COLLECTION OF ABSTRACTS AND BIOGRAPHIES

International Scientific Conference

EU eHealth Law and Public Health

Editors:
Kristina MISHEVA & Marija AMPOVSKA

With the support of the Erasmus+ Programme of the European Union

Jean Monnet Project: EU eHealth Law and North Macedonia: From Current Practice to Implementation (EUEHL)
Ref. No. 621268-EPP-1-2020-1-MK-EPPJMO-PROJECT

International Scientific Conference

EU eHealth Law and Public Health

26.09.2022 – 30.09.2022

Ohrid, North Macedonia

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Editors: Kristina MISHEVA, Ph.D., University Goce Delchev - Shtip, Faculty of Law, Republic of North Macedonia, Marija AMPOVSKA, Ph.D., University Goce Delchev - Shtip, Faculty of Law, Republic of North Macedonia

Technical support: Kristijan PANEV, Goce Delchev University of Shtip, Faculty of Law, Republic of North Macedonia

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Web: http://euehl.ugd.edu.mk
E-mail: grp-euehl@ugd.edu.mk

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FOREWORD

Dear reader,

This publication is a collection of short narrative biographies and abstract summaries from the national and international speakers at the multidisciplinary international scientific conference titled ***"EU eHealth Law and Public Health"****. The conference is part of the project activities under the Jean Monnet Project titled "EU E-Health Law and North Macedonia: From Current Practice to Implementation" (EUEHL), Ref. No. 621268-EPP-1-2020-1-MK-EPPJMO-PROJECT.*

This multidisciplinary international scientific conference aims to gather local and non-local respectable speakers and recognised professionals in the areas of Global Health Policies, EU eHealth Law, Public Health Law, Bioethics, IT creators of eHealth platforms and services, and doctors. In the context of this, we can say that the multidisciplinary approach of this conference is an added value and the first of its kind at the national level. Therefore, this will be a significant contribution not only for the academic community but also for national policymakers and professionals in the social sciences and humanities, medicine, and the IT industry.

The conference is organised in four panels. Each panel covers a different area of the subject matter. The first panel is dedicated to EU eHealth Law and Public Health Policies and focuses on EU and Global Public Health Policies and Constitutional Rights; International, EU and National eHealth Developments; Malpractice in Healthcare; and Data Privacy and Cyber Protection in Healthcare. The second panel examines biosecurity and bioethics in health. The third panel discusses information and communication technology (ICT) in healthcare engineering practice. The last panel focuses on sharing best practices among healthcare professionals in eHealth services and telemedicine. Therefore, the structure of this publication follows the panel sessions of the conference in alphabetic order by the first name of the speakers into the panels.

This diverse networking and exchange of experiences in the development of eHealth at national, international and EU levels and the implementation of best practices in digital health aims to enhance the communication and knowledge among participants. We want to share our academic debate by

publishing this collection that provides a scope of work of specific topics presented by diverse scholars, professionals in both the public and private sector. Additionally, this publication is open access, so it raises the awareness of the importance to being part of EU`s roadmap for Digital Health.

Many thanks for the unselfish effort given of the members of the Organizing Committee of this conference and for the contributions of the participants to this publication.

We hope that you will find the information interesting and useful.

Thank you for reading this Collection of Abstracts and Bios.

Academic coordinator,

Associate professor Kristina Misheva, PhD

Faculty of Law, Goce Delcev University in Stip

Organizing Committee

Kristina Misheva, Faculty of Law, Goce Delcev University of Stip, Republic of North Macedonia
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Robert Grzeszczak, School of Law, University of Warsaw, Poland
Saso Koceski, Faculty of Computer Science, Goce Delcev University of Stip, Republic of North Macedonia

Conference Programme

"EU eHealth Law and Public Health"
Hotel Bellevue, Ohrid, 26-30 September 2022

Day 1 (26.09.2022)	
16:00	Registration of Participants
18:00 – 19:00	Welcome & Opening Remarks by EUEHL Team
	Presentation of Project Activities and Results
19:00 – 19:20	**The Principles of Global Health** Professor Lawrence O. Gostin (O`Neill Institute for National and Global Health Law, Georgetown Law, Washington DC, USA) - online
	Discussion
20:00	Dinner
Day 2 (27.09.2022)	
09:30 – 10:00	Opening Remarks - Professor Dejan Mirakovski, Rector of Goce Delchev University of Stip - A representative from the Ministry of Health in the Republic of Macedonia - A representative from the Ministry of Justice in the Republic of Macedonia - Mpharm. Robert Bekirovski, Deputy Director of Macedonian Agency for Medicines and Medical Equipment (MALMED)
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	Quo Vadis EU Health Policy? – An Insight into Intersections and Synergies Between 2021-2027 EU Health and Cohesion Targets

	Associate Professor Nives Mazur-Kumrić (University of Liège, Belgium)
	More or less of the European Union in shaping the protection of Public Health? Some lessons from the Covid-19 pandemic Associate Professor Robert Grzeszczak (Faculty of Law, University of Warsaw, Warsaw, Poland)
	International Mobility during Public Health Emergency Associate Professor Fernando Dias Simões (Lusíada University of Porto and Portucalense University, Portugal)
	Healthcare: A View from the U.S. Law Enforcement Mr. John (Jack) Bennett (Managing Director, Cyber Risk Practice, Kroll, USA) - online
	The Right to Health in the Digital Age Professor Maja Nastić (Faculty of Law, University of Nis, Serbia)
	EU Health Policy and the Macedonian Strategies on the Health Issues Associate Professor Dejan Marolov (Faculty of Law, Goce Delcev University of Stip, North Macedonia)
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13:00 – 14:20	**Session 2: International and EU eHealth Developments through National Legislation (Part I)** *Moderator: Marija Ampovska*
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	eHealth Developments in China Chief Assistant Professor Deyan Dimitrov (Institute for the State and the Law - Bulgarian Academy of Sciences, Bulgaria)
	E-governance in Healthcare Systems – Has the COVID-19 pandemic boosted the development of eHealth? The case of Poland Associate Professor Jowanka Jakubek-Lalik (Faculty of Law and Administration, University of Warsaw, Warsaw, Poland)
	Healthcare Personalization and Community delivered by eHealth

	Mr. Sid Bouziane (CEO and Founder of Borouge, Paris, France)
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15:30 - 17:10	**Session 2: International and EU eHealth Developments through National Legislation (Part II)** *Moderator: Marija Ampovska*
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	eHealth Developments in the EU and the Republic of Bulgaria Chief Assistant Professor Veronika Stoilova (Faculty of History and Law, South-West University "Neofit Rilski" – Blagoevgrad, Bulgaria)
	Normative Regulation of eHealth System in Serbian Law: The Influence of EU Legislation and Practice Associate professor Marko Dimitrijević (Faculty of Law, University of Nis, Serbia)
	Legal aspects of eHealth development in North Macedonia - Where do we stand? Associate Professor Kristina Misheva (Faculty of Law, Goce Delcev University of Stip, North Macedonia)
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	Basic Patient Rights in the context of eHealth in the Republic of Bulgaria Chief Assistant Professor Nikoleta Lazarova (Faculty of History and Law, South - West University "Neofit Rilski" – Blagoevgrad, Bulgaria)
	Methodological Challenges in eHealth Research Professor Strasko Stojanovski (Faculty of Law, Goce Delcev University of Stip, North Macedonia)
	M-Health Solutions in Refugee Mobility: HERA Case

	Assistant Erdal Bayraktar, Ph.D. Candidate (Beykent University, Istanbul, Turkey)
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	Concept of liability for damages caused by artificial intelligence Associate Professor Mihajlo Cvetković (Faculty of Law, University of Nis, Serbia)
	Liability in Medicine – An Overview of Macedonian Legal System and Practice Associate Professor Marija Ampovska (Faculty of Law, Goce Delcev University of Stip, North Macedonia)
	eHealth and the Standard of Care Assistant Martin Šolc, Ph.D. Candidate (Faculty of Law, Charles University, Prague, Czech Republic)
	Criminal Liability for Medical Malpractice in Croatia Associate Professor Igor Vuletić (Faculty of Law, University of Osijek, Croatia)
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	Emerging Healthcare Cyber Risks: Predictions, Problems, and Challenges Professor Alan Brill (School of Law, Texas A&M University; Senior Managing Director in the Cyber Risk Practice of Kroll and Fellow of the Kroll Institute)

	Open data and eHealth Assistant Professor Irena Bojadzievska, (University American College Skopje, Skopje, North Macedonia)
	Processing and International Transfer of Health Data within the EU and Abroad Ms. Ljubica Pendaroska, Ph.D. Candidate (International Consultant Expert in Data Protection and Privacy, Cyber4 Women, Skopje, North Macedonia)
	Humanitarian Health Service – Legal Relationship in Practice Ms. Zsófia Riczu, Ph.D. Candidate (School of Political Science and Law, University of Miskolc, Hungary)
	eHealth, Interoperability of Health Data and Artificial Intelligence for Health and Care in the European Union Ms. Adriana Dvoršak, M.A (University Medical Centre Ljubljana, Slovenia) - online
	Security Requirements for Electronic Health Record Systems (EHR) as safeguards for Privacy Rights under Proposal for Regulation on European Health Data Space (EHDS) Ms. Daniela Atanasovska LL.M. (Data Protection Consultant & Certified Information Security Manager ISO 270001)
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20:00	Dinner
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	Bio – eco – ethically restructured Public Health Associate Professor Maria Carmen Velayos Castelo (University of Salamanca, Salamanca, Spain)
	An Analysis of Bioethical Standards in promoting Adolescent Health Associate Professor Goran Livazović (Faculty of Educational Sciences, University of Osijek, Croatia)

	A Human Being: the Definition of Personhood in the Context of Medical Ethics Decisions Ms. Kristine Whitnable, Ph.D. (Fellow with Global Scholars, USA)
	Pivotal ideas of Mediterranean Bioethics: A Bridge over Troubled Water Professor Iva Rinčić (Faculty of Medicine and Faculty of Health Studies, University of Rijeka, Rijeka, Croatia)
	A Postscript on Jahr: From Chronologist to Bioethicist Professor Dejan Donev (Faculty of Philosophy, Institute of Philosophy, University "Ss. Cyril and Methodius", Skopje North Macedonia) - online
	Ethical and Legal Challenges to eHealth in the Republic of Bulgaria Chief Assistant Professor Georgy Mihaylov (Faculty of History and Law, South - West University "Neofit Rilski" – Blagoevgrad, Bulgaria)
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13:30 – 15:00	Lunch
15:00 – 18:20	**PANEL 3: INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) IN HEALTHCARE** *Moderator: Sasho Koceski*
	Medical and Healthcare Big Data Analytics - Challenges and Opportunities Professor Blagoj Ristevski (Faculty of Information and Communication Technologies, University "St. Kliment Ohridski" – Bitola, North Macedonia)
	Digital Healthcare: The Role and Impact of ICT in Healthcare Associate Professor Adem Tuncer (Yalova University, Yalova, Turkey)
	ICT and Assistive Robotic Technology for Elderly Care Professor Natasa Koceska (Faculty of Computer Science, Goce Delcev University of Stip, Republic of North Macedonia)
	Application of Linear Regression in Modeling Relations of Health Parameters Professor Aleksandar Nastić (Faculty of Informatics, University of Nis, Serbia)

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	Telemedicine: Today and tomorrow Riste Timovski, Ph.D. (Head of E-Index Department, Goce Delchev University of Stip, North Macedonia)
	ICT Applications in Healthcare Mr. Mustafa Albanna, Ph.D. Candidate at Yalova University, Yalova, Turkey
	The Challenges of IT Applications in the Healthcare System Mr. Trencho Milenkoski, MSc (IT department, Clinical Hospital, Skopje, North Macedonia)
	Development of the National System for Electronic Health Records in the Republic of North Macedonia Ms. Zhaklina Chagoroska ("Moj termin" Ministry of Health, Skopje, North Macedonia)
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	Contemporary Communication in Clinical and Scientific Practice Associate Professor doctor Igor Peev (University Clinic for Plastic and Reconstructive Surgery, Medical Faculty, University "Ss. Cyril and Methodius", Skopje, Republic of North Macedonia)
	Application of Teledentistry in Everyday Dental Practice Associate Professor Julija Zarkova Atanasova (Faculty of Medical Sciences, Goce Delchev University of Stip, Republic of North Macedonia)
	Teleophthalmology in Theory and Practice

	Specialist Doctor Aleksandar Mishev, Ph.D Candidate (Ophthalmology Clinic, JZU Clinical Hospital - Shtip, Republic of North Macedonia)
	The Current Situation, Effects of use, and Proposals for Future Development of Telemedicine Specialist Doctor Vladko Filipov (Clinic for Urology, JZU Clinical Hospital - Shtip, Republic of North Macedonia)
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12:00 – 13:30	Closing Remarks & Certificates
14:00	Lunch
	Departing

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PANEL 1: EU E-HEALTH LAW AND PUBLIC HEALTH POLICIES

ADRIANA DVORŠAK

Adriana Dvoršak was awarded bachelor degree in 1992 at the Faculty of Social Sciences, Ljubljana and she specialized in political science - international relations. In 1993 she obtained Master of Arts in European Studies at the College of Europe, Brugges.

In 1995 she attended Master's programme for organisation and management in public administration, organised by Centre for Socio-Economic Development (Geneva) and Inštitut za javno upravo (Ljubljana). At the moment she is employed at the University Medical Centre Ljubljana, a leading medical research institution in Slovenia, which aspires to establish international research centre and to expand the basis for tertiary projects. It seeks to extend the scope of research and to promote cooperation with non-medical disciplines such as informatics, sociology, and technical sciences.

Because she works in the IT sector of the University Medical Hospital Ljubljana, she is also in position to support actively different Slovenian NGOs and help them to find the right partners or disseminate their work. Such partnerships, even if they may be very informal, represent a commitment to coordinated approach to activities aimed at improving conditions for the digitalisation of the Slovenian healthcare sector:

- training and raising competences of different stakeholders in the digitalisation of healthcare sector and delivery of health care,
- associate international and domestic industries in developing new solutions and performance in healthcare in Slovenia and Europe,
- propose regulation and promotion of digitalisation of healthcare in Slovenia and Europe,
- support stakeholders' compliance with relevant laws and regulations, data protection and confidentiality, medical informatics and ethics,
- formulate opinion and presentation on digitalisation in healthcare sector, support digital Europe,
- actively support start-ups.

E-HEALTH, INTEROPERABILITY OF HEALTH DATA AND ARTIFICIAL INTELLIGENCE FOR HEALTH AND CARE IN THE EUROPEAN UNION

Abstract: Health data is information that can be used to improve the health status of individuals and populations. The purpose of the European health data space (EHDSpace) is to provide a standardized method of collecting and storing health data related to public health issues. In order to achieve this end, the European Commission has proposed an EU regulation on the European health data space (COM/2022/197) in May 2022.

The established EHDSpace will help authorities to store patient-related health data and it aims to create a virtual common space where physical persons or natural persons could easily control their electronic health data. It will also make it possible for researchers, innovators and policy makers to use this electronic health data in a trusted and secure way that preserves privacy, including use of collected data for the application of the methods of the artificial intelligence.

A regulatory gap has been identified when it comes to information systems which are called electronic health record systems (EHR systems). The focus in the interoperability of health data must be on the EHR systems that are used to store and share electronic health data of natural persons. Currently, the cross-border exchange of electronic health data is still very limited. There are many challenges to interoperability and data portability which obstruct continuity of care and efficiency of healthcare systems.

On the institutional level, states will have to establish new health data access bodies for the secondary use of electronic health data and they will also have to ensure that electronic data are made available by data holders for data users. Natural persons should control the transmission of their data to other healthcare providers. Stakeholders such as healthcare providers, digital health service providers, and manufacturers of EHR systems or medical devices should not limit the portability of data, especially patient summaries, electronic prescriptions, medical images and image reports, laboratory results and discharge reports.

Keywords: cross-frontier data flow, health care system, exchange of information, e-Health.

ALAN BRILL

Alan E. Brill is Senior Managing Director for Cyber Risk at Kroll (and is the founder of Kroll's global High-technology Investigation and Computer Forensic practices.) He has worked, written, and lectured internationally in the areas of computer/communication security, technology crime response, and the application of the forensic sciences to the challenges of electronic evidence. He is an Adjunct Professor in the Master's Program at Texas A&M University School of Law and has served as an expert witness and Special Master for the U.S. federal courts. Prior to joining Kroll, he was Director of the Information Systems and Information Security Bureau of the New York Department of Investigation, where he served as the senior government official with responsibility for information security, and as a Deputy Inspector General in the New York City government. At the international accounting firm of Ernst & Whinney (now E&Y) he served as Senior Manager in the information security practice and was the co-founder of that firm's Data Systems Security Review practice. He has also served as system designer at Chase Manhattan Bank and was on the design team for the Apollo Project Ground Support System at the NASA Manned Spacecraft Center in Houston.

Prof. Brill has served as a visiting faculty member in the computer crime investigation programs of the United States Secret Service, the FBI Academy, the Federal Law Enforcement Training Center, and the Federal Financial Institutions Examination Council. He holds BA and MBA degrees from New York University. He is an honor graduate of both the United States Army Command and General Staff College and the National Security Management Program of the Dwight D. Eisenhower School for National Security and Resource Strategy at the National Defense University. He has also lectured for the John F. Kennedy School of Government at Harvard University. He also served on the Security Committee of the Center for Innovation in Advanced Development & Manufacturing at the Texas A&M University Health Science Center.

EMERGING HEALTHCARE CYBER RISKS: PREDICTIONS, PROBLEMS, AND CHALLENGES

Abstract: It seems like cybercrime has become something we read about in the news every day. But what is the real nature of these crimes targeting the healthcare community? From ransomware to business email compromises to data theft, healthcare has become a primary target for international cyber criminals.

While there is no such thing as a perfect or impenetrable defense, understanding how the risks are changing, how quickly the criminals can evolve their attack techniques and technology, and how best practice is increasingly turning in the direction of continuous monitoring of networks to quickly identify Indicators of Compromise (IoCs) has become vital.

