



AAP
2015 1-3 July, Budapest

**24th International Meeting
on Forensic Medicine
Alpe-Adria-Pannonia**

Date: 1-3 July, 2015

Venue:
Semmelweis University,
Basic Medical Science Center,
Budapest, Hungary

**PROGRAMME
ABSTRACT BOOK**

AAP

2015



1-3 July, Budapest



AAP 2015 Programme and Abstract Book

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Dear Colleagues,

I would like to welcome all participants of the 24th AAP meeting in Budapest. The meeting has participants from 18 countries of 4 continents.

The program will cover a wide range of topics representing all major fields of Forensic Medicine.

On the other hand the meeting was designed to provide the latest information on designer drugs.

The plenary speakers of the meeting will be Professors Yasmin Hurd (USA), Gabor G. Kovacs (Austria), John Corkery (United Kingdom). They will give information about epidemiology, molecular and neuropathological base of drug abuse. We also would like you to get knowledge on how to teach medical staff about addiction, and drug abuse problem, from Christine Goodair (United Kingdom).

Poster session will be held as scheduled in the program. I believe that the scientific quality of the presentations will guarantee that this meeting will be a memorable event for all attendees.

All participants of the meeting are invited to the Welcome Reception, which will be held at the end of the first day. Social events also included the Gala Dinner, which will be held on Thursday evening, on the “Ister Granum” boat.

I would like to express my special gratitude to our sponsors for their support.

Sincerely,

Éva Keller

President of the AAP meeting

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GENERAL INFORMATION

WEBSITES FOR FURTHER INFORMATION

www.aap2015.com

Opening hours of the registration

30 June, Tuesday	15:00 - 19:00
1 July, Wednesday	08:00 - 19:00
2 July, Thursday	08:00 - 16:30
3 July, Friday	08:00 - 13:00

OFFICIAL LANGUAGE

English

No simultaneous translation will be provided.

CERTIFICATE OF ATTENDANCE

A Certificate of Attendance will be issued at the time of registration to delegates who are pre-registered. For on-site registrants, a Certificate of Attendance will be available at the end of the Conference. No certificate will be issued after the Conference.

DISABLED PERSONS

The Conference Venue is fully accessible for disabled persons.

LIABILITY

The Local Organising Committee and the Expert-Quality Congress and Travel Agency do not accept liability for personal medical expenses, travel expenses, losses of whatever nature incurred by delegates and/or accompanying persons.

CAR PARKING

Parking places are all around the venue of the Conference, with different prices. The parking fee in the neighbourhood is 265 HUF/ hours (between 8:00 - 18:00).

CLOAKROOM AND LUGGAGE

There will be a cloakroom for luggage and suitcases. It will be available during the official opening hours.

The AAP and the Expert-Quality Congress and Travel Agency will not be responsible for any item left beyond the duty hours.

INFORMATION

At the registration desk every staff member will be glad to help you with any enquiries.

LUNCHES

The registration fee does include lunch for who registered as a regular or student participant. With these tickets the participants can use the catering services.

MOBILE PHONES

Mobile phones should be switched off during any Scientific Session.

PROGRAMME CHANGES

Organisers cannot assume liability for any changes in the programme due to external or unforeseen circumstances

SMOKING

Smoking is strictly forbidden in the whole area of the Conference Venue. It is allowed only at the designated areas.

PICTURES AND AUDIO RECORDING

It is forbidden to take photos or to make audio recording in the lecture rooms.

PROCESSING AND PUBLICATION OF PERSONAL DATA

Please note that the personal information we receive from participants will be used for statistical purposes or for the dispatch of information on relevant conferences in the future.

REGISTRATION FEES

	On-site fee
Regular	350 €
Student	250 €
Lunch	7 €
Gala dinner	58 €

Registration fee for regular participants includes

- Access to scientific presentations, program book and conference material
- Opening ceremony
- Lunch
- Coffee break
- Gala Dinner
- Congress bag

SPONSORS

MAJOR SPONSORS

The organizers are extremely grateful to the Semmelweis University and the Association of Hungarian Forensic Medicine for the generous support of the conference.

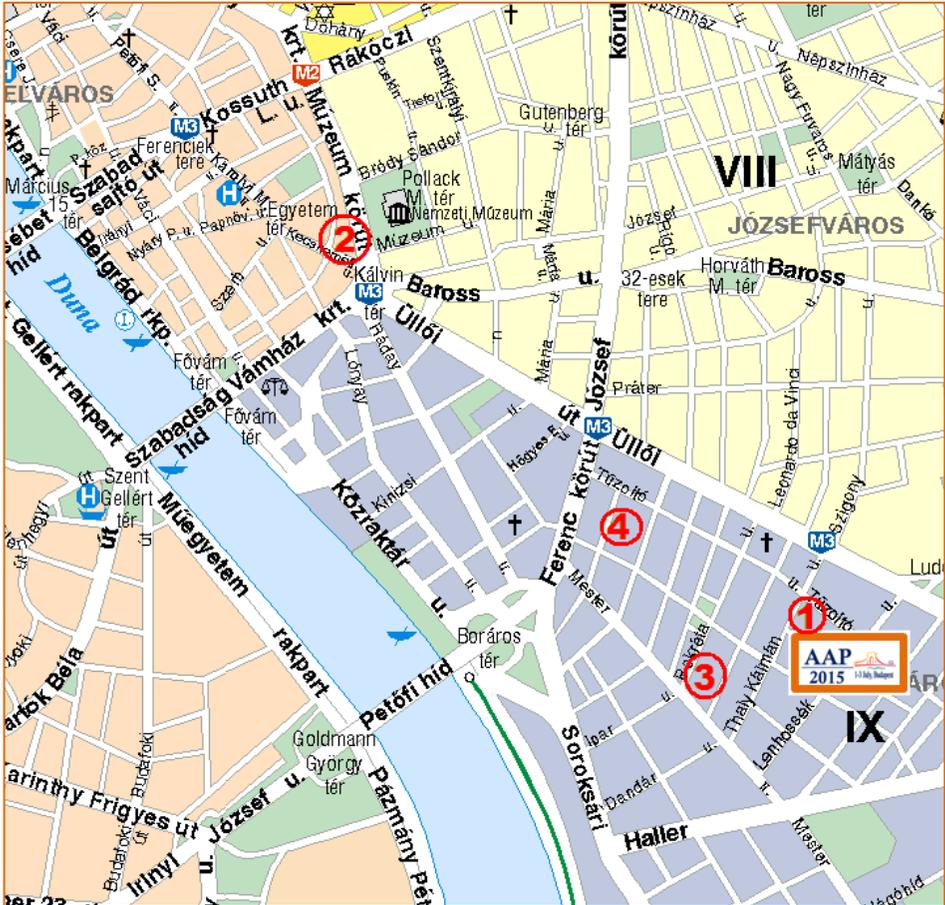


SPONSORS



The organizers are grateful for the generous support of the sponsors.

MAP OF VENUE



1. Congress venue: Semmelweis University,
Basic Medical Science Center – H-1094 Budapest, Tűzoltó u. 37-43.
2. Hotel Mecure Budapest Korona
3. Actor Hotel Budapest
4. Corvin Hotel

GUIDELINES & INFORMATION

● Guidelines for speakers

1. Please locate your session room in due time and be there at least 20 minutes before the start of the session and deliver the presentation to the technician.
Presentation format: Microsoft PowerPoint, Windows Version XP Electronic Support: USB only.
Videos should be included in your PowerPoint. Presentation or at least be in a format that is supported by Windows Media Player.
2. We would like to ask the speakers to keep their presentations within the given time limits.
3. In case of using your own laptop, please inform the team in the Session/ Lecture Room, in order to prepare for this.

SOCIAL PROGRAMMES

Welcome reception 1 July 2015, 18.30
**Venue: Semmelweis University,
Basic Medical Science Center**
Included in the registration fee.
Dress code: casual



Gala Dinner 2 July 2015, 20.00
Venue: Ister Granum Boat
Included in the registration fee.
Dress code: smart casual



Congress Organizer

Expert-Quality Congress and Travel Agency
H-1052 Budapest, Kígyó utca 4-6.
Information: Alexandra Szalma
Tel.: 00 36 1 311 66 87 Fax: 00 36 1 383 79 18

E-mail: info@aap2015.com - Website: www.eqcongress.hu

SCIENTIFIC PROGRAM TIME SCHEDULE

1 July, 2015	
09:30-10:00	Opening Ceremony
10:00-11:00	Special session with invited speakers
11:00-11:30	<i>Coffee Break</i>
11:30-13:00	Special session with invited speakers
13:00-14:00	<i>Lunch time</i>
14:00-16:00	Free communications
16:00-16:15	<i>Coffee Break</i>
16:15-18:15	Free communications
18:30	Welcome Reception
2 July, 2015	
10:00-10:45	Keynote speaker
10:45-12:00	Free communications
12:00-12:15	<i>Coffee Break</i>
12:15-13:00	Free communications
13:00-14:00	<i>Lunch time</i>
14:00-15:00	Free communications
15:00-15:15	<i>Coffee Break</i>
15:15-16:10	Poster session
20:00-23:00	Gala Dinner
3 July, 2015	
10:00-10:20	Keynote speaker
10:20-11:20	Free communications
11:20-11:30	<i>Coffee Break</i>
11:30-12:40	Free communications
12:40-13:00	Closing Ceremony
13:00-13:45	<i>Lunch time</i>

SCIENTIFIC PROGRAMME

30 June, 2015

15:00-19:00 REGISTRATION

1 July, 2015

- DRUGS AND DRUG ABUSE - MOLECULAR BASE OF DRUG ABUSE -

HEVESSY GYÖRGY ROOM

09:30-10:00 OPENING CEREMONY

Representatives of Semmelweis University and Ministries

Éva Keller

10:00-11:00 SPECIAL SESSION WITH INVITED SPEAKERS

Chairs: Jozef Sidlo, Slovakia and Éva Keller, Hungary

10:00-10:30 **The Molecular basis of drug Abuse**

Yasmin Hurd

Icahn School of Medicine at Mount Sinai New York, NY, USA

10:30-11:00 **Drug related neuropathological changes in the brain**

Gábor G. Kovács

Institute of Neurology, Medical University of Vienna, Vienna, Austria

11:00-11:30 **Coffee Break**

11:30-13:00 SPECIAL SESSION WITH INVITED SPEAKERS

Chairs: Jozef Sidlo, Slovakia and Éva Keller, Hungary

11:30-12:00 **Monitoring and profiling the characteristics of Novel Psychoactive Substances and their consumers in the context of the EU-MADNESS project**

John M. Corkery

Department of Pharmacy, University of Hertfordshire, Hatfield, United Kingdom

12:00-12:30 **How to deliver a national curriculum for undergraduate medical students and others**

Christine Goodair

St George's, University of London, United Kingdom

- 12:30-13:00 **Transition of the drugs problem in Hungary**
Gergely Horváth
Reitox National Focal Point, Hungary
- 13:00-14:00 Lunch time**
- 14:00-16:15 **FREE COMMUNICATIONS (15'+ 5' discussion)**
Chairs: **Yasmin Hurd, USA and John M. Corkery, UK**
- 14:00-14:20 **Analysis of seized drugs in Hungary - Trends and issues**
Tamás Csesztregi
Hungarian Institute for Forensic Sciences, Budapest, Hungary
- 14:20-14:40 **Toxicological analysis of new psychoactive drugs**
K. Róna, I. Elek, **Béla Kvellár**, M. Vannai, G. Sára-Klausz, T. Kócs, R. Farkas,
R. Csonka, É. Keller
Simkon Ltd., Budapest, Hungary
- 14:40-15:00 **Demographical and toxicological characterization of drug-related death cases in Budapest, Hungary between 1994-2014**
Monika Horváth, R. Csonka, É. Keller
National Board of Forensic Medicine, Department of Forensic Medicine, Uppsala, Sweden
- 15:00-15:20 **Central nervous system stimulants in drug related deaths**
Jozef Sidlo
Institute of Forensic Medicine, School of Medicine, Comenius University, Bratislava, Slovakia
- 15:20-15:40 **Sexual correlates of gamma-hydroxybutyrate (GHB) use: is it really a date-rape drug?**
Máté Kapitány-Fövényi, Zs. Demetrovics
Institute of Psychology, Eötvös Loránd University; Doctoral School of Psychology, Eötvös Loránd University; Nyíró Gyula Hospital Drug Outpatient and Prevention Center; Faculty of Health Sciences, Semmelweis University, Budapest, Hungary
- 15:40-16:00 **Psychoactive animals and new usage patterns**
Michaela Ciccacese, L. Orsolini, D. Papanti, L.A. Pini, F. Schifano
School of Life and Medical Sciences, University of Hertfordshire, Hatfield, Herts, UK; Division of Toxicology and Clinical Pharmacology, Headache Center, University of Modena, Italy
- 16:00-16:15 Coffee Break**

