

B.V. MYKHAILYCHENKO
A.M. BILIAKOV
I.G. SAVKA

Forensic MEDICINE

T E X T B O O K

Second edition



MEDICINE

WWW.MEDPUBLISH.COM.UA

B.V. MYKHAILYCHENKO
A.M. BILIAKOV
I.G. SAVKA

Forensic MEDICINE

T E X T B O O K

Second edition

APPROVED

by the Ministry of Education and Science of Ukraine
as a textbook for students of higher educational
establishments — medical universities, institutes
and academies

RECOMMENDED

by the Academic Council of Bogomolets
National Medical University as a textbook for
students of medical universities with English
language training

Kyiv
AUS Medicine Publishing
2019

UDC 340.6,134
LBC 58;67.99(2)93ya73
M69

Approved by the Ministry of Education and Science of Ukraine as a textbook for students of higher educational establishments — medical universities, institutes and academies (letter No. 1/11-11455, 6 December 2011)

Recommended by the Academic Council of Bogomolets National Medical University as a textbook for students of medical universities with English language training (minutes No. 12, 27 April 2017)

Authors:

B.V. Mykhailychenko, A.M. Biliakov, I.G. Savka

Reviewers:

Viktor Bachynskyi — D.M., Professor, Head of the Department of Forensic Medicine and Medical Law of Higher State Educational Establishment of Ukraine “Bukovinian State Medical University”, Chernivtsi, Ukraine;

Olexandr Gerasymenko — D.M., Professor

545257

Mykhailychenko B.V.

M69 Forensic Medicine : textbook / B.V. Mykhailychenko, A.M. Biliakov, I.G. Savka ; edited by B.V. Mykhailychenko. — 2nd edition. — Kyiv : AUS Medicine Publishing, 2019. — 224 p.
ISBN 978-617-505-755-1

The textbook briefly highlights both the history of forensic medicine and organization and arbitration principles of forensic medical examination. Forensic and medical thanatology issues as well as diagnostics of various environmental injuries and health conditions are scrutinized in view of current scientific advancements.

The data on lager radiation injuries and information on biological factor influence on the human body are introduced.

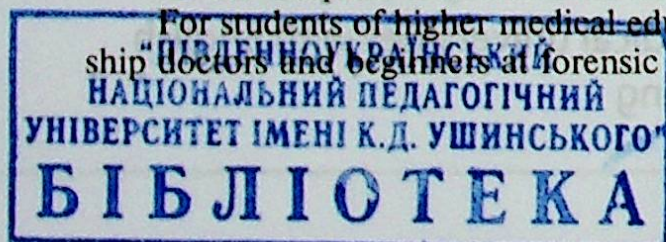
Peculiarities of examining the injured and accused parties and other persons are described according to the Criminal Code of Ukraine.

Current possibilities of forensic medical examination of material evidence are considered.

Legal aspects of health care provision and legal responsibilities of physicians as health care providers for malpractice are provided according to the Criminal Code of Ukraine.

All the chapters end with a list of questions for self-control.

For students of higher medical educational establishments, as well as for internship doctors and beginners at forensic medical expert examination.



UDC 340.6,134
LBC 58;67.99(2)93ya73

ISBN 978-617-505-755-1

© B.V. Mykhailychenko, A.M. Biliakov,
I.G. Savka, 2017, 2019
© AUS Medicine Publishing, design, 2019