Because of the data that they hold, the criminal's understanding of cyber weaknesses, the potential to disrupt treatments vital to patient survival, and the state of protection and sustainability (or non-sustainability) in organizations ranging from medical practice offices to large medical centers, there should be no question that healthcare will continue to be a prime target for cybercriminals. They have been successful in their attacks and have collected enormous sums in ransom payments and through coercion of victims.

At the same time, healthcare providers are also faced with challenges associated with the rapid expansion of the Internet of Medical Things (IoMT) – devices that communicate medical data and control medical devices over Internet communications circuits.

With more than 40 years of experience in cyber security covering both the public and private sector in law enforcement and as a private investigator, and as an academic, Prof. Brill has worked with healthcare institutions globally to help them meet the rapidly evolving challenges of cyberspace, while not forgetting the basics of physical and human resource security.

Keywords: Forensics, ransomware, hybrid attacks, investigations, cyber-insurance

BILJANA TODOROVA

Biljana Todorova, PhD, is an Associate Professor of Social Security Law at the Faculty of Law, University „Goce Delcev"- Stip, Republic of North Macedonia.

She teaches Labor Law, Social Security Law and International Labor Law. She has published a few books and a range of articles in the area of Labour Law and Social Security Law. She has research experience in research projects, some of them are: researcher in project „EDUCATION-4PROGRESS: regional cooperation to improve EU law teaching", implemented by the SEELS Network and financially supported by the Western Balkans Fund 2018; researcher in the project „The European Family Support Network-A bottom-up, evidence-based and multidisciplinary approach" 2019 – 2023. Her research focuses on domestic and international labour law and policy, decisions and the roles of governments in promoting social and economic improvement on the labour market in the era of globalization. She has participated in the drafting of national labour legislation.

E-HEALTH THROUGH THE PRISM OF THE SOCIAL LAW OF THE REPUBLIC OF NORTH MACEDONIA

Abstract: With the introduction of the concept of e-health as a vital component of the health system, it is indisputable that it becomes a component of the social system, which will help citizens to monitor their own well-being.
According to the literature, the concept of e-health originates from the idea that it is possible to provide medical care to people who are at a distance from health professionals.
Unfortunately, in our country, there are obstacles (both legal and operational) to the successful implementation of the concept of e-health, which have proven to be difficult and slow to overcome. It is undeniable that overcoming them will help speed up the way in which the constitutionally guaranteed social rights of the citizens are realized.
From the corpus of social rights in the Republic of North Macedonia, the author makes a brief overview of those social rights that are exercised, that is, the way in which insured persons exercise them through e-health.
The purpose of this study is to re-examine the issue of e-health services and their significance in practicing social rights. Taking into account the challenges that e-health is facing in the country the study draws some recommendations that need to be referenced at the national level of social protection.
The method used by the author is to analyze existing documents in order to collect secondary information on related issues, especially information from the legal acts in the country. The thesis and references are adapted from research works on e-health, studies, policies, and activities of the legislator in North Macedonia in the process of providing e-health services.

Keywords: social protection, social security, social insurance, e-health system, public health.

DANIELA ATANASOVSKA

Daniela Atanasovska LL.M is a Data Protection Consultant & Certified Information Security Manager for ISO 27000.
Present she is an Operations Coordinator at Data Masters Skopje.
Graduated from the Faculty of Law "Iustinianus Primus" in Skopje, where she earned her LL.M in Law, and an LL.M from the Faculty of Economics where she earned her LL.M in MBA.
Mrs. Atanasovska has successfully finished Data Masters Academy in 2021 - 2022 where she earned a certificate for machine learning and AI in May 2022.
Mrs. Atanasovska has successfully passed the Judicial Exam by the Ministry of Justice, Republic of Macedonia.
She is a Certified Information Security Manager (CISM) ISO 27000 until October 2024 year.
She has worked as a Data Protection Officer for a Bank, and also, she has done some compliance projects for Macedonian private companies with the new Law for Personal Data Protection.
Currently, she is a part of the NIST Privacy Workforce Public Working Group (PWWG) – Project Team 4: Data Processing Ecosystem Risk Management.

SECURITY REQUIREMENTS FOR ELECTRONIC HEALTH RECORD SYSTEM (HER) AS SAFEGUARDS FOR PRIVACY RIGHTS UNDER THE PROPOSAL FOR REGULATION ON EUROPEAN HEALTH DATA SPACE (EHDS)

Abstract: The goal of this presentation is to provide material for discussion about new security requirements set out in the Proposal for a regulation on the European Health Data Space (EHDS), especially requirements related to Electronic Health Record (EHR) Systems, and to get closer to the answer of the question: Are they enough to be safeguards for the right to the protection of personal data?

Electronic health record (EHR) systems as part of EHDS are information systems used in the health domain for storing and sharing electronic health data like medical history, notes, and other information about our health including the symptoms, diagnoses, medications, lab results, vital signs, immunizations, and reports from diagnostic tests such as x-rays.

On 3 May 2022, the EU moved forward in the health data sector by presenting a Proposal for a Regulation of the European Parliament and of the Council on the EHDS whose Annex 2 sets out security requirements for EHR Systems, after releasing its European Strategy for Data in February 2020.

The EHDS is designed to be able to provide a trustworthy setting for secure access to and processing of a wide range of health data securing the right for protection of personal information for individuals in primary and secondary use of the health data.

Besides its own narrative, the Proposal for EHDS is built further on the GDPR, proposed Data Governance Act, draft Data Act, and Network and Information Systems Directive.

All these documents, as well as publications and opinions from various EU authorities, concerned groups, and stakeholders, were consulted in the process of preparing the presentation.

Keywords: EHDS, EHR systems, personal data, security requirements, information systems.

DEJAN MAROLOV

Dejan Marolov pursued his graduate studies at the European Institute in Nice, France, where he earned his MA degree defending his thesis "Advanced European and International Studies". He obtained his PhD in International Law from the European Center for Peace and Development (ECPD), affiliation of the University for Peace, established by the United Nations. Numerous international journals and periodicals have published his academic papers in law and international relations. He authored more than six monographs. Prof. Marolov has reviewed scientific articles for respectable international journals. He has served on many national and international committees at scientific conferences and forums.

EU HEALTH POLICY AND THE MACEDONIAN STRATEGIES ON THE HEALTH ISSUES

Abstract: This paper will try to outline the EU health policy, its general framework and its particularities. The previous will be done by analyzing the legal and real powers of the EU institution in the field of health policy. The legal content analyses will be used to determine the EU competences according its primary and secondary law sources in the area of the health policies. It begins by describing the overall structure, processes and powers of the EU as they relate to health. We will try to explain why there is not a clear "EU health policy". Finally, there will be legal content analyses on the most important documents of the ministry of health of the Republic of Macedonia in the context of the previous EU health policies.

Keywords: EU health policy, health issues, Macedonian health policies, EU institutions

DEYAN DIMITROV

Deyan Dimitrov is a PhD in Law. He works as Chief Assistant Professor of International Private Law at the Institute for the State and the Law - Bulgarian Academy of Sciences. He specializes in international humanitarian law at the International Committee of the Red Cross (ICRC) in Warsaw. Until the middle of 2012, he was Chief Legal Adviser at the Executive Agency "Maritime Administration" at the Ministry of Transport. At the end of 2012, he won a scholarship and successfully completed a Master's degree in International Trade and Maritime Law at Dalian Maritime University - Dalian, Liaoning, China. During his stay in China he participated in various economic forums, diplomatic and trade meetings. After returning to Bulgaria, he received the Doctor of Law degree and was appointed as Chief Assistant Professor of International Private Law at the Institute for the State and the Law - Bulgarian Academy of Sciences. He teaches maritime law and other legal disciplines at the Nikola Vaptsarov Naval Academy in Varna and National Defence Academy "Georgi Stoykov Rakovski" in Sofia.

Deyan Dimitrov is also attorney at law and has professional interests in the field of maritime, investment, civil and commercial legal matters. He speaks English, Chinese and Russian languages.

E-HEALTH DEVELOPMENTS IN CHINA

Abstract: Health services are at the heart of social assistance systems in various countries around the world. Technological progress has accelerated the use of ICT in all spheres of human activity, including that of healthcare. Globally, this area of social service provision is considered the largest service industry and they have top priority, receiving huge investments and growing rapidly in the most developed countries. As the topic of e-health becomes more and more relevant, the evaluation of its practical application in a real healthcare environment has become more and more important for many countries, including the People's Republic of China.

China's e-health system aims to improve traditional health services. The goal is to eliminate inequities, inefficiencies, poor quality, shortages of health resources, and misallocation of health resources. It corresponds to the priorities of electronic healthcare, included in the national long-term plans for scientific and technological development. However, when implementing e-health, hospitals and medical staff face numerous obstacles, from lack of interoperability to lack of regulatory framework and funds.

Building a public health system is considered the most important part of China's national medical reform. Despite its digital progress, the country faces various challenges that suggest better coordination and communication between medical centers at the national level. Therefore, the development of e-health is a constant and relatively sustainable process in China, which needs attention to fulfill its main task, which is to use digitalization to improve people's healthcare and life.

Keywords: e-health, China, medical reform, e-diagnostic clinical services, regulatory framework.

ERDAL BAYAKTAR

Erdal Bayraktar is a Ph.D. candidate in Political Sciences and Public Administration at Istanbul University, Istanbul, Turkey and working as a research assistant at Beykent University, Istanbul, Turkey. He also holds over ten years of experience at NGOs. He was responsible for the project consultancy of HERA Digital Health Application at Medical Search and Rescue Association which different international donors had funded. He has his education in urban studies, local policies, human rights and capabilities. He is writing his dissertation on localization of human rights, human rights cities and evaluation of local policies within capabilities. His research interests include human rights, local policies and collective capabilities. He has been a member of the Human Development and Capabilities Association since 2020 and is now responsible for coordinating the Early Career Researchers and Practitioners Network.

M-HEALTH SOLUTIONS IN REFUGEE MOBILITY: HERA CASE

Abstract: The worldwide refugee and forcibly displaced population are expected to increase due to humanitarian conflicts and climate crises. The United Nations estimates that at least 200 million people will be displaced from their homes by 2050. On the other hand, the displacement of refugees poses high health risks. Mortality among mobile populations may increase, especially for pregnant women and young children. Refugees, especially women, face many barriers to accessing services for themselves and their children.

Due to the intense refugee mobility in Turkey, refugees miss out on vital care (vaccinations, pregnancy checks) during pregnancy and during the first five years of a child's life. Studies show that refugee women and children suffer higher mortality and morbidity from preventable diseases.

HERA was developed in 2018 by M.D., M.P.H. Aral Sürmeli and Medical Rescue Association team. It is an open-source mobile health (m-health) app that aims to increase the uptake of preventive healthcare for pregnant women and immunization for children under two years old. The app allows users to receive healthcare reminders, access health information, store medical records, and contact emergency services. The app also helps users attend medical appointments such as prenatal care and routine childhood immunizations by sending notifications.

The HERA app has been developed as a solution within the scope of the right to health in refugee mobility. The application is currently actively used by 3000 refugees in Turkey. In this study, I aimed to present the studies and solutions which have been carried out in HERA as an m-health application since 2018.

Keywords: m-health, HERA, refugee, app

FERNANDO DIAS SIMÕES

Fernando Dias Simões is Associate Professor at Lusíada University and Portucalense University, in Porto (Portugal). Between 2019 and June 2022, Professor Dias Simões served at the Chinese University of Hong Kong, and before that he taught for 14 years in universities in Macau and Portugal; in addition, he practiced in a major law firm and served as in-house counsel to a water concessionaire company in his native Portugal. His research interests include international adjudication (in particular, commercial and investment arbitration), investment law, and tort law. He holds a PhD from the University of Santiago de Compostela (Spain), an LLM from the University of Glasgow (United Kingdom) and a Bachelor degree from the University of Coimbra (Portugal). He is Senior Research Fellow at the University Institute of European Studies (Italy); Member of the Scientific Committee and Senior Research Associate at gLAWcal – Global Law Initiatives for Sustainable Development (United Kingdom); member of the Asia WTO Research Network (AWRN); and Rapporteur for the Oxford International Organizations – OXIO (Oxford University Press and Manchester International Law Centre).

INTERNATIONAL MOBILITY DURING PUBLIC HEALTH EMERGENCIES

Abstract: Like other epidemic cataclysms, COVID-19 is not only a threat to human health but also to human rights. Under human rights law, States have an obligation to protect public health by fighting to contain the pandemic. However, they also have a duty to protect other fundamental human rights. Almost all human rights are endangered by a pandemic. Governmental measures such as compulsory quarantine and travel restrictions may violate individual rights. The rights to bodily integrity, to privacy, to be free from inhumane or degrading treatment, to be free from discrimination, and to freedom of movement are particularly vulnerable. This seminar discusses the deep linkages between human rights and public health.

Keywords: Public Health, Pandemics, Human Rights, Travel restrictions

IGOR VULETIĆ

Igor Vuletić was born in Osijek on 4 Nov 1982. He graduated law at the Faculty of Law Osijek in 2006. During his studies, he was awarded several times as the best student in class. As a law student, he performed duty of assessor judge at the Municipal Court Osijek, department of criminal law (2002 – 2006). During that same period, he also worked as a guitar teacher in private music school. He has defended his PhD thesis at the Faculty of Law Zagreb (University of Zagreb, Croatia) in December 2011 (academic degree: PhD in criminal law and criminal sciences).

He is employed at the Faculty of Law Osijek (Department of Criminal Sciences) since 2006, first as an assistant lecturer (2006–2011), senior assistant (2011-2013), assistant professor (2013–2018) and associate professor (2018 – present). Between 2014 and 2017 he was vice-dean for education and students. He teaches substantive criminal law, international criminal law and criminology at graduate and post-graduate level.

The field of his scientific interest is focused on substantive criminal law issues, especially on sexual offences and sexual violence against women and children, medical criminal law, and recently on the impact of autonomous intelligence on criminal law. In May 2010 he has attended an international specialization course "*Human Trafficking for Commercial Sexual Exploitation"* at the International Institute of Higher Studies in Criminal Sciences (Siracusa, Italy). He was awarded with Max Planck fellowship for study visit to Max Planck Institute for Comparative and International Criminal Law in Freiburg, Germany (Feb 2011). He was guest researcher at the Institute of Criminology in Cambridge, UK (Mar 2013).

In November 2018, as a national expert, he was a member of expert group hired by UNODC to draft "Handbook for the Judiciary on Effective Criminal Justice Responses to Gender-Based Violence against Women and Girls".

As a guest lecturer, he held lectures in China (Nanjing Audit University), Lithuania (Kazimiero Simonovičiaus University in Vilnius) and Hungary (University of Pecs). He was lecturer at 6th edition of international specialization

course "*Crime Prevention through Criminal Law and Security Studies*" (Inter-University Centre, Dubrovnik, Croatia, 2014). He has lectured at several workshops for judges and legal practitioners in the field of substantive criminal law. He has written legal opinions for Constitutional Court of Croatia and for Children`s Ombudsman of Croatia.

In April 2014 he was appointed as a researcher and in December 2016 as a vice-dean of Research Centre for European Criminal Law at Shanghai Academy of Social Sciences (Shanghai, China). At the moment, he is a senior researcher at two international projects: *Jean Monnet Chair on Cross border movement of a child in EU* (teaching collegium "***Protection of children in cross-border crime cases")*** and *Croatian Violence Monitor* (Balkan Criminology Group).

He speaks English (advanced level) and German (basic level) language.

CRIMINAL LIABILITY FOR MEDICAL MALPRACTICE IN CROATIA

Abstract: A comparative overview of the criminalization of medical errors in Europe shows that this in principle is approached in two ways. Under the first approach, such errors are incriminated through the general regime for criminal offenses, such as bodily injury or causing death by negligence. The second approach, adopted in a smaller number of countries, prescribes it as a separate criminal offense (as medical malpractice). Croatian law is a typical example of the second model, which has given rise to discussions in Croatian scholarly circles about the abandonment of such a model. The author analyses the Croatian legislative solution and its realization in judicial practice, and based on this analysis, through the presentation of noteworthy case law, provides conclusions on whether or not the Croatian legislative solution indeed provides a higher degree of protection for the health of patients and a higher level of legal certainty.

Keywords: malpractice, error, negligence, causality, complication, liability

IRENA BOJADZIEVSKA

Dr. Irena Bojadzievska was an Assistant Professor at the University American College Skopje since 2008 and is an associate professor today in EU law, EU structures and institutions, and International Law.

Dr. Irena Bojadzievska is a full-fledged attorney and a successor in the Law office Bojadzievska established in 2005, dealing with civil, criminal, and administrative legal cases. She has 17 years of experience in the harmonization of national legislation with EU law and International law, legal drafting, and legal negotiations working in the state Government and later as a legal expert and consultant in several international and national projects. She is a certified OCSE trainer in legal approximation and has also been conducting training for public administration in EU matters.

OPEN DATA AND E-HEALTH

Abstract: Health data has always been attractive to researchers but has proven to be no less attractive to app developers and end users of open data. Many applications or web services globally are grounded on open data.
This paper examines what government is already available in Republic of North Macedonia and how much of it is actually health data. It will also address the issue on demand of open health attain Macedonia, what health data is most desired but not available, what are the obstacles and shortcomings on availability of requested datasets and how they can be overcome.
The paper will outline case studies on the usage of open health data and add value of its openness. Many of these problems were identified and collected through a field research for the purposes of addressing problems in implementtation of the Law on open data in Macedonia.