- 16:15-18:15** **FREE COMMUNICATIONS** (10'+ 5' discussion)
Chairs: **Christine Goodair**, UK and **Monika Horváth**, Sweden
- 16:15-16:30** **Fatal methadone intoxication in an infant listed as a homicide**
Cristian Palmiere, A. Bonsignore, A. Groppi
Centre Universitaire Romand de Médecine Légale, Lausanne – Genève (CURML),
Switzerland
- 16:30-16:45** **Self inflicted fatal injuries in association with synthetic cannabinoid abuse**
András Lászik, K. Törő, M. Vannai, G. Sára-Klausz, T. Kócs, R. Farkas,
É. Keller, K. Róna
Semmelweis University, Faculty of Medicine, Department of Forensic and
Insurance Medicine, Budapest, Hungary
- 16:45-17:00** **Fentanyl on the Bavarian drug scene**
Wolfgang Keil, H. Sachs, I. Sinicina
Forensic pathologist, Institute of Legal Medicine Munich, Germany
- 17:00-17:15** **Forensic psychiatric aspects of drug addiction**
Krisztina Baraczka
Department of Forensic & Insurance Medicine, Budapest, Hungary
- 17:15-17:30** **The role of novel psychoactive substances in traffic accidents**
Tibor Varga, A. R. Tóth, E. Petri, E. Hídvégi
Institute of Forensic Medicine, University of Szeged, Hungary
- 17:30-17:45** **Frequency patterns of stimulant designer drug consumption in criminal
cases in Budapest and South-East Hungary in 2012-2013**
Anita Réka Tóth, L. Institóris, M. Vannai, G. Sára-Klausz, K. Seprenyi,
L. Sala, T. Varga, É. Kereszty, K. Róna
Department of Forensic Medicine, University of Szeged, Szeged, Hungary
- 17:45-18:00** **The specificity of memory in drug addiction -study performed in a post
cure hospital ward**
Bogdan Malinescu, E. Nicolaescu
Ilfov Medico-Legal Service, Bucharest, Romania
- 18:00-18:15** **Legal aspect of substance abuse-the Indian perspective**
Samarendra Barman
Department of Forensic Medicine, Meghalaya, Neigrihms, India
- 18:30** **WELCOME RECEPTION**

2 July, 2015

**- NEW ACHIEVEMENTS IN FORENSIC MEDICINE -
SOLVING CRIMINAL CASES -**

HEVESSY GYÖRGY ROOM

10:00-10:45 KEYNOTE SPEAKER

Chairs: Tibor Varga, Hungary and Krzysztof Woźniak, Poland

Forensic examination of Arafat death

Patrice Mangin

Centre Universitaire Romand de Médecine Légale, Lausanne – Genève (CURML), Switzerland

10:45-12:00 FREE COMMUNICATIONS (10' + 5' discussion)

Chairs: Tibor Varga, Hungary and Krzysztof Woźniak, Poland

10:45-11:00 X-ray in the service of forensic medicine - our first experiences

**Levente István Láncki, P. A. Gergely, M. Marosi, A. Gyurkovics,
E. L. Berényi**

Department of Biomedical Laboratory and Imaging Science, University of Debrecen, Hungary

11:00-11:15 Importance of PMCT in forensic examination of bodies with unknown identity

Artur Moskala, K. Wozniak, P. Kluza, K. Romaszko, O. Lopatin

Chair and Department of Forensic Medicine, Jagiellonian University Medical College, Kraków, Poland

11:15-11:30 Identification of war victims in Bosnia and Herzegovina

Nermin Sarajlic

Department of Forensic Medicine, Medical Faculty, University of Sarajevo, Bosnia and Herzegovina

11:30-11:45 Postmortem computed tomography angiography (PMCTA) in cases related to deaths due to diseases comprising alleged medical malpractice

**Krzysztof Woźniak, A. Moskała, E. Rzepecka-Woźniak, P. Kluza,
K. Romaszko, O. Lopatin**

Jagiellonian University Medical College, Chair and Department of Forensic Medicine, Kraków, Poland

- 11:45-12:00 **Bitemark Analysis in Hungary as a result of Aligned Education, Cooperative Learning, and International Collaboration in Forensic Dentistry**
Ajang Armin Farid
Avicenna Med & Dent, Budapest, Hungary
- 12:00-12:15 **Coffee Break**
- 12:15-13:00 **FREE COMMUNICATIONS (10' + 5' discussion)**
Chairs: **Patrice Mangin**, *Switzerland* and **Loránt Magyar**, *Hungary*
- 12:15-12:30 **Identification of living people (problems and solutions)**
Loránt Magyar, E. Felszeghy, É. Keller
Semmelweis University, Department of Forensic and Insurance Medicine, Budapest, Hungary
- 12:30-12:45 **Medical Interoperability and Forensic Medicine, possible connections and way ahead**
Carlo De Astis
NATO Centre of Excellence for Military Medicine, Budapest, Hungary
- 12:45-13:00 **The Treaty of Prüm in the past and in the present. The regulation of bioemtric data exchange in the EU**
Gábor Kovács, K. Nagy
Department for Criminal Sciences, Széchenyi István University, Győr, Hungary
- 13:00-14:00 **Lunch time**
- 14:00-15:00 **FREE COMMUNICATIONS (10' + 5' discussion)**
Chairs: **Klára Törő**, *Hungary* and **Hadjadzi Omar**, *Algeria*
- 14:00-14:15 **Immunohistochemical detection of fibronectin and tenascin in human skin wounds**
Silvia Farkašová Iannaccone, A. Baloghová, A. Ginelliová, D. Farkaš, M. Dulínová
Department of Forensic Medicine P. J. Šafárik University, Košice, Slovakia
- 14:15-14:30 **Environmental-related death versus accidental death**
Klára Törő, Sz. Lajos
Department of Forensic and Insurance Medicine, Semmelweis University, Budapest Hungary
- 14:30-14:45 **Starvation-induced ketoacidosis**
Cristian Palmiere, M. M. Augsburg, C. Lardi, S. Sabatasso
Centre Universitaire Romand de Médecine Légale, Lausanne – Genève (CURML), Switzerland

- 14:45-15:00 **Forensic aspects of hypothermia**
Krisztina Danics, J. Bokor
Department of Forensic and Insurance Medicine, Semmelweis University, Budapest, Hungary
- 15:00-15:15 **Coffee Break**
- 15:15-16:10 **POSTER SESSION**
Chairs: **Bogumila Pesko, UK and Gábor Kovács, Hungary**
- P/1 **Accreditation of forensic laboratories as a part of the „European Forensic Science 2020” concept**
Gábor Kovács, K. Nagy, M. Nogel
Department for Criminal Sciences, Széchenyi István University, Győr, Research Centre for Forensic Sciences and Criminology, Széchenyi István University, Győr, Hungary
- P/2 **The milestones of the creation of european forensic science area in hungary**
Gábor Kovács, K. Nagy
Department for Criminal Sciences, Széchenyi István University, Győr, Hungary
- P/3 **Homicide-followed-by-suicide event - analysis of frequency of specific features in cases investigated at the Department of Forensic Medicine of the Jagiellonian University in the years 1981-2015**
Piotr Kluza, A. Moskała
Chair and Department of Forensic Medicine, Jagiellonian University Medical College, Kraków, Poland
- P/4 **The supplemental role of post-mortem imaging in the investigation of suspicious deaths – case description**
Antal Kricskovics, M. Angyal, I. Battyáni, S. Szukits
Hungarian Institute for Forensic Sciences, Hungary
- P/5 **Estimation of time since death using comparative proteomic and metabolomic approaches**
Bogumila Pesko, R. Burchmore, K. Burgess, H. Torrance
University of Glasgow, UK
- P/6 **Exhumation: a forensic look to history of Christian martyrs in Slovakia**
Nikita Bobrov, S. F. Iannaccone, A. Ginelliová
Department of Forensic Medicine, Faculty of Medicine, P. J. Safarik University in Košice, Slovakia
- P/7 **Fatal suicide during a 5-year period (2008-2012) in County Csongrád, Hungary**
A. Szécsi, Beáta Havasi, É. Kereszty
Department of Forensic Medicine, University of Szeged, Hungary
- 20:00-23:00 **GALA DINNER**

3 July, 2015

**- NEW ACHIEVEMENTS IN FORENSIC MEDICINE - SOLVING CRIMINAL
CASES - MEDICAL RESPONSIBILITY IN EUROPE -**

HEVESSY GYÖRGY ROOM

10:00-10:20 KEYNOTE SPEAKER

Chairs: **Stefan Pollak**, *Germany* and **Péter Sótonyi**, *Hungary*

Pattern injuries from blows with the muzzle end of a handgun

Stefan Pollak, M. Große Perdekamp

Institute of Legal Medicine, University of Freiburg, Germany

10:20-11:20 FREE COMMUNICATIONS (10'+ 5' discussion)

Chairs: **Stefan Pollak**, *Germany* and **Péter Sótonyi**, *Hungary*

10:20-10:35 The possibilities of cooperation between forensic physicists and forensic pathologists

Antal Kricskovics, P. Tóth, S. Kosztya, I. Kristóf

Hungarian Institute for Forensic Sciences, Hungary

10:35-10:50 Manner of death in gunshot fatalities. A series of 68 cases

L. Ciccone, C. Sbuelz, V. Zamai, E. Polonia, U. Da Broi, **Lorenzo Desinan**

Department of Experimental and Clinical Medicine, Medico-Legal Unit, University of Udine, Italy

10:50-11:05 Morphological differences of blunt chest trauma and trauma caused by cardiopulmonary resuscitation

Sergejs Krasilnikovs, O. Teteris

State Center for Forensic Medical Examination of the Republic of Latvia, Riga, Latvia

11:05-11:20 Skull, face and neck injuries caused by a beer bottle

Daniela Roberta Schillaci

Department of Health Sciences, School of Medicine and Surgery, University of Milan-Bicocca, Monza, Italy

11:20-11:30 Coffee Break

- 11:30-12:40 FREE COMMUNICATIONS (10'+ 5' discussion)**
Chairs: Zsombor Kovácsy, Hungary and Ágnes Dósa, Hungary
- 11:30-11:45 The „loss of chance” doctrine in medical malpractice – comparative aspects**
Ágnes Dósa
Institute of Forensic and Insurance Medicine, Semmelweis University, Budapest, Hungary
- 11:45-12:00 Disclosure malpractice in Hungary**
Zsombor Kovácsy
Kovácsy Zsombor Law Firm, Budapest, Hungary
- 12:00-12:15 Medical malpractice litigation in Hungary – first results of an empirical study**
M. Kozma, Ágnes Dósa
Institute of Forensic and Insurance Medicine, Semmelweis University, Budapest, Hungary
- 12:15-12:30 Insurance fraud**
György Horváth, Z. Szolosi, K. Urai, A. Csevar, É. Keller
Semmelweis University Department of Forensic and Insurance Medicine, Budapest, Hungary
- 12:30-12:40 POSTER**
P/8 **Medical responsibility – a student perspective**
B. Ioan, Marius Neagu, B. Hanganu, C.J. Iov
Universty of Medicine and Pharmacy, Forensic Medicine Institute, Iasi, Romania
- 12:40-13:00 CLOSING CEREMONY**
- 13:00-13:45 Lunch time**

1 July 2015**The Molecular Basis of drug Abuse****Y. Hurd**

Icahn School of Medicine at Mount Sinai, New York, NY, USA

Drug abuse is of serious public health concern worldwide with long-term consequences that include problems with physical and mental health, relationships, employment and the law. Effective treatments are unfortunately still limited due in large part to significant gaps of knowledge regarding the neurobiology underlying this complex disorder. Our research efforts have focused in large part on opioids and cannabis. Opioid addiction is now a growing national epidemic in the USA marked by an increased incidence of abuse and overdose of heroin and prescription opioids, but despite this growing opioid problem there remains a lack of knowledge about the neuropathology related to this human disorder. Most of the information known to date about opioid abuse has been based in large part on animal models that have helped to characterize key neurobiological systems linked to reward and goal-directed behavior. My research has focused on expanding knowledge about molecular disturbances directly in the brains of human heroin abusers. As such, we have optimized molecular techniques to study the postmortem brains of human heroin abusers and control subjects. Our findings reveal specific molecular neuropathological disturbances in certain brain regions and neurotransmitter systems of human heroin abusers relevant to reward, emotional regulation and cognitive function. Our studies also emphasize the importance of genetics providing insights about individual vulnerability to the disorder. Another drug of growing concern is cannabis given the debates for legalization of medicinal and recreational use. We focus on the impact of marijuana exposure during critical periods of development, such as during pregnancy and adolescence, which can enhance the risk for substance abuse and psychiatric disturbances later in life. Our studies in the human fetus and developmental animal models reveal molecular impairments of neuronal systems linked to behavioral traits and synaptic plasticity implicated in addiction vulnerability.

