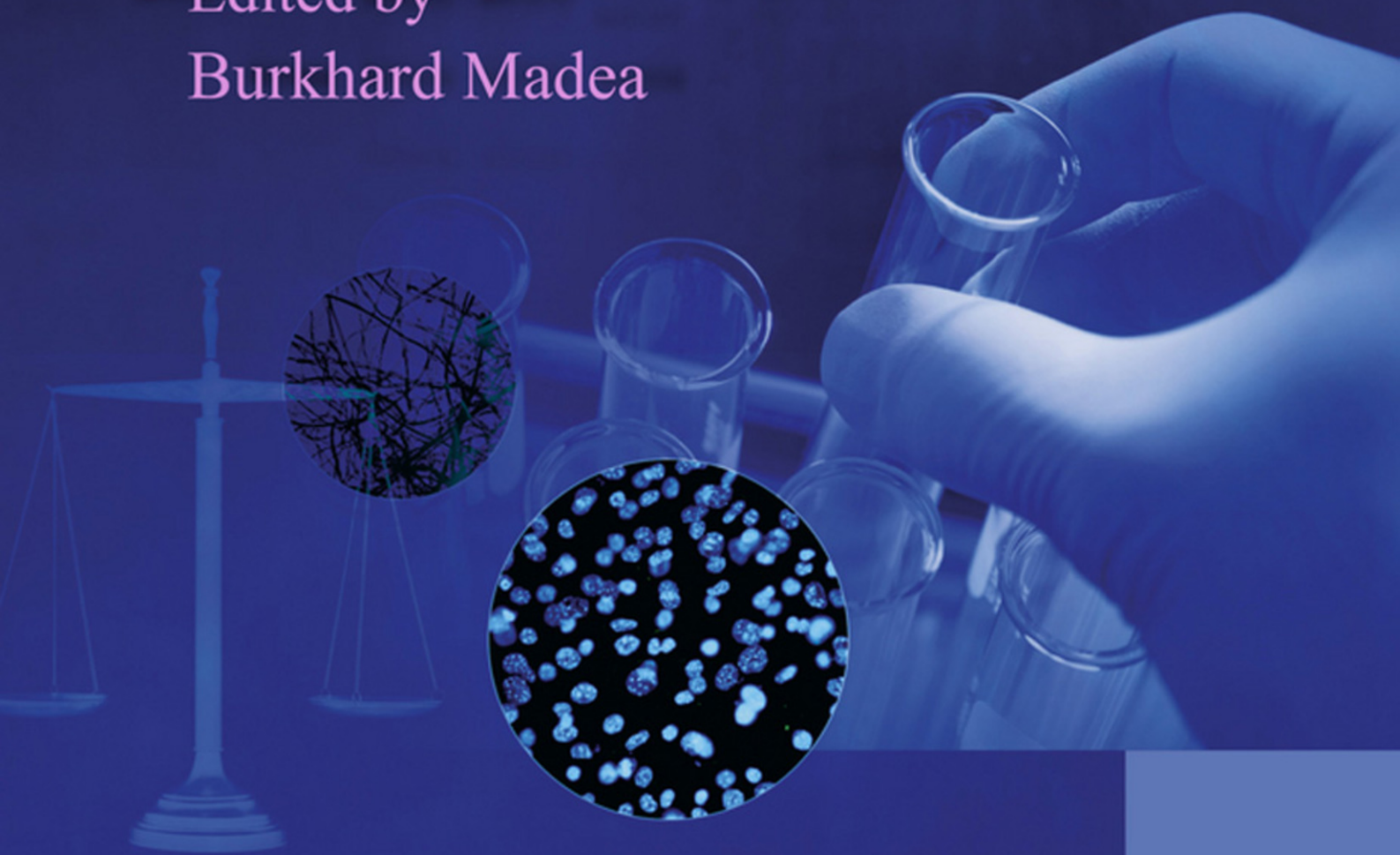


HANDBOOK OF FORENSIC MEDICINE

Edited by
Burkhard Madea



WILEY Blackwell

Handbook of Forensic Medicine

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WILEY Blackwell

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Preface

The fundamental basis of forensic medicine has to be the proper application of justice. Not only justice itself, but societies in particular benefit from well-functioning medicolegal services concerning the following:

- The detection and solving of crimes.
- The appearance of qualified expert witnesses at court.
- The prevention of crimes (such as child abuse or torture).
- The prevention of accidents (such as alcohol- or drug-related accidents or improved car engineering).