Keywords: open data, health data

IRIS GOLDNER LANG

Iris Goldner Lang is a Jean Monnet Professor of EU Law, the head of the Department of European Public Law and the Vice Dean for International and Interinstitutional Affairs and Quality Management at the University of Zagreb – Faculty of Law. She is the holder of the UNESCO Chair on Free Movement of Persons, Migration and Inter-Cultural Dialogue and the academic coordinator of the Jean Monnet Centre of Excellence "EU's Global Leadership in the Rule of Law". She is also a partner in the interdisciplinary project "Algorithmic Fairness for Asylum Seekers and Refugees (AFAR)". She has held visiting positions at University College London and at Harvard Law School, where she was a John Harvey Gregory Visiting Professor of Law and World Organization and a Fulbright Visiting Researcher. She did her LL.M. at the London School of Economics. She is the president of the Croatian Society for European Law (FIDE branch); a member of the Odysseus Network; a member of the Board of Trustees of the Academy of European Law (ERA) and an ERA Forum Advisory board member. Goldner Lang was the Editor-In-Chief of the Croatian Yearbook of European Law and Policy and she is now a member of its Editorial Board and a member of the Editorial Board of the European Foreign Affairs Review.

EU FREE MOVEMENT LAW AND THE EMERGENCE OF A HEALTH UNION IN TIMES OF PANDEMIC

Abstract: COVID-19 has demonstrated the fragility of EU free movement rules when faced with an unknown virus of such magnitude and strength that it threatens our lives, health systems, economies and society. The aim of this presentation is to show the dynamics between the threat of COVID-19 and the rules imposed as a response to the pandemic, which have impacted the EU internal market and the Schengen area and which have stimulated the emergence of the a European Health Union. The presentation will concentrate on the application of precautionary principle and public health restrictions, caused by COVID-19, to free movement of persons in the EU. The analysis will lead to three conclusions. First, it will be shown that COVID-19 has emphasized and increased the difference between the conditions for the applicability of public health restrictions, when compared to restrictions based on public policy and public security grounds. Second, it will be argued that the application of precautionary principle to anti-COVID measures has had a transformative effect on the principle of proportionality in EU law. Finally, it will be shown that COVID certificates can be viewed as accommodation of EU free movement rules. The presentation will conclude with the discussion of the emergence of the European Health Union.

Keywords: Free movement of persons, COVID-19, pandemic, proportionality, European Health Union.

IVANA BAJAKIĆ

Ivana Bajakić is a *Jean Monnet Professor* of EU Financial Markets and Regulation and an associate professor at the Faculty of Law University of Zagreb, Croatia, affiliated to the Chair of Economic Science. Her main academic interest are in EU financial markets regulation (PhD on the topic of EU securities law implementation in the new MS and Croatia), EU political economy and regulatory agencies, issues on which she has authored and co-authored several papers and publications.

She was awarded a scholarship by the Croatian Government for EU masters studies at the Lund University, Sweden, followed by her employment at the Croatian Ministry of Foreign Affairs and European Integration where she joined a special unit for the EU/SAA negotiation process at the Chief Negotiator's Cabinet, Mr. Neven Mimica, and former EU Commissioner. Prior to her job at the University, she worked as an advisor at the Croatian National Competitiveness Council and as a researcher at the Economic Institute at the Lund University in Sweden.

She was a visiting researcher at several esteemed European research institutes (Copenhagen Business School, Lund University) and a lecturer at two Jean Monnet Modules: *Introduction to EU Financial market* and *Governance of financial institutions and markets in the EU* at the Juraj Dobrila University in Pula. She is currently a project leader of the Jean Monnet module EU Financial Markets and Regulation.

Ivana Bajakić was born in 1975 in Zagreb, Croatia, married, mother of two children.

FINTECH IN SUPPORT OF PUBLIC HEALTH SERVICES

Abstract: FinTech is a contemporary terminology used to describe innovative technologies in the financial sector. According to the European Commission, the financial sector is a frontrunner consumer of digital technologies, stipulating advancements in financial products and services, accelerating competition between incumbents and tech-challengers and reshaping the financial ecosystem. FinTech solutions also expand across different industries beyond the financial sector.

The presentation will explore ways in which FinTech can support and enhance better e-health services and social inclusion. For this purpose, the presentation will include the case study of the UK's Mental Health Challenge. An initiative was conducted by the UK's financial regulatory authority, the Financial Conduct Authority in cooperation with the Money and Mental Health Policy Institute, bringing together experts and stakeholders from across and outside financial services to develop technology-based ideas to address specific industry challenges. It is a case study of a unique regulatory innovation and modern financial regulatory governance that promotes collaboration across a spectrum of different industries with a common goal of providing better financial services to customers and using innovative technologies to enhance different public policies, among which are public health services and social inclusion.

The goal of the presentation is twofold. Firstly, to propose ideas and insights into selected methods and means of approaching this challenging area. Secondly, to contribute to the academic discussion on what type of initiatives could efficiently promote e-health services in North Macedonia and the South East Europe.

Keywords: Fintech, e-health, financial regulatory innovation, public health services, social inclusion

JOHN (JACK) BENNETT

John (Jack) Bennett is a managing director in the Cyber Risk practice of Kroll, based in the San Francisco office. He leverages over 25 years of experience, which includes leading the third and sixth largest FBI field divisions where he focused on providing investigative and intelligence support to various FBI teams and governments globally. John's significant responsibilities include coordinating with large enforcement agencies, providing investigative assistance, and developing policies and programs for federal and global government agencies.

Having led a variety of complex investigations throughout his distinguished career, John's expertise includes matters related to global security, trust and safety, privacy, risk management, cyber incident response, and insider threats.

Prior to joining Kroll, John was the Assistant Director in Charge leading the FBI Los Angeles Field Division, the third largest FBI field division, with a staff of 1500 and 120 management personnel.

John received a B.A. in criminal justice and sociology from Eckerd College. He has completed his training in the Federal Bureau of Investigation Academy, Drug Enforcement Administration Academy, and Georgia Bureau of Investigation Academy. He holds a Carnegie Mellon Executive Chief Information Security Officer Certification.

HEALTHCARE: A VIEW FROM THE U.S. LAW ENFORCEMENT

Abstract: In this session, Jack Bennett, formerly Assistant Director of the FBI, discusses his experience, both as a U.S. law enforcement executive and cyber expert, and having been seconded to EU law enforcement, when it comes to what healthcare professionals and organizations can expect from law enforcement organizations, both domestically and internationally.

Jack will discuss problems that law enforcement faces in recruiting and retaining top cyber-specialists, particularly when competing for talent with the private sector, and what, realistically, law enforcement can and cannot do to assist a victim of a cyber-attack.

When law enforcement becomes involved in an incident, whether they detected it or it was reported by the victim organization, it is vital to remember that it becomes law enforcement (and prosecutors) responsibility and that as a result, there may be restrictions on what can be communicated to the victim organization(s) and control of the investigation – timing, targets, objectives, etc. – are no longer controlled by the organization that was attacked or made the referral to law enforcement.

Having gone in his career from an FBI agent to a cyber-specialist to a senior executive of the organization responsible for the Los Angeles Field Division, Jack is in a unique position to discuss the evolution of law enforcement capabilities, the international nature of the cybercrime problem, how agencies in different countries can cooperate in what are intrinsically trans-national incidents, and the extent to which law enforcement can – or can't – help the victim of a cybercrime.

Keywords: Law Enforcement, prosecution, investigation, international cooperation, FBI

JOWANKA JAKUBEK – LALIK

Dr Jowanka Jakubek-Lalik is an Associate Professor of Law and works at the Faculty of Law and Administration at University of Warsaw (Poland) where she teaches i.a. Administrative Law and Procedure, Comparative Public Administration, Local Government and Urban Management, Public Management, Legal Drafting and Application of Law, Civil Service Law and Ethics, Project Management in Humanitarian Action, International Organisations. She holds degrees in law (M.A./LL.M., Ph.D./LL.D.) and political science (M.A.) from University of Warsaw, she also studied at London School of Economics and Political Science (LSE) and Middlesex University (both in the UK). She was guest lecturer at a number of universities, including Nijmegen (the Netherlands), Kristiansand (Norway), Lviv (Ukraine), and Bratislava (Slovakia), Bishkek (Kyrgyzstan). Dr. Jakubek-Lalik is an active member of professional bodies and scientific societies, i.a. University of Warsaw Scientific Council for the Discipline of Law, European Group for Public Administration (EGPA), Network of Institutes and Schools of Public Administration in Central and Eastern Europe (NISPAcee), Astana Civil Service Hub (ACSH), Institute for National and International Security (INIS), Polish Institute of Economic Thought (PIMG). She has authored several dozen publications in international and national journals and books published by reputable publishers. As an international expert on reforming public administration and judiciary she has been working in Poland, North Macedonia, Azerbaijan, Armenia, Bulgaria, Serbia, and Kazakhstan.

E-GOVERNANCE IN HEALTHCARE SYSTEMS – HAS COVID-19 PANDEMIC BOOSTED THE DEVELOPMENTS OF E-HEALTH? THE CASE OF POLAND

Abstract: COVID-19 pandemic has brought significant changes to many aspects of governance, and especially to the healthcare systems. While eHealth has been a fast growing area of health care in Poland even before the pandemic, and its development has been strongly supported by the European Commission, it lacked many functionalities that would have been profitable for the patients. Public health services also lagged behind the rapidly modernizing private health sector in Poland. The pandemic not only rapidly changed the way the healthcare services were organized, but also created the need for swift digitalization of the health administration. This transition was in parts due to the necessity of providing at least some access to the healthcare services, drastically limited by the shifted focus and priorities of healthcare system. The pandemic crisis has therefore greatly influenced the development of public e-services and contributed to an increase in the digitalization of the administration. Apart from e-prescription and other electronic documents in health services, also mobile applications were introduced with the intention to help reach a decision about quarantine (Kwarantanna Domowa) and to inform individuals about possible contacts with an infected person (STOP COVID - ProteGO Safe). However, these developments came with meaningful disadvantages: the digital exclusion, especially for elderly patients, as well as the substitution of in person visits with digital services that came with a significant cost to the population. They also brought privacy concerns and data protection issues. It remains to be seen to what extent these shortcomings will be addressed in the post-pandemic environment and the developments of e-health will improve the overall quality of healthcare services in Poland.

Keywords: e-health in Poland, COVID-19 and e-health, e-governance in healthcare, e-health developments, quality of health services

KRISTINA MISHEVA

Kristina Misheva is an Associate Professor and Head of the Business Law Department at the Faculty of Law at Goce Delchev University in Stip, Republic of North Macedonia.

Graduated at the Faculty of Law "Iustinianus Primus" in Skopje, where she earned her LL.M. in Business Law and PhD in Law. Kristina Misheva has successfully passed the Judicial Exam by the Ministry of Justice, Republic of Macedonia. She teaches and conducts research in the area of Company Law, Finance Law, Regulation on Financial Institutions and Markets, Banking Law and, recently, in the area of Health Law and eHealth Policy.

She is an author/co-author of numerous articles presented at international conferences and published in conference proceedings and international scientific journals. Additionally, she is author of one monograph and co-author of several international book sections. She has been reviewer of many papers published at international scientific conferences' proceedings and journals.

Dr.Misheva is a member of the Programme Committee for several international scientific conferences and she has been member of the Organizational Committee at the annual faculty international scientific conferences. Dr.Misheva has participated in numerous domestic and international scientific conferences.

She was one of the co-directors of the NATO SPS ATC (G5617) titled "Toward effective cyber defense in accordance with the rules of law" in 2019. She is an academic project coordinator for the Jean Monnet Project "EU e-Health Law and North Macedonia: From Current Practice to Implementation" EUEHL (2020-2022). She has been actively involved as a lecturer in several actions under ERASMUS+ Programme.

LEGAL ASPECTS OF E-HEALTH DEVELOPMENT IN NORTH MACEDONIA – WHERE DO WE STAND?

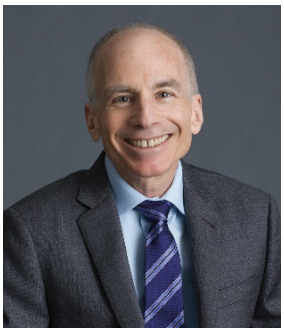
Abstract: The digitalization of healthcare systems has become essential for every modern society. Therefore, the regulation of digital healthcare plays a pivotal role in the process of creating the right rules and principles that will serve to enhance the digital health services and the patients' rights.

The development of Macedonian eHealth law is mainly based on the policies and laws that have been adopted in the last decade. In general, the national legislation follows the EU legislative framework on digital health and the WTO recommendations. The country has already developed reforms in the field of digital health and has moderately harmonized the domestic healthcare ecosystem with the EU. Thus, this research will give an inside overview of the national legislation that refers to eHealth, which primarily comprises the eHealth law. The adopted national legislation and the transposed EU rules are an intertwined legal nexus that has the potential to generate national eHealth law. In addition to this eHealth system requirements for appropriate data privacy protection challenges the need to balance public health needs and healthcare relationships. Ultimately, we want a system that reflects the need to create a just and adequate e-healthcare system. This emphasizes the demand for academic research, findings, and resources that will enhance the eHealth law.

Our findings show that there is a lack of domestic academic and research resources that may impact on the development of eHealth law as a separate discipline in the country. Should we underline the important role of this discipline? Should we work to make more systemized and to evolve it to become part of our educational system?

Keywords: Macedonian eHealth law, development, challenges

LAWRENCE O. GOSTIN



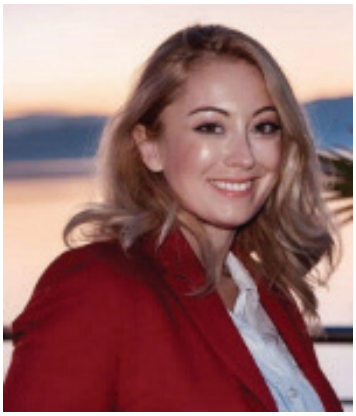
Lawrence O. Gostin is University Professor, Georgetown University's highest academic rank, and Founding O'Neill Chair in Global Health Law. He directs the World Health Organization Center on National and Global Health Law. He served on high-level advisory committees for the World Health Organization. He is working with WHO on the global COVID-19 response, including impacts on the health workforce and international migration. He served on the WHO/Global Fund Blue Ribbon Expert Panel on Equitable Access in Global Health and co-chaired the *Lancet* Commission on Global Health Law.

Prof. Gostin is Global Health editor, *Journal of the American Medical Association (JAMA)*. He's a Member of the National Academy of Medicine and sits on its Global Health Board. He also serves on the National Academies' Committee on the Analysis to Enhance the Effectiveness of the Federal Quarantine Station Network based on Lessons from the COVID-19 Pandemic. President Obama appointed Prof. Gostin to the President's National Cancer Advisory Board.

Prof. Gostin holds the National Academy of Medicine's Adam Yarmolinsky Medal for distinguished service in science and health. The American Public Health Law Association awarded Gostin its Distinguished Lifetime Achievement Award.

In the United Kingdom, the National Consumer Council bestowed Prof Gostin with the Rosemary Delbridge Memorial Award for the person "who has most influenced Parliament and government to act for the welfare of society." He is elected to the Royal Society of Public Health and to the Faculty of Public Health of the Royal College of Physicians.

LJUBICA PENDAROSKA



Ljubica Pendaroska President, Women4Cyber North Macedonia Cyber security Europe Top50 Women Influencer 2019 Privacy & Data Protection Expert Keynote Speaker Ljubica Pendaroska is an award winner as Cyber Security Top50 Women of Influence Europe 2019, Privacy & Data Protection Expert and international Keynote Speaker.

She is Founder & President of Women4Cyber North Macedonia, which operates under the trademark of Women4Cyber Foundation Brussels, directly launched by European Cyber Security Organization. Ljubica is committed to promoting profound women's participation in the complex cyber security challenges. Following that spirit, she grew up professionally with more than 12 years of experience in privacy and data protection and served in executive positions at several cyber security consultancies, as well as in telecommunication industry. In addition to her expertise role in UNICEF and in wide spectrum of EU and NATO programs, she is co-founder of Cyber-security, Corporate Security and Crisis Management Initiative Skopje, Member of Presidency of Euro-Atlantic Council, Program Director of Marshall Center Security Forum, Official Representative of the NATO Memorial Federation and Vice-President of the Adriatic Council. She served as Special Adviser to the Minister of Foreign Affairs for two years. She holds the highest credentials in Privacy, as being Certified Information Privacy Professional/Europe – International Association of Privacy Professionals.

PROCESSING AND INTERNATIONAL TRANSFER OF HEALTH DATA WITHIN EU AND BEYOND

Abstract: “The goal is to turn data into information, and information into insight”. But “Data are becoming the new raw material of business”!

Each transfer of personal data, especially those connected to the health condition of an individual, place potential additional risks for the person, because there may be a lower protection level in the country where the data is being transferred, compared to the country of origin. In that spirit, the presentation will deal with the international transfer of health data, starting from the key determination that they are crucial not only in scientific and academic research, but also as an assumption for the overall development of medicine and improvement of human health. In addition, attention will be paid to the specifics and particularities of health data, placing them in the so-called "sensitive categories" of personal data.

The current EU legal framework for cross-border transfer of health data will be considered as a discussion starting point. A special emphasis will be placed on the rules and practical mechanisms provided by the EU Regulations, the reflection of which, as the most developed system of data protection, is transmitted to other parts of the world. Non-EU health data transfers and foreseeable steps for GDPR compliance when such transfers may be carried out, will also be put on the table for debate. The presentation will be rounded off by looking at the exceptions for data transfers, especially when it comes to the flow of data for research purposes.

Keywords: personal data, data transfer, GDPR

MAJA NASTIĆ

Maja Nastić is a Full Professor at the Faculty of Law, University of Niš (Chair for Public law). Her field of research includes Constitutional Law, Human Rights, Comparative Constitutional Law, Human rights and ICT. She participated in a number of ERASMUS+ , TEMPUS as well as national scientific projects. She is a a visting lecturer at the Jean Monnet module (MONELA), which realizing at the Faculty of Law, University of Niš. As a beneficiary of research grants, Maja Nastić visited European University Viadrina, Frankfurt/Oder, Germany (2008), Central European University, Budapest, Hungary (2009), Europa Institute, Saarland University, Germany (2016, 2017), University of Sofia "St. Kliment Ohridski", Bulgaria (2018, 2019), Politecnico di Torino, Italy (2016, 2017). She is a certified HELP tutor for Serbia. She was Vice Dean for Studies and Scientific Research at the Faculty of Law (2016-2019). Currently, Maja Nastić is a Deputy of Chef of Chair for Public law and Deputy of the Presidenty of Faculty Council. She is a Lecturer at the Diplomatic Academy, Ministry of Foreign Affairs Republic of Serbia. Maja Nastić has published 10 books and more than 70 scientific papers.