Overall, this talk focuses on information learned from direct investigation of the human brain and from reverse translational studies in animal models that together provide a strong foundation of knowledge about neuronal systems associated with drug abuse disorders.

Drug related neuropathological changes in the brain**G. Kovács**

Institute of Neurology, Medical University of Vienna, Vienna, Austria

Drugs, such as amphetamines, cannabis, cocaine, and certain opiates are variably used world-wide. The psychosocial problems associated with addictions might be related to the various biological effects of these drugs on the central nervous system. Although there is a paucity of neuropathological observations related to different drugs, there are investigators reporting significant biochemical and structural changes in brains of humans addicted to these substances. For cannabis the density of cannabinoid-1 receptors have been examined but there are no studies reporting on the long-term impact of this substance on the brain. Cocaine abuse has been associated with cerebrovascular disorders, including a predisposition to present with ruptures of aneurysm at an earlier point in the natural history of the disorder. Others found evidence for significant structural changes in the white matter of abstinent cocaine addicts. A further drug, methamphetamine, was shown to be associated with reduced levels of dopamine and dopamine transporter (DAT) in the caudate of chronic users. In addition, methamphetamine-induced transient elevated blood pressure might be a causative factor for the presentation of intracerebral hemorrhage. Heroin is a commonly abused opiate drug with significant medical and societal consequences. Neuropathological studies report cerebral edema induced by hypoxic-ischemic injury, ischemic neuronal damage and neuronal loss, alterations in gray and white matter morphometry, spongiform leukoencephalopathy, furthermore, deposition of Alzheimer disease-related amyloid-beta (A β) and hyperphosphorylated tau. Further neuropathological alterations have been related to HIV (human immunodeficiency virus) infection. Although dysfunction of mesocorticolimbic dopaminergic neurons is considered a common feature of all drugs of abuse, there is a paucity of data on the dopamine system in nonstimulant human abusers. Accordingly, we examined DAT immunoreactivity in the putamen, caudate and accumbens nucleus of autopsy brains from patients with Parkinson's disease and documented heroin abuse. In Parkinson's disease, the density of DAT immunoreactivity decreases around 40% in the putamen (motor striatum), while in heroin abusers, the density of DAT immunoreactivity decreases by 55% in the nucleus accumbens (limbic striatum). In another study we focused on evaluating neurodegeneration-related proteins in the brains of heroin addicts without HIV infection. We were able to confirm previous findings that heroin addiction associates with tau hyperphosphorylation in predilection brain areas for aging and Alzheimer disease. Furthermore, we showed that this occurs also in areas implicated in the molecular disturbances and *in vivo* neuronal networks related to heroin abuse.

We emphasized the independent effect of the duration of drug use on the appearance of age-related p62-positive neuritic profiles. Our observations provided unique insights about neuropathological alterations in the brains of young heroin addicts and have

implications about brain aging and the influences of environmental and toxic factors. In summary, substance dependence is characterized by pathological changes in circuitries that include reward-related behaviours and by abnormalities associated with vascular changes, oxidative stress, and induction of biochemical cascades that have been identified in classical neurologic disorders.

Monitoring and profiling the characteristics of Novel Psychoactive Substances and their consumers in the context of the EU-MADNESS project

J. M. Corkery

Department of Pharmacy, University of Hertfordshire, Hatfield, United Kingdom

The EC-funded EU-MADNESS project runs from April 2014 to March 2015, and involves 12 centres in five countries. The project's objective is to develop integrated monitoring and profiling of Novel Psychoactive Substances (NPS) in Europe in order to prevent health harms and update relevant professionals. To achieve this, its aims are to: monitor, test, profile, and feed back into education and prevention knowledge relating to the types of NPS emerging, their associated characteristics and potential harms.

Workstream (WS) 1 involves collecting a range of information various sources relating to individuals who have reported using NPSs or died from such use. Recording of such data allows ascertainment of groups exposed to specific NPSs and their associated harms, helping to formulate improved approaches to identifying and recording deaths and 'near misses' linked to NPS use.

Criteria for the selection of molecules to investigate in depth were developed; a key one is that of serious adverse health consequences including intoxications and deaths. Protocols for data-sharing, identification of types of data sources and types of data potentially available for use were agreed. Supply of death data on a 'real-time' basis is ongoing in Italy, Hungary and in the UK (Scotland and Northern Ireland; England & Wales in progress). Data from these reports and other information, test-purchases, etc. are informing the choice of compounds being investigated in WS2 and WS3.

In WS2 computational approaches are being developed which exploit data from both laboratory-based and hand-held Raman spectroscopy; these approaches will be used to estimate or predict information regarding NPS. WS3 comprises: *in vitro* neurochemical testing of NPS in rat brain slices, aorta; *in vivo* neurochemical testing in whole rats; and *in vivo* behavioural testing in rat models of drug abuse. The most interesting of the NPSs, determined by these *in vitro* assays, are being examined using *in vivo* dopamine and 5-HT efflux in the accumbens using microdialysis. Long-term effects of selected NPS on rodent cognitive function will be also examined. Some initial findings will be presented.

Information from these activities will be disseminated via WS4, with appropriate interpretation and guidance, to different stake-holders including those involved in health professionals' training.

How to deliver a national curriculum for undergraduate medical students and others

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This presentation will consider the need to teach and improve educational strategies for undergraduate, post graduate medical training and continuing professional development in substance misuse. A brief overview of the history, current context and concerns that led to a major initiative in the UK "*Substance Misuse in the Undergraduate Medical Curriculum*" that resulted in guidance on teaching about substance misuse in the undergraduate medical curricula and a subsequent implementation process in English medical schools. The implementation programme in English medical schools will be explored and cover the mapping process used to identify what was taught and what was missing from their curricula, and the subsequent changes made to improve and enhance teaching about substance misuse across medical disciplines. From this process an identification of what could be utilized more or less directly from the UK experience will be given so as to avoid wasting valuable time duplicating and what would be different/distinctive for other countries, if at all. The challenges of achieving change—and then crucially how do you sustain the changes will be considered? This section will look at what activities are involved in developing networks and the value of producing a range of teaching resources for medical students and others, and how we continue with this important work, and what is now being done, given the growth in new psychoactive substances (legal highs) and the need for educational resources. The relevance for other professionals and their organisations will also be discussed.

Transition of the drugs problem in Hungary

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Before 2010 drugs problem in Hungary was not different from the European situation, however certain phenomena emerged with significant delay. Recreational drug use referred to cannabis smoking and stimulant - mostly amphetamine - sniffing and ecstasy pills use. Injecting drug use was associated evenly with opiates and amphetamine injecting. After 2010 appearance of novel psychoactive substances (NPS) completely transformed the drugs problem in Hungary.

118 newly identified psychoactive substances were reported between 2009 and 2013 via the national Early Warning System. Two groups, synthetic cannabinoids and new synthetic stimulants – mostly cathinones and designer amphetamines – can be distinguished. Spread of novel psychoactive substance use could swiftly be observed by the general population surveys, both among school-aged and adults. Novel psychoactive substance use posed elevated risks in certain fields including non-fatal intoxications or psychiatric comorbidity among the at-risk groups. Changes in the pattern of injecting drug use and related risk behaviours contributed to the most serious health consequences including viral infections and mortality. Transition in the characteristics of the clients entering treatment challenged social and mental health care systems as well. In order to support effective policy planning and interventions and to assist demand reduction as well as responses and supply reduction, well-tailored NPS related data collection and research shall be strengthened.

Analysis of seized drugs in Hungary - Trends and issues

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In Hungary, the seizures of drugs and related substances are analysed in the Hungarian Institute for Forensic Sciences. Evaluation of trends in the results of chemical analysis describes the trends in the illicit market. Moreover, the identification of an unknown new substance is only performable from adequate amount of seized material. Information about trends and new substances helps toxicological laboratories to update their methods correlatively to the substances available for the drug users. The cooperation among different institutes and sharing of reliable information related to new substances is essential nowadays.

The new generation of psychoactive substances has appeared in the Hungarian illicit market in 2009. The number of seizures related to these cathinone and amphetamine derivatives was not significant compared to the seizures of traditional drugs this year. One of these new substances the mephedrone became the most common synthetic drug within several months in the summer of 2010. Owing to legal control measurements, new substances appeared on the illicit market one after another. One of the actual problems of the identification of the new substances is the lack of reliable reference materials and analytical information about substances, their isomers and metabolites as well.

The dynamic trends of seizures compared with legislative measures in period 2010-2014 in Hungary will be presented. Issues of routine chemical analytical identification of new substances in seizures will also be highlighted.

Toxicological analysis of new psychoactive drugs

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The European and national drug situation is constantly changing: in addition to previously unsolved problems new challenges arise. Today's drugs differ from the previous ones and therefore the problem is harder to fix.

The number of new psychoactive drugs exceeds 450, whereas the list of already known drugs is about 200. Therefore, biological samples cannot be examined on a realistic time frame with the conventional analytical systems. Among the current analytical systems, tandem mass spectrometers, especially liquid chromatography-tandem mass spectrometry (LC-MS/MS) has spread widely in toxicological laboratories during the last 10 years and offers an ideal solution.

In this presentation, which is based on a research conducted during the first quarter of 2014, we demonstrate the results of blood and urine sample analysis from patients who were diagnosed with drug abuse and admitted to the emergency department. We carried out the qualitative and quantitative analyses of biological samples by using LC/MS/MS.

300 samples and 272 patients were included in the study. (17 patients were admitted to the emergency department more than once – 5 times in one case). 79.4% of the patients were male, the mean age of the patients were 28 years (between 14 and 52 years).

The commonest psychoactive drug is *alpha-PVP* which is known as „music” in the black market. Second one is *amfetamine* and *pentedrone*, used by 10-15% of drug-users. In the examined population the Δ^9 -THC (*Δ^9 -tetrahydro-cannabinol*) was less commonly used than other frequently used designer drugs. We also found several times higher *gamma-hydroxybutyrate (GHB)* level than the endogenous value.

In the examined cases, among the new synthetic cannabinoid receptor agonists, *AB-Chminaca* was notably frequent: it was found in one-third of the cases.

Most commonly, more than one drugs present in a sample. In addition to be a psychoactive drug, *benzodiazepine* was identified several times as well. *Alprazolame*, or *clonazepame* could be demonstrated in approximately 30% of cases. *Ethyl alcohol* was present in 50 cases but only in 14 cases solely. Psychoactive drugs were not traceable only in 3% of men, 1% of women.

Demographical and toxicological characterization of drug-related death cases in Budapest, Hungary between 1994-2014

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Drug use is a widespread phenomenon that has been slowly but gradually increasing worldwide for the past 15 years. The use of illegal substances became accelerated in Hungary after 1989, when the change of regime also generated the opening of the borders and easier access to illegal drugs of abuse. Hungary at the beginning was only a "transit" country, but it soon became a "target" country and a growing demand for drugs of abuse appeared. Together with an increased demand and use of illicit drugs the effects of drug abuse also became more visible, such as the appearance of drug related death cases (DRDs) or an increased number of certain types of infections within the population of drug abusers.

According to the Hungarian law, all unnatural causes of death, such as DRDs, have to undergo forensic autopsy. In Budapest all forensic post-mortem examinations are performed by forensic pathologists at the Department of Forensic and Insurance Medicine at Semmelweis University. Toxicological examinations for ethanol, illicit and prescription drugs were performed in the majority of the cases. When possible serological tests for HIV, HBV, HCV and lues were performed. The cause and manner of death were determined after evaluating the circumstances of death, toxicology data, autopsy results and police reports as well as family interviews and medical records when available. Drug-related deaths according to EMCDDA recommendations were divided into direct, overdose related DRDs, indirect DRDs (suicides, homicides, other accidents of drug addicts) and delayed DRDs (due to infections, lifestyle).

In Budapest we detected the first illicit DRDs in 1994. Within a few years the number of DRDs constantly increased until it peaked in 2001. After a rapid decrease it showed slow but constant increase having reached a plateau for the past few years. In overall the majority of the analysed cases consisted of direct overdoses, where the major drug of abuse were opiates, especially heroin. Most of the victims of DRDs were male with a mean age of 27 years (range: 15-58 years) with an obvious shift in age towards elder age throughout the years.