Forensic medicine is an ancient medical discipline working at the borders of medicine and law.

This is a book on forensic medicine, not just forensic pathology. It comprises all current aspects of forensic medicine commencing with the medical aspects of death, the certification of cause and manner of death and autopsy legislation, amongst others. The following chapters deal with external violence, the physical signs of abuse and the differential diagnosis of natural versus unnatural causes of death. Of special importance is a chapter focusing on toxicology since in the field of forensic medicine further matrices are now available for toxicological analyses. Further questions dealt with are the tasks of general medicolegal practice such as traffic medicine, identification, haemogenetics, medical law and forensic psychiatry.

A knowledge of all the subdisciplines of forensic medicine is required in daily routine casework since all the results obtained by different medical and scientific methods have to be integrated into one comprehensive reconstruction of events for any particular case.

During recent years there have been a number of dramatic developments in forensic medicine – both on a technical and organisational level. Great improvements have been made, especially in the fields of forensic genetics and toxicology and also in a new area – postmortem imaging – which has been developed over the last few years. This implementation of new developments into daily routine casework has considerably improved the overall validity of expert evidence. One challenge of forensic medicine for the future will be to keep up to date with other scientific improvements and to modernise the discipline.

On the organisational level, in a number of countries, improvements can be observed in the forensic medical services; in others unfortunately there has been a decline, especially in countries where forensic medical services are mainly university-based. In a time of financial austerity, other medical disciplines are much more successful than the area of forensic medicine in attracting resources.

The main tasks in forensic medicine are forensic investigation, reconstruction and expert witness reports. These areas are, of course, regulated by national legislations, differing between countries. Therefore, there are obvious geographical constraints in writing and editing a handbook on forensic medicine. On the other hand, all countries not just on one continent but throughout the world are growing economically, and a harmonisation of different scientific and medicolegal systems is inevitable in the future. An exchange of information on an international level can do nothing but good and legal medicine is no exception. Although medicolegal systems differ from country to country, in some countries postgraduate education and daily routine procedures (standard operation procedures such as medicolegal autopsy rules) have been standardised. Aspects of quality and quality control will be also addressed in this book; for example in Europe many institutes of forensic medicine are already accredited according to ISO 17025 for forensic purposes. International guidelines and internationally accepted quality standards will be of more importance in the future in an increasingly connected world.

Authors from many countries contributed to this book. I am very much in their debt for their input into this book and, of course, to the publisher for making the implementation of this book possible. I would also like to thank my secretary Mirjam Puetz for her assistance and to Professor Kernbach-Wighton who served as assistant to the editor.

Burkhard Madea
Bonn, 2014

Foreword

Born from the need for justice, legal medicine has had to adapt to a succession of scientific, technological, sociocultural and legal contexts throughout history. As a branch of science, it has been in constant evolution and, as such, has proved a source of inspiration and change for the law, stimulating improvements, amendments and legislative innovations. Specialist forensic work involves delving into mysteries of the unknown, solving the enigmas of existence and seeking answers for the large (and small) questions of life. It is also about adding to reality, about reinventing the world that we have inherited.

Legal medicine has a mission that is far from easy, a mission that has always been (and always will be) fundamental to the correct application of justice. On it depend the honour and freedom of people. Legal medicine brings us into contact with people who carry with them the traumas of a life struck by misfortune, people that sometimes have the smell of death imbued in their skin. Hearing the voices of the victims and their families, their silent screams of anguish and despair, pain and anger, we have to make a daily effort to help them and to not give up on the world. Legal medicine is a field of study riddled with doubts, uncertainties, distress and nightmares. However, associated with this, there are also moments of great fulfilment, of intense professional and personal realization – as this is an activity that indisputably helps others. All who practise it have certainly had experiences with people and situations that have profoundly enriched their lives from a human and spiritual point of view.

Although there are differences between countries regarding the content and attributions of legal and forensic medicine, it is defined by the European Council of Legal Medicine as ‘the application of medical knowledge and methodology for the resolution of legal questions and problems for individuals and society. It involves the observation, documentation, collection, assessment, and scientific interpretation of medical evidence deriving from clinical and post mortem investigations required for the different fields of law, including criminal, civil, work, family, and administrative. Its core activities are Clinical Forensic Medicine and Forensic Pathology, but other areas of science and expertise including forensic toxicology, forensic psychiatry, forensic genetics, forensic anthropology may be required depending on the nature of the case.’