THE RIGHT TO HEALTH IN THE DIGITAL AGE

Abstract: The right to health belongs to personal rights. In a broader sense, this right is strongly linked to the right to life and the right to the integrity of the person. At the same time, it also has an important social dimension. The right to health, known formally as the right to the enjoyment of the highest attainable standard of physical and mental health, was first laid out at the international level in the 1946 Constitution of the World Health Organization. The right to health is also recognized in other international treaties, such as the International Covenant on Economic, Social and Cultural Rights, the Convention on the Rights of the Child, the Convention on the Elimination of All Forms of Discrimination against Women and the Convention on the Rights of Persons with Disabilities. These international instruments include a set of obligations for the Member States to take steps toward the progressive realization of the right to health.

The Constitution of Serbia states that anyone has the right to protect his or her physical and mental health. This right is guaranteed as an individual right and, is defined by legislation.

Revolutionary developments in information and communications technologies (ICTs) inevitably affect all spheres of the society in which we live. ICTs have an inevitable impact on human rights and the legal framework within which they are protected. However, unlike other technologies, ICTs have an ambivalent nature. On the one hand, the use of such technologies can reinforce human rights and allow their effective implementation. At the same time, it puts human rights at unprecedented risk.

Hence, the aim of this article is to discuss the impact of modern technologies on the existing concept of achieving and protecting human rights to health. The paper will analyse the potential benefits and risks of achieving the right to health in the digital age.

Keywords: right to health, Constitution, ICTs, e-health

MARIJA AMPOVSKA

Marija Ampovska has been part of the academic staff of the University "Goce Delchev" in Shtip, since the establishment of the University in 2007, and has developed within this University as professional and member of the academic community, starting from teaching assistant to her present position as associate professor. This academic growth was in the field of civil law, as member of the Department of Civil law at the Faculty of Law. She obtained her PhD degree in civil law at the Faculty of Law "Iustinianus Primus", University Cyril and Methodius in Skopje. Through the years Marija Ampovska has been teaching courses, published teaching resources such as books, textbooks, workbooks and monographs, and published many scientific articles and researches in the area of Law of obligations and Tort law as her main focus and interest, but has also collaborate in multidisciplinary researches and scientific projects as coauthor and researcher. All publications and activities are availabe on the professional portal UGD Scholar.

Marija Ampovska is former (from 2017-2019) project coordinator for the Faculty of law's scientific project: International Scientific Conference "Social Changes in the Global World", as well as editor for the Proceedings from the conference. From 2020-2022 she was academic project coordinator in a project within Erasmus + programe (KA 107). Currently, she is part of the research team of the Jean Monnet Project: EU e-Health law and North Macedonia: from current practice to implementation and an academic coordinator of KA171 project within Erasmus + programe (2022-2024).

Since December 2019 Marija Ampovska is associate professor at the Faculty of law, University Goce Delchev in Shtip and teaches several courses on first and second cycles of studies at the Faculty: Law of Obligations, Tort law, Insurance law, Intellectual Property law. Also, she is the managing editor of the international scientific journal established in 2013 by the Faculty of law, University Goce Delchev in Shtip, Balkan Social Science Review, journal that is part of the UGD publishing system, and also indexed in other databases as SCOPUS, HeinOnline, EBSCO, CEEOL and Index Copernicus.

LIABILITY IN MEDICINE – AN OVERVIEW OF MACEDONIAN LEGAL SYSTEM AND PRACTICE

Abstract: The Macedonian legal system doesn't comprise special rules on the liability of medical institutions and medical staff for damage caused while providing health services. This results in the application of the general rules of civil liability, which can be found in the Macedonian Law on Obligations, to the professional liability of healthcare workers and medical institutions, with the absence of any special rules departing from the traditional tort law. The application of the regime on fault liability is predominant in comparative law, but in the present the mass usage of medical devises and the introduction of high technology into medicine in general have resulted in the tendency to increase the application of strict liability in practice. Here we discuss the results from the analysis of the legal provisions and our research regarding the court practice of medical liability in North Macedonia and the focus will be given to the basic institutes applied in cases of medical liability in practice and in theory. For that matter the research shows that the court practice in North Macedonia is familiar only with the fault liability regime. Apart from the basis of liability, other essential questions regarding liability in medicine that will be discussed are the standard of care, the causation, the legal position of the patient as plaintiff himself and the range of eligible persons, close to the patient in the role of a plaintiffs (the relatives as damaged persons), the types of damage that can be compensated by theory and in practice, and the criteria for assessment of the loss and the amount of the compensation for the damage. The question on compensation of damage will include discussion both on pecuniary and non-pecuniary damage, with focus on the non-pecuniary damage and its regulation vs. the application of the legal provisions in the court practice. Attention will be given to discussion on the disparity of the amounts ruled by the courts as compensation for non-pecuniary damage in the analyzed cases and the disparity that exists between the legal regulation of non-pecuniary damage in the Novelle of the domestic Law on Obligations and the analyzed court practice.

Keywords: fault liability, strict liability, patient, physician, pecuniary damages, and non-pecuniary damage, medical malpractice, tort law.

MARKO DIMITRIJEVIĆ

Marko Dimitrijević is the Associate Professor (PhD) and Jean Monnet Module for European Monetary Law (MONELA) Coordinator at the Faculty of Law University of Niš (The Republic of Serbia).

His fields of teaching include European and International Monetary Law, Economic Policy for Lawyers, International Financial Relations and Law of Economic System of the European Union. He is involved in various projects about the protection of human rights and Serbian law harmonization with EU Law. He is an author of scientific monograph of national importance entitled "International Monetary Law Institutions" and many scientific articles dealing with the issue of contemporary monetary law, which has been published in domestic and international scientific journals and presented in numerous international conferences. He developed scientific research in the field of the monetary law at Saarland University, European Institute (EU Cluster of Excellence for International and European Law), Saarbrücken (Germany), Max Planck Institute for Tax Law and Public Finances, Munich (Germany) and Max Planck Institute for International, European and Regional Procedural Law (Luxembourg).

NORMATIVE REGULATION OF E-HEALTH SYSTEM IN SERBIAN LAW: THE INFUENCE OF EU LEGISLATION AND PRACTICE

Abstract: The subject of the analysis in this paper is the consideration of the much-needed and desirable establishment of optimal legal regulation of the e-health concept in the legal system of the Republic of Serbia following the current legislation, good practice, and achieved results that exist in the field of the European Union, as also an international obligation to which the country has committed itself by ratifying relevant international documents in the field of health and safety. In this sense, in the first part of the paper, the author emphasizes the basic ratio of the legal and less formal entities that participate in the creation of domestic legal solutions of the E-Health concept, which enable the productive use of new methods of using health and technological resources (on the approach of synergy), to provide better quality health care to a greater number of users with, at the same time, by a significant reduction of costs (where we can see the features of contemporary nomotechnique of defining legal norms that are now both legally and economically efficient). In the further text, the subject of research is the legal component of existing initiatives, experiences, and partial solutions in the domestic legislation that should be integrated into one place through the new legal and transparent framework, with a detailed analysis of their advantages and endowments in the application (which imply the construction of interoperability between rules and standards, which should support the cooperation of different health organizations by using information and communication technologies and incorporating it into existing primary and secondary legal solutions in the field of health and safety, as well as intensive work on creating new solutions based on the common results and widespread practice in the EU). A special emphasis in the research is also given to the financial aspects of the legal framework of the e-health system in domestic law order, taking into account the numerous challenges that exist in the field of financing the classic health system, and comparing the effectiveness of existing and potentially new solutions in that regard, which aim to protect public health as the most important public good of every state.

Kew Words: Serbia, e-health, legal order, public good, economic efficiency, EU.

MARTIN ŠOLC

JUDr. Mgr. **Martin Šolc** is a doctoral student at the Department of Civil Law and a researcher at the Centre for Medical Law at the Faculty of Law, Charles University (Prague). He teaches civil law and medical law. Apart from his legal career, Martin Šolc graduated from applied ethics at the same university.
https://www.prf.cuni.cz/en/detail-cloveka/1009091

E-HEALTH AND THE STANDARD OF CARE

Abstract: The term eHealth denotes a lot of different concepts and activities. One of the most sensitive is distant provision of health services in which the provider of health services does not only receive data in a passive way but also actively engages in diagnosing and treating the patient without being physically present. In this context, the question of the standard of care arises with urgency. Its application in such unorthodox settings represents a challenge for the law and also – perhaps even more importantly – for medicine. In related malpractice cases, the courts will probably base their decisions on expert opinions and medical guidelines. There seem to be two crucial questions in this context. Should the standard of care be in any way lowered for the distant provision of health services? And what are the obligations of health professionals regarding the decision making on whether the physical contact with the patient is necessary? The presentation will deal with these pressing issues based on several cases as well as the general analysis of the standard of care in medicine.

Keywords: eHealth, telemedicine, standard of care, medical liability

MIHAJLO CVETKOVIĆ

Mihajlo Cvetković is an Associate Professor at the Chair of Civil Law at the Faculty of Law, University of Nis, with the expertise in the Law of Obligations, Consumer Protection and the IT Law.

He showed his management abilities especially at the position of the head of the Center of Publication at the Faculty of Law. Apart from the academic career, he also developed his abilities in NGO sector, in International Humanitarian Agency Norwegian Refugee Council, where he collected the significant knowledge and skills regarding migrations. He participated in several projects: "The protection of human and minority rights in the European legal space", "Harmonization of Serbian law with EU law", "Access to justice – implementation of European standards into the legal system of the Republic of Serbia", TEMPUS POGESTEI: The Trans-European mobility scheme for university studies: Post-Graduate Studies for European Integration at Faculties of Law of the Universities of Belgrade, Novi Sad and Nis. As the couch, he won the 1st National Moot Court Competition in the area of protection against discrimination (2014).

CONCEPT OF LIABILITY FOR DAMAGES CAUSED BY ARTIFICIAL INTELLIGENCE

Abstract: E-Health is supported by AI technology. Services using machine learning, or artificial intelligence, are increasingly represented in medical practice. Artificial intelligence supports many services and performs various healthcare functions, without the users always being aware of it. By automatization, artificial intelligence can support the doctor or make a recommendation to the patient. There is no legal framework that specifically addresses liability arising from the use of AI for the purposes of medical decision-making. Proper liability rules must be implemented in order to avoid hazardous, irresponsible, and harmful practices. Complex situations may result in cases where damage was caused by autonomous healthcare applications. Such damage would usually be subject to fault-based liability, either in contract or in tort. When damage is triggered by a defect present before putting an AI system into circulation, product liability may apply. if liability arising from the use of AI is determined under general medical malpractice rules, then medical actors using the AI technology should be held liable. Some authors even propose granting personhood to AI systems in order to hold the technology liable itself.

Keywords: damages, artificial intelligence, medical malpractice, product liability, compensation

NIKOLETA LAZAROVA

Nikoleta Lazarova is PhD, Assistant Professor of Labor Law and Social Security Law at the Faculty of Law and History, South-West University "Neofit Rilski", Blagoevgrad, Bulgaria.

She teaches Labor Law, Social Security Law and Health Insurance for 13 years at the Faculty of Law and History, South-West University "Neofit Rilski". Nikoleta Lazarova is a member of the Editorial Board on the Electronic journal "Law, Politics, Administration", which is issued by the Law and History Faculty of the South-West University "Neofit Rilski", Blagoevgrad, Bulgaria. She has research experience in research projects, some of them are: researcher in project "Social agri-entrepreneurship for people with disabilities in the crossborder area (AGRI-ABILITY)", 2014-2020; project manager "Comparative analysis of current issues related to the fundamental human rights and freedoms in contemporary Europe", Law and history faculty, South-west university "Neofit Rilski", Blagoevgrad,2019; researcher in the project "Current issues in exercising labour and social security rights of persons from socially vulnerable groups and their solution during the educational process", Law and History Faculty, South-west University "Neofit Rilski", Blagoevgrad, 2015. She is a member of Union of Scientists in Bulgaria and Union of jurist in Bulgaria. She is the author of the articles about the labor and social security rights of citizens. She is attorney at law in Blagoevgrad Bar association since 2015. Nikoleta Lazarova has professional interests in the field of Labor Law, Social Security Law; Health Insurance; Health Law; Antidiscrimination law and EU law.

BASIC PATIENT RIGHTS IN THE CONTEXT OF E-HEALTH IN THE REPUBLIC OF BULGARIA

Abstract: The introduction of electronic health care, as part of the health reform in the Republic of Bulgaria, put the knowledge and understanding of patient's needs in the focus of attention. Health is a basic individual, public and institutional value - one of the main components of national security in the Republic of Bulgaria. The entry of information and communication technologies into Bulgarian healthcare was a prerequisite for the emergence of new patient rights to meet the changing world. The article provides a critical review of the introduction of electronic health care in the Bulgarian reality and its impact on patient rights. The author analyzes the basic rights of Bulgarian patients in the electronic environment, which include electronic health record, electronic prescription, electronic referral, the right to protection of personal data, electronic services in connection with the vaccination status of patients (access to a digital Covid electronic certificate, online registration for vaccination against COVID-19, online information about vaccines against Covid); introduction of an electronic patient record and the right to equal access to eHealth. The introduction of the listed rights is a challenge not only in the Republic of Bulgaria, but also on a global world, which necessitated the need for new strategic and management decisions aimed at the health of citizens.

Keywords: eHealth, patient rights, healthcare, health insured person; access to medical care.

NIVES MAZUR – KUMRIĆ

Nives Mazur-Kumrić is an Associate Professor of International Law who has taught International Law and European Law courses in Belgium, Croatia, Hungary, and Lithuania since 2000. She holds a Ph.D. degree in International Law (University of Osijek, Croatia) and a Marie Curie postdoc degree in International/Nationality Law (University of Liège, Belgium). Her studies in International and European Law also include EUI, Florence; CEU, Budapest; Irish Centre for Human Rights, Galway; Academy of International Law, The Hague; Department of Law, Politics and International Studies, Parma; and many others. Her research interests lies in the area of human rights law, EU law, minority rights, citizenship, ethnicity, migrations, environmental law, etc. Currently, she holds the position of Minister Plenipotentiary at the Permanent Representation of Croatia to the EU in Brussels, Belgium with most of her work focused on the even social, economic, and territorial development of the EU. As a Croatian representative in the Council of the European Union, she is responsible for Cohesion Policy files (EU funds, macroregional strategies, the outermost regions of the EU, Brexit, the Covid-19 pandemic, synergies with other EU policies, including Health Policy, and many others). She is also an honorary scientific associate at two faculties of the University of Liège, Belgium - the Faculty of Law, Political Sciences and Criminology, and the Faculty of Social Sciences (Centre for Ethnic and Migration Studies – CEDEM). As a legal expert, she regularly takes part in legal studies and assessments of the EU institutions in the area of International/European Law.

QUO VADIS EU HEALTH POLICY? – AN INSIGHT INTO INSTERSECTIONS AND SYNERGIES BETWEEN 2021 – 2027 EU HEALTH AND COHESION TARGETS

Abstract: A plethora of health targets is deeply embedded into the 2021-2027 EU Cohesion Policy, the principal EU investment tool responsible for promoting the economic, social, and territorial convergence of the EU Member States and their regions. Developing and pursuing actions that advocate the EU's overall harmonious development and strengthen its cohesion is the EU's legal obligation stipulated by Article 174 of the Treaty on the Functioning of the EU (TFEU). This research looks into the intrinsic features of the health and cohesion intersections within the 2021-2027 legislative framework governing the implementation of the European Structural and Investment Funds (ESIF) through which the Cohesion Policy is delivered. More precisely, it assesses the anticipated evolution of the EU health schemes based on the 10-year cohesion agenda, which underpins the five horizontal political objectives of creating a more competitive and smarter Europe, a greener Europe, a more connected Europe, a more social and inclusive Europe, and a Europe closer to citizens. Special emphasis is put on reaping the benefits of digitisation for citizens, companies, research organisations, and public authorities within the health sector, as a vital link in the chain of designing and enhancing a more competitive and smarter Europe. In addition, the aim of the research is to demonstrate the necessity of establishing close synergies between the EU Cohesion Policy and other EU instruments which contribute to mainstreaming the health protection aspects in all EU activities, as regulated by Articles 9 and 168 of the TFEU. The investment architecture designated to establish a high level of health protection in the EU is illustrated by the example of the Republic of Croatia's 2021-2027 programming documents and the related legislative package. The research is based on the legal-dogmatic method as it examines current positive law, doctrine, concepts, and practice addressing elements of the multi-layered cohesion-health arrangements pertinent to the 2021-2027 investment goals.

Keywords: EU Cohesion Policy, 2021-2027 financial perspective, European Structural and Investment Funds (ESIF), health targets

PETR ŠUSTEK

Doc. JUDr. **Petr Šustek**, Ph.D., is an Associate Professor at the Department of Civil Law and the coordinator of the Centre for Medical Law, Faculty of Law, Charles University (Prague). Furthermore, he teaches several courses on medical law at other universities. He is also an attorney. Petr Šustek's main area of interest lies in civil law (in particular tort law) and medical law.

TELEMEDICINE – THE CZECH PERSPECTIVE

Abstract: Telemedicine is an emerging concept all around the world. The Czech Republic can provide a case study of a country with public health insurance system that has seen the rise of the first telemedicine services in recent years. It is still connected with a very high level of legal uncertainty. Many crucial questions remain to be answered, such as the very definition and legal nature of telemedicine, whether it can provided without the concurrent provision of "physical" health services and generally under what conditions it is permissible, how should the data protection be ensured, what are the possible liability consequences, and other issues. Apart from a certain tension between some subjects (established health services providers as well as new enterprises) trying to introduce telemedicine into Czech health system, the matter was recently addressed for the first time by the legislator as well as professional medical societies. The presentation will define the most important unresolved issues regarding the practical applicability of telemedicine, its uncertain and still neglected position within the Czech health and legal systems, as well as the outlined first attempts to address these problems and the possible trends relevant for the future.