Central nervous system stimulants in drug related deaths

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Introduction: Using central nervous system (CNS) stimulants as well as other illicit drugs represents a serious health and social problem. Analysis of drug-related deaths is

one of the essential indicators of the seriousness of drug-related problem. Obtained data serve as one of the bases for shaping anti-drug policy and strategy not only at regional but also national level.

Patients and methods: The analysis of all deaths related to CNS stimulants abuse in Bratislava and Trnava region in the years 1996 and 2013 was performed. The autopsies were performed at the institutes of forensic medicine in Bratislava. According to the EMCDDA method the cases were divided into two groups: direct and indirect CNS stimulants-related deaths. Statistical analyses were made by means of SPSS software.

Results: The criteria matched 153 cases – 1% of all autopsies. There were 31% of direct deaths and 69% of indirect deaths. Males comprised 89% of all cases and females 11%. The age category from 1 to 34 years represented 50% of cases. Amphetamines and methamphetamines were detected in 84%, cocaine in 15% and ecstasy in 5% of cases. The most frequent bi-combination of substances was CNS stimulants and opiates and opioids in the group of direct deaths, in the group of indirect deaths CNS stimulants and ethanol. The most frequent tri-combination was CNS stimulants, opiates and opioids and benzodiazepines in both of groups. In Bratislava region there were 69% of all cases, in Trnava region 31%. In district Bratislava II. 19% of all deaths were reported. Likely 33% of all cases were problem drug users with parenteral drug use.

Conclusions: The results of the study showed an increasing trend in the occurrence of CNS stimulants use in the region of Bratislava and Trnava in the last 11 years particularly in the group of indirect deaths. Among the identified substances dominated stimulants of amphetamine and methamphetamine type. Cocaine and ecstasy were found sporadically. A significant predominance of deaths in the city of Bratislava reflects the fact that the capital city has the largest number of problem CNS stimulants users.

Sexual correlates of gamma-hydroxybutyrate (GHB) use: is it really a date-rape drug?

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Objective: GHB's potential role in sexual assaults have been studied in recent years, however, sexual correlates of recreational GHB use has not been emphasized in these papers.

We aim to examine GHB's sexual effects, the patterns of choice of sexual partners, the frequency of experienced black-outs and endured sexual- or acquisitory crimes as a result of recreational GHB use.

Methods: 60 recreational GHB users filled out a questionnaire on the perceived subjective, somatic, and sexual effects of GHB, the frequency of black-outs due to their GHB consumption, and items on their sexual experiences in relation to GHB use.

Results: 25.9% of the sample reported increased sexual arousal in most of the cases as well as more intense attraction towards their sexual partners and increased sexual openness when using GHB. 34.8% had sexual intercourse with strangers, or with others, but not with their partners when using GHB. 8.6% were victims of acquisitory crimes, whereas 3.4% were victims of a sexual assault. Furthermore, 24.6% typically experience black-outs when using GHB. Average daily dose (mg/day) of GHB showed significant correlation with the majority of the assessed sexual effects. Certain characteristics of GHB use (such as its capability to boost orgasm) was found to be more frequently experienced by males. Males were also more likely to establish sexual intercourse with strangers under the influence of GHB.

Conclusion: Increased sexual desire and disinhibition may lead to a more frequent and potentially more riskful sexual activity. Experienced black-outs are considered to be risk factors for suffering sexual or acquisitory crimes. Sexual effects can also be mentioned as risk factors for more intense GHB use.

Psychoactive animals and new usage patterns

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Psychoactive substances use is a great social, personal and legal problem worldwide. A variety of substances have been implicated to be psychoactive and have been abused by man through history. Psychoactive substances in plants is common knowledge. Modern researches into the psychoactive animals are still at the beginning.

The purpose of study has been identify psychoactive properties of animals using psychonauts' experiences, focusing on their chemical nature, mechanisms of action, current/potential recreational use and side effects highlighting social problems due to the abuse worldwide.

A literature research on psychoactive animals was carried out. Results were integrated with a multilingual qualitative assessment of websites and other online resources. The online assessment was carried out over the period of 6 months (September 2014–February 2015)

Psychoactive animals can be divided in producers and consumers. We have found many psychoactive substances in these animals that act on SNC with neurological and neuropsychiatric effects. We have found many ways of administration that depend on

animals, substances inside, their metabolism toxicity and individual, social and cultural variability. There are a lot of animals 'reports on web that confirm recreational use of these animals.

Abuse of psychoactive substances by man has been evident in history right from the time of his existence. The choose of particular abuse substances is related to various factors. We have observed an easy online purchase, easy access of use through tourism (frog trip-help of charmer snake/religious trip). Current list of psychotropic substances in many countries doesn't include substance found in psychoactive fauna, apart from bufotenin. These are all factors responsible for the increase and abuse of these substances.

To control this phenomena is important scientific understanding of these animals as a precursor of a satisfactory control of the problem, monitoring psychonaut experience as a vehicle for control and prevention and sensitizing the community on damage and toxicity of these substances.

Fatal methadone intoxication in an infant listed as a homicide

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Since the introduction of methadone maintenance programs in opiate dependence, fatal and non fatal accidental methadone intoxications in children have been reported by several authors. Often such intoxications occur in families in which parents or relatives are receiving methadone prescribed for opiate addiction.

In this report, we detail the deliberate and continual administration of methadone to an infant for the purpose of sedation, eventually resulting in the infant's death.

Peripheral blood from the femoral veins, blood from the right heart, urine, bile, gastric content, cerebrospinal fluid, hair and nails were collected for toxicological and biochemical analyses.

Methadone was detected in femoral blood, urine, gastric content, hair and nails. The concentration found in the femoral blood was within toxic and lethal levels. Hair and nail analysis confirmed methadone administration during the months preceding the death. Hair samples collected from the brother of the deceased also confirmed repeated methadone administration.

The cause of death was determined to be methadone intoxication and the manner of death was homicide.

Self inflicted fatal injuries in association with synthetic cannabinoid abuse

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The use of recreational drugs (legal, controlled, or illegal) is apparently high amongst the younger population in many western and eastern European countries. The clinical effects of classical drugs and their detection are well known. However, in recent years, significant changes have taken place in this field. It should be highlighted the so-called new generation of designer drugs; the rapidly metabolizing synthetic cannabinoids have a more profound effect than its natural form. Due to the unknown chemical composition of these products marketed, recognition and identification for toxicologists is a major challenge. The tests required for detection, need specialized instrumentation and can be extremely time-consuming. Obtaining the reference material can be expensive and also difficult. The acute and chronic pharmacokinetic and pharmacodynamic behaviour of the new compounds is being unknown. Therefore it can be difficult to create a recognisable picture in the clinical practice. The development of influence and consequences are as of yet unknown for the experts.

In this presentation we would like to address the case of a 22-year-old young man.

The individual in question, was found approximately late morning to be walking back and forth in a Budapest subway underpass contently, listening to music via his head phones (seemingly to appear as a regular young individual). A little while later he undressed in front of a CCTV camera, laid on his back for several minutes on the ground and he performed swimming like movements quite erratically. Later he caused himself self-inflicted serious neck stab injuries.

The cause of death was ascribed to be due to extensive haemorrhage from opened neck vessels and air embolism. Toxicology test were performed with LC/MS/MS Multiple Reaction Monitoring assay technique. The results showed: blood 2.8 ng/ml AB-CHMINACA (N-1-amino-3-methyl-1-oxobutane-2-yl) -1- (cyclohexylmethyl) - 1H-indazole-3-carboxamide indazole based synthetic cannabinoid as a new type of psychoactive substance and 101.1 ng/ml Δ^9 -THC-COOH, 28.8 ng/ml Δ^9 -THC; and in the urine of 31.9 ng / ml Δ^9 -THC-COOH, and 1.0 ng/ml of benzoyl-ekgonin were found.

The deceased was not influenced by alcohol at the time of his death; blood and urine alcohol concentration was less than 0.2 per thousand.

Fentanyl on the Bavarian drug scene**W. Keil, H. Sachs, I. Sinicina**

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The opioid analgesic Fentanyl is approximately 100 times more potent than morphine. Over the last decade, due to the prevalence of transdermal therapeutic systems, Fentanyl has come to play a major role in chronic pain management in Germany. In 2005, the original drug Durogesic was the highest selling pharmaceutical product, with 44.3 million daily doses being prescribed and a turnover of €06.2 million.

The drug scene took advantage of the fact that the active ingredient can be extracted very easily and then administered intravenously.

The presentation is a retrospective study of the deaths associated with Fentanyl during the period from 2005 to 2014. All autopsies, including extensive toxicological analyses, were carried out at the Institute of Legal Medicine in Munich.

The concentrations of Fentanyl were calculated using LC-ESI-MS-MS made of serum or plasma. The first fatal Fentanyl intoxication was observed in 2005. In 2008, 15 such cases were registered, most of which were combined drug intoxications. The substance was extracted from transdermal patches and frequently injected intravenously; in rare cases it was absorbed via direct oral-transmucosal ingestion. Extraction trials carried out by the Institute confirm that it is possible to extract fatal doses of the substance from Fentanyl patches without further ado.

Forensic psychiatric aspects of drug addiction**K. Baraczka**

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The presence of expert evidence of drug addiction is of particular importance in criminal cases. The Criminal Code of practice shows that the punishment is different when the individual is drug addict, in comparison to an individual suffering from physical or mental health issues.

In the drug addiction expert judgment ICD-10 diagnostic criteria is mostly used. The methodological letter No. 21 which is based on a list of already mentioned diagnostic criteria could also be used.

Both standards agree that in addition to a number of factors, which must be demonstrated, the main being that the individual had a strong addiction to drugs.

The assessment from different experts can be hindered by the fact that personal examination is usually conducted several months after the acts have taken place. The individual subject under investigation can often have changing statements; therefore medical documents can be insufficient.

Expert evidence of this state of mind is difficult to conclude, when all facts are not

clearly presented. Expert opinion is often disputed as this is a very subjected field, and can be a personal opinion based on however limited facts presented.

To avoid exceeding of limits of competence of the expert; the expert examines the impact of, psychological factors identified on mental processes of the individual drug addict.

In the expert opinion the dynamic change and the interaction between psychological factors are considered. To establish dependency on a few changes in external factors (e.g., social status, interpersonal relationships) based on our view cannot be accepted.

The subject's substance use habits, attitudes to the plot serve to clarify the perception of drug addiction.

In our opinion the fundamental requirement of establishing a drug addiction is the dynamics and the interaction among mental processes.

Clarification of the criteria for drug addiction and consensus of mental health experts on the basis of international guidelines seems necessary.

The role of novel psychoactive substances in traffic accidents (Hungary 2014)

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During the period of 2000 to 2010 the general road traffic population was systematically investigated for the presence of alcohol, medicinal and illegal drugs. Among the general driving population 0,13% of alcohol, 3,14% of medicinal and 0,99% of illegal drug positive cases were found in a roadside survey. At the same time the blood samples of fatally injured drivers demonstrated 33,6% alcohol, 10,7% medicinal, and 4,92% of illegal drugs.

Results have proven that the drug market and the distribution of drug consumption have significantly changed during the last few years. The proportion of novel psychoactive substances (stimulant designer drugs and synthetic cannabinoids) was more than 50% of the seized drugs. At present we do not have significant information to confirm the high presence of drugs in the road traffic.

Blood and urine samples of 69 suspected drugged drivers were collected after traffic accidents. These samples were respectively analysed in the National Institute of Forensic Toxicology. The results demonstrated the presence of alcohol detected in 25% of the samples (0,10-1,65 mg/l breath alcohol). Medicinal drugs were present in 22 cases (18 benzodiazepine, 2 Z-drugs, 1 medicinal opiate, 1 carbamazepine, 31,9%). Illegal drugs were present in 34 cases (49,3%, 13 amphetamine, 10 THC, 1 benzoyl-ecgonin, 6 DB-CHIMINACA, 3 pentedrone, 1 alfa-PVP).

Polytoxicomania was found in 10 of the illegal drug positive drivers. The 10 cases of the novel psychoactive substances consist of one third of the drug positive material.

Frequency patterns of stimulant designer drug consumption in criminal cases in Budapest and South-East Hungary in 2012-2013

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This presentation focuses on a study, which was conducted on the abuse and frequency patterns of SDD-s between July 2012 and June 2013 in two different regions of Hungary, Budapest (1.74 million inhabitants) and South-East Hungary (Csongrád County – 418 000 inhabitants).

