**Ministry of Health of the Republic of Moldova**

# “Nicolae Testemiţanu” State University of Medicine and Pharmacy

## **Faculty of Pharmacy**

**PRACTICAL APLICATIONS AGENDA**

**regarding the practical license period**

**for 5th year students,**

## **Faculty of Pharmacy**

Chisinau, 2024

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Chapter 1.

**EXERCISE OF THE PHARMACIST PROFESSION AND PHARMACEUTICAL ACTIVITY. ORGANIZATION OF THE PHARMACEUTICAL ACTIVITY.**

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| **Practical application 1.1**  1. *List the legislative and normative acts that regulate the order of employment and resignation of the specialists, the drafting of the individual employment contract and the material responsibility.* |

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| **Practical application 1.2.**   1. *Get acquainted with all the documents based on which the pharmaceutical* enterprise *operates, with reference to the legislative and normative acts in force.* 2. *Draw up the layout of the pharmacy rooms.* 3. *Draw up the scheme of the collaboration relations of the pharmacy with the medical units.* 4. *Make the list of furniture and equipment specifying their destination and referring to the normative acts in force.* |

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| **Practical application 1.3.**   1. *Present the list of suppliers of pharmaceutical and parapharmaceutical products licensed in accordance with the legislation in force with which the pharmacy collaborates.* 2. *List the legislative and normative acts that regulate the organization of the keeping of pharmaceutical and parapharmaceutical products in the pharmacy.* 3. *Observe and note the rhythm of pharmacy space cleaning and ventilation operations.* |

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| **Practical application 1.4.**   1. *Enter the agenda and charge 5 different prescriptions according to the pharmaceutical form.* 2. *Make for personal map all types of documents, which are kept in the work sectors in the drug preparation section.* |

Chapter 2.

**QUALITY OF PHARMACEUTICAL SUBSTANCES AND their FORMS. KNOWLEDGE OF THE DRUG.**

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| **Practical application 2.1.**  *During the practice in the IPUSMF University Pharmacy «Nicolae Testemitanu», the student must complete and describe the complete analysis of five magistral pharmaceutical forms, containing two or more components. The results must be recorded in the following table:* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Composition of magistral pharmaceutical form** | **Description of the exterior appearance** | **Methods of identification. The equations of the chemical reaction.** | **Dosage methods. The equations of the chemical reaction.Calculation formulas**  (calculation of the quantitative content of active principles and deviations). | **Quality assessment** |
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| **Practical application 2.2.**  *Comparative analysis of 5 industrial pharmaceutical forms existing in the community pharmacy where you spend the practical internship, according to the parameter "Description" according to the requirements of DAN, European Pharmacopoeia or Romanian Pharmacopoeia. The results are recorded in the following table, following the example:* |

|  |  |  |  |
| --- | --- | --- | --- |
| **The name of the drug and its composition** | **Therapeutic indications** | **DAN requirements** | **Results** |
|  |  |  |  |

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| **Practical application 2.3.**  *Explanation of the choice of the primary packaging, the storage conditions and the term of validity for 5 industrial drugs existing in the community pharmacy where you spend the practical internship, depending on the physical and chemical properties of the components of the pharmaceutical form. The results are recorded in the following table, following the example given:* |

| **The name of the drug, the DCI of the active ingredients, the manufacturer** | **Therapeutic indications** | **Results** | | **Explanations** |
| --- | --- | --- | --- | --- |
| 1 |  | Primary packaging → |  |  |
| Storage conditions → |  |  |
| Terms of validity → |  |  |
| 2 |  | Primary packaging → |  |  |
| Storage conditions → |  |  |
| Terms of validity → |  |  |
| 3 |  | Primary packaging → |  |  |
| Condiţii de păstrare  Storage conditions → |  |  |
| Terms of validity → |  |  |
| 4 |  | Primary packaging → |  |  |
| Storage conditions → |  |  |
| Terms of validity → |  |  |
| 5 |  | Primary packaging → |  |  |
| Storage conditions → |  |  |
| Terms of validity → |  |  |

Chapter 3.

