KÖVETELMÉNYRENDSZER

Semmelweis Egyetem, Általános Orvostudományi Kar
Farmakológiai és Farmakoterápiás Intézet

A tárgy neve: Farmakológia és farmakoterápia I

Angol nyelven[1]: Pharmacology and Pharmacotherapy I

Német nyelven[1]: Pharmakologie und Pharmakotherapie I

Kreditértéke: 5

Teljes óraszám: 70 előadás: 35 gyakorlat: 35

Tantárgy típusa: kötelező

Tanév: 2019/2020 I. félév

Tantárgy kódja[2]: AOKFRM034_1A

Tantárgyfelelős neve: Dr. Ferdinandy Péter

Munkahelye, telefonos elérhetősége: SE Farmakológiai és Farmakoterápiás Intézet

Beosztása: igazgató, egyetemi tanár

Habilitációjának kelte és száma: 2001. június 2., 26/2001 Hab.

A tantárgy oktatásának célkitűzése, helye az orvosképzés kurrikulumában:

Pharmacology is an essential subject in the medical education. It provides strong fundamentals for further clinical subjects since pharmacological therapies have a crucial role in treating diseases. Pharmacology draws upon previously acquired knowledge of biochemistry, physiology, pathophysiology as well as the basics of clinical subjects. The subject includes general pharmacology, detailed pharmacology, clinical pharmacology and toxicology as well as the basics of drug prescriptions. General pharmacology (pharmacodynamics, pharmacokinetics) is important for understanding the basic pharmacological terminology, how medicines act and what is their fate in the body. Detailed pharmacology describes the mechanisms of actions, main effects, adverse effects of the drugs and the most important drug interactions as well as the logics of dosage and prescribing. Clinical pharmacology and pharmacotherapy connect the drugs to diseases dealing with the indications, contraindications and warnings regarding their use. The diseases which have the greatest impact on public health are further detailed and their complex pharmacological treatment strategies are discussed. Medical students gain knowledge from simple case reports that show the logic of pharmacological treatment. Toxicology covers the most important poisons, intoxications, their symptoms and management thereby providing theoretical basics for emergency medicine of poisoning and drug overdoses. During pharmacological education the students will also learn the basics of prescription writing.

A tárgy oktatásának helye (előadóterem, szemináriumi helyiség, stb. címe):
Nagyvárad téri Elméleti Tömb, 1089 Budapest, Nagyvárad tér 4.

A tárgy sikeres elvégzése milyen kompetenciák megszerzését eredményezi:
Students understand the pharmacological terminology, learn the mechanism of action, therapeutic effects, adverse effects, important interactions of drugs and the basics of dosing.

They learn the mechanisms of action of the most important poisons, as well as the symptoms and management of intoxications/poisoning. That provides theoretical basics for emergency medicine of poisoning and drug overdoses. Knowing the basics of prescribing drugs is of an outmost importance.
Medical students gain knowledge from simple case reports that show the logic of pharmacological treatment. They learn the pharmacological treatment strategies of the most important diseases with the highest public health interests. This knowledge is based on the actual therapeutic guidelines.
They get insight in the development, applications and the whole lifecycle of drugs and medical devices. They understand the principles and importance of pharmacovigilance and how to report adverse events.

A tantárgy felvételéhez, illetve elsajátításához szükséges előtanulmányi feltétel(ek):
Medical Physiology II, Medical Biochemistry II, Pathophysiology II

A kurzus megindításának hallgatói létszámfeltételei (minimum, maximun), a hallgatók kiválasztásának módja:
Through the NEPTUN system

A kurzusra történő jelentkezés módja:
NEPTUN

A tárgy részletes tematikája[3]:

- 1st week
  - Lecture: Introduction to Pharmacology. Development of Drugs (CP)
  - Practice: Pharmacodynamics I (drug receptors, receptor theories, drug-receptor interactons).
- 2nd week
  - Lecture: Pharmacokinetics. Clinical pharmacokinetics (CP)
  - Practice: Pharmacodynamics II (quantal dose-response curves, therapeutic indices, tolerance, drug interactions). Basics of prescription writing
- 3rd week
  - Lecture: Basics of the neurotransmission of the autonomic nervous system. Pharmacology of the cholinergic systems
  - Practice: Parasympathomimetics and parasympatholytics, centrally acting cholinergic drugs
- 4th week
  - Lecture: Pharmacology of the adrenergic system
  - Practice: Sympathomimetics and sympatholytics
- 5th week
  - Lecture: Pharmacology of the skeletal muscles. Pharmacology of the local anesthetics
  - Practice: Nitrates, Ca-channel blockers and other vasodilators. Pharmacology of RAAS.
- 6th week
  - Lecture: Drugs used in coagulation disorders
  - Practice: Fibrinolytics, drugs against bleeding, drugs acting on blood cell production. Diuretics and antidiuretics
- 7th week
  - Lecture: Treatment strategy of ischemic heart disease (CP). Treatment strategy of acute and chronic heart failure (CP)

- Practice: Positive inotropic agents. Antihyperlipidemic drugs.