Blood and/or urine samples of suspected drug users were analyzed for illicit and psychoactive licit drugs, as well as for stimulant designer drugs (SDDs). Altogether 2744 subjects were sampled in Budapest and 774 persons in South-East Hungary. 71.4% of cases in Budapest and 61.0% of cases in South-East Hungary were tested positive for at least one substance. Among the stimulant designer drugs pentedrone was the most frequent in both regions, the frequency of the other SDDs was highly diverse. This study is in concordance with the critical need for continuous monitoring of emerging new compounds (as an average, two new substances are introduced into to the European black market each week) what needs a continuous method development for the forensic laboratories.

The specificity of memory in drug addiction -study performed in a post cure hospital ward

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Introduction: Memories are indicators of how an individual gives meaning to the environment and to himself. Studies show that people's mind remembers and updates only what impresses it, produces pleasure or corresponds to desires and aspirations, due to the relationship between memory and affective motivational mechanisms. Drug addicts live their life according to other values, making the memories related to the consumption period change their structure and meaning compared to those prior this period. The purpose of this paper is to catch the resignification of life events correlated with the stock of the memories during consumption.

Material and methods: The study was performed on a number of 32 patients hospitalized in the post-cure ward for drug addicts at Balaceanca Psychiatry Hospital, Ilfov county, Romania. They were given the structured interview guide, "European Addiction Severity Index" to determine the severity of their addiction. All subjects had a high degree of addiction and they were included in the research. In the first phase, there were two guided interviews (two patients were selected for this phase, and their speeches were summarised) on 3 major themes, with dual function: first, pilot research aimed to better structure the instruments to be used further on and the second, to complete the explanatory drawing regarding the choice of theme. In the second phase of the research, based on the collected data, a structured questionnaire with a total of 17 items was developed, out of which 15 were applied in the same form at an interval of 3 days, but by reference to two different periods in the life of the consumer: the period before consumption (T1) and the period of time consumption (T2) (2 items were used to identify the subject). In the last phase, the subjects received a personality questionnaire - California Personality Inventory (CPI) with the purpose of completing the explanatory approach and what was found were aspects of life, memories and personality traits standardization, specific to drug addicts.

Results – Conclusions: Due to a motivational and behavioral system, specific to addicts and determined only by obsessive looking and consumption of psychoactive substances, the structure of meaning and the one of specific memories are very similar, tending towards uniformity in these subjects. Compared to the period before consumption (T1), the share, the intensity and the level of detailing of memories are significantly higher during consumption (T2). The share of memories based on civic interests is significantly reduced, and it exists only by association with drugs. The recall of the drug-related memories has an over-sized affective load.

Legal aspect of substance abuse-the Indian perspective

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Substance abuse has been considered as a major global public health problem with extensive moral, social and legal consequences and India is by no means an exception. The country is growing at an incredible pace with rapid changing of economy, demography and socio-cultural value. All these factors eventually increase stress, anxiety, frustration on the people and thus lead to addiction for some drugs or substances. Though majority of drug victims are neurotic individual who are mentally unbalanced but normal individual under stress & frustration may succumb to the temptations of drug addiction. In India, alcohol and tobacco are the commonest substances abused followed by sedatives, tranquillisers, cannabis, opiates etc. and cocaine, amphetamines, hallucinogens are less popular.

Drug abuse is a complex phenomenon which not only cause individual's physical and psychological degradation but also exerts detrimental impact on the society. Hence, to counter those ill effects of drug abuse the Government of India has formulated and amended several drug laws with strict penal provision to the offenders viz. The Drugs control act, The NDPS act, Prevention of illicit traffic in NDPS act etc. The main objective of these acts is to regulate and control of production, sale, supply and distribution of various narcotic drugs and psychotropic substances in India.

2 July 2015

Forensic examination of Arafat death

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The late president of the Palestinian Authority, Yasser Arafat, died in November 2004 in Percy Hospital, one month after having experienced a sudden onset of symptoms including severe nausea, vomiting, diarrhoea and abdominal pain. In spite of numerous investigations performed in France, the pathophysiological mechanisms at the origin of the symptoms could not be identified. Since the assassination of Alexander Litvinenko two years later, poisoning with ^{210}Po has been evocated as a cause of Yasser Arafat's death. In 2011, we identified abnormal levels of ^{210}Po in some of Arafat's late belongings stained by biological fluids. This finding led to the exhumation of Yasser Arafat's remains in 2012. Genetic analyses confirmed that the belongings and the human remains from the tombs were Arafat's. Toxicological tests revealed only Arafat's medication and its metabolites. Significantly higher (up to 20 times) activities of ^{210}Po and ^{210}Pb were found in the ribs, iliac crest and sternum specimens compared to reference samples from the literature (p-value <1%). The surface activity of the scalp and a soil sample from the tomb stained by body fluid had a much higher ^{210}Po activity than the surrounding shroud specimens and reference soil from the tomb (p-value <1%). In all specimens from the tomb, ^{210}Po activity was supported by a similar activity of ^{210}Pb . Biokinetic calculation demonstrated that a ^{210}Pb impurity, as identified in a commercial source of 3 MBq of ^{210}Po , may be responsible of all the observations made on both Yasser Arafat belongings and remains. These findings moderately support the hypothesis of a death by ^{210}Po poisoning.

X-ray in the service of forensic medicine - our first experiences**L. I. Láncki¹, P. A. Gergely², M. Marosi¹, A. Gyurkovics¹, E. L. Berényi¹**¹Dept. of Biomedical Laboratory and Imaging Science, University of Debrecen, Hungary²Dept. of Forensic Medicine, University of Debrecen, Hungary

Radiology examinations play a significant role during medical treatment providing additional information on both morphology and function. Radiology has a great advantage, that high value patient data can be acquired performing non-invasive or minimally invasive techniques both in the living or postmortem. X-ray was applied for forensic purposes in the living and postmortem radiology studies were performed even during early days of radiology. During last year a mobile X-ray unit was installed in the dissecting room of the Department of Forensic Medicine at University of Debrecen for postmortem radiology exams. In this paper we present the most relevant cases for forensic evaluations, the challenges to overcome and the proposed workflow of the newly designed unit within the departmental structure. In the case reports suicide cases (hanging and head shot), car accident cases and heart failure cases are presented. Radiology has a great advantage, that radiology images in the living and postmortem are accessible for comparison for both forensic and scientific purposes, that support understand so far hidden processes on the border of life and death.

Importance of PMCT in forensic examination of bodies with unknown identity**A. Moskala, K. Wozniak, P. Kluza, K. Romaszko, O. Lopatin**

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Introduction: Identifying deceased person is a substantial forensic problem. Postmortem Computed Tomography (PMCT) can be a quick and reliable method helping with localization and documentation of body features which can be used afterwards to admit/reject the identity of a person. There are various aspects in which this technique can be profitable for the whole identification process, especially in evaluation of mass disasters. The authors present own examples of useful PMCT findings, representing different aspects of its application.

Material and methods: Since 2012 in our Department we performed over 2000 PMCT examinations prior to standard medico-legal autopsy. CT acquisition was carried out with 16 – layered Siemens Somatom Emotion. Reconstructions were done with slice thickness 1.5mm and 0.75mm. Evaluation of the results was conducted with the open source DICOM viewer, OsiriX.

Results: Presented as 2D and 3D reconstructions of findings that may be helpful for identification of an unknown person: body and bones features, teeth, foreign objects,

previous medical history. They give evidence that PMCT can be a very helpful tool and should be performed, if accessible, in every case where there are doubts about identity of a deceased person.

Identification of war victims in Bosnia and Herzegovina

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Identification of exhumed victims from the war in Bosnia and Herzegovina is highly important, both for the families of the dead persons, and for the presentation of evidence during the prosecution of perpetrators of war crimes, but also for the entire society. The problem is particularly acute among the victims exhumed from mass graves, and especially secondary mass graves, but it exists by remains found in single graves. The absence of ante-mortem data on the killed persons, finding burned or damaged remains, lack of close relatives, killed more people from the same family, are just some of the challenges of identifying persons, even those found in single graves. The formation of mass graves, bodies moved from primary to secondary and tertiary graves, throwing the bodies into pits, inevitably leads to a strong comingling of the remains, which significantly complicates and slows down the process of identification. The goal of this presentation is to introduce: Identification of the persons found in single graves, when it is impossible to isolate the DNA profile or when there is no close relatives to give the blood for DNA analysis. Identification of persons where it was found only a small part of the body, either because they have been found in secondary or tertiary graves and primary have not yet been found, or remains were found on the surface. Identification of persons where in the same family were killed more brothers or sisters, who had no children, so the DNA report for one body can be generated only on all the murdered brothers or sisters. Identification of the persons found in secondary or tertiary mass graves, with highly mixed remains.

Postmortem computed tomography angiography (PMCTA) in cases related to deaths due to diseases comprising alleged medical malpractice

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Objectives: To present vascular changes related to death due to disease by evaluation of PMCTA data.

Introduction: Whole-body postmortem computed tomography (PMCT) is applied at our Department of Forensic Medicine as a routine introduction to conventional postmortem examination. In selected cases, when vascular / internal organ lesions are expected based on medical history or on preliminary evaluation of PMCT - we perform the CT acquisition with contrast medium administration.

Material and Methods: In cases stated above PMCTA was performed with use of oily contrast medium Angiofil[®]. PMCT acquisition with use of Siemens Emotion 16 was performed, reconstructions with slice thickness 0.75 – 1.5 mm. Evaluation of the results was conducted with a computer program OsiriX[®] (Pixmeo, Switzerland).

Results: Authors present cases of aneurysm / cardiac rupture, a case of death during cardiosurgery and a case of transposition of great arteries (TGA) as 2D and 3D images and animations based on PMCTA data.

Conclusion: Presented cases demonstrate the importance of PMCTA as valuable adjunct for conventional autopsy examination in cases of natural deaths related to vascular changes.

Bitemark Analysis in Hungary as a result of Aligned Education, Cooperative Learning, and International Collaboration in Forensic Dentistry

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After attending this presentation, attendees will better understand how bitemark analysis in Europe is becoming more and more part of police investigation.

This presentation will impact the forensic science community by underlining the importance that violent biting happens all over the world, regardless of how much importance is given to this matter.

Hungary has a long history in recognizing bitemarks and the analysis thereof. The Forensic Institute of the Semmelweis University, one of the most traditional and renowned centers of medical education, had mentioned the possibility of analysing bitemarks first in 1904. Textbooks include bitemark analysis in 1968 by Dr. László Harsányi, however due to the low rate of criminal activities in the socialist countries, little weight was given to use bitemark analysis as part of police investigation. The occurrence of human bitemarks was considered rare or non-existent, however animal bitemark analysis was conducted more frequently due to an increase of dog bites.

Since 2008 a continuous media campaign and education program for Hungarian crime scene technicians helped to raise up the awareness of the importance of bitemark analysis amongst the police and the general population resulting in the reporting of several bitemark cases, within a short span of time, to the authorities. The most prominent case, which occurred in December 2010 in a suburb of the capital Budapest,

shocked the Hungarian nation, when a 2 month old child was beaten by her father and then bitten twice to be silenced. The police were called after the child was taken to the hospital 12 days after the initial abuse. Due to the condition of the child on admission to the hospital, it was apparent that additional abuse had occurred. Since this case involved a 'closed population' suspect pool, the forensic odontologist was asked to analyse the dental evidence obtained from both parents. It is important to note that the father initially confessed to biting the infant.

A thorough examination and analysis of the bite mark excluded the mother as a biter, and included the father as the probable biter in this case. The highly specific, individualized characteristic of the bite, helped to strengthen this conclusion. The forensic dentist in Hungary worked closely with his mentor in the United States who provided advice and guidance in this unique case. The father was finally convicted to 6 years imprisonment in February 2013.

A few weeks later, another child in Hungary was reported to be bitten by a neighbour, who was asked to babysit the child, while the mother was going to work. The police became involved in this incident when the mother came back home and found several bite mark wounds on the child. In the same time frame, an elderly woman was attacked in her own home, and in self-defence she bit one of the intruders in the leg, causing a bite mark that served as evidence.

It is believed that the increase of education not only amongst the police and other agencies concerned with children's and women's welfare, but also largely amongst the general population, on the significance of bite marks, will bring more and more cases to light, serving the justice system with additional evidence.

Understanding the value of education in bite mark analysis, the International Law Enforcement Academy (ILEA) in Budapest, which is run by the FBI has asked for these topics to be incorporated into the training of their international police recruits and agents. Thus the knowledge has been transmitted to Bulgaria, Kosovo, Romania, Macedonia, Montenegro and other countries in Europe. The Semmelweis Medical University Department of Forensic Medicine in Budapest, which has integrated bite mark analysis, age estimation and disaster victim identification into its curriculum, allows newly trained dentists to bring their knowledge and learning back to their home countries including Germany, Norway, Austria, Sweden, the United Kingdom, Greece, Cyprus, Iran and Israel and other countries in the Middle East.