**DRUGS PREPARATION IN THE PHARMACY.**

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| **Practical application 3.1.**   1. *Familiarize yourself with the pharmacy’s areas, their furniture and necessary equipment. Study the provisions of the Government Decision No. 504 as of 07.12.2012 on the approval of Sanitary regulation regarding the equipping and use of pharmacies and pharmacy depots and write in your notebooks the main sections. Draw in the notebook the components and positioning of the pharmacy areas (drug preparation area) and enumerate the area’s equipment.* 2. *Study the equipment for obtaining purified water, quality control and its keeping. Write in the notebook.* 3. *Get acquainted with the Instructions regarding the pharmacy job security technique. Write in the notebook the main sections of the Instructions, as well as the Registers on job security of the pharmacy’s personnel.* 4. *Get acquainted with the Instructions regarding the sanitary system and personal hygiene in the pharmacy. In the notebook describe the main sections of Order of MH RM No. 334 as of 07.19.1995 “On the approval of the Instruction regarding the sanitary regime in pharmaceutical companies and institutions”. Describe the pharmacy cleaning specifics.* 5. *Get acquainted with Order of MH RM No. 960 as of 10.01.2012 “On how to prescribe and dispense drugs”. In the notebook describe the main sections.* 6. *Participate in the preparation activities in the pharmacy and write: preparations that are conditioned and dispensed as such from the pharmacy, preparations that are prepared based on medical prescription, pharmaceutical preparations, products that are prepared and kept in the pharmacy in order to be used at other drugs’ preparation.* 7. *Get acquainted with the prescriptions received by the pharmacy. Get acquainted with all the information contained in these forms. Describe the pharmacist’s working procedure in case of finding errors in a prescription. Give a few examples.* 8. *Get acquainted with the preparation registers (reception register, preparations register) and describe in the notebook the method of registration for 2-3 pharmaceutical forms in the pharmacy.* 9. *Study the pharmacopoeia regarding the general provisions on pharmaceutical forms preparation, their quality characteristic, and storage conditions (Order of MH RM No. 113 as of 02.17.2011 “On the approval of Pharmacopoeias of reference in the Republic of Moldova”).* |
| **Practical application** 3.2.  According to the following model, analyze in written form 40 medical prescriptions (4 each day – ointments – 5, suspensions – 5, solutions – 10, suppositories – 2, ophthalmic drops – 5, powders – 3, emulsions – 1, liniments – 1, nasal drops – 3, pastes – 3 and standard pharmacopoeia solutions – 2) dispensed in the pharmacy.   | **Prescription, dosage control** | **Calculations** | **WVD** | **Quality control** | | --- | --- | --- | --- | |  |  |  |  | |

Chapter 4.

**THE DELIVERY OF THE MEDICINAL PRODUCTS AND THE ADVICE OF THE PATIENT**

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| Practical application 4.1.  Analyze in writing, 10 medical prescriptions in the pharmacy where you practice (the prescriptions hierarchy will be annexed). |

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| Practical application 4.2.  *1.* *Describe 5 cases of pharmacist-patient communication in the process of OTC drug delivery and for each case fill in the following table:* |

| **Description of the patient's problem** | **Recommended drug and dosage regimen** | **Critical analysis of the solution applied** | **Recommendations regarding patient monitoring** | **Consultation of the patient by the pharmacist** |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| *2. Identify, in the pharmacy where you practice, the drugs used to treat the symptoms that are characteristic for*  *2.1. respiratory infections: sore throat, rhinitis;*  *2.2. respiratory infections: cough, cold, fever, conjunctivitis;*  *2.3. central nervous system disorders: headache, anxiety;*  *2.4. disorders of the locomotor system: osteoporosis, osteoarthrosis;*  *2.5. disorders of the locomotor system: arthralgia, myalgia;*  *2.6. dermatological disorders: mycosis, seborrhea;*  *2.7. dermatological conditions: herpes, acne;*  *2.8. polyhipovitaminosis, avitaminosis*  *2.9. gastrointestinal tract disorders: constipation, diarrhea;*  *2.10. gastrointestinal tract disorders: flatulence, hemorrhoids*  *according to the model below:* | | | | |

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| **Practical application 4.3.**  For 2 chronic patients in the pharmacy (diabetes mellitus, hypertension, asthma, hepatitis, etc.) elaborate the principles and algorithm of counseling, with the description of useful and necessary information to ensure maximum pharmacotherapeutic benefits. |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Name of Medicine (Trade name)** | **INN or**  **active substances** | **Presentation form** | **Classification** | **Precautions / contraindications** | **Adverse effects** | **Consultations for the patient** | |  |  |  |  |  |  |  | |