- 8th week
  - Lecture: Treatment strategy of hypertension (CP)
  - Practice: Drugs acting on blood glucose control. Antidiabetics.
- 9th week
  - Lecture: Treatment strategy of 2nd type diabetes mellitus (CP). Metabolic syndrome (CP)
  - Practice: Antiarrhythmic drugs. Drugs influencing the oxygen demand and oxygen supply of the heart. Drugs improving microcirculation.
- 10th week
  - Lecture: Pharmacology of the respiratory system. Pharmacotherapy of bronchial asthma and COPD (CP)
  - Practice: Expectorants (secretomotorics, secretolytics, mucolytics), antitussive drugs. Autacoids, histamine, antihistamines.
- 11th week
  - Lecture: Corticosteroids. Drugs affecting bone mineral homeostasis. Treatment strategy of osteoporosis (CP)
  - Practice: Pituitary hormones and hypothalamic hormones controlling their production. Hormonanalogs and hormone antagonists.
- 12th week
  - Lecture: Thyroid hormones and antithyroid drugs. Sexual hormones. Contraceptives (CCP)
  - Practice: Androgens, antiandrogens, anabolic steroids, drugs influencing sexual activity.
- 13th week
  - Lecture: Special aspects of pediatric and geriatric pharmacology
  - Practice: Nutrients, traditional plant medicines, vitamins, anorectic drugs.
- 14th week
  - Lecture: Regulation of Drugs. Pharmacovigilance. Biological Drugs. Orphan Drugs (CP) Advanced Therapy Medicines
  - Practice: Pharmacovigilance (reporting adverse effects), drug registration, ATC code, generics, biosimilar drugs). Drug formulations.

CP: clinical pharmacology/pharmacotherapy material

Az adott tantárgy határterületi kérdéseit érintő egyéb tárgyak (kötelező és választható tárgyak egyaránt!). A tematikák lehetséges átfedései:
Physiology, biochemistry, molecular biology, pathology, internal medicine, cardiology, pulmonology, clinical pharmacology, pediatrics

A tantárgy sikeres elvégzéséhez szükséges speciális tanulmányi munka[4]:

A foglalkozásokon való részvétel követelményei és a távolmaradás pótlásának lehetősége:
Maximum number of absences is 25 percent of the number of practices in the semester. In the case of absence the student can attend another class the same week.

A megszerzett ismeretek ellenőrzésének módja a szorgalmi időszakban[5]:
In each semester two written midterms are arranged. The topics of the midterms are the material discussed from the beginning of the semester or after the previous midterm.

A félév aláírásának követelményei:

The number of absences must not be more than 25 percent of the number of practices and lectures in the semester.

A vizsga típusa:

oral semifinal exam

Vizsgakövetelmények

One question is given from two topic lists each. Acceptable knowledge must be proven.

Topic list ”A”

1. Pharmacodynamics I (Molecular targets of drugs. Drug receptors. Receptor theory.)
2. Pharmacodynamics II (relation between drug dose and clinical response, therapeutic index, tolerance, pharmacodynamic drug interactions). The process of drug development.
3. Drug absorption, distribution and bioavailability. Membrane transport mechanisms.
4. Drug biotransformation, linear and non-linear kinetics. Enzyme inhibition and induction. Clearance, half-life, loading and maintenance dose. Elimination. Pharmacokinetic drug interactions
5. Local anesthetics.
6. Glucocorticoids for oral and parenteral use
7. Mineralocorticoids. Topically applied glucocorticoids
8. Androgens, anabolic steroids, antiandrogens. Agents affecting the sexual activity
9. Estrogens and antiestrogens
10. Progestins and antiprogestins
11. Contraceptives
12. Thyroid and antithyroid drugs. Hypothalamic and pituitary hormones
13. Pancreatic hormones and parenterally applied antidiabetic drugs. Pharmacotherapy of IDDM.
14. Oral antidiabetics. Pharmacotherapy of non-insulin dependent diabetes mellitus.
15. Agents affecting bone mineral homeostasis (calcium, vitamin D, parathyroid hormone, calcitonin, etc.). Pharmacotherapy of osteoporosis.
16. Drugs used in coagulation disorders I: Antiplatelet agents
17. Drugs used in coagulation disorders II: Anticoagulant drugs
18. Drugs used in coagulation disorders III: Fibrinolytic drugs. Drugs used in bleeding disorders
19. Agents used in anemias
20. Special aspects of pediatric and geriatric pharmacology
21. Biological Drugs. Orphan Drugs (CP) Advanced Therapy Medicines
22. Pharmacovigilance (reporting adverse effects), drug registration, ATC code, generics, biosimilar drugs). Drug formulations.

