

**T.C.**

**ISTANBUL MEDIPOL UNIVERSITY**

**INTERNATIONAL SCHOOL OF MEDICINE**



**ANESTHESIA AND REANIMATION CLERKSHIP GUIDE**

**2021-2022**

**ANESTHESIA AND REANIMATION CLERKSHIP GUIDE**

 **CLERKSHIP DESCRIPTION**

 Anesthesiology and Reanimation clerkship starts at 08.00 every day and ends at 17.00. It is left every day between 12.00-13.00 as "lunch break". On the second day of the clerkship, between 09.00-12.00, Monitoring and Cardiopulmonary Resuscitation practice are performed. During the Anesthesiology and Reanimation Clerkship, a total of 30 theoretical courses are explained to the students, 3 hours of practice (on models) are performed and 6 presentations are made.

The clerkship starts at 8.00 am. Between 08.00-12.00 in the morning, students are divided into three groups (one group in the operating room, one group in +2 general intensive care unit, one group in +7 General Intensive Care Unit).

|  |  |
| --- | --- |
| **Education Period** | Year V |
| **Clerkship Duration** | 2 weeks |
| **Training Place** | Medipol Mega University Hospital |
| Instrructors | * Assoc. Prof. Pelin KARAASLAN
* Assoc. Prof. Yunus Oktay ATALAY
* Assoc. Prof. Yahya Yıldız
* Assis. Prof. Dr. Gulruh Ashyralyyeva
 |
| **The Head Instructor** | * Assoc. Prof. Dr. Pelin KARAASLAN
 |

# THE AIM OF ANESTHESIA AND REANIMATION CLERKSHIP

 Anesthesiology and Reanimation clerkship provides students to understand the meaning of anesthesia, to learn different anesthetic methods, to recognize anesthetic drugs, to know airway devices and equipments for airway safety, to use these tools and equipments, to gain endotractional intubation skills, to learn cardiopulmonary resuscitation, to know how to monitor and protect the vital functions of the patient, to recognize the patient in the coma and to perform the first intervention in accidents. This is a training process that aims to provide assistance, to be able to perform fluid treatment, to have knowledge about acid-base balance disorders, to make practical simple interpretations, to recognize pain types, to indicate the approach to the treatment of the painful patient and to practice in intensive care and operating room applications with the theoretical information given.

In the curriculum based on the current CEP 2014 form, the aim is to recognize the Department of Anesthesiology and Reanimation, to be able to apply Basic Life Support in Anesthesia and Intensive Care Units, to apply Basic Life Support in cardiac arrests and, if necessary, to be able to provide opening the airway with simple manoeuvres and tools, to be able to perform endotrucheal intubation on the model, to recognize and use some drugs used in anesthesia and intensive care. It is aimed to be able to explain general and regional anesthesia techniques, to summarize which types of patients are taken to intensive care units, to have knowledge about heat stroke, frostbite, accidents, crush syndrome, dehydration, liquid electrolyte balance disorders, sepsis, circulatory shock, coma, ARDS, sepsis and to learn the applications.

Theoretical courses, applications on models and practical applications in operating rooms and intensive care units will provide knowledge about anesthesia applications, summarize what patients should pay attention to when preparing for surgery, and recognize critical patients who will be admitted to intensive care units. When faced with an emergency patient who has stopped breathing and circulation, he will gain the ability to implement basic and advanced life support.

# Learning Methods:

* Theoretical Course (Online/Face-to-Face)
* Case-Based Learning
* Intensive Care/Operating Room
* Practical Training on Model