# Chapter 5.

**INTERACTIONS OF DRUGS.**

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| **Practical application 5.1.**  *Complete the table - with pharmaceutical interactions, according to the examples in the practice guide:* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Medicine** | **Medicine** | **The mechanism of interaction** | **Pharmacological effects** | **Recomandations** |
| Physical interactions | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Chemical interactions | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Interactions of injectable medicines in the same syringe or infusion system | | | | |
|  |  |  |  |  |
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| Interactions of medicines with the solvent (diluent) | | | | |
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| **Practical application 5.2.**  *Complete the table - with pharmacodynamic interactions, according to the examples in the practice guide.*  *Make the copies and analyze 2 prescriptions, containing more than 3 medicines in the pharmacy, which you will evaluate through the drug interactions based on different produced mechanisms (synergism, antagonism).* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Prescription** | **Association** | **The mechanism of production** | **Pharmacological effects** | **Recommendations** |
|  |  |  |  |  |
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| **Practical application 5.3.**  *Complete the table with possible pharmacokinetic interactions, according to the examples in the practice guide:*  *Make the copies and analyze 4 prescriptions, containing more than 3 drugs in the pharmacy, which you will evaluate through the medicines interactions based on different production mechanisms (absorption, distribution, metabolism and elimination).* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Prescription** | **Association** | **The mechanism of production** | **Pharmacological effects** | **Recommendations** |
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| **Practical application 5.4.**  *Complete the possible interactions with* plant-derived *products (PV), food, alcohol, tobacco according to the examples in the practice guide: 2 examples of each* |

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| --- | --- | --- | --- | --- |
| **Drug** | **The association** | **The mechanism of interaction** | **Pharmacological effects** | **Recomandations** |
| Plants | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Food | | | | |
|  |  |  |  |  |
|  | alcohol |  |  |  |
|  | tobacco |  |  |  |

Chapter 6.

**PHARMACEUTICAL ASSISTANCE AND PHARMACOVIGENCE ACTIVITY**

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| **Practical application 6.1.**  Complete 2 forms of pharmaceutical assistance of patient in the hospital of the pharmacy where you practice. The patient will be followed for 3 months, in case of the community pharmacy or during the hospitalization, in case of the hospital pharmacy. Update patient data for each disease. Introduce the information obtained from the patient and your observations in the form below:  1. GENERAL INFORMATION ABOUT THE PATIENT  Name: First name:................................  Age: years Height: m BMI:............ kg/m2  Gender: M F Body weight: kg  Occupation: ………………………………………………………………  Pathophysiological condition (pregnancy, elderly, renal, liver, associated diseases): ………………………………… ............................................................................................................................................................................................................................................................................................................................................................................  Physical or other disability (eg paralyzed, blind, illiterate, etc.):.....................................................................  **2. ALLERGIES**  **Helpful questions:**  Are you allergic to medicines, foods, environmental factors, etc.? ………………………………………………………  If YES, how does this allergy manifest? ………………………………………………………………….  Did the reaction occur immediately or after a certain time (depending on how many doses of medicine)?...………  Are there any other allergic people in the family?………………………………………………………………………..  **3. MEDICAL HISTORY (current history and conditions of the patient or family)**  Current diseases: .................................................................................  Personal medical history: .................................................................................  Family medical history: .................................................................................  **4. LABORATORY TESTS, OTHER EXAMINATIONS**  Parameter/Date RBC ……………………………………………...............  Hemoglobin Hematocrit …………………………………………………...  Leukocytes Platelets …………………………………………………..  Na+ K+………………………………………………………………  Ca2+ Urea …………………………………………………………..  Serum creatinine AST …………………………………………………………  ALT Total bilirubin ……………………………………………...  Glucose Total cholesterol ……………………………………………  LDL-col Triglycerides …………………………………………………  Blood pressure Pulse…………………………………………………………..  **5. SUPPORTING QUESTIONS:**  You get used to:  o black / green tea daily quantity ………………………………………………  o coffee daily quantity ………………………………………………  o alcohol, type of drink daily quantity..........................................................  o favorite foods daily quantity ………………………………………………  Do you smoke? How long, how long?..........................................................................................................................  Do you follow a certain diet (no salt, no fat, no sugar, etc.)? If yes, what is the regime? ……… ........................................................................................................................................................................  **6. DRUGS PRESCRIBED BY DOCTOR** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trade name,  DCI, concentration | Dosage | Duration of therapy | | Reason for use (diagnosis) | Effectiveness | Adverse reactions |
| Start date | Stop date |
| *Ex. Doxycycline, capsules* | *100 mg 2 times/day for 10 days* | *22.03.2019* | *02.04.2019* | *Chronic pyelonephritis in the acute phase* | *The preparation was effective. The subjective symptoms are gone. The data was normalized.* | *Nausea, anorexia, symptoms of Candida superinfection* |
|  |  |  |  |  |  |  |
| **7. COMPLIANCE WITH TREATMENT**  Helpful questions:   * Have you been informed about the treatment you should take?   YES NO   * Have you been advised about the way you should use the drugs?   YES NO   * Who gave you the information about: * purpose of treatment DOCTOR PHARMACIST * the correct way to use drugs DOCTOR PHARMACIST   Consider that the drugs are doing you good? YES NO  You have never been prescribed drugs? ……………………………………….....................………………………………  If yes   * How often? ……………………………………………………………………………………………………………………....…. * Why (there are too many, you simply forgot, they had adverse effects, they were not efficient, the cost is too high, etc.)? ……………………………………………………………………………………………………………………………… | | | | | | |
|  | | | | | | |
| **PROBLEMS RELATED TO DRUG THERAPY** | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Problem | Cause | Pharmacist intervention to prevent or solve the problem |
| Example: | | | |
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| **Practical application 6.2.**  *Complete a report of an adverse reaction that you have identified in a patient, during the internship, according to the report sheet prepared by the Agency for Medicines and Medical Devices (Annex II). The file can be obtained from the website of the Medicines and Medical Devices Agency.* |

