

**TC.**

**ISTANBUL MEDIPOL UNIVERSITY**

**INTERNATIONAL SCHOOL OF MEDICINE**



**Guide for Rational Pharmacotherapy Clerkship**

**2021 - 2022**

**RATIONAL PHARMACOTHERAPY CLERKSHIP**

**Introduction**

Rational Pharmacotherapy Clerkship consists of 37 theoretical and 9 practical courses. The majority of the theoretical lectures are held in lecture halls while practical courses and several theoretical lectures are held in small group rooms in an interactive fashion. It is obligatory to attend at least 80% of both theoretical and practical sessions. Absenteeism exceeding the threshold level of 20% lose their right to take the exam.

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| **Period of Education** | Phase IV |
| **Duration of Clerkship** | 2 weeks |
| **Place of Clerkship** | South Field of Kavacık Campus of Istanbul Medipol University |
| **Professors** | • Assist. Prof. Volkan AYDIN  • Assist. Prof. Ayşe Arzu ŞAKUL  • Prof. Amina Mahdy SALLAM |
| **Supervisor** | • Assist. Prof. Volkan AYDIN |

**Objective of the Clerkship**

The main aim is to discuss the necessity of training for rational pharmacotherapy decision and help students develop their own way to choose a drug/treatment among many other alternatives by comparing them in terms of efficacy, safety, suitability and cost. The program also aims to help students to learn how to write a good prescription, how to use novel drugs, and how to report adverse events in clinical practice.

**Learning Methods**

* Theoretical lecture (Face-to-Face, Online)
* Case-based discussion
* Presentations
* Role-play