Keywords: eHealth, telemedicine, Czech Republic

ROBERT GRZESZCAK

Robert Grzeszczak – Professor of Law, Head of Centre for Research on European Institutional Design at the School of Law, University of Warsaw. President of Committee of Legal Sciences of the Polish Academy of Sciences, Member of the Polish Association of European Law, Member of Academia Europa (London). Professor Grzeszczak's research background is the constitutional analysis of the European Union, more specifically: European Public Law (in particular Comparative Constitutional Law, EU Law, and the EU political system); Europeanisation and Internationalisation of Public Law.

MORE OR LESS OF THE EUROPEAN UNION IN SHAPING THE PROTECTION OF PUBLIC HEALTH? SOME LESSONS FROM THE COVID-19 PANDEMIC

Abstract: The COVID pandemic has become a test for the EU. While public health is a responsibility of the Member States, the consequences of failing to tackle the pandemic would be "existential" for the EU. The basic question of this presentation, in relation to the role of the Union and its countries in the fight against the coronavirus epidemic, is this: were the Member States coping more effectively during the epidemic and the European Union was surprised by the crisis? From the perspective of 2022, was the Union effective and needed by citizens during the pandemic?

The problem is complicated. The classic model of health policy based on the state model still functions in Europe. This state of affairs is maintained regardless of the competences and actually performed activities by the European Union. Currently, the European Union, despite its weak content in terms of its competences under the Treaties, is increasingly influencing the health policies of the Member States. The EU institutions, together with the authorities of the Member States, form a peculiar weave, an atypical system of multi-level governance. As a result, there is a strong influence of the EU on lawmaking in states.

The Union occupies a regulatory field in the field of broadly understood public health, especially when it implements treaty freedoms, and examples include the principles of cross-border health services, mutual recognition of medical personnel qualifications, patient mobility, telemedicine institution, legal solutions limiting the possibility of advertising alcohol or tobacco products.

The open question is whether the conclusions made as a result of the pandemic will be implemented. These are: the need to increase the competences of the EU in the field of health protection, thus more joint actions at the EU level at the expense of states' competences, improvement of the quality of medical services in states and access to them, and the creation of a health union.

Keywords: EU competences, health protection, COVID, crisis

SID BOUZIANE

Sid Bouziane is the CEO and founder of Borouge, driven by years of executive, data, analytics, operations, patient outcomes, and flow experience in international healthcare organizations.

With a relentless focus on the delivery of Clinical Systems, Revenues cycle management, Business Intelligence, and Analytics, Sid has a deep understanding of the healthcare system and worked as an analytics transformation director for Health Authorities, medical insurance, and providers.

His extensive experience in healthcare systems around the world has led to a proven track record of senior management success in both private and public sector organizations of varying scales and complexity. He has championed turnaround strategies to drive up performance and visibility within multimillion-dollar organizations.

Beyond this, Sid works actively with other healthcare entrepreneurs as an advisor and investor. Now leading the company into a specialization in rare and chronic diseases, Sid works directly with patient groups, not-for-profit organizations, and Clinical Teams at some of Canada's largest treatment centers.

HEALTHCARE PERSONALIZATION AND COMMUNITY DELIVERED BY E-HEALTH

Abstract: Historically healthcare has been refractory to implement innovative digital solutions until tech giants like Apple, Google, Amazon took interest in providing futuristic eHealth solutions like cloud-based EHR, machine learning, telemedicine, wearable devices, etc.

Since then the eHealth market has been attracting a plethora of large firms and startups who provided complex platforms like Dr.Watson from IBM or mobile apps to manage the last COVID-19 pandemic for instance.

eHealth is becoming the main reason for critical changes in the relation formed between medical insurances, medical providers, Governments, and patients.

It has created never seen before opportunities and challenges in terms of roles, responsibilities, and expectations for a more aging, and educated population.

We are living in a time where eHealth technology is allowing caregivers to provide personalized healthcare which is the panacea for treating patients efficiently from acute to chronic conditions. Never before the use of AI, Genome sequencing and wearable devices provided an exhaustive and personalized cure for the disease of a specific patient At the same time the use of technology puts aside one of the most important aspects of human well-being which is social interactions and community.

The race to provide the latest eHealth killer apps to tackle healthcare conditions by solely using digital solutions is not sustainable as it is not inclusive of other more real life issues.

We will discuss how to approach personalized healthcare solutions and communities in a way that is not exclusive to implement the best of both keeping in mind the best interests of the patients and important stakeholders like governments, medical providers, insurances.

Keywords: Personalized healthcare, community, digital solutions.

SOŇA SOPÚCHOVÁ

Doc. JUDr. Soňa Sopúchová, PhD. is a graduate of the Faculty of Law of the Comenius University in Bratislava, where after completing her master's degree, she worked as an internal doctoral student at the Department of Administrative and Environmental Law. In 2015, she completed her doctoral studies with the topic of her dissertation *Administrative-legal aspects of the electronization of public administration*, and since this year she has been working as an Assistant Professor at the Institute of Information Technology Law and Intellectual Property Law of the Faculty of Law of the Comenius University in Bratislava, where she also holds the position of Deputy director. In 2022, she successfully completed the habilitation procedure. In 2021, she received a Fulbright scholarship, during which she completed a 3-month online program and 14-days study stay in USA with a focus on Cyber security. In the same year, she completed Erasmus teaching mobility at the University of Wroclaw in Poland.

She regularly publishes in domestic and foreign scientific periodicals and participates in domestic and foreign conferences. She is the author and co-author of several scientific articles, textbooks, monographs and other publications. As part of her teaching activities, she teaches the subjects: Law of Information and Communication Technologies, Introduction to the Study of Law and Legal Informatics, and Digitalization of Public Administration. In her professional and scientific activities, she mainly focuses on the topics of e-Government, e-Health, e-Commerce and legal responsibility in the virtual space.

LEGAL CHALLENGES OF USING AUTONOMOUS ROBOTS IN THE AREA OF HEALTHCARE

Abstract: Information and communication technologies find their application in most areas of life and their influence and use (mainly consequences of their using) become the subject of many legal questions, challenges and discussions. The reason is based on the fact that these technologies might have significant impact on current processes and often collide with customary legal institutes and legal requirements. The information society goes hand in hand with automation, which began already in the last century with the use of human-controlled machine technology. Nowadays, automation has moved even further, with regard to machines operating on the principle of artificial intelligence. These changes also affect the health sector. Therefore, in the article, the author analyzes how elements of automation might be used in connection with artificial intelligence in the provision of health care. In the introduction, the author presents the basic theses and principles of health care provision, including important institutions such as informed consent and health documentation with an emphasis on the electronization of processes falling under the issue of e-Health. The core of the article focuses on the question of which entities are legally authorized to provide health care and whether a machine working on the principle of artificial intelligence can be included among these entities. The purpose of the analysis is to assess whether in the legal environment and practice it is possible to consider a robot doctor and, if so, within what limits. The article provides answers to the basic questions of automation in the provision of health care, draws attention to existing legal challenges and highlights other emerging issues.

Keywords: automation in healthcare, e-Health, artificial intelligence in healthcare, doctor – robot

STRASHKO STOJANOVSKI

Strashko Stojanovski was born on Nov. 2. 1981 in Skopje, Macedonia. He finish his PhD and MA studies on University "Ss. Cyril and Methodius", Faculty of Philosophy-Skopje, Institute of Sociology, and BA studies on University "Ss. Cyril and Methodius", Faculty of Philosophy-Skopje, Institute of History.

He is Professor on Faculty of Law, University "Goce Delcev" – Shtip, Macedonia in the area of Sociology of Politics and Sociology of Ethnic groups. Teaching in the area of Theoretical Legal Science (Sociology of Law, Civil Society, Political Sociology and Methodology of scientific research). Fellow on University of Vienna, Austria in 2010-11and in 2008 holder of scholarship on CEU University in Budapest. Founder and first Managing Editor of Balkan Social Science Review. Founder and member of organizational committee of the International Scientific Conference "Social Change in the Global World" and Summer school on Criminal Law and Human Rights.

METHODOLOGICAL CHALLENGES IN E-HEALTH RESEARCH

Abstract: Research methodology is a basic fundament in every scientific discipline. The structure of knowledge as derivate of metaphilosophical generic continuity, separated in its basic form the natural sciences, but newer excluded the interdisciplinary possibilities and potentials for development id direction of sub special and universal matrix. The bases of sociological traditions in methodology are roughly connected with qualitative and quantitative approaches. We can notice popularization of quantitative techniques and methods from 19th century, but with intensity developing since 1960-es. From political sciences and elections, to medical diagnostics based on frequencies generated from surveys and basic statistics derived from professionals practice, we can follow development of those methods.

Technological progress, and development of IT sector, popularized the quantitative methodological techniques and make them more accessible. In the same time e-health concept is basically connected with two aspects. First, using algorithms in generating new statistics for future diagnostically matrixes, with possibility to develop even to a degree to substitute human factor in the future. This data is in the same time more accessible for future research in every social direction. And second, e-health offers possibilities to improvement in administrative organization in health systems in general. Yet, during this technological development, serious ethical questions will be raised, touching the core of existential human nature.

Keywords: e-health, methodology, IT, research, science.

VERONIKA STOILOVA

Veronika Stoilova is a PhD in Law. She works as Chief Assistant Professor of International Law and International Relations at the Faculty of Law and History of the South-West University "Neofit Rilski" – Blagoevgrad, Bulgaria.

In 2015, she specialized in American foreign policy in the United States under the SUSI for Scholars program. She actively participates in the development and implementation of number of projects under national and international programs. She is also an expert evaluator for the Horizon 2020 Marie Skłodowska-Curie (H2020-MSCA-COFUND). She is author of a number of scientific articles. She speaks English and Russian. She has professional interests in the field of International Public Law, International Relations, EU Law, International Organizations, Foreign Policy Analysis, Public Diplomacy, Lobbing, Negotiations, Human Rights, etc.

E-HEALTH DEVELOPMENT IN THE EU AND THE REPUBLIC OF BULGARIA

Abstract: Practice shows that the use of information technology in health requires strategic and integrated action at the national level to make the best use of existing capacity while providing a solid basis for investment and innovation. There is clear evidence of the growing impact that e-health is having on healthcare delivery around the world today and how it is making healthcare systems more efficient and responsive to people's needs and expectations. The crisis situation related to the COVID 19 pandemic especially clearly outlined the need for not only timely, but already urgent measures to coordinate healthcare systems with immediate options for application, improvement and mass implementation of a system of digital mechanisms for the exchange of healthcare data and effective healthcare services.

Despite the already long history of starting the processes of introducing e-healthcare, its establishment as a complete and effectively working system is still not a fact, both at the European and at national Bulgarian level. It is indisputable that individual components of the system, laid down in strategies and measures at the community level, have been developed and implemented as a priority, but the processes of creating a unified regulation is still an unreached stage. In this sense, the regulatory framework, its permanent construction and universal applicability in the dynamics of the technology development environment is a difficult, lengthy and ongoing process.

The Republic of Bulgaria is an example of a country that in recent decades has been trying to implement significant changes in the healthcare system. The result of these reforms is important for a number of areas of public life. The development of the European Health Data Space would improve the conditions for the implementation of electronic healthcare in the country.

Keywords: e-health, Bulgaria, European Union, electronic health record, European Health Data Space.

ZOLTÁN GYURÁSZ

JUDr. Zoltán Gyurász, PhD. (1994) is a graduate of the Faculty of Law of Comenius University in Bratislava (2019). He is currently working as an assistant professor at the Institute of Information Technology Law and Intellectual Property Law, Faculty of Law, Comenius University in Bratislava. In 2021, he received his first doctorate in the field of information technology law with a rigorous thesis: "Modalities of regulation of new technologies". Subsequently, in 2022, he received his second doctorate in theory and history of state and law with the topic of his dissertation: "Legal, social and philosophical aspects of the application of artificial intelligence". Since 2020, he has been cooperating externally with IEEE Transactions on Technology and Society (IEEE-TTS). Since 2022, he has been working as an international fellow at the Information Society Law Center at the Università Degli Studi di Milano. He is part of the expert map for ethics and regulation of artificial intelligence at the Permanent Commission for Ethics and Regulation of Artificial Intelligence (CERAI). In his professional scientific activities, he focuses mainly on the regulation of new technologies and the legal issues of artificial intelligence and the Internet of Things. His pedagogical activities focus on the field of Theory of Law, Information Technology Law, and Legal Informatics. He regularly publishes in domestic and foreign scientific periodicals and participates in domestic and foreign conferences.

IN WHOM DO WE TRUST? AUTOMATED DECISION MAKING IN HEALTHCARE?

Abstract: The digital revolution of the 20th century made information available everywhere and anytime. Our society has moved from its primary development from a collection-oriented economy, through production to current mass production. Industrialization also meant a shift of society to a knowledge society. A society where goods and services are based on information. Now in the age of Artificial Intelligence, this information is used for automating the decision-making process in the hope of a better and improved future. Bearing all the positives in our minds, we simply cannot forget about the concerns that artificial intelligence will have on our healthcare. For these reasons, this article aims to analyze the use of artificial intelligence in the process of decision-making in the provision of healthcare. Exploring the technical aspects as well as the theoretical implications of decision-making in this field.

Keywords: Artificial intelligence, decision-making, healthcare

ZSÓFIA RICZU

Zsófia Riczu is a PhD student at University of Miskolc, the Department of Agricultural and Labour Law, Faculty of State and Law. Her main topic is the legal regulatory environment of digitization and artificial intelligence, including primarily the examination of employer rights. In addition to her main topic, she shows a special interest in the study of Turkish labour law. She is expected to complete her doctoral studies in 2024. In addition to her studies, she is the Employment Officer of the National Institute of Oncology in Budapest, so she is also close to the field of civil service law and the issues of robotic surgery.

HUMANITARIAN HEALTH SERVICES – LEGAL RELATIONSHIP IN PRACTICE

Abstract: The XXI century, the technological explosion reached all areas of work. Robots are not only appearing on production lines, helping human work, automated software is not only helping work in office administration processes but serious progress has also been made in healthcare. New technologies are being developed. Robotic surgery is not a new thing, its history began only 37 years ago. Worldwide, the number of healthcare professionals who come into contact with robotic surgery is increasing. The number of technical articles dealing with the topic of robotic surgery is also increasing, although most of them are published in the fields of engineering rather than medicine or law. The first use of robotic surgery took place within the framework of the National Oncology Institute. But the goal is also to create a further training place in the NIO, where representatives of various surgical professions can be prepared for the use of robotic surgery.

Keywords: robotic surgery, medical activity, innovation, other additional options.

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PANEL 2: BIOETHICS

DEJAN DONEV

Prof. Dr. Dejan Donev graduated (2001) at the University "Ss. Cyril and Methodius, Faculty of Philosophy in Skopje, at the Institute of Philosophy. Received his master's degree at the same Institute in 2005, while in June 2008 defended his dissertation and obtained the degree of Doctor of Science in the field of philosophy. In 2009 was elected assistant professor, in 2014 as an associate professor, while in 2019 elected full professor at the Institute of Philosophy at the Faculty of Philosophy in Skopje in the field of Ethics.

Research interests: ethics, bioethics, environmental ethics, media ethics, managerial ethics, history of ethics, ethical education, biopolitics.

As for scientific and professional engagements, he was Secretary of the NGO "Center for Ethics" – Skopje (2004-2008), as well as President of the NGO "Center for Integrative Bioethics" – Kumanovo (2009-2014). Still engage as national coordinator of the "Regional Coordination Group for Bioethical Education" (BiH, Croatia, Macedonia, Slovenia, Serbia) since 2011; and of the Commission for Ethics and Bioethics at the Macedonian Philosophical Society – Skopje (2018-). Member of the Croatian Bioethical Society (2018-); of the Macedonian Philosophical Society (2011-); of the Executive Board of the Macedonian Philosophical Society (2017-); of the Serbian Bioethical Society (2010-); of the Croatian Philosophical Society (2006-). Also a member of the international collaborative round at the Scientific Center for Excellence for Integrative Bioethics in Zagreb, Croatia (2015-); of the International Policy Forum, UNESCO Chair in Bioethics (Haifa), led by the Interdisciplinary Center for Bioethics at Yale University (2019-). At the moment, he is, for the second time, a Head of the Center for Integrative Bioethics at the Faculty of Philosophy in Skopje, UNESCO Department of Bioethics.

Conducted study visits at universities in Serbia, Croatia, BiH, Slovenia, Bulgaria, Romania, Hungary, Poland, Greece, Turkey, Germany, Czech Republic, Portugal...

Participant on over 170, mostly international, scientific events, symposia and conferences. Published over 110 scientific articles, reviews, analysis, and books.

A POSTSCRIPT ON JAHR: FROM CHRONOLOGIST TO BIOETHICIST

Abstract: Fritz Jahr (1895-1953) rightly has been called the Father of Bioethics. He coined and defined the term Bio-Ethics in 1926 in an article in "Das Mittelschulwesen", impressed by comparative studies in physiology and psychology in humans, animals and plants by Wilhelm Wundt as well as by philosophical reflections about a potential soul-life of plants by Fr. Th. Fechner and others in the latter part of the 19th century.

He transforms and expands Kant's Categorical Imperative into a Bioethical Imperative: "Respect every Living Being on principle as an end in itself and treat it, if possible, as such". In 1785 Kant only requested respect for "humanity, in your own person as well as in any person, on principle as an end in itself, never only as a means to an end". "Sanctity of the Moral Law" was the basis for Kant's Categorical Imperative; for Jahr's Bioethical Imperative it is "Sanctity of Life", i.e. compassion with all forms of life and living-together.

While Kant's model was formal and rigorous, Jahr recognizes the interplay between self-care and care for others and replaces the virtue of respect for the law with the virtue of compassion towards all "bios", i.e. life and all forms of life. Of course, Jahr did not invent the ethics of bios; he refers to European and Asian traditions and gives his 1926 article "The Sciences and the Teaching of Ethics", describing the function of natural sciences for character formation and the teaching of bioethics, the subtitle "Old Knowledge in New Clothes".