CONTENTS

CHAPTER 1. Forensic Medicine as a Science. History of Forensic Medicine	
Development (B.V. Mykhailychenko)	7
1.1. Definition, Contents, Tasks and Role of Forensic Medicine.....	7
1.2. Historic Overview of Forensic Medicine Development.....	8
CHAPTER 2. Procedural and Organizational Basics of Forensic Medical	
Examination (B.V. Mykhailychenko)	13
2.1. General Information about Forensic Medical Examination.....	13
2.2. Participation of a Forensic Medical Expert in Examination.....	15
2.3. Structure of Forensic Medical Service.....	17
2.4. Forensic Medical Documentation.....	20
CHAPTER 3. Forensic Medical Inspection of a Scene of Incident and Corpse	
(I.G. Savka)	22
3.1. The Site of an Incident and its Inspection: General Notions.....	22
3.2. Detection, Fixation, Taking Blood Traces During Inspection of a Scene of an Incident.....	26
3.3. Taking Other Biological Objects.....	27
3.4. Documents Prepared During On-site Inspection of an Incident.....	29
CHAPTER 4. Forensic Medical Thanatology (B.V. Mykhailychenko)	30
4.1. General Information about Dying and Death.....	30
4.2. Forensic Medical Classification of Death.....	32
4.3. Forensic Medical Aspects of Organ and Tissue Transplantation.....	33
4.4. Forensic Medical Diagnosis of Death.....	34
4.5. Determination of the Time of Death.....	44
CHAPTER 5. Forensic Medical Examination of a Corpse (I.G. Savka)	45
5.1. Forensic Medical Examination of a Corpse: General Information.....	45
5.2. The Order to Conduct Forensic Medical Examination of a Corpse.....	46
5.3. External Examination.....	47
5.4. Internal Examination.....	50
5.5. Peculiarities of Examination of an Unknown Person.....	54
5.6. Taking of the Material for Laboratory Examination.....	55
5.7. Official Registration of the Results of Forensic Medical Examination of a Corpse.....	59

CHAPTER 6. Forensic Medical Examination in Case of Sudden Death	
(<i>A.M. Biliakov</i>).....	62
6.1. General Information about Sudden Death.....	62
6.2. Forensic Medical Examination in Case of Different Types of Sudden Death ...	63
6.3. Sudden Death in Childhood	67
6.4. Sudden Death under Peculiar Circumstances	68
CHAPTER 7. Forensic Medical Examination of Newborn Corpses	
(<i>B.V. Mykhailychenko</i>)	69
7.1. Peculiar Features of Forensic Medical Examination of Newborn Corpses	69
7.2. Determination of Neonatality	71
7.3. Determination of Full-Term and Mature Newborn	72
7.4. Determination of Newborn Viability.....	72
7.5. Determination of Live-Born Fetus.....	73
7.6. Causes of Death of Newborns.....	74
CHAPTER 8. Forensic Medical Traumatology (<i>A.M. Biliakov</i>)	76
8.1. Injury Classification and Peculiarities	76
8.2. Blunt Object Injuries	77
8.3. Traumatism and its Types	84
8.4. Transportation Traumatism	84
8.5. Sharp Object Traumas.....	90
8.6. Clothes Damage in case of Obtuse and Sharp Object Traumas	95
CHAPTER 9. Forensic Medical Expertise of Gunshot Injuries (<i>I.G. Savka</i>).....	97
9.1. Firearms and the Mechanism of Shot: General Notion.....	97
9.2. Bullet Entrance Wound due to the Shot from a Distant Range.....	103
9.3. Bullet Entrance Wound due to the Shot from a Close Range	104
9.4. Bullet Entrance Wound due to Contact Range of Shot	107
9.5. Bullet Exit Wound.....	108
9.6. Firearm Wound Canal.....	109
9.7. Firearm Wounds from Hunting Arms	112
9.8. Shot Injuries	113
9.9. Firearm Damages of the Clothes.....	116
9.10. Suicide Signs with the Use of Firearms.....	117
9.11. Injuries after Blank Cartridges.....	118
9.12. Injuries after Pneumatic Arms.....	118
9.13. Peculiarities of Injuries Caused by Devices for Shooting Cartridges Supplied with Rubber or Analogical by Their Properties Missiles of a Survivable Exposure	119
9.14. Explosive Injury.....	120
9.15. Laboratory Methods of Examination in Case of Gunshot Wounds.....	122
9.16. Causes of Death due to Mechanical Injury	123
9.17. Detection of the Vital Origin and Time of Injuries	127
CHAPTER 10. Injuries From Low and High Temperature Effect	
(<i>B.V. Mykhailychenko</i>)	131
10.1. The Local Effect of the High Temperature	131
10.2. The General Effect of the High Temperature (Overheating).....	134

10.3. The Local Effect of the Low Temperature 135

10.4. The General Effect of the Low Temperature 135

CHAPTER 11. Injuries and Death from Atmospheric Pressure Changes
(B.V. Mykhailychenko) 138

11.1. The General Effect of the Increased Atmospheric Pressure on the Body 138

11.2. The General Effect of the Decreased Atmospheric Pressure on the Body 140

CHAPTER 12. Forensic Medical Examination of Electrical Injuries
(B.V. Mykhailychenko) 142