**Learning Objectives of the Rational Pharmacotherapy Clerkship**

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| **Name of the Lecture** | **Learning Objective of the Lecture / Practice** | **Hours Allocated** |
| Introduction to the rational pharmacotherapy clerkship | Understand the need for education on rational pharmacotherapy | 1 |
| Understand the learning objectives of the clerkship |
| Understand the implementation of the clerkship |
| Gaining the knowledge about the assessment method of the clerkship |
| Principles of rational pharmacotherapy | Gaining the knowledge about basic principles of rational use of medicine | 2 |
| Gaining the knowledge about the steps of rational pharmacotherapy |
| Defining the major criteria of rational drug selection |
| Defining the examples of irrational use of medicine practice |
| Defining the need for rational use of medicine |
| Basic concepts of prescribing | Defining the basic concepts of prescribing | 1 |
| Gaining knowledge about the fundamental elements of prescription |
| Gaining knowledge about the e-prescription |
| Introduction to the Module Session | Understand the implementation of the modules | 1 |
| Multi-attribute utility analysis in choosing P-drug | Gaining the criteria of P-drug selection | 1 |
| Reviewing and summarizing scientific data |
| Analysing scientific data and interpreting the results |
| Applying evidence-based medicine principles in clinical decision-making |
| Defining the sources of drug information |
| Gaining the knowledge about Summary of Product Characteristics and Instructions of Use documents |
| Prescription writing | Applying the basic concepts of prescribing | 1 |
| Practicing rational prescribing |
| Prescription audit | Receiving feedbacks about prescribing performances | 1 |
| **Name of the Lecture** | **Learning Objective of the Lecture / Practice** | **Hours Allocated** |
| Defining the problem, therapeutic objectives & non-drug treatment in essential hypertension | Defining the problem and pathogenesis in essential hypertension | 3 |
| Discussing and defining the therapeutic objectives in essential hypertension |
| Explaining the non-pharmacological therapeutic options in essential hypertension |
| Defining the problem, therapeutic objectives & non-drug treatment in acute sinusitis | Defining the problem and pathogenesis in acute sinusitis | 3 |
| Discussing and defining the therapeutic objectives in acute sinusitis |
| Explaining the non-pharmacological therapeutic options in acute sinusitis |
| Clinical pharmacology of the drugs used in essential hypertension | Analysing antihypertensive medications according to their efficacy | 3 |
| Analysing antihypertensive medications according to their safety |
| Analysing antihypertensive medications according to their suitability |
| Analysing antihypertensive medications according to their costs |
| Reviewing antihypertensive medications and comparing according to their drug selection criteria |
| Setting and presenting a P-drug list for particular antihypertensive class |
| Clinical pharmacology of the drugs used in acute sinusitis | Analysing antibiotic drug group according to their efficacy | 3 |
| Analysing antibiotic drug group according to their safety |
| Analysing antibiotic drug group according to their suitability |
| Analysing antibiotic drug group according to their costs |
| Reviewing antibiotic drug group and comparing according to their drug selection criteria |
| Setting and presenting a P-drug list for particular antibiotic drug group |
| Skills workshop in choosing a set of P-drugs in essential hypertension | Discussing relative weights of drug selection criteria in essential hypertension | 3 |
| Comparing selected drug groups to set a P-drug in essential hypertension |
| Preparing a P-drug list for essential hypertension |
| Skills workshop in choosing a set of P-drugs in acute sinusitis | Discussing relative weights of drug selection criteria in acute sinusitis | 3 |
| Comparing selected drug groups to set a P-drug in acute sinusitis |
| Preparing a P-drug list for acute sinusitis |
| **Name of the Lecture** | **Learning Objective of the Lecture / Practice** | **Hours Allocated** |
| Practical aspects of prescribing & monitoring treatment in essential hypertension | Practicing rational pharmacotherapy steps in different hypertension case scenarios | 3 |
| Prescribing according to rational use of medicine principles |
| Monitoring rational pharmacotherapy in essential hypertension |
| Practical aspects of prescribing & monitoring treatment in acute sinusitis | Practicing rational pharmacotherapy steps in different sinusitis case scenarios | 3 |
| Prescribing according to rational use of medicine principles |
| Monitoring rational pharmacotherapy in acute sinusitis |
| Drug use in pregnancy & nursing | Gaining the knowledge about drug use in pregnancy | 1 |
| Gaining the knowledge about drug use in pregnancy |
| Defining the rational use of drugs in pregnancy and nursing |
| Drug use in children | Gaining the knowledge about drug use in children | 1 |
| Defining the rational use of drugs in children |
| Defining the need for off-label drug use in children |
| Drug use in elderly | Gaining the knowledge about drug use in geriatric population | 2 |
| Defining the rational use of drugs in geriatric population |
| Drug use in renal & hepatic disorders | Gaining the knowledge about drug use in patients with renal impairment | 2 |
| Gaining the knowledge about drug use in patients with hepatic impairment |
| Defining the rational use of drugs in patients with renal or hepatic disorders |
| Generic drugs | Gaining the knowledge about bioequivalence/bioavailability studies | 1 |
| Defining the need for use of generic drugs |
| Drug interactions | Gaining the knowledge about basic types of drug interactions | 2 |
| Describing the importance of prescribing cascade & deprescribing |
| Using the information of drug interactions in practicing rational pharmacotherapy |
| Pharmacovigilance & drug safety | Defining basic concepts of pharmacovigilance | 2 |
| Gaining knowledge about the importance of adverse drug event reporting |
| Gaining knowledge about adverse drug event reporting |
| Adverse event reporting | Practicing adverse drug event reporting in a selected case scenario | 1 |
| Self-medication | Explaining the need for self-medication practice | 1 |
| Defining basic concepts about over-the-counter medications |