As legal medicine is fundamental for the correct application of justice, it can only achieve its highest level with the collaboration of highly qualified legal medical departments that pulsate

with the rhythm of life and are in tune with judicial requirements. Without good legal medicine there can never be good justice. For this is the only field of knowledge can truly shed light on situations as diverse and as complex as sexual abuse, physical and psychological trauma, the influence of toxic substances, identity and kinship, death by murder, suicide and accident, etc.

The extraordinary progress which has been made over the last few years in many areas of legal medicine has yielded ever more significant results, enabling the judicial system to become faster and more efficient, and allowing it to issue decisions that are more appropriate and scientifically grounded. As a science in constant evolution, legal medicine demands permanent contact with the latest legal, scientific, technological and judicial developments, as well as promoting discussion amongst its practitioners in order to solve common problems, share experiences and knowledge, harmonize methodology and compare results. Although legal medicine has achieved a great deal over the last few decades, there is still a long way to go. The road that lies ahead will never come to an end, because it will require constant adjustments and improvements, changing yet remaining always the same. Those who travel it will have to follow its course. Books are essential for this – they are the handrail on the flight of stairs that is the ongoing professional training that each of us undergoes throughout life – offering a means for the exchange of ideas, for the acquisition and consolidation of knowledge and skills, for making contact with different perspectives and recent doctrinal, technological and scientific developments, and for understanding both the potential and the limitations of specialist activity, as well as the new challenges that are constantly appearing.

This book, edited by Professor Burkhard Madea, offers an up-to-date view of the various facets of legal medical intervention, particularly those specialist areas that have undergone the most pronounced development (such as personal injury appraisals under civil and labour law, which still arouse considerable disagreement and controversy regarding doctrine and methodology). The fruit of incessant study, an exhaustive bibliographical review and, particularly, the practical experiences of a host of legal medical teachers and professionals (most of them household names in their respective fields), it is a repository of valuable knowledge and guidance, transmitting different interpretations and points of view which stimulate reflection. Hence, it is an essential companion for qualified

specialist intervention, which always requires the careful weighing up of different interpretive possibilities and perspectives. This book will help legal medicine become more efficient and of better quality, bringing benefits to the field.

Written in clear and simple language, yet rigorous and scientifically grounded, this is the work of competent and committed academics and professionals – people who are passionate about legal medical work, about teaching, and the sharing and transmission of experiences and knowledge, who are deeply concerned with justice and the training of its practitioners. This book reveals the human, academic and professional merits of its editor, and attends to the differences in opinion that result from the wealth of human diversity and from the different perspectives that science can offer us. It is, in short, a book that deserves our attention.

It is a pleasure for me to be able to recommend this book, not only to students and practitioners of legal medicine, but

to anyone who, directly or indirectly, has an interest in legal medicine issues. I am sure it will give readers great satisfaction and provide stimulating food for thought, as well as guidance for professional practice. I congratulate the editor and the different authors on this contribution to legal medicine. It is indeed a great honour to have been invited to write this foreword.

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1 History of Forensic Medicine

Burkhard Madea

1.1 Definitions

According to Sydney Smith (1951) forensic medicine may be defined briefly as consisting essentially of that body of medical and paramedical scientific knowledge which may be used for the purposes of administration of the law. Alfred Swaine Taylor has defined medical jurisprudence as ‘that science, which teaches the application of every branch of medical knowledge to the purpose of the law’. According to a German definition by Schmidtman (1905), the last editor of the famous *Handbook of Forensic Medicine* by Johann Ludwig Casper (1857), forensic medicine is a cross-sectional discipline of medicine and natural sciences dealing with all medical evidence that is relevant for law. It deals with medical evidence not only in practice but also in research; furthermore, all legal essentials in health care are especially important for doctors as part of their teaching, training and research.

Apart from forensic pathology being the essential branch in the development of forensic medicine, in the last 20 years clinical forensic medicine has developed as its own field of expertise. Clinical forensic medicine is that discipline of medicine which involves an interaction between law, judiciary and police dealing generally with living persons.

There is of course no special date at which forensic medicine emerged as a recognisable separate scientific discipline. Several steps in the development of forensic medicine can be distinguished (Box 1.1): firstly the use of medical knowledge for legal and public purposes, secondly compulsory medical testimony

for the guidance of judges in special cases, and thirdly professionalisation as its own discipline.