***FILE-COMMUNICATION***

***ABOUT THE ADVERSE REACTIONS OF MEDICINAL PRODUCTS AND OTHER PHARMACEUTICALS***

***(will emphasize the variant of the accepted answer)***

1. The medical institution......................................................................................................................................................... Address ............................................................................................................................................................................
2. The service (section).......................................................................................................................................................................
3. The doctor who recorded the adverse reaction............................................................................................................................... ……………………………................................................................................................................. Phone…. ...............................
4. The patient (name, surname)........................................................................................................... Nr. of observation sheet........

Date of admission.............................................. Date of discharge (for outpatients)………..........................................................

1. Clinical diagnosis (basic, concomitant, complications):..................................................................................................................

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Anamnesis: ................................................................................................................................................................................

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1. **Age ….. Body weight …..****Gender: M       F **
2. **Ethnicity of the patients: Caucasian  Negroid     Mongolian  Asian    Arabic **
3. **Onset of adverse drug effect:** **(date, month, year)**
4. **End date of adverse effect (if known ):**
5. **Description of the adverse effect on the drug (or a certain combination of medicines) - onset, localization, symptoms:**  …………………………………

**Severity of adverse effect: Mild  Medium** θ **Serious **

1. **Evolution of the adverse effect:**

* Healing without sequelae (consequences);
* Healing with sequelae (consequences);
* In process of development;
* Death of the patient as a result of drug administration;
* Death - the drug may have contributed to it, or the drug possibly caused the death;
* Death - it is not related to the administration of the drug;
* Death - the cause of death is not clear.

1. **The drug (or medicines, drug combinations) suspected of having an adverse effect:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product name, pharmaceutical form, manufacturer, country, preparation series with manufacturing date** | **Dose at one administration** | **Nictemeral dose** | **Frequency (Periodicity) administration** | **Route of administration** | | **Beginning of administration of preparation (day/month/year)** | **Finishing administration of preparation (day / month / year)** | **Illness or the pathological process, which served as a right indication for administration of the preparation** | |
| **When the data is not known exact, will be indicated the term of administration of the preparation until the onset of adverse effect** | |
|  |  |  |  |  | |  |  |  | |
|  |  |  |  |  | |  |  |  | |
| The abolishment of the preparation was followed by regression  the adverse effect? | | | | **Yes** | **No** | Was it repeated or aggravated by the adverse effect upon repeated administration of the preparation? | | **YES** | **NO** |
| Does not  know | | It is not known | |

**Appreciate the role of the suspected preparation (or preparations) in the occurrence of the adverse effect:**

* definitely/sure (sure adverse reaction)
* likely (probable adverse reaction)
* possible (possible adverse reaction)
* less likely/doubtful (improbable adverse reaction)
* conditioned/unclassified (adverse reaction conditioned/unclassified)
* non-classifiable/non-evaluable (non-evaluable/non-classifiable adverse reaction)
* the interaction between 2 or more drug preparations is suspected in the adverse effect