**ANESTHESIA AND REANIMATION CLERKSHIP LEARNING GOALS**

|  |  |  |
| --- | --- | --- |
|  **Course Name** | **Learning Objective of the Course / Application** | **Course Time / Application Time** |
| Introduction of Clerkship and Introduction to Anesthesia | Defines basic concepts related to anesthesia. | 1 Hour |
| Anesthesiology and Reanimation predict what skills you can acquire after your clerkship. |
|  Monitoring | Measures arterial blood pressure. | 1 Hour |
| ECG monitoring |
| Recognize the pathological ranges in the ECG |
| Cardiovascular Resuscitation (BLS) | Arrest diagnoses. | 1 Hour |
| Application of basic life support. |
| Monitors cardiopulmonary resuscitation. |
| Cardiovascular Resuscitation (ALS) | Initiates early basic life support. | 1 Hour |
| Recognizes arrest rhythm. |
| Performs early defibrillation. |
| Preoperative Preparation and Premedication | Reminds how to perform preoperative anesthetic evaluation. | 1 Hour |
| Expresses the importance of preoperative anesthetic evaluation. |
| Explains when to get pre-anesthetic consent form from the patient. |
| Inhalation Anesthetics and Iv Anesthetics | Defines the mechanism of action of intravenous and inhalation anesthetics. |  1 Hour |
| Counts the effects of intravenous and inhalation anesthetics on systems. |
| Ranks the metabolisms and toxic effects of intravenous and inhalation anesthetics. |
| Neuromuscular Blockers and Narcotic Analgesics | Names neuromuscular blocking drugs. | 1 Hour |
| Explains the differences between depolarising and nondepolarising neuromuscular blockers. |
| Explains the mechanisms of action of neuromuscular blocking drugs. |
| Classifies neuromuscular blocking drugs according to the mechanisms of action of neuromuscular blocking drugs. |
| Names the ingredients of neuromuscular blocking drugs. |
| Describes the conditions in which they are used in the clinic, their important pharmacokinetic / pharmacodynamic properties and side effects. |
| General Anesthesia Methods and Complications | Defines General Anesthesia. | 1 Hour |
| Outsizes the methods of general anesthesia. |
| Counts the complications that may occur during and after the general anesthesia application. |
| Heat Stroke | Counts the changes in the body in heat stroke. | 1 Hour |
| Summarizes the principles of acute and chronic treatment for heat stroke. |
| Plans the treatment. |
| Freezing | Counts the changes that occur in the body in case of freezing. | 1 Hour |
| Summarizes the principles of acute and chronic treatment in case of freezing. |
| Plans the treatment. |
| Endotracheal Intubation And Complications | Defines endotracheal intubation. | 1 Hour |
| Counts indications of endotracheal intubation. |
| Sorts out complications of endotracheal intubation. |
| Explains the meaning and purpose of re-examination. |

|  |  |  |
| --- | --- | --- |
|  **Course Name** |  **Learning Objective of the Course / Application** | **Course Time / Application Time** |
| Approach to a painful patient and Postoperative Analgesia | Defines pain. | 1 Hour |
| Summarizes the pain mechanism. |
| Outlines his approach to multimodal analgesia. |
| Principles of analgesic use | Counts new approaches to the use of analgesics. | 1 Hour |
| Sorts the risks associated with the use of analgesics. |
| Which analgesic? When? To who? Answering these questions. |
| Intensive Care Principles | Defines intensive care. | 1 Hour |
| Classifies intensive care units. |
| Recognizes patients who require intensive care. |
| Directs patients requiring intensive care. |
|  ARDS | Defines ARDS. | 1 Hour |
| Summarizes ARDS diagnostic criteria. |
| Regulates emergency treatment at ARDS. |
| Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | It plans emergency treatment for accidents such as drownings, burns, electric shocks. | 1 Hour |
| Chooses which specialist to refer patients to in accidents. |
|  Crush Injuries | It defines Crush Syndrome. | 1 Hour |
| Evaluates clinical findings. |
| Plans the treatment of the patient with Crush Syndrome. |
| Acid-Base Balance Disorders | Explains the acid-base balance. | 1 Hour |
| Summarizes how acid-base balance is disturbed. |
| Identifies basic acid-base disorders. |
| Explains the general principles about the treatment approach. |
|  Dehydration | Counts fluid compartments of the body. | 1 Hour |
| Identifies dehydration. |
| Regulates emergency treatment of dehydration. |
| Summarizes the fluids used in the treatment of dehydration. |
| Fluid and Electrolyte Balance Disorders 1,2 | Explains the basic principles of fluid management in the perioperative period. | 1 Hour |
| Describes the main properties of liquids used in the perioperative period. |
| Disseminated Intravascular Coagulation (DIC) | Describes common intravenous clotting. | 1 Hour |
| Remembers the coagulation cascading. |
| Counts the diseases that cause DIC. |
|  Sepsis | Identifies sepsis. | 1 Hour |
| Counts the diagnostic criteria of sepsis. |
| Regulates emergency treatment for sepsis. |
|  Shock | Describes the definition and pathophysiology of circulatory shock. | 1 Hour |
| Explains the diagnostic criteria. |
| Plans the treatment. |
|  Coma | Describes the definition and pathophysiology of the coma. | 1 Hour |
| Plans emergency treatment for a coma patient. |
| Decompression Disease | Describes decompression disease. | 1 Hour |
| Summarizes the physiopathology of decompression disease. |
| Explains the principles of prevention from decompression disease. |
| Counts emergency first-line treatment for decompression disease. |

