



***JUBILEE SCIENTIFIC CONFERENCE
WITH INTERNATIONAL
PARTICIPATION***

**“50 Years of Medical Education and Science in Pleven”
01 – 03 November 2024**

ABSTRACT BOOK

Pleven, 2024



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***DEAR INTERNATIONAL GUESTS,
DEAR COLLEAGUES AND
FRIENDS,***

It is a great pleasure and honour for me to welcome you at Medical University – Pleven as a special guest and participant in the Jubilee Scientific Conference with International Participation “50 Years of Medical Education and Science”.



In the year 2024 Medical University – Pleven celebrates its 50th Anniversary – 50 years of education and science in Pleven, successfully combining traditions and innovations. Our Alma Mater that is growing very fast with an emphasis on implementing advanced technologies in education and clinical practice. Our priorities are in the development of robot-assisted, minimally invasive surgery, telemedicine, 3D medicine and bioprinting.

One of our crucial historical achievements is the fact that we are the first medical University in Bulgaria that in 1997 introduced English-medium course of training in Medicine for international students. Up to now, we have trained thousands of international medical doctors from more than 50 countries worldwide who are our best ambassadors in Europe, USA, India, Japan and Australia.

Nowadays Medical University - Pleven is an institution of academic excellence, having a community of distinguished professors with high standards and professional expertise in teaching and research. For nearly 50 years we have been offering high quality education to medical doctors and healthcare professionals, teaching them all the necessary knowledge, practical skills and experience to meet the challenges of healthcare.

Welcome at Medical University – Pleven and I hope you will enjoy your participation in the Jubilee Scientific Conference with International Participation “50 Years of Medical Education and Science”!

Prof. Dr. Dobromir DIMITROV, MD, PhD
RECTOR
Medical University – Pleven

CONTENT

- 5 ACADEMIC LECTURES**
- 11 BIOMEDICAL SCIENCES**
- 62 THERAPEUTIC SCIENCES**
- 113 SURGICAL SCIENCES**
- 151 OBSTETRICS & GYNECOLOGY**
- 166 VARIA**
- 186 PHARMACY**
- 223 JUBILEE SCIENTIFIC SESSION "TRADITIONS AND
INNOVATIONS IN PUBLIC HEALTH" DEDICATED TO
20TH ANNIVERSARY OF THE FACULTY OF PUBLIC
HEALTH**
- 359 VIII NATIONAL STUDENT SESSION ON HEALTH CARE**
- 394 XXII NATIONAL SCIENTIFIC SESSION FOR STUDENTS
AND TEACHERS OF MEDICAL COLLEGE**

ACADEMIC LECTURES

HITV THERAPY, DENDRITIC CELLS INTRA-TUMORAL ADMINISTRATION FOR INDUCING FUNCTIONAL CTLs

Kenichiro Hasumi

Hasumi International Research Foundation

Recently, the treatment of cancer has made amazing progress in the field of robotic surgery and molecular target medicine, but effective approaches for advanced cancers where cancer cells have already invaded in blood circulation, such as recurrent cancer and stage IV, are still not developed enough. In order to resolve this problem, if there is a way to apply effective immunotherapy to induce functional killer-T cells (CTLs), which may cover the antigen variation due to cancer cell mutations, it is possible to put into perspective to cure advanced cancer in combination with general treatment.

Now, if we think about how to induce fully functional CTLs, there are some conditions required as follows:

- (1) Inducing multifunctional CTLs, recognizing known or unknown antigens (neoantigen) derived from cancer.
- (2) CTLs are not replenished from outside, but there is always an environment that is produced in the body.
- (3) Even if antigen changes occur due to a cancer mutation, the induction of updated CTLs can follow it.
- (4) Can be expected to decrease the tumor size using intra-tumoral injection of CTLs harvested from peripheral blood.

When considering a method that meets these conditions, assuming that administration of dendritic cells into the tumor is the most efficient, and then HITV (Human Initiated Therapeutic Vaccine) therapy was developed in 2004. After that, the validity of hypothesis was proven through basic research with Professor Mann of the University of Maryland. The treatment record to date has exceeded 1,800 cases, and its safety has been proven through clinical trials in the United States and Malaysia, and technology has been transferred to Taiwan and China. From the treatment experience to date, HITV can be expected to be highly effective in combination of

general treatment. In addition, there are inclusion criteria that allow to reach complete response and if it is within that condition, the expected cure rate will be 70% or more. The condition of this cure is strongly related to the effectiveness of the general treatment itself, but immunotherapy for advanced cancer also have been exhausted and become tolerant as well as conventional therapies. It is possible to lead to the healing of advanced cancer in a limited time by using HITV therapy in combination with effective general treatment. It will be an important point to conduct protocol for patients.

To summarize the above concerns, I think that it is very valuable for patients to perform HITV therapy as a treatment and prevention in the blessed medical environment of Pleven University.

HITV therapy practical guidance – shared experience between Tokyo and Pleven

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Introduction: HITV (Human Initiated Therapeutic Vaccine) therapy was developed in 2004, and ever since it has been applied to more than 1800 patients. Intra-tumoral injections of immature dendritic cells (imDC) for treatment of multiple tumors are performed under CT or US guidance, indicated for stage IV or recurrent cancer patients. Subsequently, killer T-cells (CTL) induction starts in the injected lesion sites and in the regional lymph nodes, in order to control the tumor growth and to decrease the circulating tumor cells reducing new metastasis development. Complete remission should be reached within 9-12 months after starting tumor vaccination and then systemic imDC administration can be planned in order to reduce recurrent disease.

Aim: To summarize the applications of HITV therapy, and its inclusion and exclusion criteria, for patients with stage IV or recurrent cancer.

Materials and methods: Training course on HITV therapy was conducted from July 22, 2024 to August 5, 2024 at Tokyo Clinic & Research Institute, Medical Corporation ICVS, where the mechanism of HITV therapy and the basic methods of cell preparation required for it, were learned. The basics of the clinical protocol and intra-tumoral injection, were also covered.

Conclusion: Treatment of cancer is complex and is still a challenge. This is why new effective approaches should be researched. As a minimum invasive approach without patient's hospitalization, administration of imDC into the tumor could be very efficient, especially in combination of general treatment. This is the main idea of the HITV therapy, which is indicated for stage IV and recurrent cancer patients.

Keywords: HITV therapy, dendritic cells, intra-tumoral administration, cancer treatment

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FUTURE SURGERY - ROBOTIC SURGERY IS ONLY THE BEGINNING

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Even as this fourth revolution in surgery in 25 years (robotic surgery) is gaining acceptance, a more disruptive change is beginning the next revolution: non-invasive Directed Energy for Diagnosis and Therapy (DEDAT), which is just the beginning that heralds the transition to non-invasive surgery. Energy, when combined with robotics, , imaging systems, Virtual Reality (VR), molecular and genetic manipulation, and nanotechnology (to name a few), diseases will begin to be cured at the cellular and molecular level, and non-invasively. Such systems are based upon the premise that robotics, AI and automation can bring precision, speed and reliability to diagnosis and therapy, especially as surgery ‘descends’ into operating at the cellular and molecular level. In addition, when robotics combines with Artificial Intelligence (AI), the 5th and 6th generation (5G and 6G) telecommunications, supercomputing, and remote telesurgery, there will be an exponential increase in opportunities for innovation on a global scale. However, with these opportunities, there will also be significant challenges, not only technological, but also behavioral, humanitarian, political and ethical issues. The time has come to rethink what the future of robotics with AI and telesurgery can bring to surgery. **Keywords:** artificial intelligence (VR), directed energy surgery, robotic surgery, telesurgery

FROM METRICS TO OUTCOMES, USING VIDEO BASED ANALYTICS

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“Let’s Go to the Videotape.” Athletes, Police officers, Aviation; all replay events to improve skills, analyze events, and prevent recurrence of events with bad outcomes. Surgery must adopt this type of technology to continuously improve our surgical skills and team metrics in the Operating Room. Several HIPPA compliant technologies have now been invented to help us identify and prevent errors. By adopting an educational pathway to identify quantitative and qualitative metrics; we can improve the way we collect intra and peri operative data, further instruct the OR team to improve workflow, and measure outcome which will improve patient care.

Keywords: Video Based Analytics

MINIMALLY-INVASIVE COLECTOMY

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The use of laparoscopy for colectomy was first published in 1991. Initial use, primarily for benign disease, was facilitated by improvements in imaging and instruments in the mid to late 1990s. Widespread adoption for malignancy followed publication of landmark randomized clinical trials (2002-2004). The application of Mini-Laparoscopy, Single-Incision Laparoscopic Surgery, Robotic (Computer-Assisted) Surgery, and Natural Orifice Surgery followed. Over the last two decades, the safety and efficacy of minimally invasive (laparoscopic and robotic) colorectal surgical techniques have been well established. In sufficiently resourced environments, more than half of colorectal resections are now performed with minimally invasive techniques. Remaining opportunities to improve colorectal surgical practice include increased screening for colorectal malignancy, surgery with curative intent at earlier stages of the disease, broader application of high-quality minimally invasive surgery, reductions in anastomotic leaks and infectious complications, and widespread adoption of enhanced recovery protocols including evolving multimodal non-opiate analgesia regimens.

Jubilee Scientific Conference with International Participation

Biomedical Sciences

Content

- 18 ADVANCEMENTS IN LONG-READ FULL-LENGTH NANOPORE
TRANSCRIPTOMICS: UNLOCKING THE COMPLEXITY OF
METASTATIC TUMOR DEVELOPMENT
Soren Hayrabedian
- 19 3D BIOPRINTING - FROM DREAM TO REALITY
Victoria Sarafian, Yordan Sbirkov, Diana Molander
- 20 INTRINSIC DISORDER BY CONFORMATIONAL COEXISTENCE
IN PROTEINS
Charo I. del Genio, Veselina Uzunova, Richard Napier
- 21 THE INTERNATIONAL ASSOCIATION OF FORENSIC SCIENCES
- ITS ROLE IN THE DEVELOPMENT OF SCIENCE AND GLOBAL
COLLABORATION
Yanko Kolev, Preslav-Geo Kolev
- 22 DESIGN OF BIOACTIVE AND ANTI-BACTERIAL WOUND
DRESSING BASED ON FREE-STANDING MULTILAYER FILMS
AND ELECTROSPUN GELATIN FLEECES
Adrian Hautmann, Thomas Growth
- 23 ROLE OF INFECTION PREVENTION AND CONTROL TO REDUCE
THE BURDEN OF AMR - CONTEMPORARY APPROACHES IN
CARBAPENEM-RESISTANT ENTEROBACTERIACEAE
Rossitza Vatcheva-Dobrevska
- 24 CUTTING EDGE TECHNOLOGY FOR GENE EXPRESSION
ANALYSIS IN COLORECTAL CANCER, LYMPH NODES AND
METASTASES
Dragomira Nikolova, Ivanka Dimova
- 25 COMPUTATIONAL APPROACH TO THE SYMULTANEOUS
INHIBITION OF THE MAS AND THE AGTR2 RECEPTORS
Veselina Uzunova, Charo I. del Genio

- 26 NEW INNOVATIVE COMBINATION WITH MEMORY RECOVERY EFFECT IN RATS WITH ALZHEIMER'S TYPE DEMENTIA
Lyubka Tancheva, Reni Kalfin, Borislav Minchev, Nadya Nakova, Diamara Uzunova, Krasimira Tasheva, Elina Tsvetanova, Almira Georgieva, Albena Alexandrova, Miroslava Stefanova, Maria Lazarova, Yordan Hodzhev, Valya Grigorova, Polina Petkova-Kirova
- 27 SEX DIFFERENCES IN RENIN-ANGIOTENSIN SYSTEM
Emilya Lakova, Genka Krusteva
- 28 AEROBIC TRAINING MITIGATES MEMORY IMPAIRMENTS BY EXERTING ANTI-INFLAMMATORY EFFECTS IN THE HIPPOCAMPUS OF A RAT MODEL OF CHRONIC NEUROINFLAMMATION
Katerina Georgieva, Yana Chekalarova, Nikolay Boyadzhiev, Petar Hrishev, Georgi Hadzhipetrov, Petya Ivanova, Desislava Krushovlieva
- 29 EARLY GLYCATION OF COLLAGEN ALTERS ITS CHARACTERISTICS AND INFLUENCES INTERACTION WITH MESENCHYMAL STEM CELLS
Svetoslava Stoycheva, Borislav Dimitrov, Petar Temnishki, Violina Ivanova, Regina Komsa-Penkova, George Altankov
- 30 ROLE OF SPIROMETRY AND LUNG FUNCTION TRAJECTORIES AND THEIR APPLICATION IN CLINICAL PRACTICE
Stoilka Mandadzhieva, Plamena Stoimenova, Katerina Koleva
- 31 STIGMATIZING ATTITUDES TOWARD MENTAL HEALTH CONDITIONS AMONG MEDICAL STUDENTS IN FIVE SOUTH-EASTERN EUROPEAN COUNTRIES
Vladimir Nakov, Sanja Harhaji, Sonila Tomori, Jana Chihai, Ivana Radic, Tedi Mana, Kaloyan Stoichev, Andrei Esanu, Mihail Cristian Pirlog
- 32 USING DATA FROM MAGNETIC-RESONANCE IMAGING AS A TOOL FOR DIFFERENTIAL DIAGNOSIS OF POSTPARTUM SACROILIITIS AND AXIAL SPONDYLOARTHRITIS
Sezay Bekir, Borislava Zhelezarova

- 33 TISSUE ENGINEERING OF HYALINE CARTILAGE THROUGH 3D BIOPRINTING - A PILOT STUDY
Yordan Sbirkov, M. Redzheb, A. Valev, T. Damyanova, E. Tanova, V. Dzharov, T. Todorova, Viktoria Sarafian
- 34 SEQUENCE TYPING-BASED ANALYSIS OF MORAXELLA CATARRHALIS STRAINS ISOLATED FROM PATIENTS WITH RESPIRATORY DISEASES
Alexandra Alexandrova, Vasil Boyanov, Kalina Mihova, Raina Gergova
- 35 FIVE-YEAR REVIEW OF SPECIES DISTRIBUTION AND EPIDEMIOLOGICAL PROFILE OF VANCOMYCIN-RESISTANT ENTEROCOCCI ISOLATED IN A UNIVERSITY HOSPITAL IN PLEVEN, BULGARIA
Preslava Hristova, Teodora Bulgaranova, Valentina Edreva, Hristina Hitkova
- 36 ASSOCIATION OF THE ADIPONECTIN RS266729 POLYMORPHISM AND OBESITY IN NORTH BULGARIAN POPULATION
Tihomir Rashev, Vladislav Nankov, Desislava Marinova, Stefan Trifonov
- 37 PROSTATE CANCER STEM-LIKE PHENOTYPE PROMOTES RNA HALF-LIFE CHANGES, AND NOVEL LONG NON-CODING RNAS AND NON-CANONICAL MHC EXPRESSION TO EVADE IMMUNE SURVEILLANCE – IN SEARCH OF NEW GENE SILENCING THERAPEUTIC TARGETS
Andrey Velichkov, Ilka Tsvetkova, Radostina Tsvetankova, Soren Hayrabedian, Krassimira Todorova
- 38 MAMMATYPER: A NOVEL TOOL IN BREAST CANCER MOLECULAR SUBTYPING
Savelina Popovska, Vladislav Nankov, Zornitsa Petrova, Zornitsa Kamburova, Hristina Ignatova

- 39 PERSONALISED MEDICINE: RESEARCH AND INSIGHTS
Zornitsa Kamburova, Savelina Popovska, Katya Kovacheva,
Slavena Nikolova
- 40 HEREDITARY BREAST CANCER: PROFILE OF GERMLINE
MUTATIONS BY AGE AT DIAGNOSIS
Zornitsa Kamburova, Savelina Popovska, Katya Kovacheva,
Slavena Nikolova
- 41 CARRIER SCREENING – PILOT STUDY AMONGST THE
BULGARIAN POPULATION
Slavena Nikolova , Katia Kovacheva, Zornitsa.Kamburova
- 42 THE ROLE OF COMPREHENSIVE GENOMIC PROFILING IN
THE MANAGEMENT OF PATIENTS WITH LUNG CANCER
Vladislav Nankov, Savelina Popovska, Zornitsa Petrova,
Pencho Tonchev
- 43 SUCCESS OF PERFORMING THE TECHNIQUE OF FORCED
OSCILLATIONS (FOT) IN THE DIAGNOSIS OF SMALL AIRWAYS
DISEASE IN CHILDREN
Plamena Stoimenova, Stoilka Madadzheva, Blagoi Marinov
- 44 TREATMENT OF PC3 PROSTATE CANCER CELL LINE
WITH CLASSICAL AND NON-CLASSICAL COMPOUND
COMBINATIONS
Lidiya Petrova, Diana Zasheva, Nikolay Gergov, Els JM Van Damme,
Tsvetelina Oreshkova, Teodora Alexandrov , Vanya Bogoeva
- 45 BIOENERGETIC CHANGES IN PATIENTS WITH ISCHEMIC
BRAIN STROKE – A PILOT STUDY
Eleonora Kovacheva, Margarita Koeva, Maria Gevezova, Vasilka
Kormova, Emanuela Kostadinova, Yulia Kostadinova, Toma
Tsvetanov, Maria Kazakova, Victoria Sarafian
- 46 APPLICATION OF ELISA FOR THE DETECTION OF
CRYPTOSPORIDIUM SPP. OOCYSTS IN HUMAN AND ANIMAL
SAMPLES
Petya Dragomirova, Daniela Klisarova

- 47 ASSOCIATION BETWEEN OXIDATIVE STRESS MARKERS AND GENETIC DISORDERS IN CHRONIC LYMPHOCYTIC LEUKEMIA
Viktoriya Varbanova, Margarita Alexandrova, Vanya Popova, Svetla Blajeva
- 48 IMPLICATIONS FOR SERTOLI CELL FATE ON MALE FERTILITY
Ilka Tsvetkova-Ivanova, Radostina Tsvetankova, Krassimira Todorova, Soren Hayrabedyan
- 49 ENHANCING ACID SPHINGOMYELINASE DETECTION IN BLOOD SAMPLES OF PATIENTS WITH NEURODEGENERATIVE DISEASES
Alexandra Miteva, Petar Temnishki, Iskra Hubcheva, Magdalena Koyumdzhieva, Ivaylo Marinov, Milka Mihaylova
- 50 CONTEMPORARY CONCEPTION AND CURRENT ASPECTS IN THE SYSTEMIC REGULATION OF IRON HOMEOSTASIS
Tsvetelina Petkova-Marinova, Boryana Ruseva
- 51 IMMUNOPATHOGENETIC APPROACHES TO THE TREATMENT OF INFLAMMATORY BOWEL DISEASE
Genka Krasteva, Ioana Nikolova, Emilia Lakova
- 52 ERYTHROCYTES AND BLOOD MICROBIOME
Reni Kalfin, Lyubka Tancheva, Yordan Hodzhev, Stefan Panaiotov
- 53 DIABETES-RELATED ALTERNATIONS IN THE ENTERIC NERVOUS SYSTEM
Desislava Marinova, Tihomir Rashev, Cvetan Popov, Stefan Trifonov
- 54 NONINVASIVE HEMODYNAMIC MONITORING AND PULSE WAVE ANALYSIS IN PATIENTS WITH ARTERIAL HYPERTENSION AND TYPE 2 DIABETES MELLITUS WITH AND WITHOUT HYPERTRIGLYCERIDEMIA
Vesela Georgieva, Anelya Dimitrova², Anna Tolekova¹

- 55 NONALCOHOLIC FATTY LIVER DISEASE IN PATIENTS WITH ARTERIAL HYPERTENSION
Vesela Georgieva, Anelya Dimitrova, Anna Tolekova
- 56 LEVERAGING ADAPTIVE SAMPLING FOR COMPREHENSIVE PHARMACOGENOMICS AND MITOCHONDRIAL DNA ANALYSIS IN CHORIOCARCINOMA
Antonina Gospodinova, Yuliia Marienko, Ilka Tsvetkova-Ivanova, Radostina Tsvetankova, Soren Hayrabedian, Krassimira Todorova
- 57 SARS-COV-2 ORF3A PROMOTES LUNG MICROVASCULAR ENDOTHELIAL CELLS SENESCENCE
Yuliia Marienko, Andrey Velichkov, Krassimira Todorova, Soren Hayrabedian
- 58 GENE EXPRESSION PROFILING OF LAMPS AS HALLMARKS IN COLORECTAL CANCER
Tsvetomira Ivanova, Valentin Dichev, Yordan Sbirkov, Maria Kazakova, Nikolay Mehterov, Nikolay Belev, Boyko Atanasov, Victoria Sarafian
- 59 FREQUENCIES OF POLYMORPHISMS IN CYP2C9 AND VKORC1 GENES IN BULGARIAN POPULATION
Reni Tzveova, Antoaneta Dimitrova-Karamfilova, Silvia Vandeva, Petar Atanasov, Gencho Nachev, Vanyo Mitev, Radka Kaneva, Diana Pendicheva-Duhlenska
- 60 CERTIFICATION AND STANDARDS IN THE MEDICOLEGAL DEATH INVESTIGATION SYSTEM
Hadjazi Omar, Merad Yassine
- 61 THE VIOLENCE AGAINST ELDERLY PEOPLE: A STUDY OF 60 CASES
Noun Mustapha, Hadjazi Omar, Bensfia Imaedine, Ayed Kada, Boumelilik Mohamed Amine

ADVANCEMENTS IN LONG-READ FULL-LENGTH NANOPORE TRANSCRIPTOMICS: UNLOCKING THE COMPLEXITY OF METASTATIC TUMOR DEVELOPMENT

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Recent advances in long-read, full-length nanopore transcriptomics have revolutionised our understanding of gene expression by providing unparalleled insights into the complexity of transcriptomes. This lecture delves into the advantages of nanopore sequencing over traditional short-read methods, highlighting the comprehensive and accurate characterisation of transcripts, including isoform diversity and novel transcript discovery. We explore the differences between cDNA-based and direct RNA-based library generation, emphasising how direct RNA sequencing uniquely preserves native RNA molecules, enabling the detection of epitranscriptomic modifications and providing a more complete picture of RNA biology.

A special focus is placed on the application of single-cell transcriptomics and spatial transcriptomics in studying metastatic tumours. Single-cell transcriptomics allows for the dissection of complex cell populations, revealing cell fate trajectories and cell-cell interactions within the tumour microenvironment. Spatial transcriptomics further enhances our understanding by mapping gene expression to precise tissue locations, elucidating the spatial organisation and heterogeneity of tumour cells. By integrating these cutting-edge techniques, we can uncover the molecular underpinnings of tumour heterogeneity, identify potential therapeutic targets, and improve strategies for personalised cancer treatment. This lecture provides a comprehensive overview of how long-read, full-length nanopore transcriptomics is poised to transform biomedical research and clinical practice in oncology.

Keywords: epitranscriptomics, long read direct RNA sequencing, scRNA, spatial transcriptomics

3D BIOPRINTING - FROM DREAM TO REALITY

Victoria Sarafian, Yordan Sbirkov, Diana Molander

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3D bioprinting is an innovative technology that allows the combination of living cells, growth and nutrient factors and biomaterials to reproduce spatially organised tissues and organs with structures and functions that are as close as possible to normal ones. The ideal 3D model includes several cell types and provides a 3D microenvironment. Intercellular relationships and interactions with the extracellular matrix, growth and secreted factors influence cell behaviour and function.

The application of this technology in medicine is multifaceted - regenerative medicine and transplantation, disease modelling, drug design and efficacy testing, and personalised medicine.

Our expertise in 3D bioprinting in oncology includes the creation of a colorectal cancer model as a platform to evaluate the effect of chemotherapeutics. In regenerative and reconstructive medicine, we are developing 3D bioprinting of chondrocytes derived from mesenchymal stem cells.

The reality provided by 3D bioprinting goes beyond our dreams and opens up unexpected application possibilities, but it also brings many new challenges.

Keywords: 3D bioprinting, colorectal cancer, chondrocytes

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INTRINSIC DISORDER BY CONFORMATIONAL COEXISTENCE IN PROTEINS

Charo I. del Genio, Veselina Uzunova, Richard Napier

Trakia University, Stara Zagora

Approximately 40% of all proteins are partially or fully intrinsically disordered. Up to recently, it was believed that the secondary structure of intrinsically disordered proteins was only that of a random coil, which would cause them to behave like a long coil or a self-avoiding walk. We use Aux/IAA17, which is one of the co-receptors of the plant growth hormone auxin, as a case study to show that this is not necessarily true. Using new computational and bioinformatic methods, we predict that the protein exists in a number of different folded conformations. Experiments by nuclear magnetic resonance spectroscopy and circular dichroism confirm our predictions. In addition to providing new modelling techniques specifically suitable for disordered proteins, our results show that the properties of an intrinsic disorder can also arise as an ensemble effect rather than exclusively from a coil structure. This evidences the need to rethink our assumptions about such proteins and suggests the possibility of exploiting them for fine-tuned control of related biological functions.

Keywords: bioinformatics; biophysics, computational biology, intrinsic disorder, molecular dynamics

THE ROLE OF THE INTERNATIONAL ASSOCIATION OF FORENSIC SCIENCES IN THE DEVELOPMENT OF SCIENCE AND GLOBAL COLLABORATION

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The International Association of Forensic Sciences (IAFS) has a long and interesting history, starting in 1957. The initial steps to unite scientists in the field of forensic sciences began with forensic medicine, gradually incorporating toxicology and other specialities and branches of criminalistics. The primary goals of the organisation are to hold global meetings and to unite all scientists and professionals under one idea: the advancement and innovation, development of forensic sciences, and exchange of experience and information.

The organisation itself is unique in that it does not require membership or financial contributions, yet it is dedicated to organising global events every three years. Currently, it is the largest, most important, and most influential organisation in the world of forensic sciences, bringing together thousands of specialists from dozens of specialities and many scientific fields. One of the most important tasks is to elect a president of the organisation every three years by the Presidential Council, with each president responsible for organising and holding the next world congress and implementing the organisation's policies on a global scale.

Numerous initiatives, interdisciplinary communications, humanitarian missions, and development strategies have been created. A recent example is the introduction of the Sydney Declaration in 2020, published in 2022, which provides principles and fundamental definitions for forensic science. The 24th World Congress of IAFS will be held in Sofia, Bulgaria, which, for the first time, offers incredible historical opportunities for the development of the region, as well as stimulating science and professionals throughout Eastern Europe.

Keywords: forensic sciences, forensic medicine, International Association of Forensic Sciences

DESIGN OF BIOACTIVE AND ANTI-BACTERIAL WOUND DRESSING BASED ON FREE-STANDING MULTILAYER FILMS AND ELECTROSPUN GELATIN FLEECE

Adrian Hautmann, Thomas Groth

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Introduction. Chronic wounds place a high burden on the quality of life of patients as well as the health care system. A wide selection of advanced wound dressings has been developed to treat chronic wounds. One technique interesting for wound healing applications is the layer-by-layer (LbL) method, based on the consecutive adsorption of oppositely charged polyelectrolytes (PEL) on a substrate.

Purpose. In this study, we developed a free-standing multilayer film that can be uploaded with growth factor FGF-2 and based on components with anti-bacterial and anti-inflammatory properties in combination with a gelatine fleece to promote the regeneration of the dermis.