In the dental forensic community it is a known fact that some countries are more advanced than others in utilizing forensic dentistry in crime investigation and/or disaster victim identification while others struggle to achieve a united vision and understanding among the different government agencies involved. Therefore it becomes the moral and ethical responsibility and privilege of the more advanced forensic communities to engage in a collaborative effort to integrate this science into police investigation work in the less developed territories.

**Identification of living person
(problems and solutions)****L. Magyar**, E. Felszeghy, E. Keller

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The place of forensic anthropology is not clarified between the forensic sciences in the century of DNA examination. This statement is particularly true for the identification of living person. The video recordings made for recognition of crime by the security staff, not for identification of the individual in most of cases. Because of this, in many cases the identification is impossible, or almost impossible for the police.

What are the possibilities for the identification of living person, when the DNA examination unworkable. What can do the expert to collect the most of data for prove of identity. In the Department of Forensic and Insurance Medicine we try to elaborate cost-effective methods for identification of living person based on superimposition, and evaluation of additional findings. In many cases we use not just the anthropological data, but other individual characteristics also (like tattoos, clothes, jewelries. The side effect of this is: sometimes the identical findings are not linked directly to the anthropology.

In the presentation we will demonstrate cases, when the positive or negative identification was successful or unsuccessful with different levels of probability. We will show the simple method for reconstruction of posture of perpetrator and suspect, the body high estimation method, the conclusive strength of anthropological data, and the limits of giving opinion.

The cases will be focused on the examination ATM pictures, and security system's records.

The Treaty of Prüm in the past and in the present

The regulation of bioemtric data exchange in the EU

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Introduction: The Prüm Treaty entered into force among the Kingdom of Belgium, the Federal Republic of Germany, the Kingdom of Spain, the French Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands and the Republic of Austria on the stepping up of cross-border cooperation, particularly in combating terrorism, crossborder crime and illegal migration. This Treaty was implemented in the EU law by the Council Decision 2008/615/JHA.

Aim of the research: The aim of the research is to examine whether the implementation of EU countries has been successful and effective.

Methods: We have used the typical methods of jurisprudential researches. The primary methods were making an analytical description of laws and other sources, their evaluation, the presentation of international and domestic practice of law enforcement, and drawing conclusions from that. Of course, we processed the domestic and foreign literature beyond the evaluation of legal standards.

Results: Law enforcement officer in one Member State of the Union who needs information in order to carry out his duties can obtain and the other Member States shall ensure the availability of reference data from their national DNA analysis files and dactyloscopic data files. Reference data must not contain any data from which the data subject can be directly identified (hit/no hit system). This solution guarantees not only the effective cooperation but the data protection, too.

Conclusion: However, we could set out that not all of the provisions of the Prüm Decision is implemented by the Member States, which undermines the effectiveness of the measure.

Immunohistochemical detection of fibronectin and tenascin in human skin wounds

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The determination of vitality and age of a skin wound is a fundamental issue in forensic medicine. Conventional histology is the basis for approximate wound age determination. Enzyme histochemical and immunohistochemical investigations of skin wounds can be very helpful in determining the vitality of an injury and can be used to further narrow down the age of a skin wound. Fibronectin is a high-molecular weight glycoprotein of the extracellular matrix. It is synthesized by fibroblasts, endothelial cells, macrophages, hepatocytes, astroglia. Human fibronectin is composed of at least five distinct domains which are referred to as Hep-1/Fib-1, Gel, Cell, Hep-2 and Fib-2, depending on their affinity for heparin (Hep), gelatin (Gel), the cell surface (Cell) or fibrin (Fib). Fibronectin plays an important role in diverse biological phenomena including cell adhesion, cell migration, hemostasis and thrombosis, wound healing. Only a few minutes after wound infliction, fibronectin can be detected immunohistochemically. Tenascin is a multifunctional, extracellular matrix glycoprotein. It is synthesized by fibroblasts, chondroblasts, osteocytes, smooth muscle cells and glial cells.

The expression of tenascin is associated with development and growth, both normal and pathological, with restricted distribution in normal adult tissue. Actively growing, migrating and differentiating epithelial sheets can produce factors such as TGF- β to stimulate tenascin expression in nearby mesenchyme. Neo-expression or increased expression of tenascin has been found in stroma of various tumors and during normal tissue repair. Tenascin can be detected immunohistochemically 2-3 days after wound infliction. Immunohistochemical markers such as glycophorin and fibronectin can be used to differentiate between injuries inflicted during life and postmortem injuries. However, immunohistochemical techniques are not routinely used in forensic diagnostics. The aim of the study was to determine the importance of fibronectin and tenascin in human wound age estimation and to study their expression according to wound age intervals and postmortal changes.

Environmental-related death versus accidental death

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One of the main purposes of forensic post mortem investigation is to differentiate between natural and violence death cases, and to define the cause of death. Forensic pathologists provide valuable information about the manner of death after the autopsy has been performed. Four main categories regarding the manner of death were created. These include natural deaths, accidental deaths, homicidal deaths and suicidal deaths. The information found during the autopsy not only reveals the causes of death, how, when and where they occurred, but also shows what manner of it's.

Based on the information about the environmental-meteorological parameters have complex biological effects on human bodies, these conditions may have direct impacts on fatal outcomes, and the environmental-meteorological factors have significant importance in the forensic evaluation. For the investigation, mortality data were collected from the WHO European Detailed Mortality Database from 32 European countries between 2000 and 2011, and the most frequent death cause in environmental death cases was hypothermia cumulatively in all countries, followed by drowning in natural water. Seasonal distribution was observed with winter prevalence in cardiovascular death cases too.

Our results support the hypothesis that environmental-geographical parameters may affect fatal outcomes, and the introduction of the *environmental-related death* category is suggested.

Starvation-induced ketoacidosis**C. Palmiere**¹, M. Augsburger¹, C.Lardi², S. Sabatasso²¹CURML Lausanne, Switzerland²CURML Genève, Switzerland

Apart from diabetes mellitus and infrequent cases of intoxication (salicylate, isoniazid and isopropyl alcohol poisonings), some nutritional conditions may also be responsible for ketoacidosis, such as starvation-induced ketoacidosis, alcoholic ketoacidosis and ketogenic diet-induced ketoacidosis. Starvation-induced ketosis involves carbohydrate depletion with free fatty acid mobilization. The resulting ketosis is generally mild and not life threatening. Hence, starvation-induced ketoacidosis is uncommonly reported as the cause of death in the forensic literature.

In this study, we present some cases of suspected starvation-induced ketoacidosis, in which postmortem investigations allowed traditional causes of ketoacidosis to be excluded.

Postmortem investigations included conventional autopsy, histology, toxicology and postmortem biochemistry (acetone and beta-hydroxybutyrate determination as well as prealbumin and thyroid hormone measurement).

In all presented cases, blood acetone and beta-hydroxybutyrate concentrations were markedly increased. Prealbumin levels were decreased, thus corroborating the hypothesis of inadequate nutrient intake. Blood acetone and beta-hydroxybutyrate concentrations in some cases were within levels that are considered to be potentially responsible for fatal ketoacidosis.

Severe, life-threatening ketoacidosis is possible when starvation is complicated by a stressful event or extraordinary conditions. Starvation-induced ketoacidosis should be suspected in presence of markedly increased blood acetone and beta-hydroxybutyrate concentrations, decreased blood prealbumin levels and exclusion of alternative causes of ketoacidosis.

Forensic aspects of hypothermia**K. Danics, J. Bokor**

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Hypothermia occurs when a person's body temperature drops below 35 °C, and can quickly become life threatening and should be treated as a medical emergency. It's usually caused by being in a cold environment and can be triggered by a combination of factors, such as being outdoors in cold conditions for a long time, living in a poorly heated house or falling into cold water.

The identification of hypothermia as the cause of death has always been somewhat problematic in forensic pathology because of unspecific, inconstant, or even negative macroscopic and microscopic findings. Though the simultaneous presence of frost erythema, Wischnewski spots, light red, liquid blood, haemorrhages into the synovial membranes, bloody discoloration of synovial fluid of the knee, and basal vacuolization of the renal tubular epithelial cells have been indicated as strongly supportive of fatal hypothermia, their absence does not allow the diagnosis of hypothermia to be ruled out. Accidental hypothermia as cause of death should be to some extent preventable. The incidence of fatal hypothermia may be under-reported in national registries where choices must be made between multiple diagnoses. The best possible data concerning fatal hypothermia is a prerequisite for national and regional policies and routines designed to prevent fatal hypothermia.

We aimed to measure the incidence of fatal hypothermia during 14 years as indicated by the forensic post-mortem reports in the database of Department of Forensic and Insurance Medicine in Budapest, Hungary as well as to identify patterns in the circumstances of death and post-mortem findings.

Our report indicated that fatal hypothermia cases have been increasing in the examined period. Interestingly the number of indoor hypothermia related deaths have also been increased. There were no frostbite injuries in the majority of the cases. The main question is still whether the post-mortem alterations or the clinical data are the decisive findings in determining the cause of death.

POSTERS

P/1

Accreditation of forensic laboratories as a part of the „European Forensic Science 2020" concept

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Introduction: Globalising, cross-border crime has led EU Member States to improve methods of fighting crime on an international level as well as to increase the mutual recognition of collecting and analysing evidence by one another. Standardization of forensic expert methods of analysis is of crucial significance. In the interest of the regulated and scheduled implementation of the harmonization process, the Council of the EU made crucial steps.

Methods: In the study we investigated regulations, decisions, and rules national and international measures of the given area.

Results: In order to improve the data exchange implemented by the Prüm Decision, the Council issued decision 2008/616/JHA where they ordered the application of EN ISO/IEC 17025 standard regarding the operation of testing and calibration laboratories in order to ensure the integrity of DNA profiles. The standard covers the whole expert activity starting from the incoming of the case until issuing the opinion of the specialist. According to Council Framework Decision 2009/905/JHA on the accreditation of judicial expert laboratories, the accreditation of DNA laboratories had to be done until 30th November 2013. Forensic fingerprint laboratories have to be accredited until 30th November 2015. An important stage of this process was the formation of Project Committee CEN/TC 419 in frames of the European Committee for Standardization. The aim of the Project Committee is to ensure the integrity of forensic processes. With this object, the Project Committee should develop EU Standards which lay down the provisions for forensic science processes starting from the scene of crime, through recognition, recording, recovery, transportation and storage of material followed by the examination, analysis of material, interpretation of results, reporting and data exchange. In 2011 the EU Council made a decision of The Vision for European Forensic Science 2020 including the creation of a European Forensic Science Area and the development of forensic science infrastructure in Europe (hereafter: EFSA 2020), in which routine forensic processes for the collection, processing, use and delivery of forensic data will be based on equivalent minimum forensic science standards, and in which forensic service providers will work on the basis of a common approach to implement these standards that foster closer cooperation between them and criminal justice systems. In order to achieve objectives formulated by the Council, the European Network of Forensic Institutes (ENFSI) also made significant steps. Hence, this program goes beyond the accreditation of forensic laboratories. The harmonization of forensic experts' knowledge and training requirements is of significant importance. The further objective of EU is determining the minimum conditions of crime scene investigation.

Conclusion: The key of mutual recognition of evidence is the application of common expert guarantee requirements. The Council of the EU declared the concept of EFSA 2020 to ensure the equivalence of professional forensic examinations. It aims at working out and accepting European standards. It is obvious that the accreditation of forensic laboratories is a corner stone of the above mentioned objectives. To achieve further, it is essential for EU institutions and organizations to be thorough and cautious.

P/2

The milestones of the creation of european forensic science area in hungary

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Introduction: The Council of the European Union had adopted the „conclusions on the vision for European Forensic Science 2020 including the creation of a European Forensic Science Area and the development of forensic science infrastructure in Europe” in Brussels, on 13-14 December 2011. The Council declared several aims in order to foster cooperation between police and judicial authorities across the European Union with a view to creating a European Forensic Science Area by 2020.

Aim of the research: The aim of the research is to collect the Hungarian measures and regulation which have been introduced in connection with the European Forensic Science Area.

Methods: We have used the typical methods of jurisprudential researches. The primary methods were making an analytical description of laws and other sources, their evaluation, the presentation of international and domestic practice of law enforcement, and drawing conclusions from that. Of course, we processed the domestic and foreign literature beyond the evaluation of legal standards.