**Association of learning objectives with competencies of the program and fundamental roles**

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| **Learning objective of the clerkship** | **Corresponding competencies of the program** | **Fundamental role** | **TEPDAD General Practitioner Skill** |
| **R1- General practitioner R2-Team member R3-Communicator R4-Leader R5-Health advocate  R6-Scientist R7-Professional** | **GP1- Analytical and Critical Thinking  GP2-Clinical Questioning-Reasoning  GP3-Problem Solving GP4-Access at and Use of Information  GP5-Life-Long Learning  GP6-Communication and Team Work** |
| Describe the factors that influence clinical decision-making process in drug selection |  | R1, R5, R6, R7 | GP1, GP2, GP3, GP4 |
| Define the diagnosis and specify the therapeutic objectives |  | R1, R3, R5, R7 | GP1, GP2, GP3, GP4 |
| Make an inventory of effective groups of drugs |  | R1, R5, R6, R7 | GP1, GP2, GP3, GP4 |
| Choose an effective group according to efficacy, safety, suitability and cost criteria |  | R1, R5, R6, R7 | GP1, GP2, GP3, GP4 |
| Choose a personal-drug |  | R1, R5, R7 | GP2, GP3 |
| Prepare a personal-drug list |  | R1, R5, R7 | GP3 |
| Define the problem of a particular case |  | R1, R3, R5, R7 | GP1, GP2, GP3, GP4 |
| Specify the therapeutic objective(s) for the given case |  | R1, R3, R5, R7 | GP1, GP2, GP3 |
| Verify the suitability of the P-drug for the specific patient |  | R1, R3, R7 | GP1, GP2, GP3, GP4 |
| Identify a rational treatment plan for a specific patient |  | R1, R7 | GP1, GP4 |
| Write a complete and correct prescription |  | R1, R7 | GP1 |
| Create a good doctor-patient relationship |  | R1, R3, R7 | GP2, GP4, GP6 |
| Give the patient necessary information, instructions and warnings |  | R1, R3, R5, R7 | GP1, GP6 |
| Ensure the patient understands everything |  | R1, R3, R5, R7 | GP1, GP6 |
| Monitor the patient |  | R1, R5, R7 | GP1, GP6 |
| **Learning objective of the clerkship** | **Corresponding competencies of the program** | **Fundamental role** | **TEPDAD General Physician Skill** |
| **R1- General practitioner R2-Team member R3-Communicator R4-Leader R5-Health advocate  R6-Scientist R7-Professional** | **GP1- Analytical and Critical Thinking  GP2-Clinical Questioning-Reasoning  GP3-Problem Solving GP4-Access at and Use of Information  GP5-Life-Long Learning  GP6-Communication and Team Work** |
| Define rational use of medicines |  | R1, R2, R4, R5, R7 | GP1, GP4, GP5 |
| Define general concepts regarding rational use of medicines |  | R1, R2, R4, R5, R7 | GP1, GP4, GP5 |
| Define basic principles of prescribing |  | R1, R7 | GP2, GP3 |
| Develop the ability to prescribe rationally |  | R1, R7 | GP1, GP4, GP5 |
| Define basic principles of using drugs in elderly |  | R1, R7 | GP1, GP4, GP5 |
| Define basic principles of using drugs in children |  | R1, R7 | GP1, GP4, GP5 |
| Define basic principles of using drugs in pregnant & lactating women |  | R1, R7 | GP1, GP4, GP5 |
| Define basic principles of using drugs in cases with renal or hepatic impairment |  | R1, R7 | GP1, GP4, GP5 |
| Define basic concepts of self-medication and OTC drugs |  | R1, R3, R5, R7 | GP1, GP4, GP5 |
| Define & understand the need for using generic drugs |  | R1, R5, R6 | GP1, GP4, GP5 |
| Define basic concepts of pharmacovigilance and drug safety |  | R1, R5, R7 | GP1, GP4, GP5 |
| Develop the ability to report adverse drug events |  | R1, R5, R7 | GP1, GP2, GP3 |

**Core Education Program Table for Rational Pharmacotherapy Clerkship**

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| **Symptoms/Conditions** | **Core Diseases /**  **Clinical Problems** | **Name of the Phase IV Lecture** | **Level of Learning** | **Measurement-Assessment** |
| **Fever** | Upper respiratory tract infections | 1. Defining the problem, therapeutic objectives & non-drug treatment in acute sinusitis | DT P F | Written – Oral |
| **Nasal discharge/congestion** | Upper respiratory tract infections | 1. Defining the problem, therapeutic objectives & non-drug treatment in acute sinusitis | DT P | Written – Oral |
| **Hypertension** | Essential hypertension | 1. Defining the problem, therapeutic objectives & non-drug treatment in essential hypertension | DT E P F | Written – Oral |
| **Hypertension** | Drug side effects | 1. Clinical pharmacology of drugs used in essential hypertension  2. Skills workshop in choosing a set of P-drugs  3. Practical aspects of prescribing & monitoring treatment | T E P F | Written – Oral |
| **Hypertension** | Obesity | 1. Defining the problem, therapeutic objectives & non-drug treatment in essential hypertension | T P F | Written – Oral |
| **Postnasal drip** | Upper respiratory tract infections | 1. Defining the problem, therapeutic objectives & non-drug treatment in acute sinusitis | DT P | Written – Oral |

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| **Level of Learning** | **Description** |
| **E** | Shall recognize any emergency and administer emergency treatment; refer to the specialist if necessary |
| **WD** | Shall establish a working diagnosis and implement essential initial procedures & refer to the specialist |
| **D** | Shall establish the diagnosis and have knowledge about the treatment; implement essential initial procedures & refer to the specialist |
| **DT** | Shall establish the diagnosis and treat the disease/condition |
| **F** | Shall provide a long-term follow-up and management of the disease/condition in primary care setting |
| **P** | Shall apply preventive (appropriate one(s) of primary, secondary, and tertiary) measures |