|  |
| --- |
| **ASSOCIATION OF LEARNING OBJECTIVES WITH PROGRAM COMPETENCIES AND KEY ROLES** |
|  **LEARNING GOAL** | **RELATED PROGRAM QUALIFICATIONS** | **BASIC ROLE** | **MEDICAL SKILLS** |
| **R1- Medical Doctor****R2-Team Player****R3-Communicator****R4-Leader****R5-Health Advocate****R6-Scientist****R7-Professional** | **MS1- Analytical and Critical Thinking****MS2-Clinical Inquiry-Reasoning****MS3-Problem Solving****MS4-Accessing and Using Information****MS5-Lifelong Learning****MS6-Communication And Teamwork** |
| Recalls the anatomical and physiological mechanisms of the airways and respiratory system. | PQ1 | R1 |  |
| Recalls the anatomical and physiological mechanisms of CNS and especially medulla spinalis and peripheral nerves | PQ1 | R1 |  |
| Has information about general and regional anesthesia enouMS to inform and guide the patient and their relatives. | PQ1 | R1 |  |
| Explains the working principles of operating rooms, intensive care units and pain clinics. | PQ1 | R1 |  |
| Gets familiar with and implements basic monitoring. | PQ1 | R1 |  |
| Measures and evaluates the vital signs of patients. | PQ1, PQ6, PQ7 | R1,R7 | MS2, MS6 |
| Has idea about the patient's preparation for surgery during the preoperative period. | PQ1 | R1 | MS1 |
| ınterprets the arterial blood gases analysis. | PQ1, PQ2 | R1, R7 | MS1, MS2, MS3 |
| Applies airway equipment (airway, orthraceal intubation, balloon, ventilation with valve-mask, etc.). | PQ1, PQ6, PQ7 | R1,R7 | MS2, MS6 |
| Becomes familiar with intravenous, inhalation anesthetics, local anesthetics, opioids and neuromuscular blockers. | PQ1 | R1 | MS4 |
| Diagnoses cardiac arest, administers BLS and AED. | PQ1, PQ2, PQ6, PQ7 | R1, R7 | MS2,MS3, MS6 |
| Becomes familiar with the complications of general and re-regional anesthesia. | PQ1 | R1 |  |
| Recognizes the patients who require intensive care. | PQ1, PQ2 | R1 | MS2 |
| Knows the principles of analgesic use. | PQ1 | R1 | MS4 |
| Has knowledge about postoperative pain and its treatment. | PQ1 | R1 | MS4 |