Results: The Hungarian legislator has adopted laws to implement frameworks, regulation and other decision:

Main decisions in the EU	Results of the decisions
Conclusions of Tampere Summit (1999)	the creation of an area of freedom, security and justice in the EU
The Hague Programme (2004)	the principle of availability the base of other decisions e. e. g. Communication from the Commission to the Council and the European Parliament - The Hague Programme: Ten priorities for the next five years The Partnership for European renewal in the field of Freedom, Security and Justice /* COM/2005/0184 final */
The Treaty of Prüm (2008)	the exchange of DNA profiles and fingerprints
Council Framework Decision 2009/905/JHA on accreditation of forensic service providers carrying out laboratory activities	has significant consequences for all EU-based forensic science providers

Conclusion: Not only the Hungarian measures have shortcomings but also the European ones. There is no further improvement or specific decision, regulation in the

field of creation of European Forensic Science Area. The Stockholm Programme (2010-2014) ended in 2014: what is after that?

P/3

Homicide-followed-by-suicide event - analysis of frequency of specific features in cases investigated at the Department of Forensic Medicine of the Jagiellonian University in the years 1981-2015

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Our research study is focused on the analysis of homicide-followed-by-suicide autopsy cases that were investigated in the Department of Forensic Medicine of the Jagiellonian University. Out of a general database containing several thousand forensic autopsy protocols carried out in the years 1981-2015 we selected about 40 post-mortem autopsy reports of perpetrators and victims of homicide-followed-by-suicide cases.

The analysis was made taking into account several parameters such as: offender's age and sex, ethyl alcohol level in the perpetrator's blood, the number of victims and their relationship with the perpetrator, the methods of carrying out the homicide, the type of used tools, circumstances and manner of suicide.

Among the perpetrators a definite advantage of men observed. Majority of incidents took place at the place of residence or were perpetrator stayed for longer time.

In most cases victims were among perpetrator's closest relatives (wife, children) or among people within the intimate relationships (partner/partner). It was found that the most common way to perform a suicide was by hanging, much less frequently in other ways (eg. by stabbing, cutting or gunshot). The injuries of victims were much more extensive, in particular with numerous stab or cut wounds, accompanied by vast contusions, indicating a rapid mode of action of the perpetrator.

In recent years the number of homicide-followed-by-suicide cases has significantly increased, which is why the topic should be analyzed to improve understanding

P/4**The supplemental role of post-mortem imaging in the investigation of suspicious deaths – case description****A. Kricskovics¹, M. Angyal¹, I. Battyáni², S. Szukits²**¹Hungarian Institute for Forensic Sciences, Hungary²University of Pécs Department of Radiology, Pécs, Hungary

Post-mortem (PM) imaging is a recent, globally growing subspecialty of Radiology, Clinical Pathology and Forensic Medicine. The establishment of post-mortem CT imaging as a diagnostic tool in forensic sciences has accelerated in most European countries in the last decade. Although the domestic use of these methods are very scarce, we hope to promote their use, by highlighting it's potential in everyday forensic medical routine work.

In our currently described case we were faced with a complex problem, when the dead body of an unknown male person was found floating in a river. During the external examination two cranial, high velocity blunt force injuries, consistent with a small caliber gunshot wounds were found. There was no weapon in the vicinity of the body. Morphologically neither wounds showed gunpowder tattooing, while one had a more symmetrical star shape, consistent with an entrance wound.

Whole body CT scans were performed on the deceased, which showed on the right temporal region multiple fractures with a semicircular hole. Intracranially, multiple small bone fragments took a conic shape in the direction of the left parietal region, where a more asymmetrical skull injury was visible. No metal fragments were found in the intracranial cavity. The CT scans also showed different alterations (teeth prosthesis) which may be valuable for future identification purposes.

Due to the results of the external post-mortem examination, the immediate CT scans and the death scene investigation, at least a singular, contact shot from a small caliber handgun could be proven, with an entrance at the right temple, and a direction from right to left, upwards. All these facts did suggest a self-inflicted gunshot wound, but due to the unknown identity, the circumstances and the missing firearm, the possibility of a crime could not be excluded completely.

Our results showed the necessity of a close collaboration between death (crime) scene investigators (including the forensic medical examiner), police investigators and (forensic) radiologists, which may yield further useful results in the examination of suspicious, violent deaths.

P/5

Estimation of time since death using comparative proteomic and metabolomic approaches**B. Pesko**, R. Burchmore, K. Burgess, H. Torrance
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Introduction: The success of forensic investigation very often depends on the establishment of the correct timeline of events. In the investigation of fatalities, this depends greatly on the estimation of the time of death of the victim.

Current methods lead to inaccurate results as they are very subjective and depend on the experience of the investigator. Pathologist's estimate the time of death based on visual inspection of the bodies as well as body temperature measurement. Only very short post-mortem intervals can be evaluated with some degree of certainty. This investigation is using untargeted proteomic and metabolomic approaches to identify potential molecular markers (proteins, metabolites) which could help to quantify post-mortem changes and aid the time of death estimation. Methodology Animal models were used in the initial stages of the project. Aged beef meat (stored at room temperature for 13 days) and rat muscle samples (intact cadavers stored at ambient temperature for 3 days) were collected at 24 h time intervals. In the final stages of the project, human tissue samples were collected at the Forensic Anthropology Centre at Texas State University (San Marcos, Texas). Muscle samples were collected at various times post-mortem from 6 different subjects over the period of two weeks. For the proteomics experiment, 0.5g of tissue was homogenized in extraction buffer consisting of urea, thiourea and CHAPS. Protein separation was carried out using two-dimensional gel electrophoresis. Protein identification was performed using liquid chromatography-mass spectrometry. For the metabolomics experiment, 0.5g of tissue was homogenized in chloroform/methanol/water solution. The extracted samples were analysed using liquid chromatography-mass spectrometry. Data processing was performed using novel metabolomics software – IDEOM.

Results: The investigation allowed identifying potential biomarker candidates. The proteins of interest varied between the different mammals. However, myosin, actin and heat shock proteins seem to be the common denominators for all three species.

The metabolomics experiments yielded a large number of metabolites of interest, with similar results between the different species. Selected amino acids were identified as main compounds of interest.

Conclusions: The study has shown that both proteomics and metabolomics methods can be successfully applied to this scientific question. Using the untargeted approach gives the advantage of looking at a whole range of detected molecules and choosing the most appropriate ones for the task. Furthermore, the combination of the two approaches gives a deeper insight into the post-mortem biological processes.

P/6**Exhumation: a forensic look to history of Christian martyrs in Slovakia**

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In the 17th century there were some monasteries on the territory of Slovakia founded by European Christian ambassadors and local inhabitants. They played a great role in Christianity expansion, as well as in the development of contacts between different groups of population in former Slovakia, Hungary, Poland and Ukraine. The monastery situated in Rad locality (region of Trebišov, Slovakia) was founded approximately in 1630 by Italian, Hungarian and Slovak monks. In 1639 there was a great confessional conflict between different religious branches. A lot of monks from monastery were tortured and killed as representatives of „alien“ religion, their religious faith remained unchanged. Their monastery in Rad locality was destroyed. Their fate was the onset of a history of East-Slovakian Christian martyrs.

In 2011-2013 according to the program of archaeological research we performed 14 exhumations of skeletal remains which were found in remains of old monastery.

Exhumations were carried out in difficult conditions of flooded and drained locality near by Tisa river. We performed medico-legal investigation of skeletal remains and we found different traces of sharp and blunt violence in 5 cases. We also performed the facial reconstruction of the first exhumed person by his cranial shape (FaceMorpher v. 2.5 software). There were also successful attempts of dental identification. One of the dead persons was identified using violence marks, age estimation and historical documents from the local archive. He was a prominent person who devoted his life to God and became a monk in Rad locality, where he dead after wounding by sword-cut (visible slashes on the cranial and facial bones).

The exhumation of historical skeletal remains was successful also due to cooperation with archaeologists and representatives of the Slovak Catholic Church.

P/7**Fatal suicide during a 5-year period (2008-2012) in County Csongrád, Hungary**

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The rate of fatal suicide has been decreasing since the peak in 1985, although the rate was halved still remains as high as 24 deaths pro 100.000 inhabitants, representing the second highest rate amongst OECD countries in the year 2010.

In our present study we investigated the main features of nearly 700 fatal suicide cases occurred during a 5-year period (2008-2012) in County Csongrád, Hungary.

The data were collected retrospectively from the autopsy reports of the Department of Forensic Medicine, University of Szeged and from the police reports. The study focuses on demographic data of the victim, the influence of alcohol and drug at the time of death, the concomitant diseases and mental disturbances, furthermore the site and manner of committal.

The descriptive analysis indicates that 75% of the victims were male, and 39% of them fell into the age groups of 45-64 years. The most frequent way of lethal committal was hanging (66%), the second was intoxication by medicinal products (11%). More than half of the victim was not under alcoholic influence at the time of death, meanwhile 16,5% of them consumed some sort of psychoactive substance prior to his act. 28,3% of the victims had the history of mental disorder and nearly 8% of them had malignancy.

Our results coincide with the features of suicide found in an earlier study (1991-2000), there are no major changes in trends.

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Pattern injuries from blows with the muzzle end of a handgun

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Pistols, revolvers and blank guns may not only be used to discharge cartridges, but also for hits to the victim. In such cases, the blows preferably affect the head and/or the interposed hands protecting the body. Mostly, the impact is exerted either by the grip of a pistol or the butt of a revolver.

If the hits are brought about with the muzzle, the edge of the barrel's end causes punch lesions characterized by roundish skin flaps corresponding to the bore. Punch wounds of the scalp may be associated with fractures of the skull and even with brain contusions. Using the example of a homicide committed by "pistol whipping", the morphological features of blunt injuries from a handgun's muzzle are presented.

The possibilities of cooperation between forensic physicists and forensic pathologists

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The main duties of police authorities during death scene investigations are the establishment of the probable cause and manner of death, most importantly the differentiation between homicides, suicides and accidents. The purpose of the scene investigation - bound to the strict rules of investigative actions – is to search for, collect and document traces and findings, which may be regarded as evidence. It is often necessary to involve also forensic experts during scene investigations, whose experts opinion may also be counted as evidence. While in cases of death scene investigations, the involvement of a forensic pathologist is often necessary, the inclusion of further forensic specialties may also be important.

The presentation tries to highlight the possibilities of cooperation between physicist experts and forensic pathologists during death scene investigations as well as subsequent forensic examinations, especially in cases, where the knowledge of the laws of physics provide vital information for the establishment of cause of death or injury mechanisms.

Among the examples within our presentation are suspicious cases of falls from a height, falling into a well and water cistern, as well as the examination of injury mechanisms due to falling objects.

As a result of these cooperations, the scene investigation, expert's opinions and investigative information, the probable cause and manner of death, as well as injury mechanisms of deceased persons could be established satisfactorily.

Manner of death in gunshot fatalities. A series of 68 cases

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Differentiation between suicide, homicide and accident is a major issue for the forensic pathologist. All available elements (investigative and clinical notes, examination of the scene, external examination of the body, autopsy) should be evaluated during investigations for gunshot fatalities.

The aim of the study is to study a series of gunshot fatalities in order to find elements of certainty, probability, possibility and exclusion of a certain manner of death. Special attention was applied to the combinations of various parameters.

Cases at study comprise 68 gunshot fatalities (57 suicides: 54 males and 3 females, mean age 56.4; 10 homicides: 3 males and 7 females, mean age 37.5; 1 male accident) examined from 2003 to 2014. Autopsies were performed in 20 cases. 8 homicides presented multiple firearm wounds; in 2 suicides the presence of double firearm wounds were explained, by the lethality of only one shot in one case, and by the kind of weapon used (semi-automatic) in the other. 27 suicides happened in sick or depressed persons; in 3 suicides hexitation wounds were present. In 3 homicides victims had defensive injures.

A final differentiation between suicide, homicide and accident should be designed after an accurate medico-legal and police investigation. Multiple not self applicable firearms wounds in different anatomical sites and/or the presence of defensive wounds strongly suggest homicide. A history of depression, the presence of hexitation wounds and wound/s in accessible sites are suggestive of suicide.

Morphological differences of blunt chest trauma and trauma caused by cardiopulmonary resuscitation

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Introduction: Blunt chest trauma is still one of the important causes of mortality in the world. Cardiopulmonary resuscitation manipulations involve chest compressions, which can be reason of rib and sternum fractures, as well as other injuries. Sometimes, in situations, when resuscitation followed blunt chest trauma, or when corpse was found in suspicious circumstances and it is not clear, whether there were resuscitation attempts, evaluation and interpretation of blunt chest trauma can be difficult. The aim of the study was retrospective analysis and comparison of autopsy results, that involved cases with blunt chest trauma caused by different reasons (transport trauma, falls from height, criminal trauma and others) and cases, when cause of death was non-traumatic, and CPR was made.