**Fundamental Practices of Medicine in Rational Pharmacotherapy Clerkship**

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| **Practice** | **Name of the Practice** | **Name of the Phase IV Lecture** | **Level of Learning** |
| **Recording, reporting, notifying** | Informing and obtaining consent | 1. Defining the problem, therapeutic objectives & non-drug treatment  2. Practical aspects of prescribing & monitoring treatment | 4 |
| **Recording, reporting, notifying** | Prescribing | 1. Basic concepts of prescribing  2. Prescription writing  3. Prescription audit  4. Practical aspects of prescribing & monitoring treatment | 4 |
| **Recording, reporting, notifying** | Reporting and notifying of legally obligatory diseases & conditions | 1. Pharmacovigilance & drug safety  2. Adverse event reporting | 4 |
| **Invasive and non-invasive procedures** | Practicing principles of rational use of medicines | 1. Principles of rational pharmacotherapy  2. Basic concepts of prescribing  3. Drug use in elderly  4. Drug use in children  5. Drug use in pregnant & lactating women  6. Drug use in cases with renal or hepatic impairment  7. Use of generic drugs  8. Self-medication  9. Drug interactions  10. Skills workshop in choosing set of P-drugs  11. Multi-attribute utility analysis in choosing P-drug | 4 |
| **Preventive and community medicine practices** | Providing health education to the community | 1. Defining the problem, therapeutic objectives & non-drug treatment  2. Practical aspects of prescribing & monitoring treatment | 3 |
| **Scientific research principles and applications** | Reviewing scientific data and summarizing with tables and figures | 1. Multi-attribute utility analysis in choosing P-drug  2. Skills workshop in choosing set of P-drugs | 3 |
| **Scientific research principles and applications** | Analysing scientific data with appropriate methods and interpreting the results | 1. Multi-attribute utility analysis in choosing P-drug  2. Skills workshop in choosing set of P-drugs | 2 |
| **Scientific research principles and applications** | Applying evidence-based medicine principles in clinical decision-making | 1. Multi-attribute utility analysis in choosing P-drug  2. Skills workshop in choosing set of P-drugs | 3 |

**Measurement-Assessment Methods of Rational Pharmacotherapy Clerkship**

An examination with open-ended questions is held at the end of the clerkship. This examination also includes assessment of two different case-based prescribing performance. The presentation performances of the students during the module sessions of the clerkship are also considered and added onto the final score of the clerkship.

**Calculation of Final Score of Clerkship**

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| **Examination Type** | **Percentage** |
| **Examination with Open-ended Questions** | 45% |
| **Prescribing performance** | 25% |
| **Presentation performance** | 30% |

**Recommended Sources for Rational Pharmacotherapy Clerkship**

1. De Vries, T. P. G. M, Henning, R. H, Hogerzeil, Hans V, Fresle, D. A, WHO Action Programme on Essential Drugs. et al. (‎1994)‎. Guide to good prescribing: a practical manual / authors: T. P. G. M. de Vries ... [‎et al.]‎; with contributions from F. M. Haaijer-Ruskamp and R. M. van Gilst. World Health Organization
2. T.C. Sosyal Güvenlik Kurumu. Birinci Basamak Sağlık Kurumlarında Çalışan Hekimlere Yönelik Akılcı İlaç Kullanımı. Ed: Ahmet Akıcı. (2013) SGK Yayın No: 112; Ankara, ISBN: 978-605-4844-04-3. T.C. Sosyal Güvenlik Kurumu. Birinci Basamak Sağlık Kurumlarında Çalışan Hekimlere Yönelik Akılcı İlaç Kullanımı. Ed: Ahmet Akıcı. (2013) SGK Yayın No: 112; Ankara, ISBN: 978-605-4844-04-3.
3. Sağlık Bakanlığı Türkiye İlaç ve Tıbbi Cihaz Kurumu KÜB/KT Listesi. <https://www.titck.gov.tr/kubkt>
4. Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, Clement DL, Coca A, de Simone G, Dominiczak A, Kahan T, Mahfoud F, Redon J, Ruilope L, Zanchetti A, Kerins M, Kjeldsen SE, Kreutz R, Laurent S, Lip GYH, McManus R, Narkiewicz K, Ruschitzka F, Schmieder RE, Shlyakhto E, Tsioufis C, Aboyans V, Desormais I; ESC Scientific Document Group. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J. 2018 Sep 1;39(33):3021-3104.
5. Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr; Infectious Diseases Society of America. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. Clin Infect Dis. 2012 Apr;54(8):e72-e112.
6. Aring AM, Chan MM. Current Concepts in Adult Acute Rhinosinusitis. Am Fam Physician. 2016 Jul 15;94(2):97-105. PMID: 27419326.