**ANESTHESIA AND REANIMATION TYPE CLERKSHIP CEP TABLE**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SYMPTOMS/CONDITIONS** | **CORE DISEASES / CLINICAL PROBLEMS** | **ORGAN SYSTEMS** | **TERM 5 - COURSE NAME** | **LEVEL OF LEARNING** | **MEASUREMENT-EVALUATION** |
| **MOUTH DRYNESS** | Dehydration | Multisystem | Dehydration  | DT E P | Written |
| **ANURIA-OLIGURIA** | Dehydration  | Multisystem | Dehydration  | DT E P | Written |
| **ANURIA-OLIGURIA** | Fluid and Electrolyte Balance Disorders | Multisystem  | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **ANURIA-OLIGURIA** | Crush Injury | Multisystem  | Crush Injuries | D E P | Written |
| **ANURIA-OLIGURIA** | Shock | Multisystem  | Shock | DT E | Written |
| **FEVER** | Dehydration  | Multisystem  | Dehydration  | DT E P | Written |
| **FEVER** | Heat Stroke | Multisystem  | Heat Stroke | DT E F | Written |
| **FEVER** | Sepsis | Multisystem  | Sepsis | DT E | Written |
| **DIZZINESS** | Dehydration  | Multisystem  | Dehydration  | DT E P | Written |
| **INFORMATION CHANGES** | Fluid and Electrolyte Balance Disorders | Multisystem  | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **INFORMATION CHANGES** | Shock | Multisystem  | Shock | DT E | Written |
| **CONSCIOUS CHANGES** | Cardiopulmonary Arrest | Cardiovascular Respiration | 1.Cardiopulmonary Resuscitation (BLS) 2. Cardiopulmonary Resuscitation (ALS)3.Monitoring Application | E | Written |
| **CONSCIOUS CHANGES**  | Coma | Multisystem  | Coma | E D | Written |
| **CONSCIOUS CHANGES**  | Acid Base Balance Disorders | Multisystem  | Acid-Base Balance Disorders 1,2 | E | Written |
| **SKIN RASHES /****LEISONS****(Maculopapular, Bullous, Vesicular)** | Disseminated Intravascular Coagulation (DIC) | Multisystem  | Disseminated Intravascular Coagulation (DIC) | DT | Written |
| **DYSPNEA** | ARDS | Respiration | ARDS | DT E | Written |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SYMPTOMS/CONDITIONS** | **CORE DISEASES / CLINICAL PROBLEMS** | **ORGAN SYSTEMS** | **TERM 5 - COURSE NAME** | **LEVEL OF LEARNING** | **MEASUREMENT-EVALUATION** |
| **FREEZING** | Freezing  | Multisystem | Freezing  | DT E | Written |
| **WEAKNESS** | Dehydration  | Multisystem | Dehydration  | DT E P | Written |
| **WEAKNESS** | Fluid and Electrolyte Balance Disorders | Multisystem | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **HYPOTENSION** | Dehydration  | Multisystem | Dehydration  | DT E P | Written |
| **HYPOTENSION** | Shock | Multisystem | Shock | DT E | Written |
| **HYPOTHERMIA/ HYPERTHERMIA** | Heat Stroke | Multisystem | Heat Stroke | DT E F | Written |
| **HYPOTHERMIA / HYPERTHERMIA** | Sepsis | Multisystem | Sepsis | DT E | Written |
| **BLEEDING SLOPE** | Disseminated Intravascular Coagulation (DIC) | Multisystem | Disseminated Intravascular Coagulation (DIC)) | DT | Written |
| **MUSCLE SKELETON SYSTEM NETWORKS (Waist, Neck, Back, Hips and****Extremity Pain )** | Crush Injury | Multisystem | Crush Injuries | D E P | Written |
| **ACCIDENTS (Home, Work, Traffic,****Electric Shock, Fall,****Boğulmalar )** | Trauma-Titled Diseases (See Diseases, Clinical ProblemsList ) |  | Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | D E | Written |
| **ACCIDENTS (Home, Work, Traffic,****Electric Shock, Fall, Drownings )** | Burn | Skin | Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | D E | Written |