Materials and methods. Free-standing multilayer films (FSF) were fabricated from chitosan (CHI) and alginate (ALG) using a layer-by-layer technique (LbL). Loading of fibroblast growth factor 2 (FGF2) into the films resulted in a sustained release.

In a second step, the gelatine solution was electrospun, and the resulting fleece was combined with FSF by spray coating a PEL directly on top of the fleece. The structure, layer growth and swelling properties were characterised by confocal microscopy, profilometry and nano-tomography. Additionally, cell experiments with human dermal fibroblasts (HDF) were performed to test biocompatibility, cell adhesion and proliferation and with bacteria to study anti-bacterial effects.

Results and Conclusions. Biocompatibility studies in vitro with HDF cultured underneath the films demonstrate increased cell growth and cell migration for all films with and without FGF2. The fleece and film were successfully combined with proficient bonding provided by the crosslinking of oxidised hyaluronic acid with gelatin. All composite wound dressings show no cytotoxicity and are biocompatible but have anti-bacterial effects. The proposed FSF and composite films can increase the adhesion and proliferation of HDF by the release of FGF2 and topographical cues by the electrospun fibres acting as a scaffold. This makes FSF and the composite a promising starting point for the design of a novel wound dressing.

THE ROLE OF INFECTION PREVENTION AND CONTROL TO REDUCE THE BURDEN OF AMR- CONTEMPORARY APPROACHES IN CARBAPENEM-RESISTANT ENTEROBACTERIACEAE

Rossitza Vatcheva-Dobrevska

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Antibiotic resistance of Gram-negative bacteria is a serious public health problem today globally. Every year, around 33,000 people die in Europe as a result of infections caused by multidrug-resistant (MR) microorganisms. According to ECDC, Stockholm, the prevalence of carbapenem-resistant Enterobacteriaceae (CRE) is increasing 2017-2021. In our country, 12.4% of invasive isolates of *Klebsiella pneumoniae*, resistant to carbapenems, were registered in 2017, reaching 28.1% in 2020 and rising to 46.3% in 2021. For our hospital, there were 22 CRE isolates in the period 2013-2015, and in 2023, there were 153 or 51.3% of all the *K. pneumoniae* isolates. The acquired carbapenemases confer resistance to nearly all beta-lactams; isolates also harbour resistance determinants to aminoglycosides and/or fluoroquinolones. The main types are IMP-1, KPC-1 (*Klebsiella* producing carbapenemase), GES-1; VIM-type MBL, OXA-48, NDM-1. New antimicrobials have been introduced - beta-lactam-beta-lactamase inhibitor combinations and cefiderocol in response to therapeutic needs. We briefly analyse the description, the initial approaches for the treatment of infection caused by CRE of ESCMID, and IDSA treatment guidelines. We present the main recommendations of WHO Guidelines for the prevention and control of CRE, intended to support Infection Prevention and Control (IPC). The IPC best practices are extremely important to combat AMR: they reduce the occurrence of infection by preventing bacterial transmission, lower the use of antibiotics and limit the spread of MDR microorganisms.

Keywords: IPC, carbapenems, *Klebsiella pneumoniae*, resistance

CUTTING-EDGE TECHNOLOGY FOR GENE EXPRESSION ANALYSIS IN COLORECTAL CANCER, LYMPH NODES AND METASTASES

Dragomira Nikolova, Ivanka Dimova

Medical University – Sofia

Introduction. Traditional techniques to study gene expression are microarray analysis and reverse transcription polymerase chain reaction (RT-PCR), measuring mRNA levels. The Nanostring nCounter system is a robust technology which provides direct measurement of target molecules in a highly multiplexed single reaction without any need for amplification, thus avoiding any bias.

Materials and methods. We used RNA isolated from frozen tissue samples of colorectal cancer patients. We labelled a total of 12 samples with specific barcodes for 48 genes connected to immune response, followed by hybridisation on a nCounter cartridge. The results were analysed using the nSolver 4.0 software.

Results. After selecting the reference samples, the fold-changes of the genes were measured for each sample compared to the references and figures were generated: two comparisons were performed – i) lymph nodes vs primary tumours and ii) metastases vs primary tumours. Overall, we did not find a significant difference in the expression pattern of lymph nodes vs. primary tumours. However, the expression characteristic of distant metastases showed a different variability.

Conclusion. The Nanostring nCounter system is able to multiplex expression profiles for up to 800 different genes in a single assay. It is able to detect several hundred unique transcripts in a single reaction, at the same time reducing the bias generated by other technologies. The procedure is easy and has a short turnaround time. We conclude that the Nanostring system will be successfully applied for further studies of gene expression.

Acknowledgements: This study is part of the project № D-125/29.05.2024 of SMN (Board of Medical Sciences), Medical University – Sofia and Project No BG-RRP-2.004-0004-C01.

Keywords: benefits, gene expression, nanostring technology

COMPUTATIONAL APPROACH TO THE SIMULTANEOUS INHIBITION OF THE MAS AND THE AGTR2 RECEPTORS

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The pathology of CoViD-19 is intimately related to the renin-angiotensin system (RAS). The blockade of the angiotensin-converting enzyme 2 (ACE2) by the SARS-CoV-2 virus leads to downstream consequences such as increased vascular tone, extensive fibrosis and pronounced immune reactions. Different approaches have been suggested to tackle the adverse viral effects by compensating for the lost ACE2 function. We recently proposed a phenomenological model to describe a simplified version of the biased regulation exercised by the angiotensin II and angiotensin-(1–7) hormones, which are the substrate and the product of ACE2, respectively. Based on the model, we predict that a combination of RAS modulators will most efficiently compensate for the imbalance due to excess of angiotensin II and scarcity of angiotensin-(1–7). Specifically, the simultaneous application of a MAS receptor and an AGTR2 agonist will synergise to cause anti-hypoxic, anti-fibrotic and anti-proliferative effects, improving the clinical management of acute and chronic CoViD-19. Before selecting molecules able to stimulate both receptors, we simulate the structure of the MAS receptor, which has not been crystallised. We approach this task by using homology modelling followed by molecular dynamics refinements to obtain a crystallographic quality structural model to be used in the next stages of the work.

Keywords: renin-angiotensin system; CoViD-19; computational modelling; AGTR2; MAS

NEW INNOVATIVE COMBINATION WITH MEMORY RECOVERY EFFECT IN RATS WITH ALZHEIMER'S TYPE DEMENTIA

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Alzheimer's disease manifests itself as a complex pathological condition with neuroinflammation, oxidative stress and cholinergic dysfunction being a few of the many pathological changes. Due to the complexity of the disease, current therapeutic strategies aim at a multi-targeted approach, often relying on a combination of substances with versatile and complementary effects. In the present study, a unique combination of α -lipoic acid, citicoline, extracts of leaves from olive tree and green tea, vitamin D3 and selenium was tested in scopolamine-induced Alzheimer's type dementia in rats, using behavioural and biochemical methods. Our results showed that, compared to its components, the experimental combination was the most efficient in improving short- and long-term memory as assessed by the step-through test as well as spatial memory as assessed by T-maze and Barnes maze, supported by statistically significant decreases in acetylcholinesterase activity and lipid peroxidation; increases in superoxide dismutase activity in cortex; increases in catalase and glutation peroxidase activities and BDNF and pCREB levels in hippocampus. No significant histopathological changes or blood parameter changes were detected, making the experimental combination an effective and safe candidate for a multi-targeted treatment of Alzheimer's disease.

Keywords: Alzheimer's disease, innovative combination, memory

SEX DIFFERENCES IN RENIN-ANGIOTENSIN SYSTEM

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Introduction. The renin-angiotensin system (RAS) is represented by two axes: “classical” containing AngII (angiotensin II)/ACE (angiotensin-converting enzyme), and “alternative” comprising Ang-(1-7) [angiotensin-(1-7)]/ACE2. “Classical” RAS effects are associated with vasoconstriction, aldosterone secretion, myocardial hypertrophy, fibrosis, oxidative stress, and inflammation. Counter-regulatory “alternative” RAS is involved in vasodilation and anti-fibrotic, anti-oxidant, and anti-inflammatory actions.

Objective. The present review has focused on sex differences in components and activities of RAS in physiological and pathological conditions.

Methods. We searched for studies on the topic in the currently available literature.

Results. Testosterone interacts with RAS, resulting in the activation of AT1R (angiotensin -receptors) by Ang-II. Protective responses of “alternative” RAS are greater in premenopause females – arterial pressure is lower than in age-matched men, renal and cardiovascular disease protection. ACE2 is not only an enzyme of “alternative” RAS but also a functional receptor for host cell entry of the virus that is responsible for COVID-19. The location of the ACE2 coding gene in the X chromosome and upregulation of ACE2 in females could explain lower morbidity and mortality of COVID-19 in women. Sex-specific therapeutic responses and adverse effects of RAS-blocking drugs were reviewed.

Conclusion. The existence of sex differences in RAS is to be taken into account in the evaluation of human pathology, RAS drug blockade, and new pharmacologic approaches.

Keywords: ACE2, renin-angiotensin, sex differences

AEROBIC TRAINING MITIGATES MEMORY IMPAIRMENTS BY EXERTING ANTI-INFLAMMATORY EFFECTS IN THE HIPPOCAMPUS OF A RAT MODEL OF CHRONIC NEUROINFLAMMATION

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Chronic neuroinflammation plays a crucial role in the etiopathogenesis of Alzheimer's disease, leading to severe cognitive deficits. Current pharmacological therapies are largely ineffective, underscoring the importance of prophylactic measures. This study investigates the preventive effect of aerobic training on cognition and inflammatory markers in the hippocampus of rats with lipopolysaccharide- (LPS)-induced neuroinflammation. Male, three-month-old rats were divided into three groups (n=11): controls, sedentary LPS, and exercised LPS. Prior to the eight-day LPS-induction chronic neuroinflammation, the exercised group underwent aerobic treadmill training for five weeks. At the end of the experiment, all rats underwent behavioural tests to assess working and short-term memory using the Y-maze and Object Recognition Test. The LPS model was validated using the Sucrose Preference Test. Tumor necrosis factor-alpha and interleukin-1 beta levels in the hippocampus were measured. Results show that systemic aerobic training significantly reduces impairments in working and short-term spatial recognition memory and suppresses the expression of both neuroinflammatory markers compared to the sedentary LPS group. LPS-induced anhedonia was also alleviated by systematic training. These findings suggest that aerobic training, applied before the onset of chronic neuroinflammation, can attenuate the severity of the pathological process and mitigate short-term memory impairments.

Keywords. LPS, exercise, memory, neuroinflammation, rodent

EARLY GLYCATION OF COLLAGEN ALTERS ITS CHARACTERISTICS AND INFLUENCES INTERACTION WITH MESENCHYMAL STEM CELLS

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A crucial role of mesenchymal stem cells (MSCs) in regenerating damaged tissues is remodelling the surrounding extracellular matrix (ECM), including collagen, to restore the original structure. However, non-enzymatic glycation, a common condition in diabetes, impairs collagen remodelling, leading to significant changes in the ECM and affecting MSC behaviour.

Aim. We investigated the impact of early collagen glycation in vitro on its interaction with MSCs, focusing on remodelling.

Methods. The research was conducted on rat tail collagen type I glycated with 500 mM glucose for 1-5 days. Atomic force microscopy (AFM) was used to study the molecular organisation and mechanical properties of adsorbed collagen. MSCs were cultured for 5 or 24 hours on collagen-coated surfaces, followed by fluorescence visualisation of the actin cytoskeleton (phalloidin), cell nuclei (Hoechst) and focal adhesion contacts (anti-vinculin antibody). The de-quenching effect of fluorescently labelled samples was used to measure collagen degradation in a cellular and acellular system.

Results. The findings revealed that collagen glycation has significant biological consequences due to changes in its mechanical properties and biodegradability. This effect leads to reduced efficiency of interaction with integrin receptor proteins on the cell surface, compromising the entire cell-adhesion cascade.

Conclusion. These insights could have profound implications for understanding tissue regeneration in diabetic conditions.

Keywords: collagen, early glycation, mesenchymal stem cells

THE ROLE OF SPIROMETRY AND LUNG FUNCTION TRAJECTORIES AND THEIR APPLICATION IN CLINICAL PRACTICE

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Introduction. Spirometry is the gold standard in the study of lung function as an easy, reproducible, and reliable test used in the diagnosis, monitoring, and prognosis of respiratory diseases. The latest studies suggest that lung function follows trajectories starting from early childhood and continuing into late adulthood.

Objectives. We aimed to indicate the main characteristics of the lung function trajectories and the role of spirometry as a predictor in clinical practice.

Results. The lung function trajectories include three main phases. They follow an almost constant course from early childhood to adulthood and can be influenced by various detrimental factors. Below-average trajectories are associated with the risk of other diseases – cardiovascular, metabolic, etc., but there is still no unified concept of how to apply these data in practice. Spirometry may be a predictor, and the identification of low lung parameters includes early assessment opportunities, additional tests, and a personalised approach to prevention and treatment.

Conclusion. The lung function trajectories started in childhood may reveal the pathogenetic mechanisms of abnormal lung function during adulthood. Spirometry provides information on key indicators and is a valuable predictor of respiratory and other non-communicable diseases. The detection of early disorders in lung functions indicates opportunities for timely prevention and treatment.

Keywords: clinical practice, lung function trajectories, spirometry

STIGMATISING ATTITUDES TOWARD MENTAL HEALTH CONDITIONS AMONG MEDICAL STUDENTS IN FIVE SOUTH-EASTERN EUROPEAN COUNTRIES

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Objective. Mental illnesses rank among the most stigmatised health conditions, with prejudiced attitudes evident even among healthcare professionals. Our study sought to evaluate the attitudes of medical students toward individuals with mental health conditions across five medical schools in Eastern Europe.

Methods. The first phase of the study included first-year and final-year medical students, while the second phase included only final-year students. Two questionnaires were used: the Mental Illness Clinicians' Attitude Scale (MICA-2) and the Attribution Questionnaire (AQ-9).

Results. The mean AQ-9 score for first-year students in the first phase was 35.2, and for final-year students in the second phase, it was 34.2. The average MICA-2 score across all countries for first-year students in the first phase was 50.6, and for final-year students in the second phase, it was 47.1

Keywords: disorders, medical, mental, stigmatisation, students

USING DATA FROM MAGNETIC-RESONANCE IMAGING AS A TOOL FOR DIFFERENTIAL DIAGNOSIS OF POSTPARTUM SACROILIITIS AND AXIAL SPONDYLOARTHRITIS

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This report explores the use of MRI imaging to distinguish between two conditions: postpartum sacroiliitis and axial spondyloarthritis in women experiencing gluteal pain. The study discovered significant differences in MRI results between the two conditions, such as the presence of bone marrow oedema and erosions. While specific characteristics like fatty tissue in the bone marrow, bone replacement, and ankylosis were observed in axial spondyloarthritis but not in the postpartum group, bone marrow oedema in the sacroiliac joints, caused by prolonged mechanical stress during pregnancy, was found in 63.3% of cases. In comparison, the percentage in the axial spondyloarthritis group was 86.7%. This oedema can imitate sacroiliitis seen in axial spondyloarthritis. These findings emphasise the importance of using MRI for early and accurate diagnosis, as well as for guiding effective treatment approaches for axial spondyloarthritis. By utilising MRI technology, healthcare professionals can more effectively differentiate between postpartum sacroiliitis and axial spondyloarthritis, which ultimately leads to better patient outcomes and management of the two conditions

Keywords: MRI, postpartum, sacroiliitis, spondyloarthritis

TISSUE ENGINEERING OF HYALINE CARTILAGE THROUGH 3D BIOPRINTING: A PILOT STUDY

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The technologies for 3D bioprinting enable the development of in vitro models that can accelerate the processes of hyaline cartilage tissue engineering for the needs of regenerative medicine and the treatment of diseases such as osteoarthritis.

This pilot study aims to test and validate protocols for the 3D bioprinting of chondrocytes and mesenchymal stem cells from adipose tissue, which hold the potential for chondrogenesis, with bio-inks based on type I collagen, which is a major component of the extracellular matrix in differentiating cartilage tissue.

Materials and methods. We used established cell lines, novel collagen hydrogels, BioX extrusion bioprinter (Celink, Sweden), and standard histomorphological analysis methods.

Biocompatibility evaluation of the collagen hydrogels used in the study showed excellent cell viability (>95%) over 3 weeks after bioprinting. Histomorphological analyses of the resulting constructs demonstrated the formation of cartilaginous lacunae and positive staining for proteoglycans with alcian blue and for type II collagen by immunohistochemistry. In conclusion, 3D bioprinting with bio-inks containing type I collagen provides the necessary environment and spatial arrangement for chondrocytes and at least for a portion of mesenchymal cells to adopt typical cartilage cell morphology and 3D organisation resembling the natural architecture of hyaline cartilage.

Keywords: 3D bioprinting, cartilage, collagen bio-inks

SEQUENCE TYPING-BASED ANALYSIS OF MORAXELLA CATARRHALIS STRAINS ISOLATED FROM PATIENTS WITH RESPIRATORY DISEASES

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Background. *Moraxella catarrhalis* is commonly found in the respiratory tract of young children and can lead to otitis media, bronchitis, sinusitis, and laryngitis. Elderly patients are endangered by complications of chronic obstructive pulmonary disease and bronchopneumonia.

Materials and methods. We collected *M. catarrhalis* strains from nasal swabs and sputum samples of patients ranging from 1 month to 74 years of age. Serotyping, antimicrobial susceptibility testing, and multilocus sequence typing (MLST) for 50 of the collected strains were performed.

Results. The *M. catarrhalis* isolates were obtained from 37 children and 13 adults with rhinopharyngitis, rhinosinusitis, bronchitis, and COPD. The majority of the strains belonged to serotype A (87%). Susceptibility testing revealed 79% antimicrobial susceptibility to all tested antibiotics. Our MLST analysis identified 31 different sequence types (STs) among the studied population. We detected five primary founders belonging to clonal complex (CC) CC224, CC435, CC195, ST390 and CC1022. Notably, CC224 was predominantly found in elderly patients with COPD and is one of the globally spread *M. catarrhalis* clones, particularly prevalent in Asia. CCN1022 and CC435 were prevalent in young patients with rhinopharyngitis.

Conclusion. Further research is essential to gain a comprehensive understanding of the genetic lineages and virulence potential of *M. catarrhalis*.

Keywords: *M. catarrhalis*, respiratory diseases, sequencing

FIVE-YEAR REVIEW OF SPECIES DISTRIBUTION AND EPIDEMIOLOGICAL PROFILE OF VANCOMYCIN-RESISTANT ENTEROCOCCI ISOLATED IN A UNIVERSITY HOSPITAL IN PLEVEN, BULGARIA

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Introduction. Vancomycin-resistant enterococci (VRE) are well-known causative agents of various serious infections. We aimed to study the species distribution and epidemiological profile of VRE over a five-year period.

Materials and methods. The study was conducted retrospectively at Dr G. Stranski University Hospital – Pleven, and all enterococci isolated from January 2016 to December 2020 were evaluated. The demographic and clinical risk factors of 85 patients with VR *E. faecium* were studied. The statistical analysis was performed using SPSS 27.0.

Results. A total of 3134 enterococci were detected, and 94 (3%) of them were VRE. Predominant VRE species was *E. faecium* (n=85). A total of 65 (76.5%) *E. faecium* were isolated from the Intensive care units (ICUs) and the Departments of Surgery. A statistically significant difference was found in patients over 60 years treated in the ICUs and the surgery clinics compared to those in the other departments (p=0.005) between the positive wound swabs and other samples (p=0.003), as well as between positive urine samples and other samples (p=0.008).

Conclusion. The frequency of VRE was 3%, and the prevalence of *E. faecium* was high. This species circulated mainly in the ICUs and their adjacent surgery wards. Most affected were the patients over 60 years.

Keywords: care unit, enterococci, intensive, risk factors, surgery, vancomycin-resistant

ASSOCIATION OF THE ADIPONECTIN RS266729 POLYMORPHISM AND OBESITY IN THE NORTH BULGARIAN POPULATION

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Introduction. The alarming surge in obesity rates represents a critical health concern in developed nations. Obesity is associated with a number of health problems that are often summarised together as metabolic syndrome. One category of causes is different genetic factors, and among them, the adiponectin gene (AdipoQ) is frequently associated with them. Recent studies have recognised that obesity ($BMI \geq 25 \text{ kg/m}^2$) has a strong impact on adipokine secretion and insulin resistance.

Aim. This study aimed to investigate the frequency of AdipoQ rs266729 SNP in obese and non-obese northern Bulgarians.

Materials and methods. We studied 157 subjects selected by random sampling from hospitals in northern Bulgaria. Overweight and obesity were defined as a $BMI \geq 25 \text{ kg/m}^2$ and $BMI \geq 30 \text{ kg/m}^2$, respectively, based on criteria of the World Health Organization. Genomic DNA was isolated from peripheral blood leucocytes. Genotyping of AdipoQ rs266729 SNP was carried out using PCR-RFLP assay.

Results. The results showed that adiponectin gene AdipoQ polymorphism rs266729 (homozygous GG and heterozygous CG genotypes) was significantly associated with the obese group, and the frequency of G allele was higher in these subjects.

Conclusion. In conclusion, this study showed that the AdipoQ rs266729 polymorphism in North Bulgarian subjects was associated with obesity.

Keywords: adiponectin, allele frequency, genotype obesity

PROSTATE CANCER STEM-LIKE PHENOTYPE PROMOTES RNA HALF-LIFE CHANGES, AND NOVEL LONG NON-CODING RNAs AND NON-CANONICAL MHC EXPRESSION TO EVADE IMMUNE SURVEILLANCE – IN SEARCH OF NEW GENE SILENCING THERAPEUTIC TARGETS

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In prostate cancer, one of the most frequent male malignancies, progress to poor prognosis castration-resistant metastatic cancer is closely associated with the acquisition of stem-like properties leading to increased therapeutic resistance. CD44 is linked to cancer stem cell properties, including enhanced tumorigenicity and metastatic potential. CD24 plays a role in cell proliferation and immune evasion, with its overexpression correlating with poor prognosis and increased metastatic behaviour.

This study aimed to define the epi-transcriptome associated with the prostate cancer stem-like phenotype for potential therapeutic targeting to prevent immune surveillance evasion.

We generated prostate cancer stem-like enriched cellular subpopulations under serum-free, low-binding conditions, promoting spheroid formation from the ATCC PC3 cell line. We immuno-phenotyped and sorted subsequently both subpopulations CD44+CD24+ and CD44+CD24- that become enriched with the adhesive wild type, following our stem-like enrichment protocol, using monoclonal anti-CD44-FITC, CD24-PE antibodies. Long-read nanopore direct RNA sequencing was conducted on sorted spheroids employing a modified library preparation protocol to detect both mRNA and non-poly-A long non-coding RNAs(lncRNA). This sequencing approach provided insights into the mRNA and lncRNA profiles that may facilitate immune evasion in both stem-like subpopulations, highlighting potential targets for improving immunotherapeutic strategies in prostate cancer.

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Keywords: castration-resistant metastatic cancer; prostate cancer stem-like phenotype; epi-transcriptome; long-read nanopore direct RNA sequencing

MAMMATYPER: A NOVEL TOOL IN BREAST CANCER MOLECULAR SUBTYPING

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Introduction. Breast cancer molecular subtyping is usually based on immunohistochemical (IHC) analysis of the expression of ER, PR, HER2 and Ki67. Current data regarding the role of multigene tests in molecular subtyping and their correlation with IHC is scarce. MammaTyper is a novel in vitro diagnostic RT-qPCR test for determining mRNA expression levels of the genes ESR1, PGR, ERBB2 and MKI67 in human breast cancer tissue. The biomarker results provide a more precise assessment of breast cancer subtypes and support the selection of an appropriate treatment strategy for each patient.

Aim. This study aimed to evaluate the role of the MammaTyper assay in breast cancer molecular subtyping.

Materials and Methods. The literature on the use of MammaTyper in breast cancer subtyping was reviewed. Original research data is also presented.

Results. MammaTyper provides a quantitative assessment of ER, PR, HER2, and Ki67 mRNA expression levels on routinely collected FFPE material. It is an objective, sensitive, and precise assay that determines the upregulation of genes using standard RT-qPCR equipment. The MammaTyper assay offers an alternative approach to IHC, which is a subjective test and may show inter-observer and inter-laboratory variability for some measures. It can also provide additional information about luminal B-like tumour subtypes, usually inaccessible via IHC on luminal B-like tumour subtypes. Results of the MammaTyper assay can be used to guide treatment decisions according to established St. Gallen guidelines.

Conclusion. The MammaTyper results ensure the precise determination of breast cancer molecular subtypes and provide guidance for treatment decisions of breast cancer patients.

Keywords: breast cancer, MammaTyper, molecular subtyping

PERSONALISED MEDICINE: RESEARCH AND INSIGHTS

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Introduction. Genetics is one of the fastest-growing scientific fields. In medicine, genetics is playing an increasingly important role in the diagnosis, treatment and prevention of both genetically determined and genetically predisposed diseases such as cancer, schizophrenia, Alzheimer's disease, cardiovascular disease, diabetes and others. Advances in genetics and new methods of genetic analysis have given rise to a new direction in medicine - personalised medicine.

Objective. We present some interesting clinical cases from the works of researchers at the Laboratory of Genomic Medicine and Precision Pathology at the Leonardo da Vinci Center of Excellence. The laboratory was established at MU-Pleven in the framework of the European project BG05M2P001-1.002-0010.

Materials and methods. For the period from the beginning of 2018 to the end of 2023, more than 1000 people and more than 500 tumours were examined in the laboratory. Genetic studies were carried out using the next-generation sequencing method.

Results and conclusions. The advancement of new genome sequencing technologies helps to better elucidate the aetiology of both monogenic diseases and diseases with hereditary predispositions. Personalised medicine involves the use of sequencing-derived information (about the specific biological characteristics of an individual and their disease) to optimise the diagnosis, monitoring and treatment of a particular patient's disease or condition.

Keywords: genome, medicine, NGS, personalised

HEREDITARY BREAST CANCER: PROFILE OF GERMLINE MUTATIONS BY AGE AT DIAGNOSIS

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Introduction. The advent of new genomic technology - Next Generation Sequencing (NGS) - has led to an expansion of knowledge and the introduction of new tests related to the genetic spectrum of predisposition to oncologic diseases. Genomic studies have enabled the identification of both new predisposition genes and new pathogenic variants (mutations) in already-known genes.

Objective. We present the results of a study on genetic predisposition in women with breast cancer in relation to age at diagnosis. The studies were conducted in the Laboratory of Genomic Medicine and Precision Pathology of the “Leonardo da Vinci” Competence Center within the European project BG05M2P001-1.002-0010.

Materials and methods. A total of 203 women with breast cancer were analysed using an NGS panel containing 94 cancer predisposition genes.

Results. Patients were categorised into the following six age groups: under 29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, and over 70 years. In the age groups under 29 years, between 30-39 years and 40-49 years, the most frequently affected genes were the highly penetrant BRCA1 and 2, while in the groups after 40 years, the moderately penetrant genes (most frequently CHEK2 variants) were more frequently affected.