12.1. General Information on Electrical Injuries 142

12.2. The Characteristics of the Electric current Effect 143

12.3. Diagnostics of Death from the Technical Electricity Effect 144

12.4. Damage from the Atmospheric Electricity Effect 146

CHAPTER 13. Forensic Medical Examination of the Radiation Trauma
(B.V. Mykhailychenko) 147

13.1. The General Effect of Ionizing Radiation 147

13.2. The Specifics of the Forensic Medical Examination 149

13.3. Forensic Medical Examination of the Laser Injuries 152

CHAPTER 14. Forensic Medical Examination in Case of Mechanical Asphyxia Death *(A.M. Biliakov)* 154

14.1. General Information about Oxygen Starvation and Its Course 154

14.2. Forensic Medical Diagnosis of Mechanical Asphyxia 155

14.3. Hanging 156

14.4. Ligature Strangulation 160

14.5. Throttling 160

14.6. Closing of Mouth and Nostrils 161

14.7. Choking 161

14.8. Drowning 163

14.9. Squeezing of Chest and Abdomen 165

14.10. Asphyxia in a Limited (Closed) Space 166

CHAPTER 15. Forensic Medical Toxicology *(A.M. Biliakov)* 167

15.1. Overview on Poisons and Poisoning 167

15.2. Forensic Medical Diagnostics of Death Caused by Poisons of Local Action ... 168

15.3. Forensic Medical Diagnostics of Death Caused by Blood Poisons 169

15.4. Forensic Medical Diagnostics of Death Caused by Destructive Poisons 170

15.5. Forensic Medical Diagnostics of Death Caused by Functional Poisons 170

15.6. Forensic Medical Diagnostics of Death Caused by Narcotic Substances 173

15.7. Food Toxins (Food Poisons) 178

CHAPTER 16. Forensic Medical Diagnosis of Health Disorders Caused by a Biological Environmental Factor *(B.V. Mykhailychenko)* 179

16.1. General Information on Biological Environmental Factors 179

16.2. Infectious Effect of Biological Factors 180

16.3. Prion Infection and Its Peculiar Features 180

16.4. Biological Effect of Antigens 181

16.5. Peculiarities of Forensic Medical Examination 182

CHAPTER 17. Forensic Medical Examination of Crime Victims, Accused and Other Persons (A.M. Biliakov)	183
17.1. Reasons and Procedure of Examination.....	183
17.2. Forensic Medical Examination to Determine the Severity of Bodily Injuries.....	184
17.3. Forensic Medical Examination of Health State, Simulation, Aggravation, Self-inflicted Injuring.....	187
17.4. Determination of Age.....	189
CHAPTER 18. Forensic-Medical Expertise in Case of Disputable Sexual Conditions and Sexual Crimes (I.G. Savka)	191
18.1. Peculiarities of Expertise Concerning Disputable Sexual Conditions.....	191
18.2. Detection of Sex.....	193
18.3. Detection of Sexual Maturity.....	194
18.4. Detection of Rupture of Hymen Integrity.....	195
18.5. Detection of Sexual Reproductive Ability.....	196
18.6. Detection of the Term of Previous Labour (Past Deliveries).....	197
18.7. Detection of the Term of Previous Miscarriage (Abortion).....	197
18.8. Forensic Expertise of Sexual Crimes.....	198
CHAPTER 19. Forensic Medical Examination of Material Evidence (B.V. Mykhailychenko)	201
19.1. Blood Examination.....	201
19.2. Examination of Hair.....	209
19.3. Examination of Semen.....	211
19.4. Examination of Human Organs, Tissues and Some Secretions.....	213
CHAPTER 20. Forensic Medical and Criminalistic Methods of Examination (B.V. Mykhailychenko)	215
20.1. Measurement Methods.....	215
20.2. Photographic Methods.....	216
20.3. Optical Methods.....	216
20.4. Radiological Methods.....	216
20.5. Examination in Extreme Spectrum Rays and Luminescent Examination.....	217
20.6. Determination of Object Metallization.....	218
20.7. Examination of the Mineral Composition of Objects.....	219
20.8. Identification Examination of the Instruments of Injury.....	220
20.9. Identification Examination Using Bone Remains and Skull.....	221