| **ACCIDENTS (Home, Work, Traffic,****Electric Shock, Fall, Drownings )** | Foreign Body / Aspiration | Multisystem | Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | D E | Written |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SYMPTOMS/CONDITIONS** | **CORE DISEASES / CLINICAL PROBLEMS** | **ORGAN SYSTEMS** | **TERM 5 - COURSE NAME** | **LEVEL OF LEARNING** | **MEASUREMENT-EVALUATION** |
| **CONVULSIONS** | Liquid and Electrolyte (Sodium,Potassium, Calcium, Magnesium,Phosphorus) Balance Disorders | Multisystem | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **CONVULSIONS**  | Acid Base Balance Disorders | Multisystem | Acid-Base Balance Disorders 1,2 | E | Written |
| **PARESTHESIA** | Fluid Electrolyte Equilibrium Disorder | Multisystem | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **PETECHIA, PURPURA, ECHIMOSIS** | Trauma-Titled Diseases ( See Diseases, Clinical ProblemsList ) |  | Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | D E | Written |
| **PETECHIA, PURPURA, ECHIMOSIS**  | Disseminated Intravascular Coagulation | Multisystem | Disseminated Intravascular Coagulation (DIC) | DT | Written |
| **PUPIL CHANGES** | Cardiopulmonary Arrest  | Cardiovascular Respiration | 1. Cardiopulmonary Resuscitation (BLS)
2. Cardiopulmonary Resuscitation (ALS)
3. Monitoring Application
 | E | Written- Practice |
| **SYNCOPE** | Cardiopulmonary Arrest  | Cardiovascular Respiration | 1. Cardiopulmonary Resuscitation (BLS)
2. Cardiopulmonary Resuscitation (ALS)
3. Monitoring Application
 | E | Written- Practice |
| **CYANOSIS** | Cardiopulmonary Arrest  | Cardiovascular Respiration | 1. Cardiopulmonary Resuscitation (BLS)
2. Cardiopulmonary Resuscitation (ALS)
3. Monitoring Application
 | E | Written-Practice |
| **TETANI** | Fluid and Electrolyte Balance Disorders | Multisystem | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **BURN** | Dehydration | Multisystem | 1. Dehydration
2. Accidents (Home-Work-Traffic, Electricity
3. Impact, Fall, Drownings)
 | DT E P | Written |
| **SYMPTOMS/CONDITIONS** | **CORE DISEASES / CLINICAL PROBLEMS** | **ORGAN SYSTEMS** | **TERM 5 - COURSE NAME** | **LEVEL OF LEARNING** | **MEASUREMENT-EVALUATION** |
| **BURN** | Fluid and Electrolyte Balance Disorders | Multisystem | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **BURN** | Shock | Multisystem | Shock | DT E | Written |
| **BURN** | Accidents (Home, Work, Traffic, Electric Shock, Fall, Drownings) | Multisystem | Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | E P | Written |
| **ACCIDENTS (Home, Work, Traffic,****Electric Shock, Fall, Drownings )** | Arterial and Vein Injuries | Cardiovascular | Accidents (Home-Work-Traffic, Electric Shock, Fall, Drownings) | D E | Written |
| **PROBLEMS WITH HEIMST AND SCUBA** | Freezing | Multisystem | Freezing | DT E | Written |
| **PROBLEMS WITH HEIMST AND SCUBA** | Decompression Disease | Multisystem | Decompression Disease | DT E | Written |
| **POISONINGS** | Fluid and Electrolyte (Sodium,Potassium, Calcium, Magnesium,Phosphorus) Balance Disorders | Multisystem | Fluid and Electrolyte Balance Disorders 1,2 | DT E P | Written |
| **POISONINGS** | ARDS | Respiration | ARDS | DT E | Written |
| **POISONINGS** | Coma | Multisystem | Coma | D E | Written |
| **POISONINGS** | Acid Base Balance Disorders | Multisystem | Acid-Base Balance Disorders 1,2 | E | Written |

