Radiological and medical sciences education programs in Carol Davila University of Medicine and Pharmacy

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Bucharest University Emergency Hospital

Dr. Cosmin Dugan, Bucharest University Emergency Hospital

BUEH – short presentation

- established in 1978;
- 1100 beds distributed in 24 medical and surgical specialties arranged in 29 departments;
- nodal point for the Mobile Emergency Service for Resuscitation and Extrication and Ambulance service
- the largest emergency unit in the South-Muntenia region, with an area of 2500 sqm the average number of presentations up to 400 patients / day.
- a functional heliport (400 landings until now)
- integrated outpatient clinic

BUEH role in COVID-19 pandemic

- major role for civilian population in pandemic
- two separate circuits for covid and non-covid patients
- important investments - clinical laboratory, modernization, investments in plowing and sanitary materials
- personnel on the front line of the pandemic - increasing the degree of cooperation, efficiency and cohesion

BUEH - AIEA collaboration

AIEA projects, developed via ANDR:
6016 - upgrade radiotherapy facilities for cancer treatment
6018 - Enhancing radiotherapy services by establishing a National Dosimetry Audit Facility
6021 – establishing a national training facility to improve the safety and quality of radiotherapy services
6021 – improve radiotherapy treatment and training of radiation therapy technologies, medical physicist and radiation oncologysts in Romania

DXA system
Mammography unit

Breast cancer center
Dr. Olivier Pellet, imagist
AIEA expert

In November 2022 BUEH is notified by the Ministry of Health that it is a designated hospital for the civilian population within the medical response plan in the event of a nuclear/radiological disaster according to the National Response Plan to Nuclear or Radiological Emergency Situations.

"Improving national capabilities regarding medical response in the event of a nuclear or radiological emergency"

organized by CNCAN/CIPRIERN in march 2023, with the support of the United States Department of Energy (US DOE), within the framework of the International Radiological Assistance Program Training for Emergency Response.

Course objectives:

- Radiation protection of emergency response personnel;
- Establishing the diagnosis, as well as the treatment of injuries caused by radiation exposure;
- Medical triage of contaminated and injured patients;
- Management procedures in the pre-hospital and hospital phase and the presentation of good practices;
- Presentation of monitoring equipment.

Valahia 2023 exercise – BUEH role

The Valahia 2023 National Exercise, held between October 3-5 and organized by CNCAN, simulated a severe accident scenario at Cernavodă NPP.

The medical procedures involved in the management of 2 seriously injured from Cernavoda, transported by helicopter (one case required transfer outside the country) and 19 ambulatory patients were realistically simulated.

- multidisciplinary patients
- over 30 foreign observers (2 permanent onsite)
- ~ 30 medical personnel directly involved and ~ 50 in total in this exercise


PLAYER

NATO SPS

Regional strategy for medical response as part of the disaster management in case of radiation emergency caused by the war in Ukraine

- September 19-21 2023, as a back-to-back event with the launch of the Wallachia 2023 national exercise
- Bucharest University Emergency Hospital, in partnership with the State University of Moldova (USM)
- Sponsored by the Science for Peace and Security program

- interdisciplinarity, with participants coming from the fields of medical, radiological and nuclear security, societal resilience and defence, with the focus being on identifying medical and resilience strategies within the key role played by NATO in preparing for nuclear/radioactive emergency situations.
- 64 speakers and moderators participated
- risks, vulnerabilities, scenarios, solutions in case of an incident associated with the conflict in Ukraine - local, regional and European reactions
- The conference was attended by specialists from Romania, Ukraine, the Republic of Moldova, the United States of America, Norway, Great Britain, Bulgaria, Italy, Sweden, Japan, France, Hungary and from the World Health Organization and the European Commission.

Highlights

Regional participation: Ukraine, Republic of Moldova, Bulgaria, Hungary, Austria (online)

Ukrainian participation

Professor Sergiy Klymenko
Head of the Center of Hematology, Hemoblastosis Chemotherapy and Bone Marrow Transplantation at "Feofaniya" Clinical Hospital

Professor Andriy STAVYTSKYY
Taras Shevchenko National University of Kyiv

Dr. Mykhailo SAMUS
Chief of The New Geopolitics Research Network

Dr. Marin GHERMAN
Director of Institute of Political Studies and Social Capital

Ms. Valeriia HESSE
Fellow at the Odesa Center for Nonproliferation

WHO participation

WHO - Romanian office

Dr. Caroline CLARINVAL, PhD
WHO Country Office Representative
Dr Silvia Gatscher,
Health Operations Manager

Dr. Zhanat CARR
Radiation Emergency Medical Preparedness and Assistance Department, WHO

Haematology panel: Contingency planning for haematologists in radiologic and nuclear events

The European Group for Blood & Marrow Transplantation, Nuclear Accident Committee

Professor Ray Powles
Head of Haemato-oncology and Bone Marrow transplantation at Nuffield Cancer Centre London UK

Professor Leif Stenke (online)
Haematology and Internal Medicine at the Department of Medicine, Solna, Sweden.