1. **Concomitant medication (the preparations that have been indicated for the correction of the adverse effect will not be listed):**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Product name, pharmaceutical form, manufacturer, country, preparation series with manufacturing date** | **Dose at one administration** | **Nictemeral dose** | **Frequency (Periodicity) administration** | **Route of administration** | **Beginning of administration of preparation (day/month/year)** | **Finishing administration of preparation (day / month / year)** | **Illness or the pathological process, which served as a right indication for administration of the preparation** |
| **When the data is not known exact, will be indicated the term of administration of the preparation until the onset of adverse effect** | |
|  |  |  |  |  |  | |  |
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1. **Data from anamnesis (diseases, allergic conditions, drug allergy in the past, problems of kidney or liver disease, pregnancy, lactation, special diets, harmful habits, exposure to radiation ionizing etc.)**

The patient has been suffering from ischemic heart disease since 2005, when the retrosternal pain abolished with nitro-glycerine administered sublingually appeared. Since 2012, medium-high blood pressure has been established. Other concomitant diseases do not have. Allergic conditions or allergic reactions to medicines till now not manifested. He smokes 1 pack of cigarettes per day.

1. **Measures to correct the adverse effect:**

* Cancelling the drug preparation
* Reduction of the dose of the drug preparation
* Additional drug therapy to relieve the adverse effects, list the measures taken and the medicines administered: …….……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………................................................
* Without correction ..............................................................................................................................................................
* Cancellation of concomitant therapy (indicate which medicines were cancelled): …………………………………………….

**16. Additional data on the adverse effect (clinical, laboratory, the concentration of drug in the blood and tissues, necropsy data in the case of death of the patient). Describe the pathological changes, indicating in norm brackets:**

The additional data for the detection of the adverse effect have not been made.

**17. Other information on the medicinal product suspected of having an adverse effect or on the adverse effect:**

* Has the patient received this drug before? Yes ** No ** Not known ****
* Did the patient present identical or different reactions to this product? Yes ** No ** Not known ****

If so, indicate what kind of reaction? .……………………………………………………………………………………………………..

* Has the patient experienced similar adverse reactions to other drugs? Yes ** No ** Not known ****

If Yes, then to what drugs did these reactions occur: ……………………………………………………………………………...

* Did the patient have similar side effects, which were not caused by the administration of drugs?

Yes ** No ** Not known ****

* Have been really other factors may influence the occurrence and development of the adverse effect described (chronic diseases of the system, the dependence of drug, environmental factors, radiation ionizing, use of substances toxic chemicals, allergy)?

Yes ** No ** Not known ****

If Yes, then list: ………………………………………………………………………………………………………………………….

**18. Statute of the preparation:**

**** Preparation authorized in the Republic of Moldova   **** Preparation for clinical trials

**19. Date of filling out the communication sheet:** ……………………………………………………………………………………

**20. The doctor who completed communication sheet:** NS .................................... **Signature:** ..........................................

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| **Practical application 6.4.**  *Describe 2 case studies regarding the withdrawal of drugs from the pharmaceutical market, according to the model below:* |

|  |  |
| --- | --- |
| **The cause of withdrawal of the drug** | **Procedure for withdrawal from the pharmaceutical market** |
|  |  |

Capitolul 7.

**PREVENIREA CONSUMULUI ABUZIV DE SUBSTANŢE CU REGIM LEGAL SPECIAL**

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| **Aplicaţie practică 7.1.**  *Descrieţi 2 cazuri de solicitare a anabolizantelor steroidiene şi tactica farmacistului de recomandare şi eliberare a lor în scopul prevenirii dopajului.* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Anabolizantul solicitat** | **Scopul administrării** | **Posologia** | **Reacţiile adverse** | **Recomandările farmacistului** |
| 1. |  |  |  |  |
| 2. |  |  |  |  |

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| **Aplicaţie practică 7.2.**  *Descrieţi 2 cazuri de solicitare a psihostimulantelor şi tactica farmacistului de recomandare şi eliberare a lor în scopul prevenirii dopajului.* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Psihostimulantul solicitat** | **Scopul administrării** | **Posologia** | **Reacţiile adverse** | **Recomandările farmacistului** |
| 1. |  |  |  |  |
| 2. |  |  |  |  |