Conclusion. The use of panels with a larger number of cancer predisposition genes in genomic testing expands the possibilities for discovering the genetic determinants associated with the disease. Also, the description of the newly discovered pathogenic variants enriches the scientific database related to this pathology.

Keywords: age, breast cancer, NGS

CARRIER SCREENING: A PILOT STUDY AMONGST A BULGARIAN POPULATION

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Carrier screening is testing of healthy individuals to find genetic variants that are associated with recessive single gene disorders. It allows the identification of at-risk couples, with both partners being carriers for variants in the same gene. The latter determines a 25% risk for an affected offspring.

We present results from a pilot study of preproduction carrier screening for recessive single gene disorders, including 100 individuals (with no personal or family history for genetic pathology) from 50 couples of Bulgarian origin.

All individuals were tested via next-generation sequencing (NGS) using TruSight One Expanded (6699 genes).

In 96 of the tested individuals, there was a total of 339 variants in 229 genes. The approximate number of variants within an individual was found to be 3.39. The most commonly affected genes were ABCA4 – 16 carriers, MPO – 8, JGB2 – 7, BTB – 6, and CYP21A2 – 6. Out of all 339 variants, 73 (22%) were novel ones. In 2 of the couples (4%), both partners were found to be carriers for variants in the same gene. Due to the risks for an affected offspring, genetic prevention for their future pregnancies was recommended.

Carrier screening is an effective prevention method in terms of recessive single-gene disorders.

Keywords: carrier screening, genetic prevention, NGS, recessive, genetic variants

THE ROLE OF COMPREHENSIVE GENOMIC PROFILING IN THE MANAGEMENT OF PATIENTS WITH LUNG CANCER

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Introduction. Lung cancer is the second most commonly diagnosed malignancy worldwide and a leading cause of cancer mortality. The disease can be broadly divided into two types based on histology: non-small cell lung cancer (NSCLC) and small-cell lung cancer (SCLC). Tumours can be further characterised based on the presence of certain genetic mutations that are known to predict disease biology, treatment, and outcomes. Comprehensive genomic profiling (CGP) is a next-generation sequencing (NGS)-based approach that enables simultaneous detection of multiple oncology biomarkers in a single assay that can identify actionable biomarkers to help optimise treatment.

Aim. This presentation aims to review the advantages of CGP over targeted panel testing in lung cancer.

Materials and Methods. The literature on CGP and its clinical application for the management of patients with lung cancer was reviewed.

Results. CGP assesses hundreds of genes for relevant mutations and biomarkers in a single assay. It can detect genomic signatures such as tumour mutational burden (TMB), microsatellite instability (MSI), and loss of heterozygosity (LOH), thereby maximising the potential to identify actionable alterations that can guide targeted therapy. By assessing different molecular aberrations in a single assay, CGP reduces the need for rebiopsying and sequential testing, thus limiting the loss of precious tissue material. A comprehensive screening of a wide range of mutations that are tissue agnostic can help to obtain a better understanding of disease progression and provide a more personalised approach to treatment. CGP can be used to match patients with existing clinical trials and to select eligible participants for future clinical studies.

Conclusion. CGP-driven treatment strategies in advanced NSCLC, coupled with other available clinical information, can optimise personalised treatment.

Keywords: cancer, comprehensive genomic profiling, lung, targeted therapy

SUCCESS OF PERFORMING THE TECHNIQUE OF FORCED OSCILLATIONS (FOT) IN THE DIAGNOSIS OF SMALL AIRWAY DISEASE IN CHILDREN

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The diagnosis of respiratory diseases in children has always been a great challenge. The gold standard in the diagnosis of airway obstruction is spirometry, but it requires effort and is difficult to perform, especially in children. In recent years, FOT (forced oscillation technique) has been gaining popularity because of its easy and quick implementation and high sensitivity.

The purpose of this study is to show the success rate of the method in different age groups of children.

We examined 43 children aged between 3 - 17 years with the RESMON PRO device. Each patient was required to complete 3 successful trials. The children were divided into three age groups as follows: Group 1: under 6 years (13 patients), Group 2: 7-12 years (21 patients), Group 3: 12-17 years (9 patients). In groups two and three, we observed a study success rate equal to 100%. In group 1, the success rate was close to 85%. The difficulty in performing the examination was mostly in children under 4 years of age, as they must feel comfortable and not intimidated, which is not always possible, even in the presence of a parent. Two children (at the age of 3) failed the study, one due to crying out of fear and one due to laughing. The child's laughter was mainly caused by the oscillations, which created a tickling sensation in the child's oral cavity and chest.

The technique of forced oscillations is an extremely effective and informative method in the diagnosis of obstructive diseases, even at a young age of less than 6 years.

Keywords: children, forced oscillation technique, obstructive lung diseases

TREATMENT OF PC3 PROSTATE CANCER CELL LINE WITH CLASSICAL AND NON-CLASSICAL COMPOUND COMBINATIONS

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Prostate cancer is one of the main causes of death among men. Our study focuses on seeking new compounds and combinations to reduce the severe side effects of classical anticancer drugs for treating this type of cancer. Regarding this, we studied and compared the classical anticancer drug docetaxel and non-classical compounds, Au porphyrin and the lectin jacalin plant, in different combinations on the prostate cancer cell line PC3. Jacalin specifically recognises the tumour-associated Thomsen–Friedenreich antigen.

The present investigation reveals the interaction of jacalin with Au porphyrin. From the titration curve, we calculated the affinity of 1.8 ± 0.39 μM for the jacalin-Au porphyrin complex.

In vitro experiments with PC3 cells, treated with docetaxel, Au porphyrin, jacalin, and combinations indicated a decrease in cell viability, compared with the jacalin-Au porphyrin complex, as registered by viability assays. Interestingly, we found that the jacalin-Au porphyrin complex is more cytotoxic, reaching cell viability of 34%, than the docetaxel-Au-porphyrin complex (with cell viability above 50%).

Our results demonstrate the effects of the three compounds as well as the impact of their combinations on the treatment of PC3 cells. Interestingly, low concentrations of the plant lectin jacalin (3 μM) facilitated the cell cytotoxicity of Au-porphyrin, showing new perspectives in cancer treatment.

Keywords: Au porphyrin, complex, docetaxel, jacalin, prostate cancer

BIOENERGETIC CHANGES IN PATIENTS WITH ISCHEMIC BRAIN STROKE – A PILOT STUDY

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Introduction. Stroke is the second leading cause of death worldwide and accounts for 55% of all neurological disabilities. These statistics call for focused scientific and clinical research on the prevention, early diagnosis and prognosis of ischemic stroke (IS).

Aim: The study aimed to identify changes in cellular bioenergetics in IS patients before and after therapy and compare them with a cohort of healthy controls.

Materials and methods. Peripheral blood mononuclear cells (PBMCs) were isolated from IS patients (n=9) before and after therapy and from healthy controls (n=9). The severity of neurological symptoms was assessed using the NIHSS Stroke Scale, and the level of consciousness was measured using the Glasgow-Liège Coma Scale (GLCS). Metabolic studies of PBMCs were performed using a Seahorse XFp analyser.

Results. The data showed that pre-therapy IS patients had significantly impaired mitochondrial function and reduced spare respiratory capacity compared to the control group. The indicator increased significantly after therapy. In patients examined 14 days after the treatment, an increase in ATP production was found, which is evidence of improved mitochondrial activity.

Conclusion. Assessment of mitochondrial dysfunction and bioenergetic changes in IS are reliable indicators for further assessment of disease severity and prognosis.

Keywords: ischemic stroke, mitochondria, respiration

APPLICATION OF ELISA FOR THE DETECTION OF CRYPTOSPORIDIUM SPP. OOCYSTS IN HUMAN AND ANIMAL SAMPLES

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Cryptosporidiosis is a zoonanthroponotic protozoonosis that can present asymptotically or as acute gastroenteritis. The WHO considers it to be an opportunistic parasitosis—an indication of AIDS. *Cryptosporidium parvum* is included in the group of bioterrorism agents. In Bulgaria, the disease was first observed in calves with chronic diarrhoea in 1984. It has been known since the 1980s that species of the genus *Cryptosporidium* frequently cause infections in humans.

The aim was to evaluate the diagnostic value of the ELISA for detecting *Cryptosporidium* coproantigens in the study of target groups (according to clinical and/or epidemiological indications) in Pleven and the Pleven region.

Results. Of the 1051 (92.8%) ELISA-negative samples analysed per person, 507 (92.7%) were from females, and 544 (92.8%) were from males. A total of 82 (7.2%) samples were positive for cryptosporidiosis, of which 40 (7.3%) were from females and 42 (7.2%) were from males. Of the 1051 (92.8%) ELISA-negative samples analysed, 827 (93.2%) were from persons of Bulgarian origin, 47 (100.0%) from persons of Turkish origin, and 177 (88.9%) from persons of Roma origin. The positive rates for cryptosporidiosis were 60 (6.8%) in persons of Bulgarian origin and 22 (11.1%) in persons of Roma origin. No positive samples were found in persons of Turkish ethnicity. By ELISA, negative results were obtained in a total of 1051 (92.8%) samples, of which 688 (94.2%) were from persons living in urban areas and 363 (90.1%) from persons living in rural areas. There were 42 (5.8%) positive samples in the urban population and 40 (9.9%) in the rural population. The total number of positive samples was 82 (7.2%).

Keywords: *Cryptosporidium* spp, oocysts, ELISA, Pleven

ASSOCIATION BETWEEN OXIDATIVE STRESS MARKERS AND GENETIC DISORDERS IN CHRONIC LYMPHOCYTIC LEUKEMIA

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Introduction. Despite medical advances, chronic lymphocytic leukaemia (CLL) remains an incurable disease.

Aim. Investigating the potential role of cytogenetic profile on oxidative stress (OS) biomarker levels in patients with CLL.

Methods. A review of current scientific literature published in peer-reviewed indexed and refereed journals in English was performed by searching the MedLine, Scopus, PubMed and Google Scholar databases.

Results. Analysis of published data shows that peripheral blood glutathione peroxidase (GPx) activity is increased in patients with deletion of chromosome 13 (del(13q)). Higher serum malondialdehyde (MDA) levels have been reported in patients with del(17p13.1) and del(11q) compared to those with del(13q). Elevated levels of MDA and 8-isoprostanes were recorded in lymphocytes and urine of CLL patients who had a deletion in the ataxia telangiectasia gene. The serum concentration of carbonyl groups correlated with CD38 and ZAP70 expression. CLL patients have higher levels of AOPPs, AGEs, and S-nitrosylation than healthy individuals. However, no data have been published on the relationship between these biomarkers and IgVH gene mutagenic status, CD38 and ZAP70 expression.

Conclusion. The limited knowledge of the cytogenetic profile and OS-biomarkers in CLL is expected to stimulate further research. The identification of reliable OS biomarkers may help improve the prognostic value of routine laboratory tests and personalise the treatment of CLL patients.

Keywords: chronic lymphocytic leukaemia, oxidative stress, cytogenetic anomalies

IMPLICATIONS FOR SERTOLI CELL FATE ON MALE FERTILITY

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Recent advancements in assisted reproduction techniques have highlighted an increasing percentage of “male factor” infertility among couples facing reproductive challenges. The underlying causes of male infertility can be attributed to mechanical damage, infectious diseases, or unknown factors. Sertoli cells, through their tight junctions, contribute to the formation of the blood-testis barrier, creating an immune-privileged environment that ensures the normal development of a spermatogenesis niche through complex hormonal regulation. The presence of both pyroptotic and apoptotic caspases and the potential release of inflammatory cytokines due to prolonged inflammation can disrupt spermatogenesis. Activating the apoptotic pathway is a preferable cell death mechanism as it is not detrimental to neighbouring cells. However, intense pro-inflammatory signalling could activate Gasdermin-mediated pyroptosis, which physiologically promotes pathogen clearance and helps restore homeostasis but, when dysregulated, could potentially lead to blood-testis barrier perturbation involving surrounding immune cells. Autoimmune reactions against germ cells could be a potential cause of infertility.

It is crucial to analyse the types of cell death resulting from the activation of pro-apoptotic and pro-pyroptotic caspases, their interconnections, and their activation pathways. Our study found that activation of the pyroptotic inflammasome signalling pathway can switch to the less destructive apoptotic pathway of programmed cell death through the direct activation of caspase-3 by caspase-1 via an Nlrp3/Asc-dependent mechanism. Additionally, a reverse regulatory mechanism protects Sertoli cells from the activities of caspase-1 and caspase-3, mediated by the effector molecule GSDMD.

Keywords: male infertility, reproductive, Sertoli cells

Supported by: The Bulgarian Ministry of Education and Science Project “Research Infrastructure for Cell Technologies in Biomedicine” (INFRAACT Grant No. #178/2022 and #361/2023) of the National Roadmap for RI.

ENHANCING ACID SPHINGOMYELINASE DETECTION IN BLOOD SAMPLES OF PATIENTS WITH NEURODEGENERATIVE DISEASES

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Introduction. The enzyme acid sphingomyelinase (aSMase) catalyses the hydrolytic degradation of sphingomyelin to ceramide and phospho-choline with an optimal pH=5. It is localised in the lysosomes of oligodendrocytes and Schwann cells of the CNS and peripheral nervous system. A pathologic increase in aSMase activity can be caused by tumour necrosis factor / TNF α /, cytochemical stress-mediated responses, vaccines, viruses, etc. Heat-shock proteins /HSP/ and autoimmune diseases also increase the activity of sphingomyelinase, releasing free ceramide, which induces cell death. Further research on acid sphingomyelinases in neurodegenerative diseases such as Multiple Sclerosis and Parkinson's disease can shed light on its role in pathology.

Objective. To increase the sensitivity of an existing colorimetric method for measuring acid sphingomyelinase activity in blood serum.

Materials and methods. A pilot study for Bulgaria of acid sphingomyelinase in blood serum was conducted on 12 patients with multiple sclerosis, as well as a control group of 12 healthy volunteers. An enzymatic colorimetric kit, Abcam - ab252889q, was used.

Results. The established optimal analytical parameters were preincubation at 37^o C for 1 h and 30 min, incubation after termination of enzyme activity for 1 h and 30 min, and development of secondary standards with additional dilutions. For the control group, the detected enzyme activity of acid sphingomyelinase was 0.535 mU/mL, and for the multiple sclerosis patients studied, it was 0.401 mU/mL. **Conclusion.** Changes in the incubation time increase the sensitivity of the colorimetric method for acid sphingomyelinase in blood serum.

Keywords: acid, colorimetric test sphingomyelinase, multiple sclerosis

CONTEMPORARY CONCEPTION AND CURRENT ASPECTS IN THE SYSTEMIC REGULATION OF IRON HOMEOSTASIS

Tsvetelina Petkova-Marinova, Boryana Ruseva

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Introduction. Iron is an essential trace element for humans. In the body, its role is dual. On the one hand, it participates in vital processes. On the other hand, free iron ions are involved in reactions leading to the formation of reactive oxygen species.

The study aimed to examine the contemporary conception and current aspects of the systemic regulation of iron homeostasis by a review of the scientific literature.

Materials and methods. Information was obtained from the databases Google Scholar and PubMed for the last 10 years using the keywords: “hepcidin”, “iron homeostasis”, “iron deficiency”, and “iron overload”.

Results. The peptide hormone hepcidin plays a leading role in the regulation of iron homeostasis. Mutations in the gene *TMPRSS6*, encoding the transmembrane serine protease S6, are characterised by increased hepcidin levels and the development of iron-refractory iron deficiency anaemia. In diseases with coexisting iron overload and activated but ineffective erythropoiesis, hepcidin levels are decreased, contributing to iron overload.

Conclusion. The study of the mechanisms involved in the systemic regulation of iron homeostasis will enable the accurate diagnosis of disorders in iron metabolism, as well as the application of new therapeutic agents.

Keywords: hepcidin, iron homeostasis, iron deficiency, iron overload

IMMUNOPATHOGENETIC APPROACHES TO THE TREATMENT OF INFLAMMATORY BOWEL DISEASE

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Inflammatory bowel disease (IBD) is a chronic and long-life disease that includes two clinical manifestations – ulcerative colitis (UC) and Crohn’s disease (CD). Environmental, genetic, microbial and immunological factors are known to underlie IBD. However, a full understanding of IBD pathogenesis is unclear.

In this literature review, we explained the mechanisms by which the intestinal immune system operates in the development of IBD with a focus on developing IBD immunotherapy.

The intestinal immune system is formed by intestinal epithelial cells, intestinal immune cells and microbiota. Innate immune cells (macrophages, dendritic cells, neutrophils, natural killers, and innate lymphoid cells) constitute the first line of defence. Adaptive immunity with key player T cells is characterised by high specificity and slower response time to pathogens. Numerous cytokines and chemokines with proinflammatory effect (TNF, IL-22, IL-6, IL-12/IL-23, IL-17, IL β /IL-18), and anti-inflammatory or pleiotropic effect (IL-10, IL-22) are produced by immune mucosal cells. The balance between them regulates mucosal inflammation. Biologics are drugs that target specific molecules in the inflammatory pathway: TNF (Infliximab, Adalimumab); IL12/23 (Ustekinumab, Mirikizumab); JAKs, integrins, etc. These drugs have fundamentally changed the treatment of IBD.

Perspectives in disease-modifying therapy are related to the development of biologics and the investigation of natural remedies (ethnopharmacology).

Keywords: biologics, immunity, inflammatory bowel disease

ERYTHROCYTES AND BLOOD MICROBIOME

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The erythrocyte microbiome is an important indicator of blood. Recent research shows that in SARS-CoV-2 patients, the genetics and dynamics of erythrocytes are affected, resulting in significant changes in erythrocyte dynamics, leading to multiple organ damage. Indirect evidence from radiometric studies also proves the existence of living microbial forms in erythrocytes. In our research, we examined uncultured and cultured blood samples from clinically healthy volunteers under stress conditions. We found that the microbiota freely circulating in the blood possess a well-formed cell wall and reproduce by budding or by a cell wall shedding mechanism. Blood microbiota cultured under stress conditions (43°C for 24 h) proliferate as microbial cells without a cell wall, forming electron-dense or electron-bright bodies. Electron-dense bodies reproduce by fission, by the formation of Gram-negative daughter cells, or by enlargement to rupture with the release of daughter bodies. We also demonstrated that the blood microbiome includes a significant diversity of bacterial and fungal species. In conclusion, our results and the high biodiversity of blood-inhabiting eukaryotic and prokaryotic microbiota suggest different mechanisms of propagation under in vivo and in vitro culture conditions. Acknowledgements: The authors express their gratitude to the Bulgarian Scientific Fund for financial support under contract KII-06-H73/5/2023. **Keywords:** blood, erythrocytes, microbiome

DIABETES-RELATED ALTERNATIONS IN THE ENTERIC NERVOUS SYSTEM

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Introduction. Diabetes is a global epidemic that, due to its increasing prevalence, will likely become the most common disturbing health condition. Diabetes affects almost every part of the gastrointestinal system. The enteric nervous system (ENS) is a neuronal network localised all along the gastrointestinal tract and composed of two main cell types: neurons and glial cells (EGC). The ENS controls motility, blood flow, uptake of nutrients, secretion, and immunological and inflammatory processes in the gut.

Aim. This study aimed to examine the expression of the glial marker S100 in the wall of the intestinal tract in Streptozotocin (STZ)-diabetic and control rats.

Material and methods. Adult Wistar rats were divided into two groups: STZ-induced diabetics and controls. Studies were carried out at 30 days of STZ injection. Intestinal glial expression patterns were evaluated by immunohistochemistry for S100 protein.

Results. The expression of S100 in the ganglionic plexuses was immunohistochemically detected. There was no significant difference between the S100 expression in the diabetic and control groups at the time of the experiment.

Conclusion. EGC represent an extensive but relatively poorly described population within the gastrointestinal wall. Understanding the key role that glial cells play in the pathogenesis underlying enteric neuropathy in diabetes will provide new therapeutic strategies.

Keywords: diabetes, glial cells, enteric neurons, gastrointestinal motility, S100

NONINVASIVE HEMODYNAMIC MONITORING AND PULSE WAVE ANALYSIS IN PATIENTS WITH ARTERIAL HYPERTENSION AND TYPE 2 DIABETES MELLITUS WITH AND WITHOUT HYPERTRIGLYCERIDEMIA

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Introduction. The importance of hypertriglyceridemia as a risk factor for the development of atherosclerosis is controversial. Cardiology guidelines do not define triglycerides as a therapeutic target, but according to the recommendations of the European and Bulgarian Society of Endocrinology, diabetics with high triglycerides have a higher cardiovascular risk.

Objective. To determine the influence of triglycerides on reflected pulse wave parameters in patients with known type 2 diabetes mellitus (DM) and newly diagnosed arterial hypertension (AH).

Materials and methods. One hundred eight diabetics with newly discovered arterial hypertension and without clinically manifested atherosclerosis were divided into two groups according to the levels of triglycerides. Arterial tonometry of the brachial artery was performed in all patients. By using a transfer function, intra-aortic pressure was calculated, and intra-aortic time-pressure curves were traced during 5 consecutive cardiac cycles so we could calculate reflected pulse wave parameters and subendocardial viability ratio (markers of subclinical atherosclerosis).

Results. Patients with DM and AH in both groups had significantly higher values of augmentation pressure and augmentation index and lower subendocardial vitality compared to the healthy population and compared to patients with arterial hypertension. Patients in the hypertriglyceridemia group have statistically significantly higher reflected pulse wave indices and lower subendocardial viability ratios.

Conclusions. Patients with DM and AH have increased arterial stiffness and increased cardiovascular risk if triglyceride levels are uncontrolled.

Keywords: arterial hypertension, arterial tonometry, diabetes mellitus, hypertriglyceridemia

NON-ALCOHOLIC FATTY LIVER DISEASE IN PATIENTS WITH ARTERIAL HYPERTENSION

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Introduction. There is a bidirectional relationship between non-alcoholic fatty liver disease (NAFLD) and arterial hypertension (AH). This relationship is due to similar risk factors and common pathogenetic moments such as visceral obesity, insulin resistance, chronic inflammation and others. While there are a number of screening programs for the detection of arterial hypertension, NAFLD often remains in the shadows.

Objective. To determine the NAFLD prevalence in AH patients

Materials and methods. Two hundred patients with arterial hypertension were screened for CKD by determining the fatty liver index. In addition, a NOMA index was determined, and ECG recordings and 24-hour ECG Holter monitoring were performed to detect silent ischemia.

Results: NAFLD occurred more often in men with arterial hypertension under 50 years of age and with a similar frequency in both sexes in hypertensive patients over 50 years of age: 93% of hypertensives with non-alcoholic fatty liver disease and 8% of those without it suffer from insulin resistance. Disturbances in the lipid profile and silent and clinically manifested ischemia occurred significantly more often in hypertensive patients with NAFLD.

Conclusions. Non-alcoholic fatty liver disease occurs frequently in patients with arterial hypertension and increases the risk of developing diabetes mellitus, atherosclerosis, and ischemic heart disease.

Keywords: arterial hypertension, non-alcoholic fatty liver disease, ischemic heart disease

LEVERAGING ADAPTIVE SAMPLING FOR COMPREHENSIVE PHARMACOGENOMICS AND MITOCHONDRIAL DNA ANALYSIS IN CHORIOCARCINOMA

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Mitochondrial DNA (mtDNA), a double-stranded circular molecule composed of 16,569 bases encoding 37 genes, is more vulnerable to damage than nuclear DNA due to the lack of histone protection, active redox environment, absence of introns, and poor damage repair mechanisms. When pathogenic variant levels in mtDNA exceed certain heteroplasmic thresholds, mitochondrial dysfunctions can occur, leading to various clinical manifestations. Pharmacogenomics can enhance the risk-benefit ratio of medications by categorising patients according to genetic differences in their DNA. Increased knowledge about the mitochondrial genome and new methods for analysing it have led to more research on how variations in mtDNA affect drug response, along with pharmacogenomics data.

Our goal was to optimise the sequencing protocol of mtDNA in combination with 148 pharmacogenomics-validated genes using third-generation long-read sequencing technology, overcoming the limitations of short-read technologies. We employed enzyme treatment enrichment procedures, capillary electrophoresis, and nanopore whole genome and adaptive sampling in JEG and JAR choriocarcinoma cell lines to acquire native epigenomic data and significant target enrichment.

Our approach significantly enhances the coverage and accuracy of targeted pharmacogenomic and mtDNA regions, enabling a detailed analysis of genetic variations. Integrating pharmacogenomics into cancer therapy holds promise for optimising treatment efficacy and minimising adverse effects.

Keywords: adaptive sampling, choriocarcinoma, mitochondrial DNA, pharmacogenomics

SARS-COV-2 ORF3A PROMOTES LUNG MICROVASCULAR ENDOTHELIAL CELLS SENESCENCE

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Introduction. Virions of SARS-CoV-2 accumulate in cells and could promote the so-called “Long Covid” state that is associated with stress-inducible pro-inflammatory cytokines, extracellular matrix-modifying factors, complement-mediated cytolysis, NET formation, platelet activation, and microthrombosis, and ultimately could develop as cellular senescence.

Aim: Because of the critical role of lung endothelial cells in invasion entering and replication of the SARS-CoV-2 virus, we examined the effects of Wuhan strain ORF3a SARS-CoV-2 gene on lung microvascular endothelial cells (HULEC) using markers for cell senescence.

Material and method: HULEC5a was maintained according to the vendor’s recommendations and plated in 6-well plates per 3×10^5 cells for transfection with a 1 ng/μl final concentration of mRFP-tagged Wuhan ORF3a clones for 24 and 48 hours. After incubation, cells were trypsinised, washed, and incubated for 30 minutes at 4°C with the following antibodies: CD326, CD31, CD62-E, CD144, CD45, CD47, Mcl-1, and β-2-microglobulin, then analysed on a Sony MA900 Cell Sorter.

Results and conclusion: Exogenous expression of ORF3a showed significant upregulation of the cell senescence MCL-1 marker. In contrast, less pronounced changes in β2-microglobulin senescence marker, CD62c and CD47 - vascular damage and thrombospondin-1 receptor, respectively, suggest promotion of cell damage and cell cycle arrest, further exacerbating senescence. Our data indicate that prolonged exposure to ORF3a could promote vascular senescence and damage.

Keywords: ORF3a, SARS-CoV-2, endothelial cells, flow cytometry, senescence

Supported by the Bulgarian Ministry of Education and Science Project “Research infrastructure for cell technologies in biomedicine” (INFRAACT, Grant No. #178/2022, #361/2023) of the National Roadmap for RI and NSF grant “Study of the excessive inflammasome mediated host tissue response inflicted clinically severe SARS-Cov-2 infection. Translation approach”.