Professor Sergiy Klymenko
Head Center of Hematology, Chemotherapy and Bone Marrow Transplantation at "Feofaniya" Clinical Hospital, Ukraine

Dr. Marc Benderitter
Deputy director of the Health Division of Institut de Radio-protection et de Sûreté Nucléaire, France

Professor Alina Tanase
Head of the Bone Marrow Transplantation Unit of Fundeni Clinical Institute, Bucharest

Professor Anca Coliţă
Head of the Department of Pediatrics at the Fundeni Institute

On the third day of the conference, His Excellencies, **Mr. Hiroshi UEDA**, Ambassador of Japan in Romania and **Mr. Kap-Soo RIM**, Ambassador of the Republic of Korea in Romania, hosted a panel on preventive strategies that can reduce the risk of a radiological disaster or conflict with weapons of mass destruction.

Prof. Tsubokura MASAHARU

... Fukushima experience...

Mr. Gareth THOMAS

...HERCA...

Prof. Nicolas FORAY

...individual radioresistence...

Brig. Gen. (r) Vitalie STOIAN

...reservists and CBRN incidents...

Mr. Marc Benderitter

...Iodine Thyroid Blocking...

Prof. Iulian CHIFU

...plausibile nuclear scenarious..

Ms. Valeriia HESSE

...Hybrid Nuclear Compellence...

Prof. István TURAI

...public health preparedness...