Keywords: Fritz Jahr, bioethics, bioethicist, global bioethics, bio

GEORGI MIHAYLOV

Georgi Mihaylov is Ph.D., Assistant Professor of Theory of State and Law. Political and legal teachings." at Faculty of Law and History, South-West University “Neofit Rilski”, Blagoevgrad, Bulgaria.

He teaches “General Theory of Law", "Introduction to Law" and "Fundamentals of Law" for 11 years in Faculty of Law and History, South-West University “Neofit Rilski”. He has research experience in research projects, some of them are: researcher in project ”Social agri-entrepreneurship for people with disabilities in the crossborder area (AGRI-ABILITY)”, 2014-2020; researcher in project “Comparative analysis of current issues related to the fundamental human rights and freedoms in contemporary Europe”, Law and history faculty, South-west university “Neofit Rilski”, Blagoevgrad,2019; He is a member of Union of Scientists in Bulgaria and Union of jurist in Bulgaria. Georgi Mihaylov is the author of 24 articles and a monograph in the field of lawmaking and legal theory. His research interests are in the field of quality legal regulation, reflecting the normative force of the factual.

ETHICAL AND LEGAL CHALLENGES TO E-HEALTH IN THE REPUBLIC OF BULGARIA

Abstract: E-health, like any innovation aimed at making people's lives easier and better, carries risks that must be assessed and overcome by adhering to time- and experience-proven ethical and legal fundamentals. Along with the need and benefits of eHealth, the report attempts to outline the ethical and legal features that are relevant from a functional perspective. The challenges facing eHealth are analyzed and evaluated through the prism of the social conditions in Bulgaria.

Keywords: eHealth; eHealth challenges and risks; law and eHealth; conditions for eHealth in Bulgaria;

GORAN LIVAZOVIĆ

Goran Livazović was born in 1982 in Osijek, Croatia. He is an Associate Professor and Head of the Department for Pedagogy, the Faculty of Humanities and Social Sciences at the University of Josip Juraj Strossmayer in Osijek, Croatia, where he is a lecturer in Social Pedagogy, Leisure Pedagogy, Media Pedagogy, Institutional Pedagogy, Pedagogy of Adolescence, Special Education, Methodology of Research and Statistical Methods in Education. He graduated at the Teacher Training Faculty in Osijek in 2004 and obtained his PhD in 2011 at the Faculty of Humanities and Social Sciences in Zagreb with the thesis „*The impact of media on adolescent problem behaviour aetiology*", under the supervision of Prof. Dr. Vlatko Previšić.

After spending 5 years teaching as an English language teacher in elementary school practice (2004-2008), he was employed as a Teaching Assistant (2008-2011), Postdoctoral researcher (2011-2012), Assistant Professor (2012-2018) and Associate Professor (2018) at the Faculty of Humanities and Social Sciences at the University in Osijek. During his education and career, he was awarded on several occasions: the "*Best graduate student award"* by The Lions Club Association in 2003, for graduating as the most successful student and first in class at the Teacher Training Faculty in Osijek (2004); the "*Best presentation award*" at the SGEM International Conference in Bulgaria (2014); and the *"Award for scientific achievements"* in 2020 by the Faculty of Humanities and Social Sciences at the University in Osijek.

He was the Vice-Dean for Teaching at the Faculty of Humanities and Social Sciences at the University of Josip Juraj Strossmayer in Osijek (2014-2017), the Head of the Department for Pedagogy in two terms (2012-2014; 2020-), and the Secretary and Board member of the Croatian Pedagogical Society (2013-2018). He was a member of an international Reaccreditation board for the Croatian Agency for Science and Higher Education in 2014 and 2020. He is a lecturer at the Postgraduate scientific doctoral program in Pedagogy, both at the University in Osijek and University of Zagreb. He published more than 40

scientific papers in renowned international and national publications, authored 6 expert manuals and 1 scientific book. He is a Member of the Editorial Board for the journal "Školski vjesnik" (eng. *School Gazette*) published by the Faculty of Humanities and Social Sciences in Split, Croatia. He was an invited Guest editor for a Special edition of the international journal "Societes" (WOS). He is a reviewer for a number of renowned international journals (i.e. PLOS ONE, Current Psychology, Journal of Family Psychology, Canadian Journal of School Psychology, Child and Adolescent Mental Health, Perspectives in Psychiatric Care). He was a consultant and an author of a number of expert studies and programs in science and education. He was an expert member in several international EU and national projects in Croatia. He was a scientific project member ("Curriculum of Social Competences and School"), project leader Prof. dr. Vlatko Previšić, funded by the Ministry of Science, Education and Sports (2010-2014), and is currently a scientific project member ("Croatian Violence Monitor"), project leader Prof. dr. Anna Getoš Kalac, funded by the Croatian Foundation for Science (2017.-). He is fluent in English, German, Italian and elementary Hungarian.

AN ANALYSIS OF BIOETHICAL STANDARDS IN PROMOTING ADOLESCENT HEALTH

Abstract: Adolescent development is a period of increased vulnerability with important personal and social challenges. It includes a number of personal ethical choices for youth with diverse values living in a pluralistic and multicultural society. We discuss the basis for adolescent moral decision-making in light of great health challenges generated by modern scientific and technological progress, with special regard to the bioecological model of social development. An emphasis is placed on the relation between normative social paternalism, moral contractualism and adolescent autonomy when analyzing their individual goals, social architecture, behavior styles and health-oriented choices.

Keywords: health, adolescents, bioethical standards, risk behavior, social development

IVA RINČIĆ

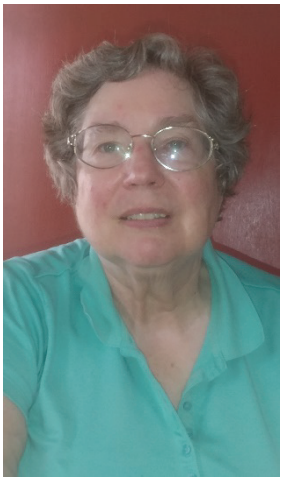
Iva Rinčić (b. 1975 in Rijeka, Croatia) graduated from University of Zagreb – Croatian Studies (sociology, Croatian culture) in 2000, earned M.A. degree in political sciences and, in 2011, Ph.D. degree in bioethics/ethics from University of Zagreb - Faculty of Social Sciences and Humanities. After a short period in NGO, since 2001, she has been working at Department of Social Sciences and Medical Humanities (University of Rijeka – Faculty of Medicine), presently as Associate Professor. She teaches courses „Medical Ethics“, „Medical Sociology“and „Research Ethics“ at various study programmes. She co-authored 5 books on bioethics and about 70 papers. She is member of few journals' editorial boards. Her main interest are history of bioethics and European bioethics. She was director of University pf Rijeka Foundat
ion 2013-2021, and now she is member of city and county council (independent).

PIVOTAL IDEAS OF MEDITERRANEAN BIOETHICS: A BRIDGE OVER TROUBLED WATER

Abstract: Bioethics cannot function as a powerful universal tool, helping to prevail real-life dilemmas in medicine or ecology, if basing onto values accepted only in some cultures. Focusing mostly on European Mediterranean, this short paper explores the possibility of the conceiving of Mediterranean Bioethics respecting values and ideas originating from this particular culturally sensitive and diverse area. The attempts by the Spaniard Diego Gracia, the Italian Salvatore Privitera, Croatian Ante Čović, Scot Alasdair MacIntyre, and some other thinkers are mentioned as examples, and the position of Northern Macedonian bioethics with respect to those approaches commented. The paper ends in an optimist vision of the development of a more original and thus more efficient bioethics in Mediterranean basin.

Keywords: bioethics, Mediterranean, Europe

KRISTINE K. WHITNABLE



Kristine K. Whitnable has been interested in medical ethics since its inception as a distinct field of study. She took pre-med as an undergraduate, graduating with a degree in Chemistry from Northwestern University, Evanston, Illinois in 1972. She received her Master's degree from Trinity Evangelical Divinity School, Deerfield, Illinois, in 1978. Her thesis was titled "Genetic Engineering: Some Moral Criteria." She went on to get a PhD in philosophy with a concentration in medical ethics from the University of Tennessee at Knoxville, graduating in 1985. This course of study included two semesters of practicum working in a variety of medical settings. Her dissertation was entitled "The Responsibilities of Personhood in the Medical Setting."

After graduation she undertook numerous adjunct positions throughout the United States, including Oklahoma State University at Stillwater, California State University at Fresno and University of Wisconsin, Rock County. She spent 15 years as an adjunct professor at Marian University in Fond du Lac, Wisconsin. There she taught nursing students medical ethics and death and dying.

During this time, she also undertook writing positions in the United States and Great Britain. She enjoyed my time overseas to the extent that I took a position at LCC University in Klaipeda, Lithuania teaching psychology, for which she will admit, she was not particularly qualified. But she did a reasonable job.

From that position, she moved to Goce Delcev University in Stip in 2011, where she worked in the Law Faculty, helping to teach Roman law, introduction to political systems and sociology of law. She has also been the English language editor for the Balkan Social Science Review for the past ten years.

A HUMAN BEING: THE DEFINITION OF PERSONHOOD IN THE CONTEXT OF MEDICAL ETHICS DECISIONS

Abstract: The definition of a human being differs depending on the person proposing the definition. The general public, biology, Christian theology and philosophy will define a human being differently based on various criteria. We will present a number of these definitions and explore their application to the practice of medicine.

The general public might say that they cannot define a human being but they know one when they see one. This definition has the obvious flaw of being very subjective and has in fact been used to deny humanity to any number of persons or groups of persons.

Biology's definition of a human being is equally simple, though it offers somewhat more depth. According to biology, a human being is any member of the species Homo sapiens. While this is technically correct, the definition leaves out some elements of what the general public might include in their definition, attributes such as emotions and virtues.

Christian theologians seem to be able to help in this area with their assertion of the idea that God created man for community with the ability to interact and even to love one another. The problem with this definition is that it is not a definition at all, rather an exposition of some Aristotelian accidents, endowed by God, on the substance we call a human being.

Philosophers have perhaps the most to say on this subject. We will explore a limited number of the definitions offered by this group, but spending the most time on the definition offered by Gabriel Marcel.

In the end the medical community will be well served to explore all of these definitions so as to be able to better serve those who present themselves for healing.

Keywords: personhood, Gabriel Marcel, doctor-patient relationship, autonomy

MARIA CARMEN VELATOS CASTELO

Carmen Velayos Castelo is an associate professor of Ethics and Political Philosophy in the University of Salamanca (Spain). Her expertise is Bioethics and Ecoethics,which she understand as related fields. She defended a thesis about ecoethics in Spain which was supervised by Dr J. Mª García Gómez-Heras a pioneer in ecological philosophy. She has been teaching Bioethics and Ecoethics for more tan twenty years and she has been member of various Ethical Committees (Clinical Trials C., Bioethical Committe of Salamanca health área, etc.)

She has been involved as a member in various national and international Research Projects. We highlight the european proyect (12 countries): "Edubioethics (Bioethical Education on Medical Progress and Human Rights in a Multicultural, Multidisciplinary and Multireligious Environment)" Cordis FPA. Sixth Framework Programme, FP6-2005, Science and Society-14SSA 036659 (2006-2009). For the scope of this Congress: - "E-Ethics (Applied Ethics in Research and E-Learning. Two experiences)". MD/030 (University of Salamanca). Velayos Castelo is the author of numerous articles in professional journals and books. Some of her authored books are: Rachel *Carson: the endearing revolution* (*in Spanish*) (2020); *Climate change and modern individualism* (Horsori, 2015, in Spanish, reedition upcoming); *Ethics of climate change* (2008); *The moral dimension of the natural environment: ¿Do we need a new environmental ethics?* (1996). She has also more than 15 edited books, as *Bioethics* (2005) (coedition with Gómez-Heras); *Political responsibility and the environment* (coedition) (2007); *Bioethical Education. Donation and trasplantation...* (2008) (coedition) (english and Spanish); or *Journals* as: *Bioética y fronteras de la vida. II. Bioética y fronteras de la vida. II. Desde la práctica (*junto a David Rodríguez-Arias y Mª Mar Cabezas, Arbor, CSIC, Madrid: vol. 190, n° 762, vol 189, no 762 (2013).

Among her conferences highlight (for the field of this Congress): "Reproductive human cloning: a bioethical perspective from Europe", en International

Workshop (Proyecto Edubioethics), *The Beginning of life*, Rome, Aula Giubileo, University of LUMSA; or "Environmental ethics. The Enlarged Agenda", en E-Ethics. Applied Ethics in Research and E-learning: two experiences, 14 junio 2010, Universidad Salamanca, Université París 5, Laboratoire d´Ethique, Universidad Sorbona París.

BIO – ECO – ETHICALLY RESTRUCTURED PUBLIC HEALTH

Abstract: From the perspective of Van R. Potter´s, global bioethics, biomedical ethics was characterized by its general inattention to organizational ethics and to public health concerns. Bioethics asserts that individual rights require protection, but -in the sphere of public health- there is a tension between those rights, and the common good concerns.

In the words of Whitehouse, Potter "believed that bioethicists would and should make an essential contribution to the future of life in this planet. But without changes in our attitudes towards health, particularly environmental, public, and community health bioethicists will lose opportunities to help sustain and enhance life on this planet." (Whitehouse, 2001, 48).

We´ll describe the concept of harm to public health as a moral harm, which is generally: (1) an aggregated harm [individual and collective], and (2) human and ecosystemic.

As the public health is a global one, and is related to environmental harm, we need tools that enable the total damage contributed by each person, corporation, government etc. We´ll mention some of this digital tools and web-sites, as the one that encourages users to calculate your carbon footprint. Or the digital tools that innovators have developed and adapted for case management, contact tracing, evidence-based surveillance, training, risk communication, and vaccine deliveryfor case management, contact tracing, evidence-based surveillance, training, risk communication, and vaccine delivery In order to join forces against the new challenges (epidemics, biospherical degradation, new deseases etc.) Potter himself created an electronic Global Bioethics Network to join bioethicists with his holistic conception of harm and prevention. Hans Schweinsberg (Canada) and our author formed an international council looking for a great consensus about preservation to global life. This example needs to inspire all of us.

Peter J. Whitehouse (2001) "In memoriam. Van Rensselaer Potter: The Original Bioethicist*", Global Bioethics, 14:4, 47-48, p. 48.

Keywords: Potter, global bioethics harm, digital tools

TRAJCE STOJANOV

Trajce Stojanov, in 2003 he started his university career at Pedagogical faculty, Ss Cyril and Methodius, as teaching assistant. In 2013 he earned his PhD at Faculty of Philosophy at University Ss. Cyril and Methodius, Skopje. Now he is associate professor at Faculty of Educational Sciences, University, Goce Delcev, Stip, where he teaches Ethics in Education, Philosophy of Education, and Philosophy of Law.

His research interests are Ethics and Bioethics, Philosophy of politics, Philosophy of Education and History of philosophy.

Dr. Stojanov has participated in numerous domestic and international scientific conferences. He is an author/co-author of numerous articles presented at international conferences and published in conference proceedings and international scientific journals. So far, he has published five books, and two textbooks. Currently he is working on two national and one international project.

He is a member of various professional societies and institutions both domestic and international (Philosophical Society of Macedonia, Philosophical Society of Russia, Member of Philosophical Association of Croatia, Member of Philosophical Society Serbia, Member of Dostoevsky Society...).

Prof. Stojanov is visiting professor at Institute for European and Globalization Studies
(http://www.inegs.com/multimedia/studije/department_ii_associates.pdf_), and International Slavic University "Gavrilo Romanovich Derzhavin", Russian University in Sv. Nikole/Bitola, Macedonia. In 2020 for his scientific achievements he was elected as *Professor honoris causa* at Socio-pedagogical Institute, Moscow, Russia.

Stojanov is also a columnist in several national and international media (Rossiyskaya gazeta, project RBTH, Macedonia, Slobodna Dalmacija, Geopolitics News).

THE MEANING OF MEDICAL LAW, ETHICS AND BIOETHICS

Abstract: Today`s world is changing rapidly. New breakthroughs in science and technology pose serious ethical challenges, especially in medical sciences and medical treatments. New medical techniques challenge humans understanding, not only on traditional morality, but on basic notions like health, life, and death. These changes are so fast and unexpected, that even Ethics, and Bioethics can't follow the pace and offer the answers. But, nevertheless, despite the fast and unprecedented development of medical sciences, medical profession remains essentially ethical one. No matter how far the technological development will reach, medical workers must not lose their focus of the essence of the profession - health and life. That's why, the Ethics, and especially the Bioethics are central to understanding emerging technologies and their use in medical profession.

One must admit, these new technologies rase new and previously unknown moral dilemmas. That's why, this paper will try to shed some light on these new medical advancements, with emphasis on eHealth and the moral implications of it. WHO defines eHealth as the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research? As we can see, eHealth opens ethical issues in many related areas, not only in medical Ethics. E-Health is at the intersection with many fields: medicine, informatics, social issues...This paper is just a summary of this ethical dilemmas opened by this emerging field in contemporary medical science.

Keywords: Bioethics, eHealth, Telemedicine, Digital Health

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PANEL 3: INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) IN HEALTHCARE

ADEM TUNCER

Dr. Adem Tuncer received his Ph.D. degree in Electronics and Computer Education from Kocaeli University, Turkey in 2013. He worked as an Assistant Professor between 2013 and 2022 and since 2022 has been an Associate Professor in the Computer Engineering Department at Yalova University, Turkey. Besides, he is a deputy director of the Institute of Graduate Studies at the same university. He was in the Department of Electrical & Computer Engineering at Florida International University in the USA between 2015 and 2016 for post-doctoral research. His research interests include artificial intelligence, machine learning, deep learning, and heuristic optimization techniques. He gave artificial intelligence seminars in Hungary, Poland, Romania, and Lithuania as part of his Erasmus Teaching Mobility program. He has been the academic advisor of Yalova University Artificial Intelligence Community for 6 years.