|  |  |
| --- | --- |
| **LEARNING LEVEL** | **EXPLANATION** |
| **E** | Should be able to recognize the emergency and perform emergency treatment, and refer him/her to a specialist when necessary. |
| **PreD** | Should be able to make a preliminary diagnosis and make the necessary preliminary actions and direct them to the specialist. |
| **D** | Should be able to make a diagnosis and have knowledge about the treatment, and should direct them to the specialist by making the necessary preliminary procedures. |
| **DT** | He should be able to diagnose, treat. |
| **F** | Should be able to perform long-term follow-up and control in primary care conditions. |
| **P** | Prevention measures (primary, secondary, tertiary prevention as appropriate/ones) should be implemented. |

**ANESTHESIA AND REANIMATION CLERKSHIP BASIC MEDICAL TRAINING PRACTICES**

|  |  |  |  |
| --- | --- | --- | --- |
| **APPLICATION** | **APPLICATION NAME** | **TERM 5 COURSE NAME** | **LEVEL OF LEARNING** |
| **INVASIVE AND NON-INVASIVE PROCEDURES** | "Airway" practice | 1.Cardiopulmonary Resuscitation (BLS) 2.Cardiopulmonary Resuscitation (ALS) | 4 |
| **INVASIVE AND NON-INVASIVE PROCEDURES**  | Defibrillation | 1.Cardiopulmonary Resuscitation (BLS) 2.Cardiopulmonary Resuscitation (ALS) | 1 |
| **INVASIVE AND NON-INVASIVE PROCEDURES**  | Intubation | 1.Cardiopulmonary Resuscitation (BLS) 2.Cardiopulmonary Resuscitation (ALS) | 3 |
| **INVASIVE AND NON-INVASIVE PROCEDURES**  | Ability to provide advanced life support | 1. Cardiopulmonary Resuscitation (BLS)
2. Cardiopulmonary Resuscitation (ALS)
 | 2 |
| **INVASIVE AND NON-INVASIVE PROCEDURES**  | Blood pressure measurementbe able to | 1.Monitoring 2.Monitoring Application | 1 |
| **INVASIVE AND NON-INVASIVE PROCEDURES**  | Pulseoxymeter application and assessment | 1.Monitoring 2.Monitoring Application | 3 |
| **INVASIVE AND NON-INVASIVE PROCEDURES**  | Providing basic life support | 1.Cardiopulmonary Resuscitation (BLS) 2.Cardiopulmonary Resuscitation (ALS) | 4 |

**MEASUREMENT AND ASSESSMENT METHODS OF ANESTHESIA AND REANIMATION CLERKSHIP**

 At the end of the two-weeks anesthesiology and reanimation clerkship period, students will pass a two-step evaluation exam. Primary care is a written exam and consists of a total of 20 multiple choice question types. The exam takes a total of 60 minutes.

In the written exam, each question consists of a total of 5 choices. Practical exams are carried out on models. The applications to be asked in the practical exam are determined and 5 practical applications will be made for each student to be asked. In practice, scores are given according to the way the student performs the application and are calculated on a total of 100 points. In order to take the practical exam, it is mandatory to get at least 50 points from the theoretical exam. In order to be considered successful in the clerkship, it must take at least 50 out of 100 from the practical exam. The passing score of the students is calculated by taking 60% of the theoretical exam and 40% of the practical exam. Students with a score of 60 or more are successful in the clerkship and receive a passing grade. Students who score lower can either take the exam with later groups or they have to take the make-up exam. The make-up exam will be held annually at a jointly held time frame at the chair board meeting. The make-up exam will also be held under the conditions described above. It was decided that the difficulty of the questions to be asked in the make-up exam should be 10 easy and 10 were moderate difficulty. In this exam, the passing grade will be calculated as described above, and those who do not get a passing grade must participate in the clerkship again next year.

# CALCULATION OF CLERKSHIP SUCCESS RATING

|  |  |
| --- | --- |
| **Exam Type** | **Percentage** |
| **Theoretical Exam** | %60 |
| **Practical Exam** | %40 |

|  |  |
| --- | --- |
| **LESSON** | **SUBJECT** |
| **Case-Based Learning** | Anaphylaxis |
| Sepsis |
| Acid-Base balance disorders |
| Approach to the painful patient |
| Fluid and electrolyte equilibrium disorders |
| Circulation shock |

**RECOMMENDED RESOURCES FOR ANESTHESIA AND REANIMATION CLERKSHIP**

1. Paul L. Marino, Marino’s The ICU Book, Fourth Edition, Wolters Kluwer

Health/Lippicott Williams & Wilkins, Philadelphia, 2014.

1. Paul L. Marino, Marino's The ICU Book, Fourth Edition. Translation Editors; Prof. Dr. Mehmet Kilic, Assoc. Dr. Ersin, Gürkan Dumlu. Palme Publishing, 2018.
2. Morgan & Mikhail’s Clinical Anesthesiology, Eds: John F. Butterworth, David C. Mackey,

John D. Wasnick, 5th edition, Mc Graw Hill Eduvation Lange. 2013.

1. Morgan & Mikhail’s Clinical Anesthesiology, Eds: John F. Butterworth, David C. Mackey, John D. Wasnick, 5th edition(Türkçe) Çeviri Ed. Prof. Dr. F. Handan Çuhruk, Güneş Tıp Kitabevleri, 2015.