GENE EXPRESSION PROFILING OF LAMPS AS HALLMARKS IN COLORECTAL CANCER

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Medical University of Plovdiv

Colorectal cancer (CRC) ranks as the third most prevalent neoplasm globally and stands as one of the leading causes of death. The heterogeneity of the tumour and the challenging prognosis for patients diagnosed at an advanced stage of CRC highlight the need for additional predictive biomarkers. Autophagy is a fundamental process in maintaining cell homeostasis, with lysosomes playing a major role in it. The current study aimed to investigate and evaluate the gene expression profiling of the lysosome-associated proteins LAMP1 and LAMP2 alongside two additional autophagy genes, BECLIN1 and LC3B, in CRC patient white blood cells. The results were validated by analysing TCGA public data on the same signatures in CRC tissues and healthy controls. The study found that the transcriptional levels of all examined gene markers were significantly increased in CRC patients compared to those of healthy controls. Higher tumour tissue expression in contrast to the control group was also detected. Additionally, in the TCGA cohort, the upregulation of both signatures was associated with shorter disease-free survival compared to patients with low expression. In summary, this study presents the gene expression profiles of LAMP1 and LAMP2 in CRC patients and reviews their possible prognostic significance.

Keywords: LAMP; gene expression; Autophagy; CRC

FREQUENCIES OF POLYMORPHISMS IN CYP2C9 AND VKORC1 GENES IN BULGARIAN POPULATIONS

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Introduction. Polymorphic variants in CYP2C9 and VKORC1 genes significantly contribute to the optimal maintenance dose of acenocoumarol in different populations.

Aim. The study aimed to establish the allele and genotype frequencies of CYP2C9*2, CYP2C9*3, VKORC1*2A, VKORC1*2B, VKORC1*3, VKORC1*4 in Bulgarians.

Materials and Methods: The study included 155 unrelated healthy individuals from different regions of Bulgaria. Genomic DNA was extracted from peripheral blood. Select polymorphisms were evaluated using High-Resolution Melting Analysis (HRMA). The allele frequencies of various genotypes were calculated using Hardy-Weinberg Equilibrium.

Results. CYP2C9*2 – CC (85.71%), CT (13.47%), TT (0.82%), C (92.00%), T (8.00%), HWE $\chi^2=2.58$; CYP2C9*3 – CC (0.04%), CT (16.94%), TT (82.66%), C (8.87%), T (91.13%), HWE $\chi^2=0.26$; VKORC1*2A – GG (32.47%), GA (48.70%), AA (18.83%), G (56.82%), A (43.18%), HWE $\chi^2=0.01$; VKORC1*2A – GG (32.47%), GA (48.70%), AA (18.83%), G (56.82%), A (43.18%), HWE $\chi^2=0.01$; VKORC1*2B – GG (11.43%), GT (44.29%), TT (44.29%), G (33.57%), T (66.43%), HWE $\chi^2=0.01$; VKORC1*3 – GG (41.04%), GA (48.23%), AA (9.93%), G (65.96%), A (34.04%), HWE $\chi^2=0.77$; VKORC1*4 – CC (64.93%), CT (32.09%), TT (2.99%), C (80.97%), T (19.03%), HWE $\chi^2=1.51$

Conclusion. The established genotypic and allelic frequencies of the studied polymorphisms in CYP2C9 and VKORC1 genes were according to the Hardy-Weinberg equilibrium and correspond to those in other European populations.

Keywords: Bulgarian population, frequency, polymorphism, CYP2C9 gene, VKORC1 gene

CERTIFICATION AND STANDARDS IN THE MEDICOLEGAL DEATH INVESTIGATION SYSTEM

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Background. When a death occurs, it must be officially confirmed by a doctor. The physician's monopoly regarding the diagnosis of death cannot be a mere formality, considering the potential consequences that may arise. Globally, given the critical nature of this subject, numerous studies have aimed to assess the accuracy of data derived from death certification. These investigations have led to substantial reforms, such as the gradual transition in the USA from the coroner system to the medical examiner system. Similarly, the Harold Shipman case in England prompted the government to initiate reforms in the verification and certification of deaths.

Problematic. The discovery of a body under suspicious circumstances triggers an immediate investigation. In less obvious situations, doctors, finding themselves alone with the deceased, primarily adopt a caregiving role, not inherently inclined towards systematic suspicion. This situation raises the question of who should officially confirm death under specific conditions, a matter that varies across different investigation systems.

Methods. After conducting a comprehensive literature review on the subject, we designed a questionnaire for physicians in the city of Sidi Bel Abbes (Algeria) and its surrounding areas. Our goal was to gather their opinions on verifying and certifying deaths in specific cases and subsequently determine the preferred death investigation system among our physicians.

Results. We collected 100 questionnaires, with general practitioners accounting for 44% and specialists - for 46% of the respondents. Of the surveyed doctors, 73% expressed support for granting forensic pathologists a more prominent role in a revised death investigation system, especially in cases requiring specialised certification by a forensic pathologist.

Conclusion. It is imperative to develop an enhanced system for confirming deaths based on robust legislation and precise legal rules to eliminate any possibility of misinterpretation.

Keywords: death, investigation, system

VIOLENCE AGAINST ELDERLY PEOPLE: A STUDY OF 60 CASES

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In Sidi Bel Abbès, like in many other regions, elderly individuals face various forms of violence, ranging from physical abuse to neglect and financial exploitation. Despite the efforts to address this issue, such as awareness campaigns and support services, instances of mistreatment persist. Factors like social isolation and dependency exacerbate the vulnerability of older adults to such abuse. Understanding the root causes and implementing targeted interventions are crucial steps towards safeguarding the well-being and dignity of the elderly population in Sidi Bel Abbès.

The study was conducted on violence against elderly individuals. We analysed 60 cases, adopting a cross-sectional descriptive monocentric approach. This methodology involved examining a single point in time to gather data on the prevalence and characteristics of the observed phenomena within a specific location - in this case, likely focusing on Sidi Bel Abbès. By collecting information on a diverse group of victims, the study aimed to provide a comprehensive overview of the types and extent of violence experienced by the elderly population in the region.

The analysis of 60 cases of violence against elderly individuals revealed a concerning pattern. Among the victims - 36 women and 24 men, 74% experienced superficial injuries such as bruises, cuts, and slaps. The remaining victims endured verbal abuse. These findings underscore the prevalence of physical harm inflicted upon elderly individuals, particularly women, highlighting the urgent need for comprehensive measures to prevent and address such abuse. Efforts should not only focus on physical protection but also on combating the insidious effects of verbal mistreatment on the mental and emotional well-being of older adults.

The study results indicated that the total work disability ranged from 0 to 30 days, with fewer instances of long-term consequences, suggesting that the majority of victims were able to resume their normal activities within a relatively short period after experiencing violence. Additionally, the lower incidence of lasting effects or sequelae highlights the potential for recovery among elderly individuals subjected to such mistreatment. However, further investigation into the factors influencing these outcomes is warranted to develop targeted interventions aimed at mitigating the impact of violence on the elderly population.

Keywords: violence, elderly, post-traumatic syndrome



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Content

- 69 INTRAVASCULAR METHODS FOR CORONARY ARTERIES ESTIMATION
Plamen Gatzov
- 70 TRANSTHYRETIN AMYLOIDOSIS AS A RARELY RECOGNIZED CAUSE OF HEART FAILURE
Elena Kinova
- 71 TECHNOLOGICAL PROGRESS AND IMPROVEMENT OF THE OUTCOMES IN PATIENTS WITH ATRIAL FIBRILLATION BY EARLIER INTERVENTIONS
Borislav Dinov
- 72 ADVANCES IN THE DIAGNOSIS AND TREATMENT OF MALIGNANT SKIN NEOPLASMS
Petranka Troyanova
- 73 ANGIOEDEMA IN EMERGENCY MEDICINE
Svetlan Dermendzhiev, Petar Paskalev, Mihail Maznev
- 74 SERUM PEPSINOGENS AND HELICOBACTER PYLORI ANTIBODY FOR DIAGNOSTIC ASSESSMENT OF ATROPHIC GASTRITIS AND INTESTINAL METAPLASIA – A REPORT FROM BULGARIA
Zornitsa Gorcheva
- 75 THROMBOCYTOPENIA IN NEWLY DIAGNOSED CASES OF LIVER CIRRHOSIS
Miroslava Mihaylova-Strashilova, Pencho Tonchev
- 76 CLINICAL SIGNIFICANCE OF NEUTROPHILIC CD11B/CD18 EXPRESSION IN PATIENTS WITH MYELOPROLIFERATIVE NEOPLASMS
Doroteya Todorieva-Todorova, Liana Gercheva-Kyuchukova, Katya Kovacheva, Vanya Popova, Lachezar Bogdanov, Ivaylo Hristov, Ralitsa Ilieva

- 77 TREATMENT OF DIFFUSE LARGE B- CELL LYMPHOMA IN THE ERA OF TARGETED THERAPY
Ralitsa Ilieva, Vanya Popova, Doroteya Todorieva-Todorova
- 78 COPD - DIAGNOSIS, TREATMENT & EVOLUTION: A CASE REPORT
Svetoslav Georgiev, Polina Lukanova, Snezhanka Ivankovska, Elena Borisova, Pavlina Glogovska
- 79 RARE CASE OF SYSTEMIC LUPUS ERYTHEMATODES AND ACTIVE PULMONARY TUBERCULOSIS. CLINICAL AND THERAPEUTIC CHALLENGES.
Snezhanka Ivankovska, Figian Ismailova, Borislava Zhelezarova, Elena Borisova, Plamen Pavlov
- 80 HEMATOGENOUS DISSEMINATED ABSCESING PNEUMONIA – A CLINICAL CASE
Elena Borisova, Snezhanka Ivankovska, Plamen Pavlov, Yavor Ivanov, Nikolay Kyuchukov, Zlatina Ivanova, Valeri Andreev, Stefan Stanimirov, Gergana Stefanova, Tyulin Riza, Radosvet Drambozov, Neli Miteva, Pavlina Glogovska
- 81 VASCULAR ACCESS FOR HEMODIALYSIS TREATMENT IN PROBLEM GROUPS OF PATIENTS
Milena Stoimenova, Julia Benovska, Svilena Alexandrova, Biser Borisov
- 82 CONSTIPATION - A COMMON CAUSE OF DYSFUNCTIONAL VOIDING
Venetsiya Botsova, Stanimira Elkina, Kristina Yotova
- 83 FIVE-YEAR FOLLOW-UP OF CHILDREN WITH CRANIOPHARYNGIOMA
Irina Halvadzhiyan, Stanimira Elkina, Chayka Petrova, Violeta Iotova

- 84 CHIARI MALFORMATIONS - TYPES AND CLINICAL PRESENTATION
Ventsislava Stoyanova, V. Todorov, Nikolay Balgaranov
- 85 SERUM FERRITIN – AN EARLY MARKER IN THE DIAGNOSIS OF IRON DEFICIENCY
Christina Yotova, Boryana Avramova, Atanas Banchev, Nikolay Bulgaranov, Venetzia Boztsova
- 86 SGLT2 INHIBITOR-INDUCED EUGLYCEMIC DIABETIC KETOACIDOSIS – A CASE REPORT
Boris Dinkov, Galya Stavreva, Katya Todorova
- 87 A RARE CASE OF TOXIC EPIDERMAL NECROLYSIS RESULTING FROM MULTIPLE DRUGS
Mihail Maznev, Svetlan Dermendzhiev, Eva Dimitrova
- 88 HEXAHYDROCANNABINOL INTOXICATION WITH HHC LIQUID FOR ORAL ADMINISTRATION
Katerina Stefanova, Olimpiada Atmazhova, Evgenia Barzashka
- 89 A CASE REPORT OF CASUISTIC PSILOCYBIN POISONING IN EARLY CHILDHOOD
Katerina Stefanova, Olimpiada Atmazhova, Evgenia Barzashka, Ani Alexandrova
- 90 AN IMPROVED MODEL FOR CARDIOVASCULAR RISK MANAGEMENT IN GENERAL PRACTICE
Plamen Latev
- 91 EOSINOPHIL CATIONIC PROTEIN AS AN ADDITIONAL MARKER FOR DIAGNOSIS OF COVERT TOXOCARIASIS IN PATIENTS WITH CLINICAL ALLERGY
Lyudmil Stoyanov, Eleonora Kaneva, Ivelin Angelov

- 92 BITES FROM POISONOUS SNAKES IN BULGARIA
Olimpiada Atmazhova, Evgenia Barzashka
- 93 NEW SYNTHETIC NARCOTIC SUBSTANCES – "DESIGNER DRUGS" - WHAT IS IT?
Olimpiada Atmazhova
- 94 ATYPICAL PRESENTATION OF A SPINAL EPIDURAL ABSCESS – A CASE REPORT
Maya Danovska, Veronika Vasileva, Diana Marinova-Trifonova, Magdalina Yanakieva, Plamen Stoev, Iliya Duhlenki
- 95 SUPERIOR VENA CAVA SYNDROME MIMICKING SUBACUTE DEMYELINATING POLYNEUROPATHY: A CLINICAL CASE
Desislava Marinova, Yoanna Todorova, Trayana Obreshkova, Maya Danovska
- 96 SUBACUTE CEREBELLAR DEGENERATION IN LONG-TERM ALCOHOL ABUSE
Yoanna Todorova
- 97 MODIFIABLE RISK FACTORS FOR ISCHEMIC STROKE STROKE IN YOUNG AND MIDDLE-AGED PATIENTS: A CASE-CONTROL STUDY
Georgi Dimitrov, Maya Danovska, Plamen Stoev, Diana Marinova, Eleonora Mineva-Dimitrova
- 98 METHADONE-RELATED MYELOPATHY IN A PATIENT WITH SPASTIC PARAPLEGIA: A CASE REPORT
Magdalina Yanakieva, Emiliya Ovcharova, Diana Marinova, Maya Danovska
- 99 THE IMPACT OF METABOLIC SYNDROME ON THE SHORT-TERM OUTCOME OF PATIENTS WITH ACUTE NON-CARDIOEMBOLIC ISCHEMIC STROKE
Diana Marinova-Trifonova, Maya Danovska, Magdalina Yanakieva, Emilia Ovcharova, Veronika Vasileva, Plamen Stoev

- 100 EXTREME HYPERLIPIDEMIA – RARE COMPLICATION OF DIABETIC KETOACIDOSIS IN CHILDHOOD
Stanimira Elkina, Irina Halvadzhiyan, Venetsiya Botsova, Chayka Petrova
- 101 STUDY ON 25 (OH)D STATUS IN HOSPITALIZED CHILDREN WITH ACUTE RESPIRATORY INFECTIONS
Gena Petkova, Boyko Shentov, Venetsia Botsova
- 102 ASSESSMENT OF THE SEVERITY OF THE CLINICAL COURSE OF ACUTE BRONCHIOLITIS IN CHILDHOOD
Maria Petkova, Venetsia Botsova, Nikolay Balgaranov
- 103 RISK FACTORS AND PREDICTION MODELLING OF LATE-ONSET NEONATAL SEPSIS
Preslava Gatseva, Zarko Yordanov, Nikolay Balgaranov, Victoria Atanasova
- 104 IDIOPATHIC PHOTSENSITIVE OCCIPITAL EPILEPSY: CLINICAL CASES
Nikolai Yanchev, Ventsislava Stoyanova, Nikolay Balgaranov
- 105 HYPERIMMUNOGLOBULIN E SYNDROME IN CHILDHOOD: A CLINICAL CASE
Kristina Yotova, Mariya Petkova, Nikolay Balgaranov, Gergana Petrova, Ivelina Yordanova
- 106 RAYNAUD'S SYNDROME - CLINICAL MANIFESTATIONS AND IMMUNOLOGICAL CHARACTERISTICS IN RHEUMATIC DISEASES
Borislava Zhelezarova, Tsvetanka Petranova, Nadia Stancheva, Snezhana Tisheva
- 107 ASSOCIATION BETWEEN SENSIBILIZATION TO CAT ALLERGENS AND BEE AND WASP VENOM IN PATIENTS WITH CHRONIC URTICARIA: INSIGHTS FROM SKIN PRICK TEST
Sofiya Dzhikova

- 108 CRYOPEN - INNOVATIVE SOLUTION FOR CRYOTHERAPY
Nikola Pirovski, Julia Vasseva-Dikova
- 109 RHYTHM AND CONDUCTIVE DISORDERS AND COVID-19
INFECTIONS
Zhivko Yovchev, Konstantin Gospidinov, G. Todorov, Snejana Tisheva
- 110 CIRCULATING UNDERCARBOXYLATED MATRIX GLA PROTEIN
AS A POTENTIAL BIOMARKER FOR CARDIOVASCULAR RISK
IN PATIENTS WITH CHRONIC KIDNEY DISEASE
Borislav Ignatov, Tatyana Simeonova, Valentina Raykova, Georgi
Ignatov, Tsvetelina Eftimova, Krasimir Kostov
- 111 DECIPHERING THE TRIAD: PSORIASIS VULGARIS, BLASCHKO'S
LINES AND DIABETES MELLITUS: A CASE REPORT
Djamile Kamber, Veronika Gincheva, Klementina Gospodinova,
Preslav Vasilev, Ivelina Yordanova, Dimitar Gospodinov
- 112 EUROPEAN TRAUMA COURSE: A MODERN APPROACH TO
THE MANAGEMENT OF MAJOR TRAUMA
Aleksandr Valkov

INTRAVASCULAR METHODS FOR CORONARY ARTERIES ESTIMATION

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Cardiovascular diseases are among the most widely spread in the world. In our country, they are the reason for about 2/3 of the mortality. Their diagnosis and treatment have enormous health and social importance. Interventional cardiology, as a branch of cardiology itself, is one of the most quickly developing disciplines in medicine. A significant part of the diagnosis of heart disease requires different intravascular methods for the estimation of coronary artery pathology. Those methods usually play a crucial role in the decision of and the kind of planned treatment, such as the follow-up of treatment application. Intravascular coronary artery investigation methods have been applied in catheterisation laboratories for decades. There are two main groups - morphological: selective coronary angiography, intravascular ultrasound (IVUS), optical coherence tomography, et cetera, and functional: intracoronary Doppler measurements, coronary thermodilution, et cetera. In the present lecture, a review of the contemporary intravascular coronary diagnostic methods has been made, as well as their principles, ways of implementation, and applications in different clinical situations.

Keywords: coronary arteries, intravascular ultrasound, optical coherence tomography

TRANSTHYRETIN AMYLOIDOSIS AS A RARELY RECOGNIZED CAUSE OF HEART FAILURE

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Amyloidosis involves the extracellular accumulation of pathologic protein in the form of amyloid fibrils, affecting organs and tissues. Previously regarded as rare, recent data indicate that cardiac amyloidosis is an under-recognized cause of prevalent heart conditions, including heart failure, conduction disorders, aortic stenosis, and unexplained left ventricular hypertrophy, particularly among older adults.

Nine distinct types of cardiac amyloidosis are recognised, predominantly associated with monoclonal immunoglobulin light chain amyloidosis (AL), which necessitates chemotherapy or transthyretin amyloidosis (ATTR). Transthyretin amyloidosis may be inherited (ATTRv) or non-hereditary (ATTRwt, wild type). The ATTRwt variant, often related to ageing, is recognised as the predominant form of cardiac amyloidosis globally. The prognosis of ATTR is poor and depends on the variant, extent of cardiac involvement, and neurologic phenotype. It is a progressive disease. Currently, there are specific new treatments for amyloidosis, making early diagnosis worthwhile according to a set algorithm.

Keywords: amyloidosis, heart failure

TECHNOLOGICAL PROGRESS AND IMPROVEMENT OF THE OUTCOMES IN PATIENTS WITH ATRIAL FIBRILLATION BY EARLIER INTERVENTIONS

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Background. Atrial fibrillation (AF) is a common arrhythmia, and its prevalence in society grows as the population ages. It is associated with an increased risk of hospitalisations for heart failure, other cardiovascular events, and exacerbations of COPD. Furthermore, the mortality in patients with AF is 1.5-2 fold higher than in the general population, and deaths occur mostly due to stroke or heart failure. Recent data showed that the risk of death is even higher in patients who are diagnosed early with AF. Recently, there has been tremendous progress in the early diagnosis, the treatment of AF and the prevention of AF-related complications. Different interventions proved to be effective in reducing the risk of HF hospitalisations and mortality. Recent studies confirmed the superiority of rhythm control with ablation over standard drug therapy. The benefits are highest in patients with heart failure with reduced ejection fraction and when the intervention has been performed earlier. At the same time, the rapid technological progress and wider availability of new technologies for mapping and ablation of AF made AF ablation more effective, safe and affordable for broader groups of patients.

Purpose. In this lecture, the current progress in the interventional therapy of AF and its advantages in decreasing AF-related risks will be presented.

Keywords: ablation, atrial fibrillation, mapping

ADVANCES IN THE DIAGNOSIS AND TREATMENT OF MALIGNANT SKIN NEOPLASMS

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Malignant neoplasms of the skin, malignant melanoma and non-melanoma skin carcinomas are the most common malignancies in the Caucasian population. Their medico-social importance is determined by the increasing morbidity in recent decades in the world due to the ageing of the population and better possibilities for diagnosis and registration in developed countries.

Malignant neoplasms of the skin are treatable in the early stages. Still, advanced forms lead to mutilation, disability and death and represent a heavy economic burden on the healthcare system and society.

In order to ensure efficient prevention and effective treatment, it is important to understand the aetiology of malignant skin neoplasms, the mechanism of cell proliferation, the factors influencing cell growth and the mechanisms of drug resistance. The successes of medical science, molecular biology and genetics, the development of high technologies, and the development of new immunotherapeutic approaches and targeted drugs have led to significant progress in the control of malignant neoplasms of the skin.

This review presents the current aspects and progress in the diagnosis and treatment of malignant skin tumours, as well as the new challenges regarding the selection of patients suitable for these new treatments based on biomarkers and parameters of the tumour microenvironment.

Keywords: diagnosis, malignant melanoma, non-melanoma skin carcinomas, treatment

ANGIOEDEMA IN EMERGENCY MEDICINE

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Angioneurotic edema is the most common condition in emergency medicine. It could manifest independently, as well as a part of the clinical picture of the anaphylactic shock. Some localisations of angioedema, like laryngeal edema, are distinguished with a high risk of fatal outcomes. The edema of the intestinal mucosa, which could be seen in patients with Hereditary angioedema, mimics the clinical picture of an acute abdomen and could falsely be interpreted as imposing laparotomy emergency condition. Therefore, our knowledge about the etiology and pathogenesis of angioedema appears to be a key factor for its correct and prompt diagnosis and effective management. Systematisation of diagnostic-therapeutic algorithms, perceived by the national and international guidelines, is important in determining the phenotype and endotype of angioedema in each patient, personalising therapy, and improving the quality of life in patients.

Keywords: angioedema, diagnostic-therapeutic algorithm, quality of life

SERUM PEPSINOGENS AND HELICOBACTER PYLORI ANTIBODY FOR DIAGNOSTIC ASSESSMENT OF ATROPHIC GASTRITIS AND INTESTINAL METAPLASIA – A REPORT FROM BULGARIA

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Background: Atrophic gastritis (AG) and intestinal metaplasia (IM) are precancerous lesions. Serum pepsinogens and *Helicobacter pylori* antibody (HpAb) serological assays have been used for gastric cancer (GC) risk stratification in Asia.

Aim: We aimed to investigate the diagnostic significance of Pepsinogen I (PGI), Pepsinogen II (PGII), and *Helicobacter pylori* antibodies as noninvasive biomarkers for AG and IM in the Bulgarian population.

Methods: A prospective clinical-epidemiological study was conducted involving 53 participants, of which 23 (43.4%) were healthy asymptomatic and 30 (56.6%) had dyspeptic complaints. Blood serum for PGI/PGII and HpAb was taken from all patients. Dyspeptic patients underwent esophagogastrosocopy with biopsy. The Operative Link of Gastritis Assessment (OLGA) and Operative Link of Gastric Intestinal Metaplasia (OLGIM) were determined by severity and topography of atrophy and IM. *Helicobacter pylori* (Hp) was also determined histologically.

Results: In the dyspeptic group, as the OLGA stage increases, PG I values, and the PG I/PG II ratio show a permanent decrease (OLGA stage I and II, $p < 0.001$). PGI and PGI/PGII levels were lower in patients with IM than in those with normal mucosa ($p < 0.001$). 66.7% of individuals with histologically confirmed atrophy and 56.5% of asymptomatic patients were HpAb positive. PG levels were not affected by HP infection status.

Conclusion: Pepsinogens can be used as noninvasive markers to stratify patients at increased risk of GC. Further studies on this test in the management of high-risk patients are needed.

Keywords: *Helicobacter pylori* antibody, gastric precancerous lesions, pepsinogens

THROMBOCYTOPENIA IN NEWLY DIAGNOSED CASES OF LIVER CIRRHOSIS

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Aim. To determine the incidence of thrombocytopenia in cases with liver cirrhosis and its relationship with the severity of the disease.

Material and methods. This retrospective study of cases of liver cirrhosis was carried out from 2017 to 2021. Information was collected from the patient's hospital records at their first hospital admission. The study group included 258 (71%) men and 103 (29%) women. The MELD Na of all was calculated, and all were staged using the Child-Pough scoring system. Thrombocytopenia is defined as a platelet count below 150 G/L. The results were processed statistically with IBM SPSS 26 and Exel statistics.

Results. 171 (47.4%) subjects had thrombocytopenia. In 45 (26%) of them, this was present without the presence of accompanying haematological abnormalities. There was no statistical relationship between the Child-Pough stage and the presence of thrombocytopenia ($p=.400$) and statistically significant differences in platelet counts in the three Child-Pough stages ($p=.205$). Thrombocytopenia cases were found to have a higher MELD Na than those without, although there was no statistically significant difference between the two groups ($p=.025$). 73.7% of thrombocytopenia cases had esophageal varices ($p=0.000$). Calculated cut-off value of 181G/L with 73% sensitivity and 54.5% specificity for predicting the occurrence of varices. There was no statistical association between thrombocytopenia and PSE ($p=.591$).

Conclusion. Thrombocytopenia is a laboratory finding of portal hypertension. An isolated finding also requires the exclusion of chronic liver disease, as well as endoscopic examination to rule out esophageal varices.

Keywords: Child-Pough, esophageal varices, MELD Na, Plt count, portosystemic encephalopathy

CLINICAL SIGNIFICANCE OF NEUTROPHILIC CD11B/CD18 EXPRESSION IN PATIENTS WITH MYELOPROLIFERATIVE NEOPLASMS

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Introduction. Myeloproliferative neoplasms (MPN) are malignant haematological diseases characterised by the overproduction of clonal myeloid precursors in the bone marrow. They include chronic myeloid leukaemia (CML), polycythemia vera (PV), essential thrombocythemia (ET) and myelofibrosis (MF). The main therapeutic problem is potentially life-threatening thrombotic events (TE) of complex aetiology (blood cell activation inclusive).

Aim. To define the clinical significance of neutrophilic CD11b/CD18 expression in MPN patients, depending on the type of disease, changes in the blood cell count and TE presence.

Materials and methods. A prospective study was performed on 113 MPN patients, who reported information about the haematological disease and medical history. Complete blood count and immunophenotyping of peripheral blood were obtained. The control group consisted of 46 healthy volunteers. Every person included voluntarily signed an informed consent form. Results were statistically analysed.