Topic list ”B”

1. Cholinergic transmission and its presynaptic modification.
2. Adrenergic transmission and its presynaptic modification
3. Cholinomimetics
4. Muscarinic receptor blocking drugs
5. Catecholamines
6. Indirect sympathomimetics. Selective α_2-agonists and drugs acting on the imidazoline receptors
7. α-receptor antagonists
8. β-receptor antagonists
9. Centrally acting skeletal muscle relaxants (spasmolytics). Dantrolene. Botulinum toxin
10. Skeletal muscle relaxants acting on the neuromuscular junction

11. Selective β_2-stimulants and other bronchodilators. Pharmacotherapy of bronchial asthma and COPD.
12. Antiinflammatory agents used in bronchial asthma. Antitussive agents and expectorants
13. Drugs used for the treatment of peripheral vascular diseases. Therapy of migraine
14. Drugs used for treatment of heart failure I: Drugs decreasing the load on the heart. Drugs of acute cardiac failure. Pharmacotherapy of chronic heart failure.
15. Drugs used for treatment of heart failure II: Positive inotropic agents. Pharmacotherapy of acute heart failure.
16. Antiarrhytmic agents
17. Drugs used for the treatment of hypertension I: Classification of antihypertensive agents and their mechanisms of action. Pharmacotherapy of hypertension.
18. Drugs used for the treatment of hypertension II: Ca^{++}-channel blockers and other vasodilators
19. Drugs used for the treatment of hypertension III: Drugs acting on the renin-angiotensin-aldosterone system
20. Drugs used for treatment of angina pectoris. Pharmacotherapy of ischemic heart disease.
21. Agents used in dyslipidaemias.
22. Potassium excreting (wasting) diuretics
23. Potassium sparing diuretics, ADH antagonists, osmotic diuretics
24. Histamine and antihistamines.

Az osztályzat kialakításának módja és típusa[7]:
According to the knowledge proven at the exam.

A vizsgára történő jelentkezés módja:
Registration must be done through the NEPTUN system for the days set by the department up to the limits.

A vizsga megismétlésének lehetőségei:
According to the Study and Examination Policy of Semmelweis University

A tananyag elsajátításához felhasználható nyomtatott, elektronikus és online jegyzetek, tankönyvek, segédletek és szakirodalom (online anyag esetén html cím):

Basic and Clinical Pharmacology (Ed. B. G. Katzung), 14th edition, McGraw-Hill Education, 2018. ISBN 978-1-260-28817-9

Materials discussed during lectures and seminars: http://semmelweis.hu/pharmacology, Moodle (https://itc.semmelweis.hu)

A tárgyat meghirdető habilitált oktató (tantárgyfelelős) aláírása:

A gesztorintézet igazgatójának aláírása:

Beadás dátuma:

OKB véleménye:

Dékáni hivatal megjegyzése:

Dékán aláírása:

[1] Csak abban az esetben kell megadni, ha a tárgy az adott nyelven is meghírdetésre kerül.
[2] Dékáni Hivatal tölti ki, jóváhagyást követően.
[3] Az elméleti és gyakorlati oktatást órákra (hetekre) lebontva, sorszámozva külön-külön kell megadni, az előadók és a gyakorlati oktatók nevének feltüntetésével. Mellékletben nem csatolható!
[4] Pl. terepgyakorlat, kórlapelemzés, felmérés készítése, stb.
[5] Pl. házi feladat, beszámoló, zárthelyi stb. témaköre és időpontja, pótlásuk és javításuk lehetősége.
[6] Elméleti vizsga esetén kérjük a tételsor megadását, gyakorlati vizsga esetén a vizsgáztatás témakörét és módját .
[7] Az elméleti és gyakorlati vizsga beszámításának módja. Az évközi számonkérések eredményeink beszámítási módja.