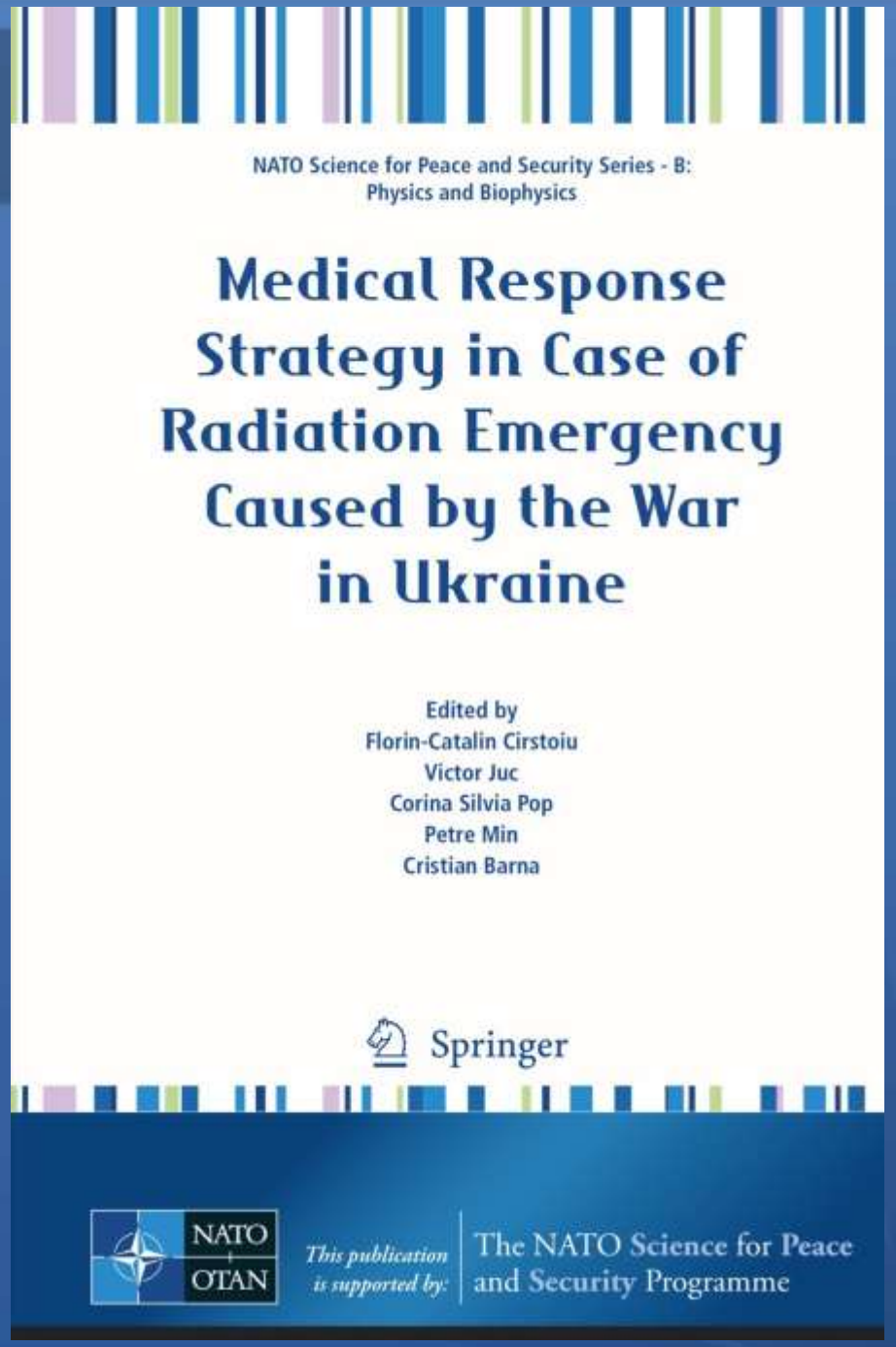
Mr. Bogdan VAMANU

...simulation...

Mr. Stephen L. (Steve) SUGARMAN

...education and prevention...

https://www.youtube.com/watch?v=n1bQ25gOjn4&feature=youtu.be



Accession of the Carol Davila University of Medicine and Pharmacy to the National University Alliance for Nuclear Energy

30 March 2024

The participation of the University of Medicine and Pharmacy "Carol Davila" as a founding member:

- training within UMFCD Bucharest of specialists in medical radiology, nuclear medicine, radiotherapy, radiation medicine;
- other clinical, research, national and international cooperation aspects involving the use of radiation and radioisotopes in medical practice.

Visit of HE, Mr. Rafael Mariano Grossi, Director General of the International Atomic Energy Agency at Bucharest University Emergency Hospital

10 April 2024

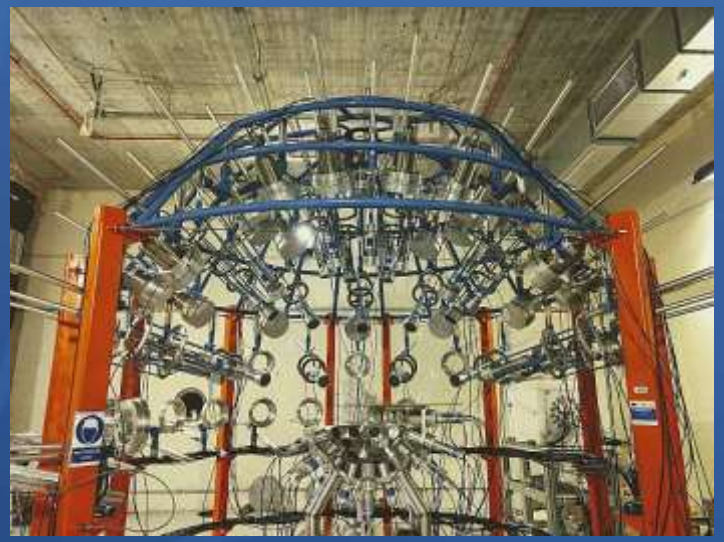
Development of a complete circuit for oncological patients in the hospital

The largest radiotherapy bunker in Romania.

Support for future programs - radiology, radiotherapy and clinical training in the event of a R/N disaster.

Post-graduate training for radiologists, radiotherapists, nuclear medicine.

MoU between BUEH and Extreme Light Infrastructure - Nuclear Physics (ELI-NP) September 2024



Cooperation on research topics in the field of cancer diagnosis and treatment by carrying out specific research activities on:

- development of hadronotherapy and investigation of the Flash effect
- development of highly sensitive X-ray imaging methods• generation of radioisotopes for medical applications (Fluorine-18)
- preclinical tests• training of specialists in medical radiology, nuclear medicine, radiotherapy, radiation medicine, occupational medicine, other medical specialties
- other clinical, preclinical and academic aspects involving the use of radiation, radioisotopes, lasers in medical practice.

CONVEX-3 exercise (2025)

ConvEx-3 (2025) was the world's largest international nuclear emergency exercise, organized by the International Atomic Energy Agency and hosted by Romania.

It simulated a severe accident at the Cernavodă Nuclear Power Plant to test and improve global preparedness and response mechanisms through realistic scenarios, involving over 75 countries and 10 international organizations.