DIGITAL HEALTHCARE: THE ROLE AND IMPACT OF ICT IN HEALTHCARE

Abstract: Information and communication technology (ICT) is the umbrella term for all hardware, software, networking elements, and systems that enable interaction with the digital world. ICT has fundamentally altered the way people work, communicate, and live. From computers to robots, ICT is revolutionizing every aspect of the human experience, and it has a significant positive impact in all areas of life. It has been referred to as the fourth industrial revolution by some. The improvement of the healthcare system has been greatly aided by ICT. It has opened up new opportunities in the health industry and has grown to be an essential component of healthcare. The healthcare industry faces many difficulties, including storing patient medical records, keeping up hospital information systems, maintaining medical equipment, drug errors, and much more. Hospitals now rely on ICT to overhaul the entire healthcare industry. It is simple to provide treatment and care for a patient who is located anywhere in the world if a doctor has the proper communication channel. The system enables the doctor to continuously keep track of the patient's medical history, diagnostic findings, and state of health. The doctor can converse with the patient, suggest a medical exam, and give medication. The terms e-health, m-health, telehealth, and telemedicine are all used to refer to the use of desktop and mobile technology for patient management in the digital healthcare. Even though these terms are sometimes used synonymously, they each refer to a distinct area of technology and healthcare. ICT in healthcare has several advantages; including providing high-quality care, making services accessible to people in remote areas, improving workflow efficiency, cutting healthcare costs, patient safety, clinical decision-making, training and educating healthcare professionals, promoting health, and sharing knowledge with the general public.

Keywords: ICT, healthcare, digital health, e-health, telemedicine

ALEKSANDAR NASTIĆ

Aleksandar S. Nastić received his doctorate at the University of Niš at the Faculty of Sciences and Mathematics in 2012 defending his doctoral dissertation entitled: *Contribution to the Analysis of nonnegative Integer Valued Time Series Generated by Geometric Counting Series*. From 2020 he is a full professor at the University of Niš, Faculty of Sciences and Mathematics, where he teaches a few bachelor, master and doctoral courses, i.e. Mathematical statistics, Multivariate analysis, Sampling theory and design of experiments, Econometrics, Decision theory, Statistical Modelling, Regression analysis, Methods of statistical analysis, Experimental statistics. He mentored 2 doctoral dissertations and over 25 master thesis. He was the head of the Department of Mathematics (2017-2019). In scientific area, he is engaged as an editor in the following scientific journals: Journal of Applied Statistics, Communications in Statistics - Theory and methods, Communications in Statistics - Simulation and Computation, all published by Taylor & Francis, and FILOMAT and Facta Universitatis - Series in Mathematics and Informatics, published by University of Niš. His research interest is in the fields of Integer-valued autoregressive processes, Time series analysis, and Regression and Multivariate analysis. He published over 30 papers with IF, with more than 600 citations and h-Index 13. From 2002, he participated in Tempus, Erasmus+ and DAAD projects as well in scientific project financed by Republic Science Foundation of Serbia. He is a member of the Serbian Scientific Mathematical Society.

APPLICATION OF LINEAR REGRESSION IN MODELING RELATIONS OF HEALTH PARAMETERS

Abstract: Here, we present the usage of multiple linear regression analysis in modeling the functional dependence among some biochemical blood parameters. Our goal is to explain and obtain a possible relation between the lymphocyte count on one side and hemoglobin concentration, packed cell volume, WBC count, neutrophil count and most important the blood serum lead concentration, on the other side. There are a few statistical approaches which can be used in explaining above mentioned relations. However, the most interesting is the one which give the simultaneous functional dependence definition, which is the regression modeling. Also, very important role of this method is the possible usage in prediction and forecasting in general, which can be used for preventive purposes.

So, firstly some basic introduction of simple linear regression is given. Then, the main modeling tool and the focus of this presentation, i.e. the multiple linear regression model with normally distributed random variables is introduced. Maximum likelihood estimators of the unknown model parameters are derived including sample covariance matrix based on the observation values of considered random variables. Then, the correlation structure of these regression models is shortly discussed and appropriate numerical linear dependence criteria are given. Finally, all preceding results are implemented and explained on a case study performed on the hematological results of workers exposed to lead-saturated fumes with the focus on the calculation of the magnitude of the influence of serum lead concentration on the lymphocyte count number.

Keywords: multiple regression, modeling, linear regression, maximum likelihood estimation.

BLAGOJ RISTEVSKI

Dr. Blagoj Ristevski is currently a professor at the University "St. Kliment Ohridski" - Bitola, Republic of North Macedonia. He is the head of the Department of Software Engineering and Information Systems at the Faculty of Information and Communication Technologies—Bitola. His research interests focus on Databases, Data Science, Cryptography, Big Data Analytics, Bioinformatics and e-Health. He obtained the Ph.D., MSc and Graduate Engineer degrees in Technical Science/Computer Science at Ss. Cyril and Methodius University in Skopje, Republic of Macedonia. He is an author of numerous scientific papers as well as book chapters in the field of Computer Science and Engineering.

Prof. Ristevski is a reviewer of many international scientific journals and a member of many organizing and program committees of international conferences.

He was an expert in project evaluation in Horizon 2020 program.

Dr. Ristevski is an IEEE Senior Member and a member of the German Informatics Society (Gesellschaft für Informatik). He is the chair of the Computer Society Chapter of the IEEE North Macedonia Section.

MEDICAL AND HEALTHCARE BIG DATA ANALYTICS - CHALLENGES AND OPPORTUNITIES

Abstract: In the big data era, a massive volume of complex heterogeneous healthcare, biological and medical data are generated and transferred continuously. These heterogeneous data stored in various data formats have to be integrated and stored in a standard way and formats to perform appropriate efficient and effective data analysis and visualization. To obtain the best services and healthcare for patients, healthcare organizations have proposed various models of healthcare information systems. These models for personalized, predictive, participatory and preventive medicine are based on using of electronic health records and large amounts of complex biomedical data and high-quality – omics data. These big data are generated from different sources such as mobile devices, sensors, laboratory tests, clinical notes, social media data, various high-throughput -omics data (genomics, epigenomics, transcriptomics, proteomics, metabolomics, interactomics, microbiomics, pharmacogenomics, diseasomics), electronic health records data, etc. These big data can be structured, semi-structured or unstructured; discrete or continuous. These varieties of data structures require these big data to be stored not only in standard relational databases but also in NoSQL databases. To provide effective data analysis, proper classification and standardization of big data in medicine and healthcare are required, as well as excellent design and implementation of healthcare information systems. Regarding the security and privacy issues of patient data, utilizing suitable data governance policies is mandatory. Furthermore, more efforts should be made toward selecting suitable software development frameworks, tools, databases, in-database analytics, stream computing, and data mining algorithms to discover valuable knowledge and insights from healthcare and medical big data.

Keywords: Big Data, Medical and Healthcare Big Data, Big Data Analytics, Databases, Healthcare Information Systems.

MUSTAFA ALBANNA

Mustafa Albanna is computer engineer, master's graduate, from Altinbas University at Istanbul, Turkey and Ph.D. student at Yalova University in Yalova, Turkey. He has been in Turkey for five years now. He was born in Iraq/Mosul, completed his bachelor's degree in Computer Engineering, and moved to Turkey in 2017. His father is an engineer and his mother is also an engineer. Growing up, he was surrounded by books and computers, as well as by his two younger siblings. This fostered his interest in learning and making things work better for people—which is why he chose to study computer science when he got accepted into university.

His passion for problem-solving has helped him become an excellent researcher who always strives for perfection. The analytical nature of his thinking has allowed him to identify solutions that address real-world problems effectively and efficiently, without sacrificing quality or aesthetics.

He also has strong leadership skills because he always feel confident about what needs to be done—and how best it can be done—no matter what challenges come his way.

ICT APPLICATIONS IN HEALTHCARE

Abstract: Globally, there is a rising demand for an effective, efficient, and trustworthy healthcare delivery system, particularly in developing countries with large populations and significant remote or inaccessible areas. The use of ICT to deliver healthcare services, in particular eHealth and its sub-category m-health, offers an enormous potential to reduce costs, advance health information exchange, and improve healthcare access, as well as public and personalized medicine. However, developing countries also face unique challenges to optimally develop and apply ICT in healthcare sector, including financial feasibility, infrastructure, access, equity, and quality; knowledge and research evidence; leadership and governance; security and interoperability; and social and technological environments. We review innovative ICT healthcare applications in this presentation in the means of implementing such applications that would reduce health problems precisely for people with chronic diseases.

The presentation is provided in three main axes:

- ICT applications for hospitals and smart hospitals:

Prior data on hospitals' adoption of electronic health records or key functions of electronic records (e.g., computerized provider-order entry for medications) suggest low levels of adoption. The Smart Hospital concept is aimed at creating a single IT environment composed of automated «bricks» of specialized and auxiliary processes through cloud computing services, machine learning methods, and artificial intelligence. Let's review the key points about eHealth solutions development. Therefore, in our presentation we will demonstrate few helpful applications in the hospitals that have shown success in managing and saving lives efficiently.

- ICT applications for patients:

Information technology has a critical role to play today in enabling progress in a multitude of areas which fall under the domain of development. The presentation will demonstrate few applications in different medical areas such as: (mental health, fitness, adherence medicine and stop-smoking) applications.

Keywords: information and communications technology (ICT)

NATASA KOCESKA

Natasa Koceska obtained her Ph.D. in robotics and artificial intelligence in 2009 from the University of L'Aquila, Italy. Currently, she is a full professor at the Faculty of Computer Science, University "Goce Delcev"-Stip, Macedonia.

Her research and scientific work focus mainly on the fields of human-computer and human-robot interaction, user experience evaluation, robotics, and intelligent systems, embedded systems, and wearable sensors. Her research work has been valued through numerous articles in renowned journals. She serves as an editor and reviewer in several SCI journals. She has also been involved in many international and national scientific and applicative projects (including HORIZON 2020, ERASMUS, EU-TEMPUS, EU-COST, and NATO Science for Peace).

ICT AND ASSISTIVE ROBOTIC TECHNOLOGY FOR ELDERLY CARE

Abstract: With the increased aging population, and declined support from the families, societies will need new tools to ensure the well-being of the elderly. Many of them prefer living at home, but they need help and assistance from someone. ICT innovations in the field of robotic systems can make a significant difference in the lives of the elderly and their caregivers. Robotic assistants can enhance the autonomy level of older people thus prolonging the nursing home admission. They have the potential to assist and support elderly in certain daily activities, such as: eating, drinking, reminding of scheduled appointment or taking medication, maintaining a shopping list, emergency notification etc. Some robotic systems can collect medical data about patients' vital signs, which can be later meaningfully used by doctors and caregivers. However, elderly people require not only service support but also social support. Many researchers agree that social support is beneficial to a person's physical, mental and emotional health.

In light of these needs of the elderly, we have designed a low-cost assistive telepresence robotic system, for facilitating the health care and for improving the quality of life of the elderly, creating conditions for more independent living at their homes. The developed robot, along with its functionalities, permit various interactions in a remote environment, like navigation, fetch and carry small objects, measuring vital parameters of an elderly person, reminder, calendar, and interpersonal communication. The potential users of the robot system are not only the elderly but, also professional caregivers. The robot can be remotely controlled by a distant person and can perform some activities as if he/she was physically present at the elderly's residence. The developed assistive telepresence robot was tested in, both, simulation and experimental environment.

Keywords: assistive robotics, elderly care, mobile robot system, telepresence robot.

RISTE TIMOVSKI

Riste Timovski is Head of E-Index sector, Goce Delcev University in Stip. Additionally, he is assistant for the subject: Modeling and simulations, undergraduate studies at the Faculty of Electrical Engineering, Goce Delcev University in Stip.

During 2022, he earned a PhD in Computer technics and informatics, Faculty of computer science, Goce Delcev University in Stip.

M-r Timovski is born in Stip, Republic of Northern Macedonia, on 08.12.1982. Finished primary and secondary education in his hometown, after which in 2001 went to study at the University "St. Cyril and Methodius University in Skopje, where he graduated at the Faculty of Electrical Engineering and Information Technologies (FEIT), in the field of electronics and telecommunications in January 2007.

After graduating, he is engaged in Siemens A.E., Athens, Greece until August 2008, as a development engineer in the innovation and product department the company. From September 2008 until today he works at the Goce Delcev University in Stip as: Junior system administrator; System administrator for assets and technical support and Head of the Electronic Index Sector.

During his work at the University, he completed postgraduate studies at the Faculty of Informatics, in the study program in software engineering and proceeded to the third cycle. He initiated and established the E-index department as a central body of the University responsible for software platforms, the largest of which is the electronic index. Within his work, he has published several scientific papers and participated in several scientific and applied projects.

TELEMEDICINE: TODAY AND TOMORROW

Abstract: Telemedicine is a tool to break down barriers to patient care, particularly in rural areas. Physician can able to examine a patient located in another city, view highly detailed medical images, consult with distant subspecialists, or supervise complex medical procedures. The wider concept of telehealth is engaged in the distribution of health-related services and information via electronic information and telecommunication technologies. It allows long-distance patient and clinician contact, care, advice, reminders, education, intervention, monitoring, and remote admissions. The evolution of telemedicine, its technical fundamentals, and some of the advanced technologies for its applications are tremendous nowadays, such as thousands of real steps of the successful Telemedicine implementation network around the globe. On the other hand, remote hospitals can obtain specialist consultations and diagnoses without the need for the patient to travel. We shed light on the technology, benefits, and various applications of telemedicine with its multimedia and communications requirements. A review of the future of telemedicine is presented, concepts and a broad approach to the path of its development in the future.

Keywords: Telemedicine, online hospital, Telehealth, consultation, diagnosis.

SASHO KOCESKI

Prof. **Saso Koceski** obtained his PhD in robotics and artificial intelligence in 2009 from the University of L'Aquila, Italy. Currently he is a Full professor and Dean of the Faculty of Computer Science at University "Goce Delcev"-Stip, R.N. Macedonia. During his education he has participated at national and international competitions in mathematics, physics and computer science and won more than 50 medals and awards for his achievements. He was awarded with the "Best student" award. He was also awarded with a special prize at the international competition "First step to Nobel prize" for young scientists.

Prof. Koceski is publishing his research studies and serves as an editor and reviewer in top ranked SCI journals. He is an author and editor of several books. Prof. Koceski is an author of several US and European patents. He has been involved in many international and national scientific and applicative projects (including HORIZON 2020, FP7, EU-TEMPUS, EU-COST, NATO Science for Peace) as a project coordinator or participant. He is member of several professional societies. His current research interests are focused in the fields of Internet of Things (IoT), Artificial Intelligence (AI), robotics, bioengineering, HCI and medical imaging. He has more than 20 years of experience in the ICT sector and serves as a mentor and technology consultant at multiple international companies.

TRENCHO MILENKOSKI

Trencho Milenkoski was born in 1975. He was graduated and he became BSc. In Electrical Engineering at Electro technical Faculty at University "St. Cyril and Methodius" – Skopje in 1999. He finished with postgraduate studies and he got his master's degree in MBA Management at Faculty of Economics at University "St. Cyril and Methodius" – Skopje in 2011.

His working carrier started in 2000 in small IT Company. After two years in 2002 he moved to University Clinical Center Skopje and he was working in IT department as an IT administrator. Starting from 2003 till now he has been working as a Manager of IT Department in University clinic of radiotherapy and Oncology, Skopje. In meantime from 2006-2008 he was working as an IT advisor to the Minister of Health and National Coordinator for e-Health Projects in Ministry of Health of the Republic of Macedonia in two big projects: Integrated health information system-IHIS and National e-Health Card system. Also, he was working as a member of executive board in Macedonian Radio Television (National TV Station) from 2007-2008. He has very good knowledge of Macedonian healthcare and e-health system, experience of design and Implementation of Hospital Information Systems, ICT infrastructure planning and implementation in healthcare organizations. He participated at many professional events: national and international health informatics symposiums, active participation in preparing and implementation of the National strategy for integrated health information system. He participated on e-Health Ministerial Conference in Portoroz, Slovenia in 2008, as a head of delegation from Macedonia. He participated at Health management and leadership training program organized within the health sector management project covered by Ministry of Health of R. Macedonia and School of public health, in order to get official license for manager on public Health Institutions. Successfully completed the managers' exam.

THE CHALLENGES OF IT APPLICATIONS IN THE HEALTHCARE SYSTEM

Abstract: We live in a time of digital transformation, in a time when the using of ICT technology is everyday life and it is impossible to imagine any institution functioning without application of IT. Information and communication technology is also the driving force of health reforms. The goals of the digitalization of the health systems are to support on time, quality and efficient providing of health services to patients, as well as building an efficient health system at all, improving the quality of healthcare, improving the access to adequate health care, improvement of the quality of life of patients and their environment is imperative for any healthcare system.

The quality health IT system enables one of the basic problems in healthcare and modern medicine in general to be overcome and that is the collection, the systematization and processing and use of the huge number of health data.

At the same time, there are many challenges with which our health system is faced, and therefore it is necessary to adopt certain EU standards, that would represent an opportunity for improving the quality and usability of health data. The providing of continuity in work and increasing the reliability of the IT system, increasing the efficiency and effectiveness of business processes, secrecy and security of patient data, social engineering - psychological manipulation in order to discover the valuable data are also the challenges we face every day.

The development of information and communication technology has brought new dangers for the privacy, rights and freedoms of citizens, which increase the awareness of the need to protect them. Security of IT systems, strong procedures and legal regulation seems to be the right way to prevent and effectively protect privacy and personal data.

The vision is to create an efficient and functional, but at the same time trustworthy, reliable, and secure integrated health information system. It is a challenge to build a health system where the patients and the public can be sure that their data is kept safe and are exchanged according to the appropriate legal ethical and technological norms.

Keywords: Health reforms, quality, and efficient health system, impact of e-health and digital transformation; privacy and security of patient data

ZHAKLINA CHAGOROSKA

Zhaklina Chagoroska is a most valuable member of the team that worked from the very beginning of rise, creation, actual implementation and management of the Macedonian National System for Electronic Health Records - MojTermin.