Characteristic topics that are dealt with in forensic medicine are summarised in Box 1.2. Forensic medicine as we experience it at the beginning of the 21st century has developed since the 19th century and from much older roots. The famous criminal code of Emperor Charles V, the *Constitutio Criminalis Carolina*, promulgated in 1532, is often called a landmark of the first importance in the history of legal medicine (Fig. 1.1). R. P. Brittain (1965a) wrote:

It has commonly been considered as the true start of legal medicine, and hence Germany has been hailed as the country which gave birth to the discipline. It has been said that it caused medical men to be called in legal matters for the first time. This is not strictly true. They had been called on before as earlier enactments show. Without in any way minimising the advance the Carolina represented, it would be wrong to consider it as a phenomenon which occurred without logical antecedents, and as implying the legal medicine arose by a kind of spontaneous generation.

Indeed the Bamberg Criminal Code was a model for the *Constitutio Criminalis Carolina*. However, there is a deep-seated relationship between medicine and law dating back much earlier. These roots can be found in studies of nature, the violation of law and its relation to medicine (injuries, violent death, pregnancy, still birth, rape, poisoning) and the need for experts

Box 1.1 Development of forensic medicine.**Step 1**

Medical knowledge used for legal or public purposes and dependent on the level of achievement both in law and medicine in:

- Knowledge of medical plants and botany
- Knowledge of injuries
- Educational standards in medicine
- Standards of competency
- Legislation concerning disposal of the dead
- Legislation concerning injuries
- Compensation for injuries and deaths

Step 2

Expert medical testimony must be obtained for the guidance of judges in cases of murder, wounding, poisoning, hanging, drowning, infanticide, abortion and malpractice.

Step 3

Further professionalisation in:

- Medicolegal examination
- Giving evidence at court/medical expertise required at court
- Publication of monographs
- Teaching
- Systematic research (decrease of the domain of magic and sorcery)
- Knowledge gained by own practice replacing textbook knowledge (e.g. J. L. Casper)
- Foundation of professorships
- Foundation of own institutes
- Foundation of societies

to assist the law or a court – thus defining the constitution of forensic medicine as a scientific discipline with the publication of monographs, subjects of special instructions and its own research (Table 1.1).

The development and existence of the speciality of forensic medicine depends essentially on two factors: a sufficiently high development of the law and a sufficiently high development of medicine. As Ackerknecht has outlined, in very highly developed civilisations with sophisticated legal regulations there is, on the one hand, no evidence that judges consult medical persons in assessing crime. On the other hand, despite the high development of a rational medical art, no document exists that provides evidence for the use of medical experts in ancient Greece.

Box 1.2 History of characteristic topics in forensic medicine. After Fischer-Homberger (1983).**Responsibility**

- Age
- Gender
- Mental diseases, melancholia
- Simulation
- Disease or malice

Sexuality and reproduction

- Marriage, family
- Impotence, infertility
- Virginity
- Conception and pregnancy
- Duration of pregnancy
- Superfetation
- Abortion
- Infanticide: hydrostatic tests of the lungs
- Rape

Injuries and violent death

- Injuries
 - prognosis of injuries and their locations
 - lethality of wounds, grades of lethality
 - relative fatality of wounds in different parts of the body
- Suffocation
- Poisoning

Role of medicine for the public

- Specialised medical profession
- Educational standards
- Standards of competency
- Ethical standards
- Malpractice

The early literate civilizations of the Near East and China had definite systems of law relating not only to crime but also to property, marriage and other civil matters. For instance, in Egypt the practice of medicine was subject to legal restrictions; the right to practice was restricted to members of a certain class with the intention that physicians had to study the precepts laid down by their predecessors in certain ancient books (Smith 1951). Since physicians had to strictly adhere to the knowledge of ancient books, experiments and originality were not encouraged and, instead, witchcraft, magic and sorcery became dominant. As a result good treatment was characterised by observing the authoritative ‘canon’, with the result that bad treatment or even malpractice originated from not properly observing the authoritative ‘canon’.

In China at the beginning of the 14th century, a noteworthy volume entitled *Hsi Yüan Lu* (*The washing way of wrongs*) was compiled on the procedure to be followed in investigating deaths, especially those under suspicious or obviously criminal circumstances. Sydney Smith, who has studied a comparatively modern edition of this book, describes his impression as follows:

1.2 Civilisations of the Near East and China

Forensic medicine developed in relation to law and it was often legal requirements that pushed improvements in forensic medicine forward. Forensic medicine as a scientific discipline developed when the domain of magic and sorcery was overcome.