Results. The number of neutrophils that express CD11b/CD18 was higher in MPN patients than in the control group, higher in patients with leukocytosis than in those with normal/low leukocytes and also higher in patients, who experienced TE than those without such (p

Keywords: myeloproliferative neoplasms, neutrophilic CD11b/CD18 expression, thrombotic events

TREATMENT OF DIFFUSE LARGE B- CELL LYMPHOMA IN THE ERA OF TARGETED THERAPY

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Introduction: Diffuse large B-cell lymphoma (DLBCL) is one of the most common types of non-Hodgkin's lymphomas in adults. The disease is characterised by heterogeneity in cell origin and clinical presentation. In recent years, the treatment of DLBCL experienced major development associated with a change in therapy focus – from conventional immunochemotherapy to a targeted consisting of monoclonal antibodies, antibody-drug conjugates and monoclonal bispecific antibodies.

Aim: To review and summarise the results of some new therapeutic approaches in the treatment of DLBCL in the past years.

Materials and methods: Data from accessible sources published in PubMed, Scopus and MedLine was used, analysed and summarised.

Results: Data from polatuzumab vedotin available from clinical trials regarding its benefit as first- and second-line therapy in patients with DLBCL demonstrated improved PFS compared to conventional therapy. The response rate of Tafasitamab and Epcoritamab in patients with relapsed/refractory DLBCL was significantly higher compared to the standard regimens used.

Conclusion: The summary data on the mechanism of action, performance indicators, and safety profile of novel agents could help in the choice of first and subsequent therapy lines in patients with DLBCL.

Keywords: diffuse B-large cell lymphoma, monoclonal antibodies, antibody-drug conjugates, monoclonal bispecific antibodies, targeted therapy

COPD - DIAGNOSIS, TREATMENT & EVOLUTION: A CASE REPORT

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Chronic obstructive pulmonary disease (COPD) is a heterogeneous disease with a progressive course, characterised by chronic respiratory symptoms - dyspnea, cough, sputum, exacerbations due to bronchitis and/or emphysema, which often cause progressive airway obstruction. COPD is a disease of high health economic importance, with significant costs to health systems, and is expected to remain one of the leading causes of death worldwide by 2030.

The symptoms, spirometric indicators, complications and treatment of a patient with COPD, whose condition was followed for a period of 16 years, are discussed in the presented clinical case. The risk factors and accompanying diseases related to the course of chronic obstructive pulmonary disease in the described patient were established. The assessment of the disease over time was done by CAT test, mMRC scale, spirometry, recording the number of exacerbations and hospitalisations per year due to COPD. The pharmacological and oxygen treatment of the patient was monitored. Complications in the progressive course of the disease are reported. The patient with COPD was subjected to a complex assessment of the severity of the disease, which requires an integrated approach and care by medical specialists.

Keywords: COPD, clinical case, diagnosis, treatment

RARE CASE OF SYSTEMIC LUPUS ERYTHEMATODES AND ACTIVE PULMONARY TUBERCULOSIS. CLINICAL AND THERAPEUTIC CHALLENGES

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Introduction: Systemic lupus erythematosus is a chronic autoimmune disease with various clinical manifestations involving all organs and systems in the human body. It occurs with periods of flares and low disease activity. The patients are mainly women in the active age group of 16-55 years. The therapy is complex and aims to achieve remission in all aspects - immunological and clinical, but immunosuppression carries a high risk of immunocompromising and activation of latent infections. Tuberculosis, in particular pulmonary tuberculosis, is an infectious disease known to mankind for at least 2 centuries, the last quarter of the 20th century and the first quarter of the 21st century. Nowadays, TB has somewhat already been forgotten. It is caused by *Mycobacterium tuberculosis*, a bacteria that is highly resistant to environmental factors. The disease has two forms: latent and active. The most common cause of activation is immunocompromisation due to viral infections, immunosuppressive therapy, alcoholism, drug addiction, systemic malnutrition, and systemic stress.

Objective: We present a clinical case of Systemic Lupus Erythematosus and Active Pulmonary Tuberculosis, the therapeutic problems that arise due to the unusual combination of immunosuppressive and tuberculostatic therapy, and approaches to managing the two conditions.

Materials and methods: Physical examination, laboratory and microbiological tests, imaging studies, and comparative analysis of similar cases from the literature were performed.

Conclusion: Autoimmune pathology continues to be a serious clinical problem, with a high probability of overlay with respiratory infection, an unpredictable progression of clinical symptoms and a high mortality rate. The treatment is long-term, multidisciplinary and requires additional funding.

Keywords: immunosuppression, Lupus Erythematosus, Pulmonary Tuberculosis

HEMATOGENOUS DISSEMINATED ABSCESSING PNEUMONIA – A CLINICAL CASE

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Pneumonia is an inflammatory disease of the lung. A rare but serious complication – abscess, can be observed. The occurrence of a lung abscess in pneumonia takes place by a bronchogenic or hematogenous route. The frequency of cases of abscess pneumonia resulting from hematogenous dissemination ranges from 12% to 14%. Among the most common causative agents is *Staphylococcus aureus*, but those caused by *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* have also been described. The disease is severe, proceeding with a septic state, and in case of untimely diagnosis and lack of adequate and long-term treatment, the prognosis in terms of course and mortality worsens.

We present a clinical case of a 58-year-old female patient with hematogenous disseminated abscess pneumonia, with an epidural abscess as the primary focus. After establishing the diagnosis and carrying out a conservative treatment, the septic condition was controlled, the reverse development of pneumonia was observed, and the patient underwent an operative intervention to remove the primary septic focus.

Conclusion. Hematogenous disseminated abscess is a rare disease, but it is a serious challenge for the clinician, requiring a complex and multidisciplinary approach in terms of diagnosis and treatment.

Keywords: abscess, pneumonia, sepsis

VASCULAR ACCESS FOR HEMODIALYSIS TREATMENT IN PROBLEM GROUPS OF PATIENTS

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Chronic kidney disease (CKD) is increasingly common worldwide. Their contribution is estimated at 9,1% (from 8,5 to 9,8%) of the total number of patients with CKD, amounting to 700 million people in 2017. Hemodialysis is the preferred treatment for end-stage renal disease. In terms of vascular access, tunnelled catheter preferences range from 1% in Japan and 18% in the USA to 42 and 44% in Belgium and Canada, respectively. In South Africa, the relative share of native fistulas among patients on hemodialysis treatment was 51% in 2017; in Argentina, it was 70% in 2018; and in Vietnam, it was >95%.

The purpose of our review is to present the features of vascular access in three problem groups – diabetics, overweight patients and elderly patients. Literature data indicates that the relative share of central venous catheters continues to be high. The number of patients, especially the elderly, who refuse attempts to construct a native fistula is increasing. Vascular access in problem groups of patients should be resolved individually after the patient's clarification.

Keywords: end-stage renal disease, hemodialysis, vascular access

CONSTIPATION - A COMMON CAUSE OF DYSFUNCTIONAL VOIDING

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Introduction: Functional voiding disorders /FVD/ are common in childhood. The characteristic symptoms are similar to those of a neurogenic bladder and are also defined as dysfunctional voiding. Constipation is one of the most common causes of impaired micturition control, which affects about 80% of children. Our presentation aims to focus attention on this problem and to illustrate it with a case from the clinical practice.

Material and methods: An analysis of FVD in children and their diagnosis was made. A case of a pediatric patient with prolonged constipation, dysfunctional urination and a high risk of kidney damage is presented.

Results: An 8-year-old boy with a one-year history of episodes of constipation, encopresis, nocturnal enuresis, and difficulty micturition was assessed. A neurological disease was denied. The ultrasound of the urinary system showed bilateral high-grade hydronephrosis and an enlarged bladder, which was confirmed by CT. Dolichosigma and dolichocolon were established from the irrigography. Normalisation of defecation and renal drainage was achieved with complex therapy.

Conclusion: Early diagnosis and adequate treatment of constipation ensures good micturition control and reduces the risk of kidney damage.

Keywords: constipation, dysfunctional urination, children

FIVE-YEAR FOLLOW-UP OF CHILDREN WITH CRANIOPHARYNGIOMA

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Craniopharyngiomas (CP) are the most common tumours of the hypothalamic-pituitary region in childhood. Long-term follow-up of children after surgical treatment of CP should focus on pituitary hormone deficiencies and hypothalamic neuroendocrine dysfunction, manifested mainly with excessive weight gain.

Two girls with CP were observed within 5 years after surgical treatment. Auxological, clinical, biochemical, hormonal and imaging characteristics were evaluated at diagnosis, postoperative and during the next 5 years of treatment.

Postoperative panhypopituitarism (growth hormone deficiency, secondary hypothyroidism, secondary hypocorticism, diabetes insipidus, and hypogonadotropic hypogonadism) occurred in both. A substantial problem was also hypothalamic obesity, with significant changes in BMI. After the introduction of complex hormone replacement therapy, both patients showed catch-up growth, achieved target height, and experienced adequate bone maturation and full pubertal development. On annual MRI imaging, no recurrence of the tumour was observed. Struggling with the psychological burden of the diagnosis and difficulties with strict adherence to hormonal therapy and diet are still present.

Conclusion: Body weight control immediately after surgical treatment and good adherence to hormone replacement therapy are crucial to improving the quality of life in children with CP. Multidisciplinary care in specialised, experienced centres is determinative for better long-term prognosis in patients with CP.

Keywords: children, craniopharyngioma, hypopituitarism, obesity

CHIARI MALFORMATIONS - TYPES AND CLINICAL PRESENTATION

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Chiari (Arnold-Chiari) malformations are anatomical defects of the posterior fossa characterised by caudal displacement of the cerebellum and brainstem or hypo-/aplasia of the cerebellum. In the vast majority of cases, the defect is congenital. There are 5 types of Chiari malformations – I to V. The neurological symptoms are the result of two main pathological processes: 1) direct compression on the herniated brain structures and 2) impairment of normal flow of cerebrospinal fluid. The diagnosis is based on clinical symptoms and results from neuroimaging. This report reviews the clinical characteristics and treatment of the different subtypes of Chiari malformations and also presents cases from our practice.

Keywords: clinical presentation, Chiari malformations, types

SERUM FERRITIN – AN EARLY MARKER IN THE DIAGNOSIS OF IRON DEFICIENCY

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Introduction. Iron deficiency (ID) in childhood is a problem encountered in both developing and developed countries. Various indicators are used to assess iron status (IS) and detect ID, and serum ferritin (SF) is a reliable indicator for early diagnosis.

Objective. To review data from the medical literature reflecting the importance of SF in the diagnosis of ID and its age-related changes.

Materials and methods. A review of worldwide literature was performed regarding the role of SF in the diagnosis of ID. Forty-seven full-text articles and scientific reports in available databases (Pubmed, SCOPUS, Web of Science, Google Scholar) published in the last 5 years were processed.

Results. The majority of publications reviewed highlighted the important role of SF as an early and sensitive marker for the assessment of IS in children. However, there is conflicting evidence in this regard.

Conclusion. It can be concluded that the significance of SF as a sole criterion of IS in infants is limited, suggesting the use of more than one indicator to refine the diagnosis of iron deficiency with or without anaemia. Accurate classification of iron status requires multiple biomarkers for the adequacy of iron storage and transport.

Keywords: children, iron deficiency, serum ferritin

SGLT2 INHIBITOR-INDUCED EUGLYCEMIC DIABETIC KETOACIDOSIS – A CASE REPORT

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Introduction. In diabetic patients with chronic heart failure and chronic kidney disease, taking sodium-glucose cotransporter-2 (SGLT2) inhibitors can achieve good glycemic control, HbA1c reduction, and cardio- and reno-protective effects. However, euglycemic diabetic ketoacidosis (EDKA) is a rare, serious adverse complication of this treatment with a frequency of 0.1%.

Case presentation. A middle-aged woman with a history of type 2 diabetes, diagnosed 3 years ago on the occasion of abdominal aortic surgery. She was treated with metformin and diet for 3 years. One week before admission, she started treatment with empagliflozin 10 mg daily. During this period, she lost 8 kg and had polyuria, polydipsia, poor appetite, vomiting, and dehydration. On admission, serum glucose was 10.0 mmol/l, bicarbonate 14 mmol/l, pH 7.25, and urine analysis was positive for ketones. We stopped the SGLT inhibitor and started a basal-bolus insulin regimen. Rehydration with saline and glucose solutions was performed, and her general condition improved. After the patient had stabilised, we evaluated C-peptide, immunoreactive insulin, and glycated haemoglobin, which showed diminished beta cell function.

Conclusion. Euglycemic DKA is a rare, sometimes life-threatening, adverse drug reaction to SGLT2 inhibitors. Patients with low functional beta-cell reserve (with type 2 diabetes, impaired insulin secretion, and low C-peptide) have a higher risk of developing this complication. All patients with DKA should be hospitalised and immediately treated.

Keywords: adverse reaction, euglycemic ketoacidosis, SGLT2 inhibitor

A RARE CASE OF TOXIC EPIDERMAL NECROLYSIS RESULTING FROM MULTIPLE DRUGS

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Introduction. Toxic epidermal necrolysis is a severe life-threatening condition characterised by extensive desquamation of the epidermis and mucosa. It is characterised by immune activation and imbalance with a shift of the immune response to a cytotoxic reaction and epidermolysis in response to certain drugs or their metabolites. In toxic epidermal necrolysis, involvement of 10 to 30% and more of the skin is observed, with damage to the epidermis and mucous membranes and severe necrolysis.

Aim. Enriching knowledge on the etiology, clinical presentation and course of toxic epidermal necrolysis.

Materials and methods. We present a 65-year-old patient who, due to the onset of fever up to 38°C without other complaints, is taking different groups of medications - antibiotics, antipyretics, and analgesics. In the following days, the appearance of a rash gradually generalised and progressed to the extent of necrolytic foci. The source of information is the patient's official medical records.

Results and conclusion. After the complex therapy, there was a process of reverse development and the appearance of spontaneous epithelisation of the affected areas.

Timely and correct diagnosis and adequate treatment are of key importance in limiting skin and mucosal damage and improving the prognosis.

Keywords: clinical presentation, diagnostic-therapeutic algorithm, etiology, toxic epidermal necrolysis

HEXAHYDROCANNABINOL INTOXICATION WITH HHC LIQUID FOR ORAL ADMINISTRATION

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Hexahydrocannabinol (HHC) is a synthetic cannabinoid, a hydrogenated derivative of tetrahydrocannabinol (THC), which is the main psychoactive substance in cannabis. HHC interacts with specific cannabinoid receptors CB1 and CB2. It is currently included in the prohibition list of substances carrying a high risk to public health, and its sale and distribution are illegal. However, in the Internet space, it can be freely purchased and delivered in various forms - liquids for oral use or VAPE refill with HHC. Manufacturers and distributors assure that these products cause only a powerful experience with pleasant sensations of relaxation and relief. Clinical practice shows that their use can lead to overdose and intoxication with HHC with a psychotic reaction.

We present a case of acute intoxication after oral administration of 5 drops of liquid HHC Oil 20%, with toxic encephalopathy with disorientation, depersonalisation and derealisation, accompanied by delirium and a panic attack. We focus on HHC-induced panic attacks and psychotic symptoms, which attest to the higher toxicity of synthetic cannabinoids.

Conclusion. Manufacturers of liquids with HHC do not provide specific information about the possibility of a positive test for cannabis. In the present case, the oral use of a liquid with HHC tested positive for THC in a urine immunoassay for psychoactive substances.

Keywords: HHC, hexahydrocannabinol, intoxication, panic attack, psychosis

A CASE REPORT OF CASUISTIC PSILOCYBIN POISONING IN EARLY CHILDHOOD

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Psilocybin (4-phosphoryloxy-N, N-dimethyltryptamine) is an alkaloid produced by psychoactive mushrooms of the genus *Psilocybe* and some other mushrooms. These hallucinogenic “magic mushrooms” grow mainly in Mexico and North and South America, and currently, they are actively cultivated from mycelial spores in the countries of Europe, Africa and Asia. The relatively easy availability of Psilocybin mushrooms from wild and cultivated sources, as well as the distribution and sale of micelles on the Internet, makes them among the most widely used hallucinogenic drugs. Cultivation and possession of “magic mushrooms” is prohibited by law in Bulgaria.

The acute psilocybin poisoning in a 3-year-old child after consuming chocolate without the original packaging clinically presented with cholinolytic syndrome, toxic encephalopathy with delirious manifestations and choreoathetic motor activity alternating with episodes of stupor. The diagnosis was verified with a toxico-chemical analysis proving the presence of psilocin in the urine. The detoxification-depuration, cerebroprotective and symptomatic treatment quickly controlled the clinical symptoms and the child was discharged healthy.

We focus on a psychedelic intoxication that is casuistic in early childhood and may create diagnostic difficulties of hallucinatory production. At the age of 3-4 years, children’s speech is insufficiently developed, and they cannot communicate what exactly they feel. Any inappropriate behaviour of the child should be a signal of poisoning with psychoactive substances. Toxico-chemical analysis helps to refine the differential diagnosis.

Keywords: hallucinations, magic mushrooms, poisoning, psilocybin, psychoactive substance

AN IMPROVED MODEL FOR CARDIOVASCULAR RISK MANAGEMENT IN GENERAL PRACTICE

Plamen Latev

IPPMP Mediana Ltd.

The most important result of the in-depth study, as well as a step forward in the prevention of cardiovascular diseases at the national level, is the proposal of a new improved model for risk assessment, including in primary care.

The basis of the improved model are the results and conclusions made in a study in 2022, where in all evaluated 2458 switched patients in one calendar year, they were compared with the models for estimating the added, attributable risk proposed in the European recommendations for the prevention of cardiovascular diseases themselves. vascular diseases in clinical practice by the European Society of Cardiology in 2016 and 2019, as well as the methodology implemented in the NRD (modified 2016). The basis of the improved model is the weight or attribute risk of each additional risk factor.

First, and as a first step in the development of the new model, additional factors were added to the SCORE calculations, as suggested by the 2016 European Guidelines for the Prevention of Cardiovascular Disease in Clinical Practice and the NRD Appendices. The second step to developing the new model is entirely based on the statistical results of the survey. The improved model is presented in Figure.

Keywords: risk assessment

EOSINOPHIL CATIONIC PROTEIN AS AN ADDITIONAL MARKER FOR DIAGNOSIS OF COVERT TOXOCARIASIS IN PATIENTS WITH CLINICAL ALLERGY

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Introduction: Toxocariasis is a zoonotic parasitosis caused by migration of *Toxocara canis* and *Toxocara cati* larvae. It presents as visceral or ocular larva migrans, neurotoxocariasis and covert toxocariasis. The disease is characterized by allergization with the development of pruritus, urticaria, angioedema and bronchial asthma. *Toxocara* invasion causes a Th-2 type immune response with the activation of eosinophils which secrete eosinophil cationic protein (ECP).

Aims: To assess ECP as an additional marker for the discovery of covert toxocariasis cases among patients with clinical allergy.

Materials and methods: Using ELISA for anti-*Toxocara* IgG antibodies and ECP we examined 150 people divided into three groups: 50 patients with clinical allergy that were carriers of anti-*Toxocara* IgG antibodies, 50 patients with allergic symptoms and no anti-*Toxocara* IgG antibodies and 50 healthy individuals.

Results: We found a statistically significant difference in the mean levels of ECP between the three tested groups ($p=0,010$). ECP levels were significantly higher in patients with acute urticaria and anti-*Toxocara* IgG antibodies than in patients with acute urticaria that didn't carry anti-*Toxocara* antibodies ($p = 0,015$). We did not find a significant difference between ECP levels in patients with chronic urticaria or patients with other allergic reactions.

Conclusion: Eosinophil cationic protein can be used as a marker for the diagnosis of covert toxocariasis cases.

Keywords: Toxocariasis, ELISA, ECP

BITES FROM POISONOUS SNAKES IN BULGARIA

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There are 18 species of snakes in Bulgaria, 4 of which are poisonous. Snakes that can pose a danger to human life are the *Vipera berus* and the *Vipera ammodytes*. Snake venom injury is a potentially life-threatening illness.

Snakebite is characterized by a combination of local toxic damage with general toxic effects.

According to WHO data, 5 million people worldwide are exposed to bites every year. Before the application of modern methods of treatment, the mortality was 20-40%, and in some countries up to 70%. Now, thanks to the application of anti-snake serum, the number of deaths has decreased significantly.

Although there are no deadly snakes in Bulgaria, every single bite is not to be underestimated, due to the fact that the complications for people with health problems are very severe.

Keywords: anti-snake serum, snake, snakes' bites

NEW SYNTHETIC NARCOTIC SUBSTANCES – "DESIGNER DRUGS" - WHAT IS IT?

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Narcotic (from Greek. νάρκωτικός — leading to numbness, Greek. νάρκωσις — stupor) - according to the WHO, «a chemical agent that causes stupor, coma or insensitivity to pain. The term usually refers to opiates or opioids, which are called narcotic analgesics».

The term «narcotic» is often used in medical, legal literature and documentation in an extended sense, denoting all prohibited psychoactive substances, regardless of their pharmacology.

New synthetic narcotic substances are a modified molecule of a known illicit drug (eg heroin) with the same/or significantly increased, psychoactive properties. These substances have a high threat to society and were created to replace substances that are already controlled by the Single Convention on Narcotic Drugs of the United Nations since 1961.

Compounds from the group of new psychoactive substances can most often be offered on the illegal market either in the form of a friable fraction (crystals, granules) or in compressed form (tablets). Much less often, they can be distributed in the form of capsules, liquids for electronic cigarettes and vapes, chewing gum, tea, smoking mixes (Spice, Chillin, Zohai, Fire - crushed grass sprayed with a synthetic drug), bath crystals.

Keywords: designer drug, narcotic, new synthetic drugs

ATYPICAL PRESENTATION OF A SPINAL EPIDURAL ABSCESS – A CASE REPORT

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Introduction. Spinal epidural abscess (SEA) is a rare but life-threatening suppurative infection of the central nervous system (CNS) involving the epidural space.

Purpose. To present a clinical case of SEA with a debut of atypical signs of cervico-thoracic radiculopathy.

Materials. A 70-year-old patient was admitted to the Neurology Clinic in Dr Georgi Stranski University Hospital with severe neck pain radiating to the left shoulder and left half of the chest, with a ten-day duration. The neurological examination showed painfully limited neck flexion and extension fasciculations of the left biceps and triceps with hypotrophy and hyporeflexia. The patient had a history of long-term diabetes mellitus. During the hospitalisation, on account of fever and elevated inflammatory markers, a spine MRI was performed, demonstrating epidural abscess at C7-Th12 level. Neurosurgical treatment with evacuation and drainage was applied in combination with antibiotics targeting *Staphylococcus aureus* with a favourable outcome.

Results. In contrast with the typical clinical manifestation of SEA, the described patient presented with severe radicular and vertebral syndromes followed by fever, with known risk factors – age and diabetes mellitus.

Conclusion. Early diagnosis of SEA is a real challenge in elderly immunocompromised patients. Timely diagnosis and treatment minimise the risk of an unfavourable outcome.

Keywords: epidural abscess, infection, spinal cord

SUPERIOR VENA CAVA SYNDROME MIMICKING SUBACUTE DEMYELINATING POLYNEUROPATHY: A CLINICAL CASE

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Introduction: Subacute demyelinating polyneuropathy is a syndrome characterised by progressive, predominantly distal symmetrical muscle weakness, sensory disturbances, possible cranial nerve involvement, and albuminocytologic dissociation in the cerebrospinal fluid, developing over 4-8 weeks, mainly in patients between 40 and 50 years of age. Differential diagnosis focuses on excluding inflammatory, autoimmune, and toxic causes of acquired polyneuropathy.

Objective: Presentation of a clinical case of a patient with the first manifestation of paraneoplastic syndrome with subacute polyneuropathy and superior vena cava syndrome.

Results: The patient was referred to the clinic due to complaints of progressive asymmetric limb weakness, muscle atrophy, fasciculations, and nasal speech for about 8 weeks. The risk profile included psoriasis, systemic alcohol use, and degenerative spinal changes. CT of the cervical spine showed spinal canal stenosis, cerebrospinal fluid analysis indicated mild protein elevation, and electroneurography revealed segmental demyelination. During the hospital stay, the patient experienced multiple episodes of upper body cyanosis, soft tissue swelling of the face and neck, and shortness of breath, suggesting the presence of a mediastinal process causing superior vena cava syndrome. A subsequent CT scan revealed multiple pathologically enlarged lymph nodes forming masses. The patient was consulted with a thoracic surgeon and referred for planned surgical intervention.

Conclusion: Subacute polyneuropathy can be a manifestation of paraneoplastic syndrome, which should always be considered for timely diagnosis and appropriate treatment.

Keywords: paraneoplastic, polyneuropathy, superior vena cava

SUBACUTE CEREBELLAR DEGENERATION IN LONG-TERM ALCOHOL ABUSE

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Introduction. Subacute cerebellar degeneration with toxic genesis is the most common cause of gait disturbances (ataxia). It has two main types: 1) paraneoplastic and 2) associated with chronic vitamin B1 deficiency, primarily in cases of long-term alcohol abuse. The second type of degeneration results from damage to the Purkinje cells and usually begins in middle-aged patients.

Objective. We present a clinical case of a 46-year-old patient with alcohol dependence and subacute cerebellar degeneration beginning at a young age.

Results. The patient reported progressive ataxia, starting at the age of 30, leading to the inability to move independently and becoming entirely dependent on external assistance. As the disease progressed, visual disturbances, dysarthria, mood changes, and erectile dysfunction developed. When the symptoms first appeared, medical help was sought, but no diagnosis was made. An MRI showed pronounced cerebellar degeneration, predominantly affecting the anterior lobe. Differential diagnostic procedures included biochemical tests, lumbar puncture, and serological tests for HIV and syphilis. The advanced degenerative nature of the disease resulted in minimal effects from treatment with vitamin B1 and vasodilators. To limit progression, we recommended the cessation of alcohol consumption and active rehabilitation.

Conclusion. Progressive cerebellar degeneration, though rare, can begin at a young age and significantly reduce the quality and duration of life for patients. Due to the lack of specific treatment, the main focus is on the early recognition of symptoms, diagnosis, and assisting the patient in overcoming alcohol dependence.

Keywords: alcohol, cerebellar degeneration, young age

MODIFIABLE RISK FACTORS FOR ISCHEMIC STROKE STROKE IN YOUNG AND MIDDLE-AGED PATIENTS: A CASE- CONTROL STUDY

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Background. Lately, the prevalence of modifiable risk factors (RFs), such as arterial hypertension (AH), diabetes mellitus (DM), dyslipidemia, smoking and obesity, is increasing among ischemic stroke (IS) patients aged 18-55 years. There is a debate as to what extent these modifiable RFs contribute to IS occurrence in young and middle-aged patients.

Aim. To evaluate the strength of the relation between the modifiable RFs and IS in young and middle-aged patients.

Material and methods. We compared 120 patients, aged 18-59 years, with first-ever IS, to 120 controls with modifiable RF but without IS. Odds ratios (OR) and their confidence intervals (CI) were calculated. A value of $p \leq 0.05$ was considered statistically significant.

Results. By the means of logistic regression analysis, statistically significant for IS modifiable RFs were: AH (OR-10.018; 95% CI: 5.523-18.173); dyslipidemia (OR-7.569; 95% CI: 4.270-13.416); DM (OR-6.143; 95% CI: 2.910-12.968); current smoking more than 20 cigarettes a day (OR-9.00; 95% CI: 4.489-18.043); low physical activity (OR-5.515; 95% CI: 3.086-9.855); alcohol abuse (OR-4.349; 95% CI: 2.035-9.294); body overweight (OR-2.200; 96% CI: 1.237-3.941), psychosocial stress (OR-2.087; 95% CI: 1.234-3.530) and short night sleep (OR-1.977; 95% CI: 1.060-3.686).