The exercise focused on international cooperation, regional collaboration, the integration of nuclear security elements like cybersecurity, and advanced crisis communication.

ConvEx-3
2025 | România

Launching of the Convex-3 exercise

Task group meeting

Simulation of clinical management for a seriously ill, polytraumatized, burned, irradiated and externally and internally contaminated patient, who will be stabilized, decontaminated, provisionally treated in the ICU Clinic and then transported the next day by air to France.

ConvEx-3
2025 | România

Training, international cooperation, scientific activities

Course for students on the effects of radiation, CIPRIERN – march 2025

Psychological effects in the event of a nuclear/radiological event – may 2025

Cooperation event with Black Sea Women - speaker Mrs. Dr. Mirela Zivari – June 2025

ConvEx-3 Interinstitutional Meeting - July 2024

Visit of students from Vietnam, Malaysia and Indonesia to BUEH - June 2024

Public communication workshop ConvEx-3 - April 2025

Psychology of Disaster: Human Responses to Extreme Threats

Primary Reaction to Nuclear Disasters – The Cognitive and Affective Dimensions of the Immediate Human Response

Psychologist Daniela Hofnar

Introduction:
Nuclear disasters represent extreme stressors distinct from natural disasters. The invisible and delayed nature of radiation amplifies fear and uncertainty.

Immediate Human Reactions:
Cognitive: confusion, impaired decision-making
Affective: anxiety, fear, anger
Behavioral: evacuation, stockpiling, denial

Study Results (330 participants):
Significant correlation between scientific literacy and effective risk perception. Prior trauma predicts stronger emotional intensity. Participants highlighted a need for institutional support and clear communication.

Results
Urban residence is the only statistically significant factor ($p = 0.044$). Individuals living in urban areas are more likely to report a high level of preparedness (knowledge 4–5). Age (31–50 years, 51–70 years, over 70 years) shows no significant association with preparedness level (coefficients close to 0, $p > 0.6$).
Personal plan vs. knowledge level – individuals who have a concrete preparedness plan (e.g., emergency backpack, supplies) tend to report a higher level of knowledge.
Trust in authorities vs. nuclear concern – those who perceive authorities as prepared generally report a lower level of concern about nuclear disasters.
Support network vs. knowledge level – respondents with a clearly defined support network (family, neighbors, friends) are more likely to report a higher level of preparedness.

Long-Term Consequences: PTSD, depression, anxiety; Loss of trust in institutions; Intergenerational trauma; Community fragmentation

Coping Mechanisms:
Individual: mindfulness, rationalization, spirituality
Familial: emotional support, safe routines
Community: credible leaders, clear communication

Conclusions:
Psychological resilience is as vital as physical safety in nuclear crises. Preparedness, education, and social trust are key to future responses.
Building psychological resilience today will determine the capacity of societies to withstand tomorrow's nuclear and radiological challenges.

Future Implications
Psychological preparedness must become an integral part of nuclear emergency planning, alongside physical protection.
Risk literacy and resilience training should be incorporated into education and public health programs.
Clear, transparent communication is essential to counter misinformation and strengthen trust in institutions.
Community-based approaches can enhance long-term recovery and reduce intergenerational trauma.
Research and innovation (AI tools, digital platforms) offer opportunities to monitor and support mental health during crises.

Future projects

Develop basic radiological protection and EPR courses for university students

Establish an interdisciplinary Master's programme in Emergency Preparedness and Response (EPR) – CDMPU/NHI/CNCAN

UMFCD - Center of Excellence for training in ensuring emergency medical and clinical response in disasters (IAEA, CNCAN, INSP, SNEN)

Integrate CIPRIERN as a practical teaching platform within emergency and clinical academic programmes (CNCAN/CIPRIERN)

Establishing a national training network for medical personnel involved in the clinical (hospital) response to CBRN disasters

Develop certified postgraduate courses in radiation exposure medicine and radiological emergency management

Development of a public health program dedicated to long-term monitoring of the health of personnel and the population adjacent to the SMR type NPP (IV generation) - Doicesti (CDMPU/NHI/CNCAN)

Message to take home:

- UMPCD and BUEH are solid partners, with extensive experience in research projects and international cooperation
- Our interest in collaboration is long-term
- We collaborate efficiently with CNCAN, Politehnica University of Bucharest, other medical universities in Romania, other medical institutions
- We have a very good cooperation at the moment with the IAEA, but far from the maximum potential
- New challenges in reality require interdisciplinary and interinstitutional cooperation that takes advantage of the new working tools available
- There is a very high interest for foreign students (non-EU) to follow UMPCD courses

Thank you for your attention !