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| **Aplicaţie practică 7.3.**  *Descrieţi 2 cazuri de solicitare a analgezicelor opiacee şi tactica farmacistului de recomandare şi eliberare a lor în scopul prevenirii dopajului.* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Analgezicul opiaceu solicitat** | **Scopul administrării** | **Posologia** | **Reacţiile adverse** | **Recomandările farmacistului** |
| 1. |  |  |  |  |
| 2. |  |  |  |  |

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| **Aplicaţie practică 7.4.**  *Descrieţi 2 cazuri de solicitare a canabinoidelor şi tactica farmacistului de recomandare şi eliberare a lor în scopul prevenirii dopajului.* |

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| --- | --- | --- | --- | --- |
| **Canabinoidul solicitat** | **Scopul administrării** | **Posologia** | **Reacţiile adverse** | **Recomandările farmacistului** |
| 1. |  |  |  |  |
| 2. |  |  |  |  |

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| **Aplicaţie practică 7.5.**  *Descrieţi 2 cazuri de solicitare a diureticelor/agenţilor de mascare şi tactica farmacistului de recomandare şi eliberare a lor în scopul prevenirii dopajului.* |

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| --- | --- | --- | --- | --- |
| **Diureticul/agentul de mascare solicitat** | **Scopul administrării** | **Posologia** | **Reacţiile adverse** | **Recomandările farmacistului** |
| 1. |  |  |  |  |
| 2. |  |  |  |  |

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| **Aplicaţie practică 7.6.**  *Identificaţi, în farmacia în care faceţi practica, produsele farmaceutice ce conţin substanţe interzise de Agenţia Mondială Antidoping.* |

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| --- | --- | --- | --- | --- |
| **Denumirea produsului** | **Substanţa activă** | **Forma farmaceutică/ Doza** | **Producător** | **Recomandările farmacistului** |
| 1. |  |  |  |  |
| 2. |  |  |  |  |

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| **Aplicaţie practică 7.7.**  *Descrieţi 3 cazuri de biotransformare a produsele farmaceutice ce conţin substanţe interzise de Agenţia Mondială Antidoping cu indicarea reacţiilor fermentative şi metaboliţii formaţi:* |

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| **Denumirea**  **produsului** | **Reacţii oxidare** | **Reacţii hidroliză** | **Reacţii dezalchilare** | **Reacţii hidroxilare** | **Absorbţia în stomac** | **Absorbţia în intestine** | **Metaboliţii** |
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Chapter 8.

**VEGETAL PRODUCTS, MEDICINAL SPECIES AND PHYTOMEDICINES**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Warning the patient to consult the doctor if the health condition does not improve in short time.  **Practical application 8.1.**  *Describe 5 vegetal products:*  *1. The name of vegetal product, pharmaceutical form, dose, packaging, manufacturer;*  *2. Latine name of vegetal product, plant species and family;*  *3. Chemical composition of vegetal product;*  *4. Pharmacological action and usage;*  *5. Mode of preparation and administration;*  *6. Precautions and contraindications.*   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Od.**  **Nr.** | **1.** | **2.** | **3.** | **4.** | | **The name of vegetal product, pharmaceutical form, packaging, dose, manufacturer** | **Latine name of vegetal product, plant species and family** | **Chemical composition of vegetal product** | **Pharmacological action and usage** | |  |  |  |  |  | | **5.** | **Mode of preparation and administration** | | | | | **6.** | **Precautions and contraindications** | | | | |

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| **Practical application 8.2.**  *Describe 5 medicinal species (consisting of several vegetal products)*  *1. The name of medicinal species, pharmaceutical form, dose, packaging, manufacturer;*  *2. The constituents of medicinal species and indication of latine name of vegetal products, plant species, family;*  *3. Chemical composition and active principles;*  *4. Pharmacological action and usage;*  *5. Mode of preparation and administration;*  *6. Precautions and contraindications.*   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Od.**  **Nr.** | **1.** | **2.** | **3.** | **4.** | | **The name of medicinal species, pharmaceutical form, dose, packaging, manufacturer** | **The constituents of medicinal species and indication of latine name of vegetal products, plant species, family** | **Chemical composition and active principles** | **Pharmacological**  **action and usage** | |  |  |  |  |  | | **5.** | **Mode of preparation and administration** | | | | | **6.** | **Precautions and contraindications** | | | | |