Conclusion. Early identification, management and control of modifiable RFs in young and middle-aged individuals is essential for the reduction of IS incidence.

Keywords: ischemic stroke, modifiable risk factors, young and middle-aged patients

METHADONE-RELATED MYELOPATHY IN A PATIENT WITH SPASTIC PARAPLEGIA: A CASE REPORT

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Introduction. Though presenting with similar clinical, neurophysiological and neuroimaging characteristics, myelopathies are associated with a wide spectrum of underlying factors, thus evoking a diagnostic challenge. Methadone-related myelopathy is one of the less common types with rising occurrence due to the emerging incidence of drug addiction.

Objective. To increase awareness and emphasise a rare side effect of methadone toxicity.

Materials/methods. A 36-year-old female patient was admitted to the Neurology Department of Dr Georgi Stranski University Hospital in Pleven, Bulgaria, with a subacute onset of back pain and weakness in the lower limbs following intravenous exposure to methadone. She had a history of chronic hepatitis C and opioid abuse since she was 18 years old. On examination, a spastic paraplegia with sensory loss at the level of Th8-Th9 was found. Spinal cord MRI revealed thoracic myelopathy with extensive T2-weighted hyperintensity from Th3 to Th6 segments.

Results. A wide diagnostic panel was performed to identify the aetiology of the myelopathy. CSF analysis showed hyperproteinorrhachia. The patient was treated with high-dosage Methylprednisolone intravenously without a significant response. Physiotherapy was initiated with moderate clinical improvement.

Conclusion. This case report highlights the long-term neurotoxic impact of methadone abuse on the central nervous system.

Keywords: myelopathy, methadone, neurotoxicity

THE IMPACT OF METABOLIC SYNDROME ON THE SHORT-TERM OUTCOME OF PATIENTS WITH ACUTE NON-CARDIOEMBOLIC ISCHEMIC STROKE

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Background. The metabolic syndrome (MetS) is associated with an increased risk of cerebrovascular disease and ischemic stroke (IS).

Purpose. To assess the impact of MetS multiple components on the short-term prognosis of patients with acute non-cardioembolic IS.

Methods. A prospective study of 100 acute IS patients admitted to the Neurology Clinic of Dr Georgi Stranski University Hospital in Pleven was conducted from Jan 2020 to Jan 2021. The Patients were divided into two groups - with and without MetS.

Results. Stroke patients with MetS (n=50) showed demographic and gender differences with a prevalence in the age group 61-70 years and female gender. Despite the preexisting therapy with antidiabetics, antihypertensives and statins, the patients with MetS showed a worse risk profile in comparison with the controls: arterial hypertension (78%), diabetes mellitus (100%) and dyslipidemia (64%). In the control group (n=50), arterial hypertension was prevalent (24%) in males and hypercholesterolemia (20%) in females. The evaluation with the National Institute of Health and Stroke Scale (NIHSS) on discharge demonstrated predominantly moderate stroke in controls, while 20% of the MetS group had severe strokes with 2.5-fold poorer outcomes.

Conclusions. Patients with MetS are at higher risk of IS, especially females. The multiple components of MetS significantly impact the short-term outcome of IS, but their control and treatment still remain a therapeutic challenge.

Keywords: ischemic stroke, metabolic syndrome, risk factors

EXTREME HYPERLIPIDEMIA – RARE COMPLICATION OF DIABETIC KETOACIDOSIS IN CHILDHOOD

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Introduction. Though cerebral oedema is the most common complication of diabetic ketoacidosis (DKA) in children with Type 1 diabetes mellitus (T1D), patients may also have other rare complications like pulmonary oedema, peripheral venous thrombosis or electrolyte disturbances and hyperlipidemia.

We present a clinical case of extreme hyperlipidemia in a debut DKA.

Material and methods. A 13-year-old girl with new-onset T1D presented with sudden neurological symptoms consistent with coma in cerebral oedema, severe metabolic acidosis and electrolyte imbalance typical for DKA.

Results. The patient was found to have grossly lipemic serum with extreme hyperlipidemia (total cholesterol of 33,47 mmol/L and serum triglyceride of 208,01 mmol/L). No clinical symptoms for long-term hyperlipidemia (xanthoma or xanthelasma) were manifested. She was managed with intravenous (IV) fluids, electrolytes and IV insulin according to the ISPAD guideline. Additionally, Fraxiparine subcutaneously and fibrates because of the hypertriglyceridemia were started. DKA was resolved within 48 hours, while normalisation of lipids occurred after a month.

Conclusion. Malignant hypertriglyceridemia in DKA might be seen in the pediatric population. It can cause life-threatening complications, but when treated on time, it responds very well to high-dose intravenous insulin infusion and low molecular weight heparins.

Keywords: complication, diabetic ketoacidosis, hyperlipidemia

STUDY ON 25 (OH)D STATUS IN HOSPITALIZED CHILDREN WITH ACUTE RESPIRATORY INFECTIONS

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Introduction. Vitamin D deficiency and its consequences have long been subjects of scientific research. In recent years, the extensive immunomodulatory effects of active vitamin D, due to its local synthesis in the lungs, immune system cells, and other extrarenal tissues, have been elucidated.

Aim. To determine and analyze serum levels of 25(OH) vitamin D and parathyroid hormone (PTH) to evaluate vitamin D deficiency as a risk factor for increased incidence of acute respiratory infections in childhood.

Materials. The study included 129 children divided into five subgroups: children with acute bronchopneumonia (n=42), children with acute laryngotracheitis (n=7), children with acute bronchiolitis (n=32), children with acute bronchitis (n=18) and a control group (n=30).

Methods. Serum levels of 25(OH) vitamin D3 and parathyroid hormone (PTH) were quantified using an electrochemiluminescent immunoassay on the Roche Cobas e411 immunological analyzer.

Results. A statistically significant difference in 25(OH)D levels was found between the control group and the groups of children with bronchopneumonia, acute bronchitis, and laryngotracheitis.

Conclusion. The results of our study provide evidence for the importance of vitamin D as a crucial pathogenetic factor in the occurrence and course of acute respiratory infections.

Keywords: children, 25-hydroxyvitamin D3, parathormone, respiratory tract diseases

ASSESSMENT OF THE SEVERITY OF THE CLINICAL COURSE OF ACUTE BRONCHIOLITIS IN CHILDHOOD

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Introduction. Acute bronchiolitis is one of the most common causes of hospitalization in infancy. Many authors emphasize the importance of viral agents for the severity of the disease. The aim of this study is to assess the severity of the clinical course of acute bronchiolitis in children.

Materials and Methods. We examined 49 hospitalized children between 1 month to 2 years with acute bronchiolitis. The study investigated viral etiology and markers of inflammatory activity. Disease severity was assessed according to the ReSVinet scale.

Results. A viral agent was identified in 58% of cases, with predominant RSV (respiratory syncytial virus) etiology in 32%, followed by rhinovirus in 16%, human metapneumovirus and bocavirus in 4% each; adenovirus, influenza type A, and parainfluenza virus in 2% each. No causative agent was identified in 40% of cases. We observed a mild clinical course in 34%, mostly with combined viral infection, moderate in 62%, mainly with RSV etiology, and severe in 8%, where no etiological factor was identified. A statistically significant difference was found in inflammatory markers, highest in moderate and severe cases ($p=0.006$).

Conclusion: The study of viral etiology in acute bronchiolitis is particularly important for promptly and precise treatment to prevent life-threatening complications.

Keywords: acute bronchiolitis, children, viral etiology

RISK FACTORS AND PREDICTION MODELLING OF LATE-ONSET NEONATAL SEPSIS

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Introduction. Late-onset neonatal sepsis (LOS), associated with the postnatal nosocomial milieu, is a substantial contributor to neonatal morbidity and mortality. It is an ongoing problem for neonatal intensivists because of the increasing survival of preterm infants, prolonged hospitalization, broader use of life-sustaining invasive medical devices and emerging aggressive pathogens with antibiotic resistance.

Material and methods. An ambispective (January, 2021 – June, 2023) clinical-epidemiological study was conducted in a third level NICU in Pleven, Bulgaria. Five hundred and nineteen patients with NICU stay above 72 hours were included (72 with nosocomial sepsis; 447 healthy controls). Twenty-one indicators were tested for influence on the occurrence of LOS. The administration of 4 probiotic preparations was evaluated as a possible preventive measure. This was followed by a quantitative assessment of the identified risk factors and threshold values establishment. A predictive model for the likelihood of developing LOS in newborns was created based on risk and preventive factors. Comparative analysis, ROC curve analysis and multiple binary logistic analysis were applied. Data were entered and processed with the statistical packages IBM SPSS Statistics 27.0.1.0 and MedCalc Version 19.6.3. and Office 2021 Excel. A significance level rejecting the null hypothesis was taken as p

Keywords: late neonatal sepsis, risk factors, probiotic supplementation, prediction modelling

IDIOPATHIC PHOTOSENSITIVE OCCIPITAL EPILEPSY: CLINICAL CASES

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Idiopathic photosensitive occipital epilepsy is a rare presentation of childhood epilepsy, between 2-7% of benign idiopathic childhood focal seizures and 0.4% of all epilepsy cases. Its onset is between 3 and 15 years old, more commonly in children with a family history of migraine and epilepsy.

The leading symptom occurs as elementary visual hallucinations, manifesting as a cluster of bright multi-coloured spots in the field of vision and may be accompanied by an ictal or postictal headache, jerking of the eyelids and a secondary generalised seizure. Diagnosis is made on the basis of anamnesis and specific EEG findings.

We present a clinical case of a boy whose seizures were dismissed as not alarming by the parents until a generalised seizure was observed. The diagnosis was confirmed by electroencephalography. Another case, in which the patient's symptoms were first interpreted as visual aura migraine until an EEG was performed and additional anamnestic data about the characteristics of the aura were acquired. For this reason, in making the differential diagnosis, it is important to rule out migraine with visual aura and symptomatic epilepsy.

Conclusion. Establishing the diagnosis and recognising the semiology of the seizures is the key to proper treatment and control of the disease.

Keywords: childhood, occipital epilepsy

HYPERIMMUNOGLOBULIN E SYNDROME IN CHILDHOOD: A CLINICAL CASE

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Introduction. Hyper-IgE syndrome (HIES) is a rare primary immunodeficiency characterized clinically by the triad: atopic dermatitis, recurrent staphylococcal dermatitis, and recurrent pulmonary infections. It is characterized by extremely high serum levels of IgE (>2000 IU/ml), and eosinophilia is observed in 90% of the patients. Most cases of HIES are sporadic, but cases of autosomal-recessive (AR) and autosomal-dominant (AD) inheritance, known as Job syndrome, have been described. The purpose of this report is to present the clinical picture and laboratory characteristics of a patient with Hyper-IgE syndrome.

Materials and methods. We present a clinical case of a 5-year-old girl hospitalized in the Pediatric Clinic due to a severe skin infection, presenting with a disseminated papulo-vesicular rash, with the presence of oval and linear excoriations and postlesional hypopigmentation. With a history of recurrent severe infections affecting the skin, respiratory and digestive systems.

Results. Immunological studies revealed extremely elevated IgE values (5000 IU/ml) and eosinophilia (44%; $11,4 \times 10^9/l$). Based on the clinical data and immunological results, it was assumed to be HIES.

Conclusion. The presented clinical case emphasizes the need to consider this rare syndrome in the differential diagnosis of patients with recurrent staphylococcal infections.

Keywords: childhood, hyper-IgE syndrome, staphylococcal infections

RAYNAUD'S SYNDROME - CLINICAL MANIFESTATIONS AND IMMUNOLOGICAL CHARACTERISTICS IN RHEUMATIC DISEASES

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Raynaud's phenomenon is characterised by recurrent vasospasms of small arteries and arterioles of the fingers and toes. It appears when exposed to cold or emotional stress, in various rheumatic diseases, exposure to harmful factors, and medications. It occurs in three phases: ischemia, cyanosis and hyperemia. The duration of paroxysmal periods is variable. Clinical manifestations are pain and discomfort, numbness, throbbing pain or cold sensation, ulceration and necrosis. Raynaud's phenomenon is classified into two groups: primary (Raynaud's disease) and secondary (Raynaud's syndrome). In the primary manifestations, functional disorders and the involvement of thermoregulatory changes in the circulation result in an isolated vasospastic state. In the secondary case, structural microvascular abnormalities and involvement of the skin's nutritional blood flow, resulting in tissue hypoxia and ischemia, are established. The most common manifestations of Raynaud's syndrome in rheumatology are in systemic connective tissue diseases: scleroderma and progressive systemic sclerosis, systemic lupus erythematosus, undifferentiated connective tissue disease, dermatomyositis/polymyositis; in some inflammatory joint diseases - rheumatoid arthritis, primary Sjogren's, as well as in systemic vasculitis: Buerger's disease, Takayasu's arteritis, polyarteritis nodosa, granulomatous polyangiitis. Each nosological unit has a characteristic clinical course and specific immunological markers. As an accessible and noninvasive instrumental diagnostic method, capillaroscopy is used to assess capillaries in the nail fold of the fingers in terms of number, structure, shape and morphology, and presence of avascular zones.

Keywords: capillaroscopy, immunological markers, progressive systemic sclerosis, Raynaud's syndrome, vasculitis

ASSOCIATION BETWEEN SENSIBILIZATION TO CAT ALLERGENS AND BEE AND WASP VENOM IN PATIENTS WITH CHRONIC URTICARIA: INSIGHTS FROM SKIN PRICK TEST

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Introduction. Urticaria is a frequent, mast cell-driven disease that presents with wheals, angioedema, or both. Allergies to animal dander and insects are frequent triggers of urticaria, yet the specific interplay between allergens, such as those from cat and bee/wasp venom, warrants further investigation.

Aim. This study aimed to explore the potential association between sensitization to cat allergens and allergens from honey bees and wasps in patients with chronic urticaria.

Materials and methods. It was a cross-sectional study of consecutive patients diagnosed with chronic urticaria- both spontaneous and inducible, and hospitalized in allergology department for the period January 4-December 18, 2023. We conducted skin prick test on 121 patients to assess their sensitization to cat dander and insect allergens.

Results. Statistical analysis revealed a significant association ($p=0.05$) between sensitization to cat allergens and sensitization to honey bee and wasp allergens among the patients with urticaria. This suggests potential cross-reactivity or shared immunological pathways between these allergen groups.

Conclusion. These findings highlight the possible cross-reactivity between cat allergens and bee/wasp venom in patients with chronic urticaria. Further investigation into the specific allergenic components and immune mechanisms involved is essential for improving diagnostic accuracy and therapeutic strategies for managing urticaria associated with animal and insect allergens.

Keywords: allergens, chronic urticaria, sensitization

CRYOPEN - INNOVATIVE SOLUTION FOR CRYOTHERAPY

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CryoPEN is an innovative cryotherapy technology that offers precise and effective treatment of skin lesions by freezing. This system uses liquid nitrogen delivered through a specially designed nozzle that allows targeted and controlled tissue cooling. CryoPEN combines the advantages of traditional cryotherapy with modern technological solutions, ensuring better accuracy and minimising discomfort for the patient. The microtip allows for focused treatment that reduces the risk of damage to surrounding healthy tissue. The temperature and time of freezing can be precisely controlled, providing optimal results for different types of skin lesions. The noninvasive nature of the procedure without anaesthesia reduces the risk of complications and makes the treatment suitable for a wide range of patients. The compact and mobile design of CryoPEN allows easy use in various clinical settings, including home visits.

Our research has demonstrated high efficacy and patient satisfaction, making CryoPEN the preferred choice for the treatment of warts, actinic keratosis, hemangiomas and other benign skin lesions. The technology continues to develop, offering new possibilities for application and improving therapeutic results.

Keywords: cryotherapy, CryoPEN, skin lesions, liquid nitrogen, noninvasive treatment

RHYTHM AND CONDUCTIVE DISORDERS AND COVID-19 INFECTIONS

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Introduction. The COVID-19 infection causes acute respiratory syndrome. Rhythm and conduction disorders are key elements that contribute to complications of the infection.

Aim. This research aims to study the connection between newly appeared or recurring rhythm disorders for one year in patients who have suffered from COVID-19 infection.

Methods. We observed and analysed 118 patients with heart diseases and rhythm pathology who were hospitalised in the Clinic of Cardiology of Dr Georgi Stranski University Hospital in Pleven between 01.03.2021 and 01.03.2022. All of them signed an informed consent to take part in the study.

Results. The results showed that out of 118 patients (men 63.55 % and women 36.44%), 92 patients had suffered from a COVID-19 infection - men 56 (60.86 %), women 36 (39.14%). Out of them, 29% had a newly onset rhythm disorder, 53 % had a recurring one, and 18% had a persistent disorder. Of all of the patients, 26 had not suffered from COVID-19 infection (53.84% men and 46.16 % women), 19.23 % had a newly appeared rhythm pathology, 65.39 % had a relapse, and 15.38% had a persistent one. Those with COVID-19 infection were divided by a percentage ratio: atrial fibrillation – 51 (46.92 %), atrial flutter – 8 (7.36%), supraventricular extrasystoles – 14 (12.88%), ventricular extrasystoles – 19 (7.48 %). It was concluded via accurate statistics that atrial fibrillation had the highest frequency compared to all other researched rhythm pathologies.

Conclusion. The analysis of the collected data shows a moderate to strongly positive correlation between the number of COVID-19 infections and patients with rhythm pathology. Therefore, COVID-19 infection is associated with an increased risk of arrhythmias, which could be a result of direct or indirect damage to the myocardial tissue.

Keywords: arrhythmias, COVID-19

CIRCULATING UNDERCARBOXYLATED MATRIX GLA PROTEIN AS A POTENTIAL BIOMARKER FOR CARDIOVASCULAR RISK IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Introduction. Chronic kidney disease (CKD) patients have a high cardiovascular disease risk, mainly due to vascular calcification. Undercarboxylated matrix Gla protein (ucMGP) inhibits vascular calcification and is crucial in preventing this condition.

Materials and methods. We compared ucMGP levels in 84 predialysis CKD patients with preserved and reduced renal function and evaluated its role as a cardiovascular risk biomarker. Patients were divided into two groups based on kidney function: Group I (GFR \geq 90 mL/min/1.73 m²) and Group II (GFR 15-89 ml/min/1.73 m²). Blood samples were analysed using the Cobas E 311 automated analyser, and the ucMGP levels were measured using an ELISA kit from Abbexa, UK.

Results. In Group I, CVD patients had significantly higher blood urea nitrogen, serum creatinine, and ucMGP concentrations, as well as lower GFR compared to non-CVD patients. In Group II, CVD patients had higher ucMGP concentrations, but the difference was not statistically significant. UcMGP levels were associated with age and CVD in Group II and highly correlated with inorganic phosphate and serum creatinine levels in Group I.

Conclusions. UcMGP levels show a significant increase in CKD patients with CVD and are strongly connected to various renal function indices, indicating its potential as a biomarker for cardiovascular risk assessment.

Keywords: cardiovascular risk, chronic kidney disease, undercarboxylated matrix Gla protein, vascular calcification

DECIPHERING THE TRIAD: PSORIASIS VULGARIS, BLASCHKO'S LINES AND DIABETES MELLITUS: A CASE REPORT

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We present a 49-year-old man with psoriatic lesions along the Blaschko lines and metabolic syndrome. Since the age of 22, the patient has had pruritic, erythematous, well-defined, scaly plaques on the body and extremities, following Blaschko's lines. The rash appeared after a stressful military experience, starting on the back of the thorax and spreading to the extremities. The patient reports chronic pain in the joints of the hands and knees, without changes in the scalp and nails. There is a positive family history, he has an aunt with psoriasis vulgaris. The patient underwent treatment with corticosteroids and emollients without improvement. Laboratory tests showed a slight increase in inflammation and metabolic markers. A skin biopsy confirmed psoriasis vulgaris. The diagnosis was made on the basis of clinical signs, laboratory tests, and skin biopsy, showing Blaschkoid psoriasis and type II Diabetes mellitus. Treatment with methotrexate, folic acid, keratolytics, emollients and UVB phototherapy were administered, resulting in clinical improvement. Consultations with an endocrinologist and gastroenterologist were conducted. Blaschkoid psoriasis may be associated with systemic conditions such as metabolic syndrome. Early treatment and a multidisciplinary approach are crucial.

Keywords: Blaschko's lines, metabolic syndrome, psoriasis vulgaris

EUROPEAN TRAUMA COURSE: A MODERN APPROACH TO THE MANAGEMENT OF MAJOR TRAUMA

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Trauma is one of the leading causes of death, resulting in 4.4 million deaths per year (WHO, 2024). The quality of emergency care can significantly improve the chances of survival and decrease disability (WHO,2024).

In 1978, Dr. Styner developed the first structured approach to managing major trauma, Advanced Trauma Life Support (ATLS) (Carmont, 2004). ATLS approached the management of major trauma in a vertical manner - sequentially dealing with issues affecting airway, breathing, circulation, and disability (ABCD approach) (Galvagno et al., 2019).

Recent developments in the understanding of pathology of major trauma, advancements in Point of Care imaging and the creation of major trauma centres allowed further optimisation in care (Lendrum et al, 2012).

In 2008, the European Resuscitation Council (ERC) developed the European Trauma Course (ETC) (Carsten Lott, 2009). The ETC approach to trauma is the so-called pitstop concept (ETC manual, 2022). A multi-professional team, under the direction of a Trauma Team Leader, assesses multiple systems simultaneously and ensures communication between team members.

ETC training led to changes in the approach to trauma, increased compliance with European Trauma Protocols (Vasse et al., 2023), confidence in the management of Major Trauma (Neutel et al., 2023), and improved outcomes in Major Trauma cases (Vasse et al., 2023).

Jubilee Scientific Conference with International Participation

Surgical Sciences

Content

- 118 DEVELOPMENT OF COLOPROCTOLOGY IN PLEVEN IN THE
LAST 20 YEARS
Dobromir Dimitrov
- 119 INDUSTRY AND INNOVATION: WHAT IS THE ROLE OF THE
SURGEON?
Giulio A Santoro, Paolo Santoro
- 120 TRACHEAL SURGERY IN CHILDREN. VASCULAR RINGS AND
SLINGS
Tsvetomir Loukanov
- 121 KIDNEY TRANSPLANT: HISTORY, UPDATES AND THE
FUTURE
Prince Mohan Anand
- 122 DR. ASEN PETROV – THE FOUNDER OF MODERN SURGERY
IN BULGARIA
Georgi Baitchev
- 123 PANCREATIC RESECTIONAL SURGERY – HAVE THE STUDIES
IN THE LAST 50 YEARS BEEN ENOUGH FOR OVERCOMING
NIHILISM AND SCEPTICISM?
Kiril Draganov
- 124 TRADITIONS AND MODERN CONCEPTIONS OF THE IVOR
LEWIS ESOPHAGECTOMY IN THE OPERATIVE TREATMENT
OF DISTAL ESOPHAGEAL CANCER
Nikolay Belev
- 125 REVISION HIP REPLACEMENT WITH POROUS METAL
IMPLANTS
Plamen Kinov

- 126 ANAESTHESIOLOGY AND INTENSIVE TREATMENT: WHY, WHEN, HOW, WHAT, WHOIN THE XXI CENTURY
Vilian Platikanov
- 127 MEDICAL STUDENT TRAINING IN THE 3RD DECADE OF THE 21ST CENTURY. CHALLENGES, PITFALLS AND OPPORTUNITIES
Sergey Iliev, Pencho Tonchev
- 128 STRUCTURE OF EMERGENCY HOSPITALISATIONS IN THE SURGICAL DEPARTMENTS OF DR. GEORGI STRANSKI UNIVERSITY HOSPITAL IN THE PERIOD 2013-2023
Pencho Tonchev, Miroslava Hristova, Sergey Iliev, Dimitar Stoykov
- 129 ADOPTION AND EVOLUTION OF AN OUTPATIENT CHOLECYSTECTOMY PROTOCOL IN A SPANISH SECONDARY HOSPITAL
Tihomir Georgiev-Hristov, Pablo Finno, Santiago González Ayora, María José Fraile Vilarrasa
- 130 COMPLEX HEPATO-PANCREATO-BILLIARY SURGERY IN A SPANISH SECONDARY HOSPITAL. RESULTS AND COMPARISON WITH THE INTERNATIONAL STANDARDS (BENCHMARKING) AND TEXTBOOK OUTCOMES
Tihomir Georgiev-Hristov, Martina Califano, Julia Rodrigues Monteiro, Santiago González Ayora, María José Fraile Vilarrasa
- 131 BOTULINUM TOXIN APPLICATION AS PREHABILITATION FOR COMPLEX VENTRAL HERNIA REPAIR. CONCEPT ACTUALISATION AND LESSONS LEARNED FROM THE FIRST 50 CASES
Tihomir Georgiev-Hristov, Santiago González Ayora, Juan Bernar de Oriol, María José Fraile Villarica
- 132 INTRODUCING FLUORESCENT ANGIOGRAPHY IN ROUTINE MINIMALLY INVASIVE COLORECTAL CANCER SURGERY TO REDUCE ANASTOMOTIC LEAK RATES
Tsanko Yotsov, Martin Karamanliev, Svilen Maslyankov Dobromir Dimitrov

- 133 DEVELOPMENT OF RECTAL SURGERY IN THE LAST 50 YEARS AND THE INTRODUCTION OF TRANSANAL SURGERY IN THE TREATMENT OF RECTAL CANCER
Martin Karamanliev, Meri Shoshkova, Yoan Ivanov, Tsanko Yotsov, Dobromir Dimitrov
- 134 NON-INTUBATION SINGLE-PORT VIDEO-ASSISTED THORACIC SURGERY IN PATIENTS WITH PLEURAL EFFUSIONS
Daniel Valchev, Plamen Vidolov, Zlatomir Ilinov, Duigu Hassan
- 135 ANALYSIS OF THE COLORECTAL CANCER MINIMALLY INVASIVE SURGICAL TREATMENT IN BULGARIA
Martin Karamanliev, Meri Shoshkova, Yoan Ivanov, Tsanko Yotsov, Dobromir Dimitrov
- 136 DEHISCENCE: CAUSES AND PREVENTION
Irina Dekova, Ivaylo Marinov
- 137 THE ROLE OF WATER-SOLUBLE IODINATED CONTRAST IN DIAGNOSING AND TREATING PATIENTS WITH INTESTINAL OBSTRUCTION
Irina Dekova, Lazar Tranchev
- 138 FLUORESCENT CHOLANGIOGRAM OPTIMAL DOSE AND TIME OF INJECTION: A SURVEY AMONG PRACTITIONERS
Tsanko Yotsov, Paolina Kamenova, Adriana Vricheva, Ivelin Yotsov
- 139 FOURNIER'S GANGRENE: PATHOGENESIS, RISK FACTORS, AND PREVENTIVE MEASURES
Ivanche Ristovski, Vasil Dimitrov, Aleksander Yankov
- 140 APPLICATION OF MITOMYCIN C IN THE TREATMENT OF CONJUNCTIVAL TUMORS
Ina Nikolova, Georgi Balchev
- 141 ORBITAL DISEASES
Georgi Balchev

- 142 AI-ENHANCED PREDICTION OF LUNG CANCER RISK FROM IMAGING BIOMARKERS IN CHEST RADIOGRAPHS: AN EXTERNAL VALIDATION STUDY
Ayis Pyrros
- 143 KERATOPLASTY NOWADAYS
Snezhana Murgova
- 144 CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION - SURGICAL TREATMENT
Krasina Valcheva
- 145 SURGICAL RECONSTRUCTION MIDFACE LIFTING IN LOWER EYELID NEGATIVE VECTOR
Tsvetina Ivanova, Georgi Balchev
- 146 RECONSTRUCTION OF LOWER EYELID WITH MEDIAL TRANSPOSITION: A CLINICAL CASE
Bilyana Mihova, Georgi Balchev
- 147 EVISCERATION, ENUCLEATION AND EXENTERATION
Michaela Tsvetkova, Georgi Balchev
- 148 DISTANT SOFT TISSUE FLAPS IN A DEGLOVING SKIN INJURY
Denis Dimitrov, Mancho Kovachev, Vihar Kovachev
- 149 TREATMENT OF HUMERAL FRACTURES AND SECONDARY COMPLICATIONS.
Denis Dimitrov, Mancho Kovachev, Vihar Kovachev
- 150 BIOACTIVE GLASS APPLICATION IN ORTHOPEDICS AND TRAUMATOLOGY: A LITERATURE REVIEW AND PROPOSITION OF A PROTOCOL OF A RANDOMISED CONTROLLED TRIAL
Emil Simeonov, Viktor Mikson, Rostislav Kostov, Radostina Madzarova, Preslav Vasilev, Zhenya Andreeva-Simeonova

DEVELOPMENT OF COLOPROCTOLOGY IN PLEVEN IN THE LAST 20 YEARS

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Introduction. Over the last 20 years, high-tech and low-trauma techniques have contributed to significant advances in diagnosing and treatment of diseases of the anus, colon and rectum. Major improvements in both clinical and functional outcomes have been achieved. Rapid recovery and improved patient quality of life have proven essential. At the same time, it is becoming increasingly difficult for hospital management to invest in so many new devices and technologies and train physicians to use them relatively quickly.

