGY AND PHARMACOTHERAPY

# **SIDE EFFECTS OF DRUGS**

## **(optional educational component)**

**second (master's) level of higher education**

**Educational program "Pharmacy"**

**Specialty 226 Pharmacy, industrial pharmacy**

# Description of the educational component

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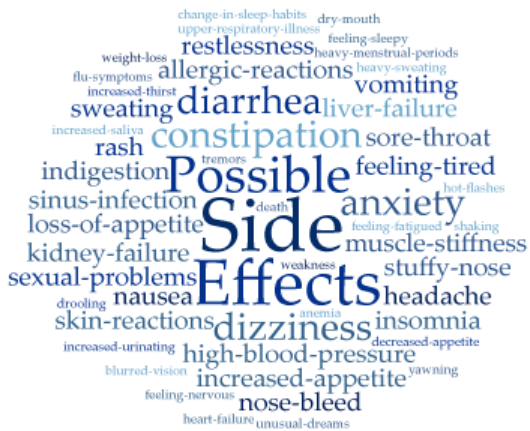
The whole amount of hours – 90

Credits ECTS – 3

- Auditory hours - 32
  - ✓ Lectures – 8
  - ✓ Practical classes – 24
- Independent work – 58
- Form of control - **credit**

2

3



# The purpose of the educational component

**Side effects of drugs** is an optional educational component that studies the side effects of drugs on the human body and animals. The rapidly growing amount of information about drugs requires a pharmacist to have deep knowledge of pharmacology, which will allow him to freely navigate in it and use this knowledge professionally in his practical activities.

***The purpose*** of teaching the educational component "Side effects of drugs" is to form and deepen the professional knowledge and competence of students regarding the side effects of drugs of various pharmacotherapeutic groups, issues of drug safety and pharmacovigilance.

# The main tasks of the educational component



is the acquisition by students of education of the necessary knowledge about:

possible side effects of each group of drugs, the main mechanisms of the development of side effects of drugs;

negative types of drug action associated with pharmacodynamics, overdose and repeated administration of drugs;

conditions that increase or decrease these negative manifestations;

features of complications of pharmacotherapy in different age groups (in children, elderly patients, women during pregnancy and lactation);

rational and safe use of prescription and non-prescription drugs and prevention of side effects of drugs;

pharmaceutical care during the selection and dispensing of an over-the-counter medicinal product by assessing the risk/benefit ratio, compatibility, indications and contraindications guided by data on the health status of a particular patient, taking into account biopharmaceutical, pharmacokinetic, pharmacodynamic (including side effects) and physical chemical features of the medicinal product;

the main methods of preventing the development of side effects and the principles of treatment, as well as trends in the development of pharmacovigilance;

# Competences acquired by applicant for education

## **General competences (CG):**

**CG 6. Knowledge and understanding of the subject area and understanding of professional activity.**

## **Professional (special) competences (SC):**

**SC 1. The ability to act socially responsibly and civically.**

**SC 2. Ability to apply knowledge in practical situations, make informed decisions.**

**SC 4. Ability to think abstractly, analyze and synthesize, learn and be modernly educated.**

**SC 5. Ability to show initiative and entrepreneurship.**

# PROGRAM LEARNING OUTCOMES

PRN 5. To position one's professional activity and personal qualities on the pharmaceutical labor market; formulate the goals of one's own activity taking into account public and industrial interests.

PRN 6. Argue information for decision-making, bear responsibility for them in standard and non-standard professional situations; adhere to the principles of deontology and ethics in professional activity.

PRN 7. Perform professional activities using creative methods and approaches.

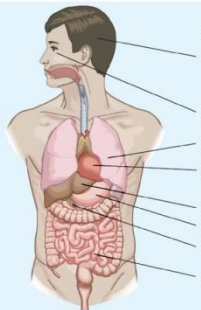
PRN 8. Carry out professional communication in the state language, use oral communication skills in a foreign language, analyzing specialized texts and translating foreign language information sources.

PRN 14. Determine the advantages and disadvantages of drugs of various pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic and pharmacodynamic features. Recommend to consumers non-prescription drugs and other products of the pharmacy assortment with the provision of advisory assistance and pharmaceutical care.

PRN 16. Determine the influence of factors affecting the processes of absorption, distribution, deposition, metabolism, and excretion of a medicinal product and are determined by the condition, features of the human body, and the physicochemical properties of medicinal products.

PRN 25. Contribute to the preservation of health, in particular the prevention of diseases, the rational prescription and use of medicinal products. To faithfully fulfill one's professional duties, to comply with the legislation on the promotion and advertising of medicinal products. Possess psychological communication skills to achieve trust and mutual understanding with colleagues, doctors, patients, consumers.

## Common Side Effects of Drug



Organ	Side Effect	Drug
Brain	Insomnia Drowsiness Hallucinations	Amphetamines, caffeine Alcohol LSD
Eyes	Psychosis Blurred vision Bloodshot eyes	Cocaine, PCP, amphetamines PCP Marijuana
Lungs	Emphysema Cancer	Tobacco, marijuana
Heart	Heart attacks Arrhythmias	Amphetamines, spice, cocaine
Liver	Cirrhosis	Alcohol
Stomach	Nausea	Narcotics
Kidneys	Increased urine	Alcohol, caffeine
Intestines	Constipation	Narcotics

FIGURE 5.1 Common side effects with drugs of abuse. Almost every organ or system in the body can be negatively affected by the substances of abuse.

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# Learning outcomes of the educational component

## Know:

- general issues of complications of pharmacotherapy and learn the main measures of the organization of drug safety control carried out in Ukraine;
- classification of side effects of medicinal products and provide them with a general characteristic; concepts of "breadth of therapeutic action" and "therapeutic index"; phenomena that occur with repeated and combined administration of drugs;
- characteristics of typical adverse drug reactions, the mechanism of their occurrence, methods of prevention and correction;
- the pharmacological logic of the relationship between the mechanism of action of drugs and side effects and contraindications to the use of drugs of different groups;
- factors that contribute to the occurrence of side effects of drugs and reduce their manifestations in individual drugs and in pharmacological groups;
- rules of rational antibiotic therapy in order to prevent side effects and development



# Learning outcomes of the educational component

## Be able:

- to determine manifestations of side effects of drugs, symptoms of overdose of potent and poisonous drugs (assessment of the "benefit/risk" ratio);
- to determine the main mechanisms of the development of side effects of drugs;
- to orient oneself in the conditions that contribute to the strengthening or reduction of the side effects of drugs;
- to give comparative characteristics of individual medicinal products in terms of effectiveness, safety, taking into account side effects and contraindications to the use of medicinal products;
- to predict the consequences of the interaction of drugs with their combined administration, drugs and components of food, drugs and alcohol;
- to consult a doctor for the purpose of prevention of side effects of drugs;
- search for pharmacological information in modern reference books, scientific and professional periodicals



# THANK YOU FOR ATTENTION!



Національний фармацевтичний університет  
вул. Пушкінська, 53, м. Харків, 61002

E-mail: [mail@nuph.edu.ua](mailto:mail@nuph.edu.ua)  
<https://nuph.edu.ua>