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| **Practical application 8.3.**  **Describe 5 phytomedicines (multicomponent)**  *1. The name of phytomedicines, pharmaceutical form, dose, packaging, manufacturer;*  *2. The constituents of phytomedicines;*  *3. Chemical composition and active principles;*  *4. Pharmacological action and usage;*  *5. Mode of preparation and administration;*  *6. Precautions and contraindications.*   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Od.**  **Nr.** | **1.** | **2.** | **3.** | **4.** | | **The name of phytomedicines, pharmaceutical form, dose, packaging, manufacturer** | **The constituents of phytomedicines** | **Chemical composition and active principles** | **Pharmacological**  **action and usage** | |  |  |  |  |  | | **5.** | **Mode of preparation and administration** | | | | | **6.** | **Precautions and contraindications** | | | |   *\* 8.1, 8.2 and 8.3 to be completed with vegetal products authorised as medicinal products, do not include food supplements.*  *\* \* Out of 15 phytotherapeutic products described, at least 3 must be manufactured in the Republic of Moldova.* |

# Chapter 9.

**BIOLOGICAL MEDICINES. FOOD SUPPLEMENTS AND SPECIFIC FOOD. NUTRITION ELEMENTS.**

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| **Practical application 9.1**  *Complete the table with the characterisation of* ***2 biological medicinal products*** *of different classes (enzymes, vaccines, immunoglobulins, hormones) according to the examples in the Practice Guide* |

|  | **Trade name, composition, pharmaceutical form** | **Quality control peculiarities** | **Special features of storage, validity (including after opening the package)** | **Peculiarities of administration** | **Comments, recommendations** |
| --- | --- | --- | --- | --- | --- |
| Medicines from extracts of animal origin (enzymes) | | | | | |
| Digestive enzymes |  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Vaccines | | | | | |
| Whole –Agent, Subunit vaccine |  |  |  |  |  |
|  |  |  |  |  |  |
| Immunoglobulins | | | | | |
| Monoclonal or polyclonal antibodies |  |  |  |  |  |
|  |  |  |  |  |  |
| Hormonal medicines | | | | | |
| Insulin |  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Medicines used in hemorrhagic diseases | | | | | |
| Heparin |  |  |  |  |  |
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| **Practical application9.2**  *Complete the table with the characterization of* ***3 dietary supplements*** *for pregnant women, infants, preschoolers, young and older adults,, that have been found in ther pharmacy, according to the examples in the Practice Guide* |

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| --- | --- | --- | --- | --- |
| **Product name** | **Composition, active substances** | **Pharmacological effect** | **Indications for use** | **Specific recommendations** |
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| **Practical application 9.3**  *Complete the table with the explanation of 3 special nutrition regimens, that have been found in thepharmacy,* ***for any 2 pathologies****, according to the examples in The Practice Guide:* | | | | |
| **Pathological process** | **Recommended foods** | **Forbidden foods** | **Specifications for age, gender** | **Recommendations** |
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| **Practical application 9.4**  *Complete the table with characterization of dietary supplements containing isoflavones, carotenoids and phytosterols, that have been found in the pharmacy, according to the examples in the Practice Guide:* ***1 example of product for each nutraceutical.*** |

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| --- | --- | --- | --- | --- | --- |
| **Product name** | **Composition**  **Content of active ingredients (isoflavones, carotenoids and phytosterols)** | **Sources of obtaining** | **Pharmacological effect** | **Indications for use** | **Specific recommendations** |
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| **Practical application 9.5**  *Completethe table with characterization of some dietary supplements containing fatty acids and phenols, prebiotics, probiotics, lutein, coenzyme Q,that have been found in the pharmacy, according to the examples in The Practice Guide:* ***1 example of product for each nutraceutical.*** |

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| --- | --- | --- | --- | --- | --- |
| **Product name** | **Composition**  **Content of active ingredients** | **Sources of obtaining** | **Pharmacological effect** | **Indications for use** | **Specific recommendations** |
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Chapter 10.