Aim. The plenary paper presents the landmarks in the development of coloproctology in Pleven during the last 20 years.

Materials and methods. Objective data from publications in Bulgarian and international medical journals over the last 20 years were used in the analysis. The analysis does not claim to be complete and comprehensive.

Results. Historical evidence of innovations that have been introduced into the clinical practice by physicians at the Pleven University Hospitals is presented, including clinical-anatomical and physiological basis for total mesorectal and mesocolic excision, sentinel lymph node biopsy in colorectal cancer, anal tonometry, sphincter-sparing anterior resections of the rectum, laparoscopic colorectal surgery, transanal minimally invasive surgery, transanal endoscopic microsurgery, transanal hemorrhoidal disarticulation, laser ablation of anal fistulas, robotic colorectal surgery, among others.

Conclusion. During the last 20 years, the surgeons at the university hospitals have kept abreast with the rapid development of coloproctology on a global scale. Thanks to the appropriate policy and substantial investment of the leadership of Medical University – Pleven, patients from Northern Bulgaria have had access to almost all modern medical achievements in this field.

Keywords: development, innovations, robotic colorectal surgery

INDUSTRY AND INNOVATION: WHAT IS THE ROLE OF THE SURGEON?

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Introduction: To describe the progress in surgery over the past 50 years, revolutionizing clinical care through technological innovation and clinical research.

Purpose: Surgical innovation is fundamental to improving patient outcomes, reducing complications, and shortening hospital stays. Procedures once deemed impossible (laparoscopy, robotics, minimally invasive procedures, 3D printing, artificial intelligence, telemedicine, regenerative medicine) are now or will become standard, profoundly affecting surgical decision-making and patient care. However, it is crucial that surgical innovation is conducted with caution to protect patient safety and ensure the best outcomes. The aim of our study was to evaluate the role of industry and surgeon in the introduction of new approaches in order to consider proper training, quality assurance, patient selection, auditing, trials and health policy implications.

Methods: A review of the literature on technology innovation in surgery was undertaken using databases (PubMed, Medline, Cochrane Library, Embase, WoS).

Results: Surgical innovation shows no signs of slowing down, however the process of developing and promoting new procedures has not been systematically and rigorously defined to date. Often deciding how and when to apply emerging techniques is based on personal judgment of individual surgeons rather than on evidence based. This potentially can pose significantly risks to harm patients. Furthermore, the impact of technological changes on clinical governance and hospital organization and productivity has not been thoroughly considered.

Conclusion: Industry and surgeon have the responsibility to cooperate to develop, explore and assess innovation to improve the quality of patient care.

Keywords: devices, industry, innovation, procedures, research, surgery, technologies

TRACHEAL SURGERY IN CHILDREN. VASCULAR RINGS AND SLINGS

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Tracheal stenosis in children is primarily caused by congenital complete cartilage tracheal rings. These infants present with severe respiratory distress early in life. The purpose of this presentation is to examine the surgical intervention for infants and children with congenital tracheal stenosis. Most of the significant advances in the surgical treatment of patients with congenital tracheal stenosis have occurred over the past 50 years. The results of surgical intervention on patients with congenital tracheal stenosis have steadily improved, particularly during the past 20 years. Most successful centres use cardiopulmonary bypass, simultaneous repair of associated pulmonary artery sling and cardiac anomalies, and the current procedure of choice – slide tracheoplasty. During the past 50 years, significant advances have been made in medical care for infants with congenital tracheal stenosis. The outlook for these children is currently quite good, and successful outcomes are particularly evident at institutions with a careful multidisciplinary approach to these patients.

Keywords: children, surgical treatment, tracheal stenosis

KIDNEY TRANSPLANT: HISTORY, UPDATES AND THE FUTURE

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Kidney transplant has come a long way since the first successful transplant was done in Boston in 1954, exactly 60 years ago. The last 60 years have been a success story for the field of transplantation. We have seen the field broaden with heart, lung, liver, pancreas, uterus, and vascular composite allografts (VCA) transplants. In the most recent times, we have seen xenotransplants from genetically modified pigs. I will discuss these updates, my experience in starting a new kidney transplant program, and its impact on patient care.

Keywords: genetically modified pigs, kidney transplant program, xenotransplants

DR. ASEN PETROV – THE FOUNDER OF MODERN SURGERY IN BULGARIA

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Dr. Asen Petrov was born on March 15, 1862. His family was involved in the Bulgarian Renaissance movement. He graduated with honours in medicine in Montpellier and specialised in surgery in Paris and Vienna. From 1896, he was the head of the surgical department of Alexandrovska Hospital for 25 years. He was a military field surgeon and organised military hospitals during the 1912-1918 wars. Dr. Asen Petrov is the author of 94 works in all fields of surgery and introduced the methods of asepsis and antiseptics in Bulgaria. Also, he offered innovative techniques for colon operations and was the first in our country to perform gastric resection, liver lobectomy, and trepanation. Dr. Asen Petrov successfully operated on vascular aneurysms and introduced plastic surgery practice in Bulgaria. He designed several types of new surgical instruments and an innovative operating table. He established a school and was the first to organise training courses for Bulgarian surgeons, sharing his innovative ideas and methods. He was Chevalier of the French Legion of Honour and a member of many international medical societies. Having saved thousands of patients, he died of a heart attack on February 20, 1920, only 58 years old.

PANCREATIC RESECTIONAL SURGERY – HAVE THE STUDIES IN THE LAST 50 YEARS BEEN ENOUGH FOR OVERCOMING NIHILISM AND SCEPTICISM?

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Introduction. Duodenohepaticopancreatectomy (DHPE) plays an important role in the pancreatic head adenocarcinoma (PHAC) treatment scheme. Attitudes towards this procedure have varied over the last 50 years. Postoperative pancreatic fistula (POPF) remains the Achilles heel of DHPEs.

Aim. Presentation of own high-volume single-centre institutional experience in DHPEs.

Material and methods: More than 700 cases of PHAC from 2007 to 2023 were included in the study. Certain prognostic factors for resectability and risk factors for early postoperative complications were analysed. The definitions of the International Study Group of Pancreatic Surgery were used to interpret the results.

Results: The early postoperative mortality and morbidity rates in a series of 310 DHPEs were 0.3 % (n=1) and 32.6% (n=101), respectively. A dilated main pancreatic duct (MPD) was the only prognostic factor for resectability.

Keywords: duodenohepaticopancreatectomy; pancreatic head adenocarcinoma; postoperative pancreatic fistula

TRADITIONS AND MODERN CONCEPTIONS OF THE IVOR LEWIS ESOPHAGECTOMY IN THE OPERATIVE TREATMENT OF DISTAL ESOPHAGEAL CANCER

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Esophageal cancer is the seventh most common malignancy and the sixth most common cause of death from malignant neoplasms worldwide. In 2002, approximately 604,100 new cases of esophageal cancer were newly diagnosed, with 544,076 (0.90 mortality rate) of these dying of the disease (1). Ivor Lewis esophagectomy (ILE) has remained the procedure of choice for early and locally advanced (after neoadjuvant therapy) cancer of the mid- or lower esophagus since it was first introduced in 1946 (2). This operation provides a radical cure but is associated with significant morbidity and mortality. Despite its widespread use, the complication rate remains high. Reported anastomotic insufficiency is still as high as 25%, and esophageal strictures can be as high as 40%. It is well-known that anastomotic ischemia contributes to these complications, and the authors believe that they are largely avoidable.

The Ivor Lewis Minimally Invasive Esophagectomy (MI-ILE) is applied in an attempt to reduce perioperative complications. MI-ILE demonstrated comparable postoperative outcomes to open ILE and showed the potential to reduce blood loss and hospital stay. There is no evidence of a significant improvement in long-term survival after MI-ILE (6).

Almost 20 years have passed since the first reported case of robot-assisted minimally invasive esophagectomy (RAMIE) as a promising minimally invasive technique aimed at reducing morbidity and mortality, improving long-term survival, and improving patient quality of life. Robotic ILE is safe and feasible, but more studies are needed to prove its benefits. Randomised controlled trials comparing MI-ILE or robotic ILE with conventional open ILE are warranted to determine the optimal surgical procedure for the treatment of esophageal cancer.

Keywords: esophageal cancer, Ivor Lewis minimally invasive esophagectomy, robot-assisted esophagectomy

REVISION HIP REPLACEMENT WITH POROUS METAL IMPLANTS

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In the era of revision arthroplasty, solid bone defects of the acetabulum are increasingly encountered, regardless of the nature of the pathology, leading to the need for revision joint replacement. Often, the entire acetabular zone is affected by the osteolytic process. Inadequate bone substrate and important anatomical structures in the pelvis significantly limit surgical options. The implantation of prostheses with a contact surface of trabecular threads and a bioactive coating applied to the metal represents an attractive alternative to addressing this pathology.

Materials and methods. Over the past 8 years, porous metal implants have been used in 103 patients at the Clinic of Orthopedics and Traumatology at Tsaritsa Yoanna - ISUL University Hospital, Sofia. The average age of the patients was 66.4 years. Most of the cohort were women - 68.7%, while the men accounted for 31.3%. The main indications for revision were aseptic loosening and infection.

Results. The results were excellent. The survival rate in the 6th year with end event aseptic loosening was 98.8% and with end event revision for any other reason – 95.2%. The predominant severe complication in the series was dislocation (three cases) and necessitated re-revision. In one case, early loosening occurred after a fall in the early postoperative period.

Conclusion. Porous metal implants are viable alternatives in most complex revision cases. Their use warrants favourable and reliable outcomes and mid-term follow-up.

Keywords: porous metal implants, revision arthroplasty

ANAESTHESIOLOGY AND INTENSIVE TREATMENT: WHY, WHEN, HOW, WHAT, WHOIN THE XXI CENTURY

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Panta rhei, panta chorei.... said Heraclitus a long time ago. Everything flows, nothing stays the same, everything changes. This applies with particular force to medical science. With the development of technology, we increasingly have to work with high-tech devices that help us and often replace some of our activities in treating patients. Of course, we can only progress into the future by being aware of our past and present. Broadly speaking, the lecture follows this line of exposition - from ancient times through the present and 2024, and what lies ahead in the near future, with a horizon of 2050 and shortly beyond, in terms of anaesthesia and intensive care. Current state-of-the-art advances, drugs and techniques are discussed, as well as the entry into the specific practice of anaesthesiology and intensive care of the increasingly relevant practices of telemedicine, robotic anaesthesia, nanorobotics, theranostics, artificial intelligence, etc. The characteristics of physician professionals in these medical fields are presented, a comparison is made between aviation and anesthesiology, and what changes are expected in the near future.

Keywords: anesthesiology, artificial intelligence, nanorobotics, robotic anaesthesia, telemedicine, theranostics

MEDICAL STUDENT TRAINING IN THE 3RD DECADE OF THE 21ST CENTURY. CHALLENGES, PITFALLS AND OPPORTUNITIES

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The training of medical students results from three vectors: teachers, material base, motivation and capacity of the trainees. The development of the information environment in the last decade has been in a “geometric progression”. The huge array of data and easy access to it should ensure better and adequate training. The application of artificial intelligence in the educational sphere is still gaining momentum with all the pros and cons. “Screen addiction”, which is growing in size and covers all age groups, with the resulting changes in brain activity and loss of concentration and attention, is a serious problem requiring changes in the approach and structure of training. We offer an analysis of the existing material base, teaching provision and opportunities to adapt to the realities of the students’ requirements and capacities.

Keywords: AI, medical education, screen addiction

STRUCTURE OF EMERGENCY HOSPITALISATIONS IN THE SURGICAL DEPARTMENTS OF DR. GEORGI STRANSKI UNIVERSITY HOSPITAL IN THE PERIOD 2013-2023

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About 60-75% of admissions to the surgical departments of University Hospital are urgent. A significant part of admissions is through the Multi-Profile Emergency Department (MED), as some patients are transported from the Center for Emergency Medical Care (CEMC) - Pleven.

Aim. The present study aims to analyse the structure of admission by diagnoses, departments, and years and determine whether there is a relationship between hospital mortality and how patients are referred to the General Emergency Department (GED), the time of admission, and the time to surgery.

Material and methods. We studied the data from GammaCode Master of Dr. Georgi Stranski University Hospital for 11 years (2013-2023). A total of 371,035 patients have passed through the GED. Of these, 30382 were admitted to different surgical wards of the hospital. Of these, 6,941 were transported by CEMC teams. With the appropriate statistical methods, the structure of admissions by diagnoses, departments, and years was analysed, as well as whether there is a relationship between hospital mortality and the way patients were referred to the GED, the time of admission, and the time until surgery.

Results. During the period, 63194 patients were admitted to the surgical clinics. The mortality rate for emergency admissions was 3.4%, and for planned admissions - 0.4%. The average stay for emergency admissions is 5.7 days and for scheduled admissions - 3.7 days. The study data showed statistically significant differences in the main indicators according to the type of surgical unit, major diagnosis groups, emergency admission, and whether an EMS team transported the patient. **Conclusion.** A significant part of the patients treated in the surgical clinics of Dr Georgi Stranski University Hospital were admitted as emergencies through the GED. This contingent of patients had a longer hospital stay and a higher mortality rate.

Keywords: emergency surgery, mortality, hospital stay length

ADOPTION AND EVOLUTION OF AN OUTPATIENT CHOLECYSTECTOMY PROTOCOL IN A SPANISH SECONDARY HOSPITAL

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Background. Outpatient cholecystectomy protocols are still not universally accepted, and success rates largely vary.

Aim. We aimed to study the application of a structured protocol, its evolution, and its impact on the results in a Spanish secondary hospital (Hospital Universitario General de Villalba).

Method. We reviewed 1024 patients who underwent elective cholecystectomy from January 2018 to December 2022 after the protocol was introduced. The initial intention for introducing the outpatient cholecystectomy protocols, as well as the success rate and complications, was analysed. Patient factors and operative parameters were studied for their impact on the results.

Results. Outpatient cholecystectomy was offered to 80.3% of the patients and significantly increased during the studied period from 69% to 91%, with an increasing success rate reaching 88.2% in 2022. Although considered initially as relative contraindications, BMI >30, advanced age, comorbidities, ASA and recent history of pancreatitis and/or cholecystitis, these factors did not increase the admission and complication rates. They led to more flexible indications for outpatient cholecystectomy.

Conclusion. Structured protocols for outpatient cholecystectomy and continuous control and revision could lead to safe adoption and increased introduction of this procedure worldwide. Some relative contraindications (recent acute pancreatitis or cholecystitis, BMI>30, advanced age, and ASA) could have an impact in such a scenario.

Keywords: major ambulatory surgery, outpatient cholecystectomy

COMPLEX HEPATO-PANCREATO-BILLIARY SURGERY IN A SPANISH SECONDARY HOSPITAL. RESULTS AND COMPARISON WITH THE INTERNATIONAL STANDARDS (BENCHMARKING) AND TEXTBOOK OUTCOMES

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Background. There is some controversy regarding the relationship between case volume and quality of outcomes in complex hepato-pancreato-biliary surgery.

Aim. We aimed to analyse our entire experience with complex HPB surgery since the establishment of the HBP Surgery Unit at our centre.

Materials and Methods. Demographic data, surgical details, postoperative outcomes, and pathological and oncological results were analysed. The results were compared with recent benchmarking outcomes, and Textbook Outcomes rates were calculated.

Results. Between June 2016 and March 2023, 63 pancreatectomies and 89 hepatectomies (67 complex) were performed by two surgeons. The results remain within international benchmarks, except for a slight deviation in terms of mortality, “failure to rescue,” readmissions for pancreatic resections, and readmissions after liver resections.

Textbook Outcomes were achieved in 60% of duodenopancreatectomies and 58% of left pancreatectomies (absence of pancreatic fistula B/C, haemorrhage B/C, complications >grade 2, mortality, and 30-day-readmission) and in 66% of the complex hepatectomies (R0, absence of biliary fistula B/C, major complications, readmissions, and in-hospital mortality).

Conclusions. Recognised international benchmarking outcomes and high Textbook Outcomes rates can be achieved outside of high-volume hospitals if the rest of the requirements for specialised training, infrastructure, and availability of a highly specialised multidisciplinary team are met.

Keywords: benchmarking, complex hepato-pancreato-biliary surgery, textbook outcomes

BOTULINUM TOXIN APPLICATION AS PREHABILITATION FOR COMPLEX VENTRAL HERNIA REPAIR. CONCEPT ACTUALISATION AND LESSONS LEARNED FROM THE FIRST 50 CASES

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Background. Botulinum toxin has been increasingly used for off-label purposes. The main reasons are esthetic, pain management or muscle relaxation. It is a relatively new concept for abdominal wall reconstruction, with no more than 2000 cases reported so far.

Aim. We aimed to summarise details and critical points of the protocol and share our experience with the first 50 cases.

Materials and Methods. The most common indications are giant ventral hernias (>10 cm of fascial separation), large (>5cm) hernias with multiple recurrences with previous mesh placement and open abdomen management. In the case of domain loss (>20% of the intraabdominal contents herniated), it is commonly associated with a progressive pneumoperitoneum. Botulinum toxin infiltration is performed 1-1.5 months prior to surgery, and its effect progressively decreases in the next 2-3 months.

Results. Complete reconstruction of the abdominal wall, mainly midline closure, was achieved in all the cases. Component separation techniques were rarely used, mainly transverse abdominis muscle release and no anterior component separation was necessary. In all the cases, Rives-Stoppa mesh reconstruction was achieved.

Conclusion. Botulinum toxin prehabilitation prior to surgery facilitates complete abdominal wall reconstruction, probably with less abdominal pain and, therefore, shorter postoperative stay.

Keywords: Botulinum toxin, complex ventral hernia repair, component separation

INTRODUCING FLUORESCENT ANGIOGRAPHY IN ROUTINE MINIMALLY INVASIVE COLORECTAL CANCER SURGERY TO REDUCE ANASTOMOTIC LEAK RATES

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Objective: Anastomotic leaks (AL) are the most devastating complications of colorectal surgery, with significant increases in mortality, morbidity and cost. Many efforts are put into researching methods to reduce AL rates. Fluorescent angiography with green indocyanine (ICG) is a novel technique that has been used in recent years. Because there was no such previous practice in our country, we developed and introduced a protocol for perfusion assessment with ICG during minimally invasive colorectal cancer surgery.

Methods and procedures: We developed a protocol for fluorescent angiography and prospectively followed up the patients. The primary outcome studied was the AL rate after colorectal resection. We also studied the time for fluorescence to appear in the bowel wall, transection line change rates and stoma formation rates.

Results: From June 2020 to June 2022, a total of 53 minimally invasive colorectal resections were performed by a single surgeon. Of them, 25 were robotic and 28 laparoscopic. The AL rate was 0% (compared to 5.76% previously), mean time to fluorescence was 30.92 ± 10.288 sec. The transection lines were changed in 9 patients (17%), and stomas were formed in 17 (32%).

Conclusion: Fluorescent angiography with ICG was feasible and successfully applied in the surgical practice. The results showed a positive impact on AL rates.

Keywords: angiography, colorectal surgery, fluorescence, minimally invasive surgery

DEVELOPMENT OF RECTAL SURGERY IN THE LAST 50 YEARS AND THE INTRODUCTION OF TRANSANAL SURGERY IN THE TREATMENT OF RECTAL CANCER

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Introduction. The gold standard for surgical treatment (total mesorectal excision - TME) in patients with mid- and low rectal cancer was introduced in 1982 by Heald et al.. It dramatically changed the outcomes in the treatment of these patients. It was rapidly accepted by the surgical community and has been the standard to present. In 1983, transanal endoscopic microsurgery (TEM) was introduced for the treatment of benign rectal disease and early rectal carcinoma. The necessary technical refinements took time, and transanal minimally invasive surgery (TAMIS) was described in 2009. In the same year, a combination of TME and transanal surgery, transanal total mesorectal excision (TATME), was performed for the first time.

Aim. To analyse the development of rectal cancer surgery and share a single-centre experience with TATME.

Materials and methods. We performed a literature review on emblematic advances in rectal oncologic surgery and presented perioperative and oncologic outcomes after TatME. Quality of life was assessed using a survey method.

Results. The first 21 patients after TatME were analysed and the outcomes were compared with those of the control groups (case match), as well as open and robotic TME. Groups were matched for age, sex, stage of disease, distance from dentate line to lower tumour margin, and comorbidities. The TaTME and robotic group had better outcomes in terms of short-term quality of life scores compared with the open surgery group. There were no significant differences in terms of oncological safety.

Conclusion. Rectal surgery has undergone significant development over the past 50 years. Minimally invasive surgery methods are finding their indications and proving their advantages.

Keywords: minimally invasive surgery, rectal cancer, TaTME

NON-INTUBATION SINGLE-PORT VIDEO-ASSISTED THORACIC SURGERY IN PATIENTS WITH PLEURAL EFFUSIONS

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Introduction. A large proportion of patients with pleural effusions are elderly and have multiple comorbidities that are contraindications for general intubation anaesthesia.

Objective. We made a retrospective analysis of non-intubated single-port video-assisted thoracoscopic surgery (NSVATS) performed in a series of consecutive patients treated at our institution.

Materials and methods. For a period of 40 months (01.01.2021 to 04.30.2024), 1164 patients were treated for pleural effusions in the Clinic of Thoracic Surgery in CTS of Prof. Dr. St. Kirkovich University Hospital. The operative methods applied were thoracocentesis with intrapleural catheter placement, video-assisted thoracoscopic surgery (VATS) under general intubation anaesthesia, and VATS with venous non-intubation anaesthesia. Pleurectomy, decortication, talc or iodine-povidone pleurodesis, and long-term thoracostomy catheter were performed to prevent effusion recurrence.

Results. The patients' average age was 68 years, 711 men and 453 women. Of the series of 1,164 patients, 470 underwent VATS procedures. Of these, 143 underwent intubated VATS. The remaining 327 patients received a non-intubated surgical procedure and single-port VATS. In 261 patients, the aetiology of the pleural effusion was malignant. Postoperative complications and mortality were not reported. Postoperative pain in patients after NSVATS procedures was significantly less strong than in conventional VATS.

Conclusion. NSVATS is a safe and sparing procedure.

Keywords: non-intubation anaesthesia, pleural effusions, single-port video-assisted thoracoscopic surgery

ANALYSIS OF THE COLORECTAL CANCER MINIMALLY INVASIVE SURGICAL TREATMENT IN BULGARIA

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Objective. Colorectal cancer incidence is among the first three most common cancers. Timely diagnosis and treatment management are of great importance to the oncologic results. A national database for colorectal cancer diagnosis and treatment is not available, and there is no ongoing screening program in Bulgaria. In this study, a platform with access to all national medical data for research purposes was used to perform a nationwide analysis of minimally invasive surgical treatment for colorectal cancer.

Materials and Methods. We analysed data from January 2019 to May 2024 on a nationwide basis using an artificial intelligence (AI) powered software solution that has access to anonymised medical information through science-oriented contracts with the leading oncology hospitals in Bulgaria. Information about colorectal cancer diagnosis and radical and palliative surgery procedures (open and minimally invasive) was analysed and interpreted.

Results. During the study period, the patients diagnosed with colorectal cancer (C18, C19 and C20 - ICD) were 24 729. Surgical procedures were performed in 12 854 patients. Laparoscopic resections were carried out in 3779 cases, and robotic resections were carried out in 453 patients, with a total of 4232 minimally invasive resections (32.92%). Radical procedures were performed in 8184 cases (63.67%). Out of the 12 854 patients who underwent surgery, 2877 were in stage IV (22.38%), 3716 - in stage III (28.91%), 3929 - in stage II (30.57%) and 2332 - in stage I (18.14%).

Conclusion. In Bulgaria, the rate of minimally invasive radical surgery for colorectal cancer is still low and high rates of late-stage cases at the time of the diagnosis are observed. Colorectal screening program implementation is essential and needed.

Keywords: colorectal cancer, minimally invasive surgery

DEHISCENCE: CAUSES AND PREVENTION

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Introduction. Dehiscence is a surgical complication whose treatment requires significant human and material resources and can lead to severe disability and/or death of patients.

Aim. We aimed to analyse the causes leading to dehiscence and develop a prevention algorithm.

Materials and methods. A retrospective analysis covers five years (2017-2021), and the prospective one covers two years (2022-2023). The patients included in the study had complete dehiscence as a result of previous surgeries.

Results. From 2017 to 2023, there were 4149 patients operated in the department, and 25 patients (0.60%) were diagnosed with surgical wound dehiscence -84% men and 16% women. The mean postoperative period until dehiscence was 11.96 days. In 15 patients, it was diagnosed during treatment during the first hospitalisations, and 10 patients had to be readmitted on this occasion. The mortality rate was 20% (5 patients). The causes were categorised by aetiological, clinical, microbiological, and human factors.

Conclusion. The causes can be divided into three groups: patient-related, surgical wound-related and related to the surgical team. An effort to eliminate these causes is the basis of prevention.

Keywords: dehiscence, prevention, surgical complication

THE ROLE OF WATER-SOLUBLE IODINATED CONTRAST IN DIAGNOSING AND TREATING PATIENTS WITH INTESTINAL OBSTRUCTION

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Introduction. The main problem in patients with intestinal obstruction is whether and when they should be operated on.