She is a Head of the unit within the E-Health Directorate, Ministry of Health. By title: Graduated Professor of Mathematics at the Faculty of Natural Sciences and Mathematics, University SS Cyril and Methodius, Skopje; Microsoft Certified Systems Administrator; and currently a master's student in IT management at the Faculty of Information Sciences and Computer Engineering (FINKI), University SS Cyril and Methodius, Skopje. Main focus in everyday work, and also in all activities to which she is fully committed, is the e-health and digitalization of health services. She is actively involved in the work of several national and multi-sectorial committees and working groups covering health care topics such as screening for early detection of malignant diseases, the cancer registry, primary health care, open data, etc. For the last 5 years, she is an appointed contact person from the Ministry of Health for the WHO in the area of health information systems and data processing.

DEVELOPMENT OF THE NATIONAL SYSTEM FOR ELECTRONIC HEALTH RECORDS IN THE REPUBLIC OF NORTH MACEDONIA

Abstract: The National eHealth system (Moj Termin) started in 2011 and it was developed for internal use in 3 public health institutions. After the successful implementation in those institutions, from 2013 the system was expanded on secondary and tertiary (public hospitals and clinics) and primary healthcare level (GP's). From year to year the system was upgraded with new modules, expanding the domain of implementation in the fields of healthcare, prevention and public health. The system fully integrates data from all three levels of healthcare. Today we can say that Moj Termin is a centralized eHealth System that creates and stores data and information related to healthcare.

Expanding the domain of implementation, many electronic services were made possible through the Moj Termin system. Today, the system contains data for over 1.8 million people, who throughout all the years of the system's existence had contact with the health system. The system exchanges data with several institutions, in order to improve the quality of services to citizens. The data that is part of the system is already used in several scientific researches that are published in prominent journals.

During the Covid-19 crisis, when the main advantage in almost all segments, especially in healthcare, was the use of digital tools, the Moj Termin system experienced multi-module development related to dealing with Covid-19 (testing, vaccination, epidemiology...).

Here I highlight the constant struggle in the development of the system between user requirements and trends on the one hand, and the administrative way of developing, financing and maintaining such systems that are owned by the state, on the other hand.

In my presentation, I will also talk about the hosting, development, and maintenance of the system, the issue of data protection, the accelerated need for digitalization of health processes, and the legal framework that should follow this accelerated development.

Keywords: eHealth, Health Information Systems, Digital Health

PANEL 4: E-HEALTH SERVICES (TELEMEDICINE AND HEALTH CARE DEVICES) IN PRACTICE

ALEKSANDAR MISHEV

Dr. Aleksandar Mishev is a ophthalmologist with over 10 years' experience as a specialist in the Clinical Hospital Ship. He completed his medical studies at the Faculty of Medicine of the Ss. Cyril and Methodius University in Skopje and received his specialization diploma in ophthalmology at the University Clinic for Eye Diseases, State Hospital Skopje.

Since his specialist studies he has been actively involved in practice and focuses on improving his professional knowledge on national and international levels. In 2013 he was part of the exchange programme of the Macedonian Ministry of Health and spent four months training for Phacoemulsification *and* vitreoretinal surgery at the Microsurgery Clinic in Kiev, Ukraine.

In 2011-12 he was a teaching assistant at the Faculty of Medical Sciences at the Goce Delchev University in Shtip.

Dr. Mishev has been a member of the management board at the Clinical Hospital in Shtip and he has been actively involved in several Commissions. In 2017 he was appointed as Head of the department of Surgery at the Clinical Hospital in Ship.

In 2019 he was recognized as the best doctor in the South- Easter part of the country by the NGO Association of journalists.

He has been elected as a delegate at the Assembly of the Doctor`s Chamber of the Republic of North Macedonia for the second time. He is president of the Municipality Board - Shtip, Doctor`s Chamber of the Republic of North Macedonia.

Currently, he is studying for the Ph.D. degree at the Faculty for Medical Sciences at the "Goce Delchev" University in Shtip.

TELEOPHTHAMOLOGY IN TEORY AND PRACTICE

Abstract: The Information and Communication Technologies (ICTs) used in the field of ophthalmology have emerged and developed rapidly in recent years. Two major aspects of these advancements are teleophthalmology and smartphones, which have enabled healthcare providers to achieve optimal outcomes in record time with minimal costs. Teleophthalmology and smartphones, two major aspects of these advancements, have enabled practitioners to achieve optimal results in record time with minimal costs. Teleophthalmology is a branch of telemedicine that provides remote access to eye medical services over distance. The frequent use of smartphones and the Internet, the increased use of social networks, and the manufacturing of high resolution cameras have led to increased high-quality information sharing in medicine. This has had a particular impact on the ophthalmology, which has evolved significantly, especially regarding photo-documentation and expert consultation. Due to the widespread range of ophthalmic applications, smartphones can be used in many ways, including for clinical photography, which is especially useful in ophthalmic practice as it enables the storing, documenting, and secure sharing of different pictures, pathologies, and diagnoses between colleagues and patients.

Many studies and clinical trials have been conducted globally, led by large countries due to their distant rural areas and lack of sufficient numbers of ophthalmologists to treat all patients. Various programmes and platforms have been developed for use by professionals as well as between specialists and patients. These contemporary developments in ophthalmic technology, in theory and practice, reveal that it is important to establish a global teleophthalmology society of specialists from both technology and ophthalmology fields from all over the world in order to regulate the legal and ethical principles of the practice and unify it in a common language with standards that are evidence-based.

Keywords: Teleophthalmology, healthcare providers, challenges, benefits

BLAGICA KRSTEVSKA

Blagica Krstevska is a pathologist with 11year experience and teaching assistant of the Institute of pathology, Faculty of Medicine in Skopje since 2008. She started her specialization of pathology in 2006 after finishing Faculty of Medicine in Skopje. In 2013 she visited AKH Vienna for three months training in gastrointestinal pathology.

Her professional interest includes advances in gastrointestinal pathology, pediatric surgery pathology and skin pathology. Her educational skills are cytology, pathohistology, immunohistochemistry and molecular pathology. As a researcher she has many publications as author, coauthor and has reviewed also articles for publication in Journals with international Editorial board.

Her professionalism is unselfish transmitted to yang residents in pathology and medical doctors at the Institute of pathology as an Educator. She actively participates in 1st and 2nd Macedonian Congress of pathology with international participation (2013, 2016), European Congress of pathology (2019, 2021).

She is member of Macedonian Association of pathologists, European Society of pathology, International Academy of pathologists, American Society of pathology, Macedonian Medical association and Macedonian Society of Gastroenterohepatology. In 2019 she is elected as member in Committee for malignant diseases in gastrointestinal pathology at University Clinic for Digestive surgery in Skopje.

She is awarded by Macedonian Medical Association in 2013 and 2020. In 2022 she gets a title for Primarius by Ministry of Health of Macedonia.

E-DIAGNOSTICS DEVICES: A CHALLENGE FOR BETTER PUBLIC HEALTH

Abstract: Information communication technologies (ICT) have already changed everyday life and may soon change how people receive health-care services. The necessary technology for most modules of eHealth applications is already available: teleconferencing for teleHealth, advanced databases storage and analysis for electronic medical records and mobile connectivity for mHealth.
eHealth diagnostic devices (eDiagnostics) should have low-to-moderate cost, to be affordable for general population, operate with minimal user involvement and be able to analyze untreated biological samples. To be used in eHealth systems, eDiagnostics should be capable of transmitting the test results to cloud-based systems in an automated and secure way.
The type of biological fluid (blood, urine, saliva, etc.) would determine the necessary pre-treatment steps that an eDiagnostic device should perform; all pretreatment steps, even the simplest ones, such as dilutions and pH adjustments, should be performed inside the device to avoid user involvement. This presentation talks about paper-based, microcell-based and chip-based diagnostic devices.
The landscape of medical self-testing is changing rapidly. A decade ago, point-of-care devices were mainly used by health professionals at or near the point of care, and very few self-testing devices (thermometers, blood pressure meters, glucometers, and pregnancy tests) were available to consumers. Within the past years, several point-of-care devices have been modified and further developed to become self-testing devices for blood oxygen, blood glucose and continuous glucose monitoring, for recording electro-cardiograms, or for detecting analysts such as lactate, creatinine, cholesterol, uric acid, hemoglobin, illicit drugs, etc.
The technology for home-based medical testing is not fully developed and further research is needed to produce a range of eHealth diagnostic devices to support eHealth systems.

Keywords: e-diagnostic, devices, monitoring, health

IGOR PEEV

Dr. Igor Peev is a senior teaching surgeon at the University Clinic for plastic and reconstructive surgery, Clinical center "Mother Theresa" in Skopje. He has specialization in general surgery and subspecialization in plastic and reconstructive surgery. As part of his training, he has done several long-stay fellowships abroad: USA, Germany, Turkey, and Serbia. With working experience of more than 15 years, he is known for introducing novelties in aesthetic and reconstructive surgery in North Macedonia. Defending PhD thesis in the field of liposuction in 2018, he was elected Scientific Associate at the Medical faculty, University "St. Cyril and Methodius" in Skopje. As a member of Department of Surgery, he takes part in education of medical students and residents in several specialties.

He is member of several domestic and international medical associations and current president of Association of aesthetic medicine in our country. As author and co-author, he has contributed in publication of numerous scientific articles and chapters in medical journals and books. Presently, he affiliates full-time position at the University Clinic for plastic surgery, teaching stuff at the Medical Faculty and has part time additional work in a private hospital.

He is father of one and speaks English and German.

CONTEMPORARY COMMUNICATION IN CLINICAL AND SCIENTIFIC PRACTICE

Abstract: Modern communications refers to speedy, adequate and accurate stream of information. Instantaneous communications, such as telephone, fax or e –mail, have been actual for decades, but they are surely surpassed by instant messaging technologies in recent years. These various cell-phone applications, such Viber, WhatsApp or various social media messengers are, became part of our daily private and professional lives.

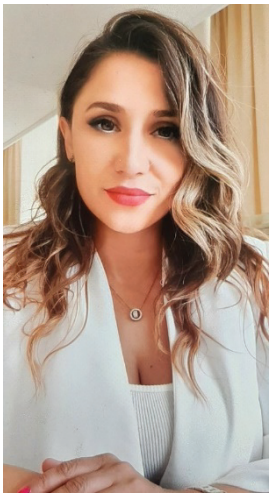
Whether as text, picture or video call, instant communications take part in medical practice, being a part of telemedicine as such. This applies on several levels: patient to doctor, colleague to colleague or resident/nurse/stuff to doctor communication. Patients from abroad can have a consultation via video calls and schedule operations or checkups very easily. Analysis are sent as photo files and adequately discussed as well as any other follow up concerns. Sometimes, instant messaging delivers a problem solving action very promptly as in surgery is usually needed. These advantages are of great importance of immediate healthcare delivery, with a provider more accessible to the patient thus improving the quality of health treatment in total. However, instant patient-doctor messaging may shift the traditional doctor-patient relation, bringing certain disadvantages.

Another excellent acquisition of these contemporary communication tools are the opportunity of huge networking among doctors and scientists. During Covid-19 pandemic, the largest international study was conducted using WhatsApp platform, uniting more than 10 000 doctors across the globe, gaining data about newly Corona threat. In such cases, fast data flow is obligatory and needed.

Contemporary communication instruments take part in daily correspondence among medical practitioners, medical scientists and patients, being a part of modern and publicly available telemedicine thus improving the work of doctors and medical care at all.

Keywords: communications, telemedicine, medicine, instant messaging

JULIJA ZARKOVA ATANASOVA



Julija Zarkova Atanasova works as a teaching assistant at UGD, Stip's Faculty of Medical Sciences, Dental Medicine. She was born in 1985 in Stip.

She graduated from the Faculty of Dentistry at the University "St. Cyril and Methodius" in Skopje in 2008. After completing an internship at the dental clinic St. Pantelejmon, in 2009 Julia Zarkova Atanasova was chosen as a demonstrator at the Faculty of Medical Sciences, UGD, Stip.

In 2011, she was elected as a junior assistant within the same faculty, where she is involved in the teaching-educational process of the Study Program in Dental Medicine's field of prosthodontics, and in 2014 promoted as teaching assistant.

She received the title of Master of Dental Sciences from the Faculty of Dentistry in Skopje in 2015.

She becomes a Specialist in Dental Prosthetics in 2019 after passing the specialist exam at the Faculty of Dentistry in Skopje.

In 2021, after successfully defending the doctoral thesis titled "The role of thickness in monolithic lithium-disilicate ceramics on the color and aesthetics of prosthetic restorations - In vitro evaluation," she was awarded with the title of Doctor of Dental Sciences and appointed as associate professor in the field of prosthodontics at the Faculty of Medical Sciences, UGD.

She has published numerous scientific and professional papers in domestic and international journals, as well as participation in numerous gatherings, symposiums, and congresses. She has participated in numerous workshops and courses in the field of prosthodontics and other.

APPLICATION OF TELEDENTISTRY IN EVERYDAY DENTAL PRACTICE

Abstract: Teledentistry (TD) is a relatively new field of dental medicine that combines information technology, such as electronic information and imaging, with telecommunications, such as video, audio, and data, to provide better dental care, consultation, and education. The current COVID-19 pandemic has increased global TD awareness and implementation. In this article, we will discuss the various modalities of teledentistry, such as synchronous TD (real-time interactive technologies), asynchronous (store and forward information), remote patient monitoring (connected tools for oral health monitoring), and mobile health care services (smartphone applications and text messages), and how they are used in various areas of dentistry. TD is used in pediatric dentistry to screen for early childhood caries, dentoalveolar trauma, and other oral diseases. Oral surgery implements teleconsultation to assess the patient's health prior to surgery. Teledentistry is applied in the specialty of oral medicine to diagnose or prevent oral lesions. Prosthodontics uses TD for instruction in the fabrication of overdentures in rural clinics, as well as communication with a remote dental technician laboratory. Because of technological advancements, teledentistry is becoming more popular in orthodontics to consult with and monitor patients without having to visit dentists. The most common types of online communication technology used in orthodontics are virtual consultation and artificial intelligence (AI)-based treatment monitoring methods with photos or videos. Today, dentists frequently use TD for continuing dental education in the form of webinars, online courses, interactive videoconferences, dental chat rooms, and so on. Teledentistry is the most efficient and cost-effective method of connecting rural and urban health communities. It has a promising future and will be further developed to improve patient oral health services

Keywords: Information technology, teleconsultation, telediagnosis, telemedicine, virtual dentistry

VLADKO FILIPOV

D-r Vladko Filipov is a specialist in Urology, employed at the Clinical Hospital - Stip since 2007. Born in 1977 in Stip, where he completed primary and secondary medical school. He graduated from the Faculty of Medicine in Skopje at the University "St. Cyril and Methodius".

He completed specialization in Urology at the Faculty of Medicine in Skopje.

In the period 2005-2007, he was employed at "Jane Sandanski " Secondary Medical School as a Professor in the subjects of Infectious Diseases, Internal Diseases, Pediatrics with Nursing and Microbiology with Parasitology.

He is a member of medical associations - MLD (Macedonian Medical Association), Association of Urologists of RS Macedonia, Medical Chamber. Winner of a certificate and certificate of thanks from MLD for the most successful young specialist doctor. He participates in several international Congresses organized by the Urological Association of Southeast Europe, the Urological Association of Macedonia and the Urological Association of Serbia. Participant of several lectures in which he actively participates as a lecturer, they are organized by the Medical Chamber of RSM in cooperation with well-known pharmaceutical companies - Alkaloid, Pliva, Lek, PharmaS, Glaxo Smith Klain, Alvogen.

More publications in medical journals - Zdravje, Medicus and others. Participation in studies in the field of Urology (the positive effect of drugs in the treatment of BPH, Cystitis, Incontinentio urinae). Lectures on the topic of raising awareness about men's health - Prevention of prostate cancer and testicular cancer.

He works in other institutions as a consultant in the Urology clinic of the General Hospital - Veles (2015 - 2019), the Urology clinic at the Health Center - Radovis (2019 - 2022), the Urology clinic at the Sv. Nikole Health Center (2019 - 2022) and the Urology clinic in Kratovo Health Center (2021-2022). Member of the Commission for Order and Discipline, and the Commission for the Advancement of Procedures for Treatment and Treatment of Patients at PHI Clinical Hospital - Stip.

THE CURRENT SITUATION, EFFECTS OF USE, AND PROPOSALS FOR FRUTE DEVELOPMENTS OF TELEMEDICINE

Abstract: By creating this paper I wanted to present more closely the current conditions, the effects of use and my proposals for the future development of telemedicine that emerged from practical application. The patient's health by definition is complete physical, mental and social well-being, and not just the absence of disease or physical defects, which is actually the main goal of every doctor. In achieving this goal, modern medicine, like any other science, follows modern trends and includes them in the function of improvement, prevention and better quality treatment. The dynamics of modern life, the increased use of information technology necessitated its increased use in medical communication and patient diagnostics. The easy availability of social networks currently allows much easier communication at the level: patient - doctor, family doctor - doctor specialist, doctor specialist from secondary health care - doctor specialist from tertiary health care. Telemedicine, which enables audio and video communication at a professional level in order to improve the care of patients, their treatment and consultation for further examination of the patient, is slowly but surely being inserted into the health system of the Republic of Macedonia. This shortens the finances and time that patients would spend during classical communication, more reliable and better diagnosis by a specialist doctor, quick and easy consultation between fellow specialists or necessary consultations with specialists from another field, easy access to surgery appointments and interventions and many other benefits. As a result of the use of telemedicine, the recommendations for improvement and development are in the context of consultation time with tertiary specialists, technical and spatial equipment of health facilities, improvement of communication or installation of special programs that will allow the results of a certain examination of the patient to be shared with other fellow specialists (CT and MRI scans, video recordings of interventions, etc.) and not as previously only the reports were visible in "My term".

Keywords: telemedicine, communication, patient health, diagnosis, social networks.