**PHARMACEUTICAL FORMS WITH CONVENTIONAL AND MODIFIED RELEASE**

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| **Practical application 10.1.**  *In the practice notebook, describe one product, of choice,* ***with conventional release*** *of each pharmaceutical form according to the following model:* | | | | | | | | | | | | | | |
| **N** | **Pharmace-utical form, packaging** | **The trade name of the product, manufacturer** | | | **IDN of drug substance (s) quantity per pharmaceutical unit (dose)** | | **Auxiliary substances used in formulations** | | **The role of each component in the formula** | | **Pharmaco-therapeutic group and ATC code. Bioavailability (BD)%;**  **pharmacokinetics** | |
| 1. |  |  | | |  | |  | |  | |  | |
| The stages of technological process of manufacture | | | | | | | |  | |  | |  | |
|  | |  | |
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| 2. |  |  | | |  | |  | |  | |  | |
| The stages of technological process of manufacture | | | | | | | |  | |  | |  | |
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| 3. |  | |  |  | | | |  | |  | |  | |
| The stages of technological process of manufacture | | | | | | | |  | |  | |
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| 4. |  | |  | | |  | |  | |  | |  | |
| The stages of technological process of manufacture | | | | | | | |  | |  | |
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| **Practical application 10.2.**  *In the practice notebook, describe a product, founded in pharmacy, of each group of medicines* ***with modified delivery and transport to the target*** *according to the following model:* |

| **N** | **Pharmace-utical form, packaging** | **The trade name of the product, manufacturer** | **IDN of drug substance (s) quantity per pharmaceutical unit (dose)** | **Auxiliary substances used in formulations** | **The role of each component in the formula** | **Pharmaco-therapeutic group and ATC code. Bioavailability (BD)%;**  **pharmacokinetics** |
| --- | --- | --- | --- | --- | --- | --- |
| 1. |  |  |  |  |  |  |
|  | | | |  |  |

Chapter 11.

**TECHNICAL-MEDICAL PRODUCTS.**

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| **Practical application 11.1.**   * 1. *You have to present the analysis of 2 technical-medical products in writing form, encoutered in the pharmacy during the practical practise and you have to mention what recommendation should be given to patients*   2. *Menthion the types of medical thermometers found in the pharmacy*   3. *Describe one determination device of a blood glucose or blood pressure* |

Chapter 12.

**Emergencies in Pharmacy.**

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| **Practical Application 12.1.**  *De Describe 2 situations of emergency in the pharmacy with elaboration of the medical assistance.* |

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| **State of emergency and cause of emergence** | **Symptomes of state of emergency** | **First aid measures** |
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| **Practical Application 12.2.**  *De Describe 3 medications used in state of emergency.* |

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| --- | --- | --- | --- | --- |
| **Medicaments used in state of emergency.**  **Pharmacological Group** | **Mechanism of action and pharmacological effects** | **Dosage and mode of administration** | **Indications** | **Contraindications and adverse reactions** |
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Chapter 13.

**INTERPRETATION OF LABORATORY ANALYSIS**

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| **Practical application 13.1.** | | |
| **Problem** | **Values**  (in norme) | **Values**  **(in the respective diseases)** |
| 1. Indicate the limits of the number of red blood cells, the level of hemoglobin and hematocrit if the patient has the respective degree of anemia (eg, grade I, II, III anemia). | Er – \_\_\_\_\_\_\_\_\_\_\_\_mil/mm3  Hb – \_\_\_\_\_\_\_\_\_\_%  Hematocrit - \_\_\_\_\_\_\_\_\_\_g/dl |  |
|  |  |  |
| 2. Indicate the changes in the biochemical analysis of the blood in the respective liver disease (eg viral hepatitis, alcoholic hepatitis, liver failure, etc.). | ALT – \_\_\_\_\_\_\_\_\_\_\_U/l  AST – \_\_\_\_\_\_\_\_\_\_\_U/l  LDH – \_\_\_\_\_\_\_\_\_\_\_\_U/l  Albumin – \_\_\_\_\_\_\_\_g/dL  Total bilirubin \_\_\_\_\_\_\_\_\_\_ mg/dl  Direct bilirubin \_\_\_\_\_\_\_\_\_\_ mg/dl  Indirect bilirubin \_\_\_\_\_\_\_\_ mg/dl |  |
| 3. Indicate the changes in the urine analysis in the respective uroexcretory disorder (eg pyelonephritis, glomerulonephritis, nephrolithiasis, renal failure, etc.). | Density – \_\_\_\_\_\_\_\_  pH – \_\_\_\_\_\_\_\_\_\_\_\_  Leukocytes – \_\_\_\_\_\_\_\_\_  Erythrocytes – \_\_\_\_\_\_\_\_\_  Proteins – \_\_\_\_\_\_\_\_\_\_ |  |