Material and methods: Study involved analysis of 250 autopsy reports that were made in State Center for Forensic Medical Examination of the Republic of Latvia in Riga in 2011-2013; 163 of them were blunt chest trauma cases, 83 cases were non-traumatic deaths with medical records about CPR in perimortal period. Cases with extreme postmortal changes (e. g., putrefaction and charring) and with age at death lower than 18 years were excluded. Results were analysed with SPSS 20 program, using Mann-Whitney U-test, Kruskal-Wallis H-test and Pearson's chi-squared test, with significance level of $p=0,05$.

Results: Significant differences in trauma morphology were found between blunt chest trauma caused by different reasons, as well as between blunt chest trauma and CPR trauma. In cases, where CPR was made in non-traumatic deaths, injuries were present in 39,1% cases and absent in 60,9%. Of all cases with blunt chest trauma, visible external injuries (subdermal hematomas, abrasions, wounds) were present in 57,1% and absent in 42,9% cases; in CPR trauma 8% had defibrillation marks and 1,2% had small subdermal hematomas. Internal injuries were massive in pedestrians, who were run over by a car or struck by a train, occupants of cars, motorcycles and bicycles, less intense – in falls from height and in pedestrians, who were struck by car, and least expressed in criminal trauma and CPR cases. Internal injuries in non-traumatic deaths with following CPR were mostly sternal fractures (23%) and rib fractures (37,9%); shoulder blade, collar bone and spine fractures as a result of CPR were not discovered. In blunt chest trauma cases, sternal fractures were present in 35,6%, rib fractures were present in 90,8%, there were also shoulder blade (16,8%), collar bone (18%) and spine (29,8%) fractures. In 5,9% of CPR cases there were small subepicardial haemorrhages and in 2,9% cases – small subpleural haemorrhages; no other internal organ damage was described in CPR cases. Heart injuries (44%), aortal injuries (12,8%), lung injuries (67,7%), mediastinal haemorrhages (21,9%) were frequent in blunt chest trauma cases, there were also trachea and bronchi injuries (6,8%) and oesophagus injuries (1,2%). Hemothorax was present in 57,2% of blunt chest trauma cases, pneumothorax – in 3,7%. There were several important differences between CPR injuries and blunt chest trauma in bone fracture morphology. In CPR cases, indirect rib fractures on chest anterior part were much more often, than in blunt chest trauma ($p < 0,001$), and haemorrhages in soft tissues around CPR-caused rib fractures were less intense and more often did not appear at all, in comparison with traumatic rib fractures ($p < 0,001$). Sternum fractures were more frequent in cases with CPR-caused trauma, than in blunt chest trauma ($p = 0,04$). Haemorrhages around sternum fracture were usually less intense and sometimes absent in CPR trauma, however, there was no significant statistical difference ($p = 0,069$). Haemorrhage size was also dependent on time of survival after trauma or CPR ($p = 0,037$). There was significant difference ($p = 0,001$) in presence of CPR injuries between cases with reanimation on prehospital stage (56,8% with CPR trauma), prehospital and, later, hospital stage (50% with CPR trauma) and reanimation on hospital stage only (CPR trauma in 16,2% cases). CPR injuries were more often in older people ($p = 0,019$) and were not significantly dependent on length of CPR ($p = 0,177$). Most frequent types of CPR trauma were rib fractures on both sides of chest with sternum fracture (44,12%), rib fractures on both sides without sternum fracture (23,53%) and rib fractures on one side of chest without sternum fracture (17,65%); less frequent were rib fractures on one side of chest with sternum fracture (11,76%) and sternum fracture without rib fractures (2,94%).

Conclusion: There are various significant differences between morphology of blunt chest trauma and trauma caused by CPR, which can be used to evaluate trauma when case circumstances are unclear. Main signs of CPR are defibrillation marks on skin, sternum fracture, indirect rib fractures with minimal bleeding or no bleeding, absence of chest internal organ injuries. CPR injuries are more intense in older people and in cases of prehospital reanimation.

Skull, face and neck injuries caused by a beer bottle

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Introduction: Penetrating neck injuries are nowadays frequent civilian trauma and the spectrum of injury ranges from minor to life-threatening. This type of injury is particularly challenging to treat because of the complex anatomy of the neck, with vital structures in close proximity to one another and in the lateral part of the head and neck the major blood vessels and nerves are relatively close to the skin surface and incised wounds in this region can be frequently fatal. Stab wounds to the neck account for 40% of all penetrating neck injuries and are usually low velocity injuries and can be produced with minimal force. Glass can be considered sometimes a sharp, pointed, knife-like tool and glass injuries can cause severe penetrating injuries to skin and underlying nerves and vessels, as well as tendons, and result in significant long term disability or death by exsanguinations due to injury of a major vessel, most often the carotid artery. In bars and disco pub beer is normally served in Italy in glass bottle (33cl) that can become formidable impulsive weapons, due to the sharpness of the edges especially on breaking on somebody's head or face during altercations.

Case report: During a dispute between a group of young people outside a disco pub in an early December morning (07:00 AM) a 33-year-old man (190cm, 99kg) received a blow with a glass bottle in his head by a 32 years-old man, hit shortly before with a fist in the face, as testified by other persons present at the dispute. Immediately after the fact a passer-by found the young man prone on the sidewalks and alerted the emergency medical service that found the man in haemorrhagic shock. At the Emergency Department (07:22 AM) the clinical-instrumental investigation detected an active heavy bleeding injury complex in the left temporal region (auricle helix lacerations, deep laceration of the parotid gland, injury of the internal jugular vein (level mouth floor); bleeding spots in ramification vessels of the external carotid artery; section of the VII nerve with intracranial retraction of the cranial end; complex fracture of the temporal bone (squamous portion); partial dislocation of the left condyloid process). No other wounds were indicated in the medical records.

The heart rate was 130 beats/min, blood pressure was 70/40 mmHg, with cool, clammy skin, snoring breathing, the patient was drowsy and not contactable with mid-midriatic pupils and circulation instability (III-IV haemorrhage class; 08:00 AM: oxygen saturation was 50% in room air; Hb 8.6g/dL and Hb nadir: 6.8g/dL). The patient was treated immediately with intravenous fluids, red blood cell transfusions, cardiotoxic and sedative agents and intubation (12:00 PM: Hb 9.3g/dL) and the vascular surgery ended with satisfactory recovery and the patient was discharged after two weeks with outpatient controls and care program. After three months the patients presented evident auricular scars and deficit of the VII, XI, XII left cranial nerves. The perpetrator's injuries were bruises and contusions to the left eye-cheek region, a superficial laceration of the left eyebrow and a pair of superficial wounds between the first and the second finger of the right hand.

Results: In this case the crime tool was a glass beer bottle, but no clear information was given about the assailant bottle grip modality, the bottle integrity, the beer brand and the presence of a bottle filling. The complexity of the wound in the left temporal region was characterized by a temporal comminuted fracture, incomplete condyloid mandibular joint dislocation, vessels and nerves discontinuations and parotid gland and auricle lacerations. No defense wounds were on the victim. From a topographical side the injury complex is precisely placed in a circumscribed area, the left temporal region and the wounds were life-threatening until the very beginning of the clinical consequences.

Conclusion: It is well known that stab wounds inflicted with a broken bottle tend to occur as clusters of wounds of different sizes, shapes and depths. Colour, weight and thickness of the glass of a beer bottle depend from the beer brand, but in general an empty beer bottle can weigh around 250 grams. With this minimal bottle's weight the possibility of an empty beer bottle to be broken by a man's hand on a man's head is highly likely to happen. The bottle has a cylindrical morphology and a round rim when perfectly cut, but when broken the bottle's edges are normally irregular in shape, number and depths of the single shards (jagged rim). If the bottle brakes in a blow against the head it can become a complex sharp-edged instrument, that can produce various penetrating injuries and the characteristics of such wounds are of irregular incised-type wounds of variable depths and severity and cover a circumscribed body area, frequently a bow-like shaped wound is visible on the skin. In this case the complexity of the wounds with a bony fracture and the limited injured area support the hypothesis, in the mechanism of injury, of a single blow to the head with a beer bottle that broke by hitting the victim's left temporal region (personal injury for defence versus attempted homicide).

The „loss of chance” doctrine in medical malpractice – comparative aspects

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The loss-of-chance doctrine is an important notion in medical malpractice, it was created to compensate patients who lost an already diminished chance of living because of medical negligence (for example if a diagnosis of a malignant tumor is negligently missed, however, early and proper diagnosis – statistically - would have improved the five or ten year survival of the patient). The question arises if the courts should hold the health care provider liable for the lost chance of survival, or should there be no liability. This issue reflects a tension in competing social values, opponents often argue that the loss-of-chance doctrine encourages lawsuits based on probability calculations which are rather uncertain and difficult to prove. Given the crucial role of forensic scientists in medical malpractice litigation, it is essential for them to understand the loss of chance doctrine and its legal and social background. Although there are no clear-cut answers, the presentation summarizes the possible legal solutions, with emphasis on the recent rulings of the Hungarian Supreme Court and the academic debate related to the doctrine.

Another important result is that the risk of medical litigation is not a criterion for the students when choosing their future specialization. Taken as a whole, the results indicate that the participants have insufficient knowledge of the medical responsibility and the relevant legal provisions and a reduced risk awareness about these issues. Our study shows the need for a more serious training of the students in medical responsibility and in legal issues of the medical profession, thus protecting both the future physicians and the patients.

Disclosure malpractice in Hungary

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A significant part of malpractice procedures aim at the issue of appropriate information to be provided to the patient. The necessary content and way of information provision is not easy to set even if the Hungarian Act on Health serves as a solid basis for the requirements of the compulsory elements of the communication towards the patient as well as main qualitative criteria. Taking examples from litigation procedures, failures of everyday communication routines can be highlighted such as generalization of information provision, lack of documentation, failure in the selection of the person to be informed.

Furthermore, miscarriages of information provision can ruin the compliance of the patient or even lead to his dissatisfaction and can be manifested in legal claims. It is not always easy to find an appropriate, just and also professionally correct way of information provision but good practices can support service providers in their activities.

Medical malpractice litigation in Hungary – first results of an empirical study

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Very few empirical studies have been conducted on medical malpractice litigation in Hungary, and due to the absence of official judicial statistics our knowledge on this field is rather limited. We know, however, from former publications that the number of medical malpractice claims against health care providers is on the rise since the late 90's and that the average damages have been steadily rising ever since.

To get more accurate data, the authors analyze the decisions of three second instance courts of Hungary brought between 2008 and 2014 in tort proceedings initiated against health care providers for negligence, using the publicly available court decisions database. They gathered data on various characteristics of malpractice litigations, such as the affected disciplines, the judicial and forensic approach of the standard of care and the role of the forensic expert. They present the first results of their empirical study.

Insurance fraud

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Insurance fraud is an intentionally committed action. Whereby a fraudulent event is devised against insurance companies to achieve some type of financial gain. There can be several different types of insurance fraud attempts ranging from medical, life and automobile insurance policies.

Insurance fraud can be generally classified as either hard fraud or soft fraud. Hard fraud is defined by an entirely fabricated false insurance event. In comparison to soft fraud, the insurance event and claim is legitimate, but the claim is exaggerated.

Detection of a fraudulent event is not an easy task, since mostly they are well organised and in many cases medical professionals and insurance agents can be involved.

In Hungary we have had three major types of insurance fraud within the last ten years, these have consisted of cases such as, medical insurance, accidental insurance (liability insurance fraud), and life insurance fraud.

We are presenting insurance fraud events, for example; how we could solve cases in conjunction with insurance companies, police and forensic experts. Further more upon this collaboration with all specialised experts, their views and opinions will be implemented to produce the next successful insurance contracts.

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Medical responsibility – a student perspective

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The error in medical practice and professional medical liability are currently under the scrutiny of the society, being topics of particular importance for both medical field and mass-media. Our study aimed to explore the level of knowledge and opinions of medical students about the medical responsibility and about the legal and ethical provisions that apply to the medical profession.

To this aim, the authors of this study performed a quantitative research with data being collected by means of a questionnaire. The questionnaire was composed of 12 open-end questions grouped in two areas: one analysing the students' opinions and another looking at the students' level of knowledge. The study group included 100 medical students in the 6th year of the Grigore T. Popa University of Medicine and Pharmacy in Iasi, Romania.

The main result of our study was that the vast majority (99%) of the participants did not define correctly and completely the medical malpractice.

B/3 HIRDETÉS

B/4 HIRDETÉS