Aim. Our goal was to identify the level and severity of intestinal obstruction and the need for surgical treatment by using water-soluble liquid iodine contrast, shortening the waiting period.

Materials and methods. In the period 2019-2023, 80 patients with frequent hospitalisations due to ileus symptoms were examined in the First Surgical Clinic of Dr Georgi Stranski University Hospital - Pleven. The patients were divided into two groups: unoperated and previously operated. An identical Toronto University Guigline protocol was followed to evaluate the latter group.

Results. The condition was seen in both sexes. Using contrast in patients with adhesive disease was of high diagnostic value, and timely surgical treatment achieved better results.

Conclusions. Using water-soluble contrast for diagnostic-therapeutic purposes is an easily applicable method. It is inexpensive and has a good prognostic value. When it is combined with the data from the physical examination and those from the laboratory and instrumental results, it helps to assess the severity of the disease adequately.

Keywords: ileus, operative treatment, water-soluble liquid contrast

FLUORESCENT CHOLANGIOGRAM OPTIMAL DOSE AND TIME OF INJECTION: A SURVEY AMONG PRACTITIONERS

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Introduction. Bile duct injuries (BDI) are a serious complication during laparoscopic cholecystectomy with uncertain outcomes even when detected and repaired early. The most common cause for BDI is poor visualisation of the structures in the triangle of Calot. Fluorescent cholangiogram is a novel technique aimed at reducing the rates of BDI.

Aim. The study aimed to present results regarding the optimal dose and time of injecting the dye using a survey among practitioners.

Materials and methods. Three different doses of ICG (0.05mg/kg, 1mg and 2mg) were injected at three different periods (1,3,6 hours) prior to surgery. Images of the bile duct anatomy were obtained under white light and near-infrared (NIR) light for all cases. A questionnaire containing side-by-side pictures of the anatomy under white light and NIR light was prepared and uploaded on Google Forms. The survey was sent to different practitioners, and the results were collected anonymously.

Results. There were 122 responders. According to them, the most optimal image of the fluorescent cholangiogram was obtained with 1mg ICG injected 3 hours preoperatively. The worst case was presented when 0.05 mg/kg ICG was injected one hour prior to surgery. Only 16.4% reported routine use of the method. However, more than 80% found the method useful. Nearly 70% of the responders reported they would use the method if they had access to it.

Conclusion. Even though few surgeons routinely use the method, the majority of the responders affirmed that the method is useful, and more than half are willing to use it routinely if they have access to it.

Keywords: cholangiogram, fluorescence, minimally invasive surgery

FOURNIER'S GANGRENE: PATHOGENESIS, RISK FACTORS, AND PREVENTIVE MEASURES

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Introduction. Fournier's gangrene is a rare, acute necrotising infection of the loose connective tissue in the perineum and genital area caused by a synergistic polymicrobial infection involving both aerobic and anaerobic microorganisms. The disease has a high mortality rate, necessitating urgent medical intervention with early surgical debridement and broad-spectrum antibiotic therapy.

Aim. This report aimed to provide a comprehensive review of Fournier's gangrene, focusing on the pathogenesis and microbiological profile of the disease. Additionally, it aims to identify and analyse the main risk factors, such as diabetes, immunosuppression, alcoholism, and trauma, which increase susceptibility to the infection.

Materials and Methods. A retrospective monocentric study covering 10 years was conducted. A patient cohort of 82 individuals with polymicrobial necrotising fasciitis of the perineum, admitted on an emergency basis and treated at the Department of Coloproctology (DCP), was analysed.

Results. In the DCP, there were 82 patients (63 men and 19 women). All of them underwent surgery; 49 were operated on within six hours after admission. There were 14 deaths among these patients. The minimum hospital stay was five days, while the maximum was 60 days, with an average length of 12.3 days. Nine patients had skin grafts performed.

Conclusion. Early surgical intervention within six hours, along with AB treatment and hibiscrub dressings, led to a reduction in mortality rates compared to treatment 15 years ago.

Keywords: Fournier's gangrene, necrotising fasciitis

APPLICATION OF MITOMYCIN C IN THE TREATMENT OF CONJUNCTIVAL TUMORS

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Introduction: Conjunctival papilloma is an acquired benign tumour that arises from the stratified squamous epithelium of the conjunctiva. The main reported risk factor for conjunctival papilloma is HPV infection. Treatment is mainly surgical. Conservative methods are also applied: Mitomycin C, 5FU, IFN α 2b.

Aim: Presentation of a clinical case of recurrent conjunctival papilloma, with applied operative and conservative treatment

Methods and Materials: A 75-year-old woman was admitted for the first time to the Eye Clinic of Dr Georgi Stranski University Hospital in Pleven. A complete ophthalmological examination was carried out, surgical removal of the established lesion and histological proof of the result was performed, a follow-up of the condition was performed, and subsequent conservative therapy was performed.

Result: The histological examination showed an atypical conjunctival papilloma, which recurred 7 months after excision.

Conclusion: The approach to squamous cell papillomas is mainly surgical. There are cases where surgery is unsuccessful or insufficient. Conservative therapy with Mitomycin C, 5FU or IF α 2b can then be included.

Keywords: conjunctival tumor, mitomycin C, papilloma

ORBITAL DISEASES

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Introduction: Orbital diseases, and orbital tumours in particular, are one of the challenging areas for both ophthalmologists and other surgical specialists. Surgical intervention is complex and long – it requires a well-trained surgeon and an assistant.

Objective: To show the surgical and therapeutic approach in cases of orbital diseases treated at the Pleven Eye Clinic for one year.

Method: Analysis of patients with orbital diseases for 1 year treated at the Eye Clinic.

Results: All patients were operated and histologically controlled. The diagnosis was most difficult in patients with lymphoproliferative diseases. Benign tumours required only operative treatment and controlled drainage, while malignant tumours required a multidisciplinary approach.

Conclusion: Accurate diagnosis is decisive for treatment. A biopsy is mandatory, which, accordingly, makes surgical intervention mandatory.

Keywords: lymphoma, malignant melanoma, orbital tumours, oculoplastic surgery

AI-ENHANCED PREDICTION OF LUNG CANCER RISK FROM IMAGING BIOMARKERS IN CHEST RADIOGRAPHS: AN EXTERNAL VALIDATION STUDY

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Duly Health and Care, Science Officer and Advisor at MY Synergy

This study explores the potential of artificial intelligence to predict lung cancer risk using imaging features from chest radiographs (CXR), independently of traditional risk factors like smoking history. This approach could serve as an early detection tool in populations lacking comprehensive patient histories.

Methods. This IRB-approved study utilized a dataset of 249,749 initial frontal non-portable CXRs (51.5% Black, 48.5% White) from 2008 to 2021 to identify patients with lung cancer via ICD10 codes. The dataset was divided 80/20 for training and testing. A pre-trained ICD-10 comorbidity CNN model predicted 10 risk factors, utilized by an XGBoost model for lung cancer prediction. Additionally, a logistic regression (LR) model served as a baseline. Model performance was evaluated using AUC, sensitivity, and specificity metrics. External validation was conducted on a geographically distinct dataset comprising 160,244 patients. SHAP values were employed for model explainability.

Results. For logistic regression (LR), the area under the curve (AUC) was 0.76 [95% CI: 0.74 – 0.79], with a sensitivity of 0.89, specificity of 0.53. The XGBoost (XGB) model showed slightly improved performance with an AUC of 0.79 [95% CI: 0.76 – 0.82], sensitivity of 0.85, and specificity of 0.58. On the external dataset, the LR model demonstrated an AUC of 0.77 [95% CI: 0.76 – 0.79], sensitivity of 0.75, specificity of 0.68. The XGB model exhibited comparable results with an AUC of 0.79 [95% CI: 0.77 – 0.80], sensitivity of 0.73, and specificity of 0.72.

Conclusion. In conclusion, our study highlights AI's potential in forecasting lung cancer risk using CXR imaging biomarkers, providing a non-invasive method irrespective of conventional risk factors like smoking history.

KERATOPLASTY NOWADAYS

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Corneal transplantation is one of the most common and most successful procedures. Surgical techniques are different – all layers of the cornea can be replaced (penetrating), or only the layer that is diseased (lamellar). Clinical cases with different indications for keratoplasty are presented, and the advantages and disadvantages of different surgical techniques are discussed. Penetrating keratoplasty is an established method for treating corneal diseases, and despite the age of the lamellar technique, it remains the main method of choice.

Keywords: corneal diseases, keratoplasty

CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION - SURGICAL TREATMENT

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Diseases of the lacrimal drainage system are congenital or acquired. Congenital nasolacrimal duct obstruction (CNLDO) is found in about 6% of newborns. The initial treatment in newly discovered cases with CNLDO is conservative with massage over the lacrimal sac. If the massage has no curative effect, surgical treatment is indicated. Probing the nasolacrimal duct is the first surgical procedure of choice. The recommended age for the patient to undergo probing is around 13 months. “Blind” probing is performed in Bulgaria. The surgeon can predict intraoperatively the result of the procedure. The success rate of primary probing is around and above 90%. Other methods for surgical treatment of CNLDO are silicone intubation, balloon catheter dilatation and dacryocystorhinostomy. Congenital nasolacrimal duct obstruction requires stepwise treatment. Each stage of the therapeutic approach includes specific manipulations. The result of the applied treatment method is determined by understanding and correct implementation of these manipulations.

Keywords: congenital nasolacrimal duct obstruction, lacrimal drainage system diseases

SURGICAL RECONSTRUCTION MIDFACE LIFTING IN LOWER EYELID NEGATIVE VECTOR

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Introduction: Midface lifting is used in patients with hypoplastic cheekbones or maxillae in which the lower orbital rim is located significantly back in relation to the eyeball. This results in a configuration called a “negative vector”. In case of positional anomalies of the lower eyelid (entropion, ectropion or retraction of the lower eyelids), it is necessary to look for the presence of a negative vector, as this requires the application of an additional operative technique - midface lift.

Objective: To present the advantage of the midface lift operative technique for correcting a negative vector in positional anomalies of the lower eyelid.

Methods: We present a 70-year-old male patient (B.T.I.) who underwent conventional right eye surgery for entropion. Three months later, the lower eyelid of the same eye turned inward again. Due to the presence of retraction, ptosis, and negative vector, an additional operative technique was chosen - midface lifting, to correct the negative vector before the operation of the already present entropion.

Results: In the postoperative period, we observed very good anatomical, functional and aesthetic results. The patient’s subjective complaints, such as irritation and watery eyes, disappeared on the first postoperative day.

Conclusion: Negative vectors are characterised by drooping of the lower eyelid and low projection of the cheekbones. If a facelift is not performed, a stand-alone operative technique to reconstruct positional anomalies such as entropion or ectropion is doomed to failure.

Keywords: hypoplastic cheekbones, midface lift, negative vector, positional anomalies of the eyelids

RECONSTRUCTION OF LOWER EYELID WITH MEDIAL TRANSPOSITION: A CLINICAL CASE

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Introduction: Defects after removal of medially situated lower eyelid tumours present a difficulty when reconstructive surgery is needed. The gold standard for such cases is the Hughes operation. Lower eyelid reconstruction by medial transposition, periosteal band, and tarsal graft is a good alternative to this, and with a more satisfactory cosmetic result.

Clinical case: An 81-year-old woman presented with a tumour formation in the medial half of the lower eyelid, including the lash line. After surgical excision, reconstruction of the lower eyelid was needed, using the above-described technique with medial transposition, periosteal strip and a tarsal graft. The patient was followed up for 6 months.

Conclusion: The definitive treatment of eyelid tumours is surgical excision. If necessary, the defect is reconstructed using different techniques with varying results in terms of preservation of anatomical structures, normal functions of the eyelid and good cosmetic results. Using the described technique for reconstruction of the lower eyelid, we achieved good anatomic, functional, and cosmetic results, while other techniques were deficient in terms of one or more of these results.

Keywords: eyelid tumours, medial reconstruction, periosteal strip, tarsal graft

EVISCERATION, ENUCLEATION AND EXENTERATION

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Introduction: Removal of the eye or the contents of the orbit is one of the most serious and difficult decisions that a patient and a doctor have to make. This surgical intervention is radical, and the decision for it is made after all conservative options fail or in cases where it is the only option.

Objective: To review the causes of evisceration, enucleation and exenteration by disease groups and consider possible operative techniques.

Method: Retrospective analysis of patients undergoing enucleation, evisceration and exenteration who underwent surgery over three years (2021-2023) at the Clinic of Ophthalmology - Pleven.

Results: For three years, a total of 30 operations were performed: 24 eviscerations, 4 enucleations, and 2 exenterations. A larger percentage of patients were residents of small villages. The gender distribution was even. The age distribution was relatively even- after the age of 40. The 61-70 age group 61-70 predominated. The reasons for surgery were most often inflammatory diseases, followed by tumours, blindness, painful eyes, and trauma.

Conclusion: Despite advances in ophthalmic surgery, evisceration and enucleation are widely used nowadays. In some cases, they are life-saving, and in others, they control the pain syndrome and provide comfort to the patient.

Keywords: enucleation, evisceration, exenteration, operative techniques

DISTANT SOFT TISSUE FLAPS IN A DEGLOVING SKIN INJURY

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Introduction. Avulsion skin injuries of the glove removal type are one of the most challenging problems in reconstructive hand surgery. Immediate or early coverage of the hand is of utmost importance. Several options are proposed for early covering the preserved structures (tendons, bones and nerves), the main point being skin grafting on the preserved viable structures.

Aim. To present the use of distal soft tissue flaps as a method of choice for injuries, which, when not treated, lead to invalidization.

Material and Methods. We present a case of a patient with 4th and 5th finger crushing and avulsion skin injury of thumb and index finger and lost distal phalanges. The 4th and 5th fingers had been amputated due to gangrene. Two anterior abdominal wall flaps were applied: a thoracombilical flap and a horizontal Filatov stem flap. On the 25th day, the flaps were separated from the fingers, followed by commissuroplasty 10 months later.

Results. Fusion between the donor flap and the recipient structures was obtained without clinical evidence of infection, ulceration and flap necrosis.

Conclusion. Application of remote skin flaps is a safe and simple method to restore hand function when microsurgery cannot be applied.

Keywords: abdominoplasty, commissuroplasty, thoracombilical flap, thoracoabdominal flap

TREATMENT OF HUMERAL FRACTURES AND SECONDARY COMPLICATIONS

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Introduction. Fractures of the humerus are challenging to treat. The humerus has a high potential for fusion, but there are also risks and complications. Different methods and principles of treatment are applied, depending on the type of fracture and the therapeutic approach: surgical or conservative.

Purpose. To present a summary of techniques for treatment and reconstruction of humerus fractures and secondary complications.

Material and methods. We present cases treated conservatively with fractures of the humerus, as well as selection for osteosynthesis and operative access for treatment of fractures at different levels - proximal, diaphyseal and distal.

Result: In the presented cases, complete consolidation of the fractures was achieved without secondary complications such as pseudarthrosis and paresis of the radial nerve. A good position was reached in the permissible anatomical deviations in conservatively treated cases.

Conclusion. The treatment of humerus fractures is a complex process in which the correct selection of operative technique, access and synthesis is extremely important, both for the final result and for the prevention of secondary complications, such as non-union, pseudarthrosis, damage to the radial nerve, etc.

Keywords: humerus, non-union, osteosynthesis, pseudarthrosis

BIOACTIVE GLASS APPLICATION IN ORTHOPEDICS AND TRAUMATOLOGY: A LITERATURE REVIEW AND PROPOSITION OF A PROTOCOL OF A RANDOMISED CONTROLLED TRIAL

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Introduction. Bone, as a rigid structure of the human body, plays a crucial role in providing support, protection, and locomotion. When a bone is subjected to excessive load or force, it may fracture. Bone possesses a remarkable regenerative capacity and often fully recovers. The factor which may impede this process is a bone defect, which often occurs following high-energy trauma events. Bone defects are usually filled with autologous bone grafts or with a bone-substitute substance such as bioactive glass. This innovative material was originally developed in the 1970s by Professor Larry Hench. Boneglass has shown the ability to provide mechanical and biological support to the surrounding bone tissue, aiding in the process of bone reconstruction and healing.

This research aimed to review the literature on the use of bioactive glass in the treatment of fractures with bone defects and outline the research protocol for a future clinical study.

Methods. A protocol was developed for a randomised controlled trial involving patients aged 18 to 65 years who had fractures requiring osteoplasty due to bone deficiency, randomised into 2 groups: using bioactive glass and an autograft (control) group, which uses autospontaneous. Clinical results are evaluated through LEFS and VAS scales and through X-rays and CT.

Conclusion. A literature review showed limited evidence on the use of bioactive glass in traumatology. We hope that the results from our research will confirm the advantages of bioactive glass and reduce the necessity of additional autograft harvesting surgery.

Keywords: autograft, bioactive glass, bone defect

Jubilee Scientific Conference with International Participation

Obstetrics & Gynecology

Content

- 154 ENDOMETRIOSIS-ASSOCIATED NEOPLASMS
Vesela Ivanova
- 155 CONSERVATIVE TREATMENT OF HPV-ASSOCIATED
PRECANCEROUS CONDITIONS OF THE VULVA IN YOUNG
WOMEN
Nadezhda Hinkova
- 156 PREGNANCY ON THE CICATRIX OF A PREVIOUS
CAESAREAN SECTION - CONTRIBUTION WITH A CLINICAL
CASE
Nadezhda Hinkova
- 157 APPLICATION OF ARTIFICIAL INTELLIGENCE FOR THE
DETECTION OF PRECANCEROUS CHANGES OF THE CERVIX
Georgi Prandzhev, Slavcho Tomov, Grigor Gortchev
- 158 CHANGES OF SERUM ANGIOTENSIN PEPTIDES, PRO-
ENDOTHELIN-1 LEVELS IN WOMEN ONE YEAR AFTER
PREECLAMPSIA AND THEIR ASSOCIATION WITH
CARDIOVASCULAR RISK FACTORS
Nikola Popovski, Asparuh Nikolov, Tsvetan Lukanov, Svetla
Blazheva, Nikoleta Stoyanova, Tihomir Totev
- 159 A CASE OF CHORIOCARCINOMA IN THE OPERATIVE
CICATRIX AFTER A CAESAREAN SECTION AND ELECTIVE
ABORTION
Nadezhda Hinkova
- 160 TOTAL HYSTERECTOMY WITH DIAGNOSIS: CA COLLI UTERI
IN SITU
Nadezhda Hinkova
- 161 ECTOPIC PREGNANCIES WITH RARE LOCALIZATION
Dobrinka H. Gincheva, Nadezhda H. Hinkova, Veronika H.
Gincheva, Aleksandar Vanov

- 162 THE ROLE OF ALBUMIN-TO-FIBRINOGEN AND FIBRINOGEN-TO-PREALBUMIN RATIOS IN THE DEVELOPMENT OF OVARIAN CARCINOMA
Valeria Racheva, Irina Dekova, Zornitsa Gorcheva
- 163 INDICATIONS FOR PERFORMING RE-CONIZATION AND RE-LLETZ
Nadezhda Hinkova, Kristin Yaneva
- 164 ENDOMETRIAL CANCER – CLASSIFICATIONS, STAGING SYSTEM AND DIAGNOSTIC ROLE OF MRI
Mirela Vasileva, Nachko Totsev, Zornica Gorcheva, Radoslav Trifonov
- 165 A RARE CASE OF HEREDITARY CARDIAC ARRHYTHMIA AND PREGNANCY
Nikoleta Stoyanova, Nikola Popovski, Asparuh Nikolov

ENDOMETRIOSIS-ASSOCIATED NEOPLASMS

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Endometriosis affects approximately 10% of women of reproductive age. In about 1% of patients, related neoplasms develop, with most tumours arising in the pelvis. Atypical endometriosis predominantly occurs in the ovary and has been suggested as a potential precursor to endometriosis-related tumours. These neoplasms are primarily malignant, with endometrioid and clear cell carcinomas being the most common types; benign and borderline seromucinous tumours appear less frequently. The presentation is focused on rare endometriosis-associated neoplasms such as seromucinous tumours, adenosarcoma, and squamous cell carcinoma. It is aimed at sharing the author's personal experience.

Keywords: endometriosis-associated neoplasms

CONSERVATIVE TREATMENT OF HPV-ASSOCIATED PRECANCEROUS CONDITIONS OF THE VULVA IN YOUNG WOMEN

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Introduction. The proven connection between HPV and the development of precancerous and cancerous diseases of the genital system determines a new modern view of treatment, depending on their localization. While the problem in women who have completed their reproductive function has an easier solution - surgical removal in varying volume, in young patients, it is related to a desire for radical but also organ-preserving treatment. Vulvar dysplasia (VIN) can be localized in a limited area, but in young women, the multifocality of the lesions presents a diagnostic and therapeutic problem. Compounding this problem is the possibility that the lesions are histologically presented with different degrees of alterations, which necessitates accurate mapping, histological verification of the individual lesions and appropriate treatment.

Clinical case presentation. A 34-year-old woman visited a gynaecologist with uncharacteristic complaints in the area of the EGO and histologically verified VIN I-II-III. Only conservative treatment was carried out. For 16 years, the patient has been actively monitored, and at this time, there is no clinical and paraclinical data on HPV-associated diseases of the EGO.

Conclusions. Conservative treatment of HPV-associated vulvar lesions requires accurate histological diagnosis after mapping, correct and timely treatment, combined with adequate follow-up. This would lead to a reduction in VIN recurrences and radical surgical interventions.

Keywords: HPV, treatment, vulvar dysplasia

PREGNANCY ON THE CICATRIX OF A PREVIOUS CAESAREAN SECTION - CONTRIBUTION WITH A CLINICAL CASE

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Introduction. Implantation of a pregnancy on the cicatrix of a previous Caesarean section is considered a rare form of ectopic pregnancy and is defined as a life-threatening condition. The worldwide incidence is equal to less than 1%, but the growing number of operative deliveries could lead to an increase in the frequency of this pathology.

Case report. A 32-year-old female patient was hospitalized due to ultrasound evidence of a pregnancy, which had developed in the area of an operative cicatrix from a Caesarean section after an unsuccessful attempt at a medical abortion. A diagnostic and therapeutic procedure was performed: Hysteroscopia diagnostica et Interruptio. The patient was discharged after a week for active clinical and preclinical follow-up in an outpatient setting.

Conclusion. The growing trend for operative delivery increases the risk of developing pregnancy on a cicatrix from a previous Caesarean section. The condition requires rapid diagnosis, competent obstetric behaviour and general resuscitation measures in hospital settings.

Keywords: Caesarean section, pregnancy on cicatrix

APPLICATION OF ARTIFICIAL INTELLIGENCE FOR THE DETECTION OF PRECANCEROUS CHANGES OF THE CERVIX

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Cervical cancer is the fourth most common malignancy in women, accounting for 604,000 new cases in 2020, half of which are fatal. The application of artificial intelligence (AI) is related to the possibility of automating processes in various subject areas, including the field of medicine, to solve specific tasks.

Aim. A review, analysis and comparison of methodologies using artificial intelligence methods for colposcopic recognition and categorization of cervical features and identification of potential problems.

Materials and methods. Artificial intelligence methods - computer vision, neural networks, and deep/machine learning are used to recognize features of the cervix obtained from colposcopic images using CNN, C-RCNN algorithms, ResNet, and other systems.

Results. A review and analysis of existing approaches for applying artificial intelligence to colposcopic cervical imaging. A comparison between the applied learning algorithms, as well as a comparison between gynaecologists, experts and the established computer systems.

Conclusion. Artificial intelligence methods enable powerful and detailed analysis of large sets of cervical images, offering significant advancements in the early diagnosis of precancerous changes. The application of AI enhances the detection of atypical patterns, mitigates subjectivity in medical judgment, and reduces diagnostic errors, thereby improving overall diagnostic accuracy and outcomes.

Keywords: artificial intelligence, cervix, detection, precancerous

CHANGES OF SERUM ANGIOTENSIN PEPTIDES, PRO-ENDOTHELIN-1 LEVELS IN WOMEN ONE YEAR AFTER PREECLAMPSIA AND THEIR ASSOCIATION WITH CARDIOVASCULAR RISK FACTORS

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Introduction. Women who have had preeclampsia (PE) have two to four times higher risk for the development of cardiovascular disease (CVD) compared with women with a history of normotensive pregnancy. The study aimed to determine changes in circulating levels of key vasoactive peptides in sera of women with a history of PE and in women who had a normal pregnancy 1 year after delivery.

Material and methods. The current research examined 32 women one year after preeclampsia (mean age 25.3±6.3 years) and a control group of 20 women one year after normal pregnancy (mean age 25.6±5.6 years). The enzyme-linked immunosorbent assay (ELISA) was used to determine serum levels of angiotensin II (AngII), angiotensin-(1-7) [Ang-(1-7)] and pro-endothelin-1 (Pro-ET-1).

Results. Serum AngII levels in women one year after PE were statistically significantly lower than in women one year after normotensive pregnancy - 0.9 vs. 2.3 pg/ml. Levels of serum Pro-ET-1 in women one year after PE were statistically significantly higher than in women one year after normal pregnancy, 322.65 vs. 248.7 pmol/L. AngII showed correlation with AH grade ($r=-0.33$; 0.02), Ang-(1-7) ($r=0.27$; 0.05), DBP ($r=-0.28$; $p=0.04$), BMI ($r=-0.30$; $p=0.03$), TC ($r=-0.31$; $p=0.03$) and LDL ($r=-0.30$; $p=0.03$).

Conclusion. Our data showed an association between key vasoactive peptides and major CVD risk factors in women one year after PE.

Keywords: angiotensin-II, angiotensin-(1-7), cardiovascular risk factors, history of preeclampsia, pro-endothelin-1

A CASE OF CHORIOCARCINOMA IN THE OPERATIVE CICATRIX AFTER A CAESAREAN SECTION AND ELECTIVE ABORTION

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Introduction. Choriocarcinoma is a malignant disease which can develop after miscarriage, ectopic pregnancy and, in extremely rare cases- after a full-term pregnancy. The frequency is 1 in 20,000 – 30,000 pregnancies. 25% of diagnosed Choriocarcinomas have occurred after abortion. Survival is determined by the stage and risk of the disease.

Case presentation. A 40-year-old female patient was admitted due to genital bleeding and a positive hCG test after an elective abortion and instrumental revision. The operative intervention included diagnostic laparoscopy and hysteroscopy, coupled with dilation and curettage. Histology revealed choriocarcinoma stage pT1 with low risk. After a multidisciplinary tumour board discussion, the patient was referred for radical surgical treatment - total hysterectomy without the adnexa. The histological result proved residual myoinvasion of choriocarcinoma. The patient was referred for follow-up and adjuvant chemotherapy. At the moment, clinical and paraclinical follow-up is conducted according to generally accepted recommendations for this localization.

Conclusion. In the era of ever-increasing surgical delivery by means of caesarean section, the possibility of rare localizations for the development of GTD should be considered, malignant variants of choriocarcinoma in particular. The application of generally accepted diagnostic measures at the slightest suspicion, adequate surgical treatment, adjuvant therapy, and active follow-up also determine a high degree of survivability.

Keywords: choriocarcinoma, diagnosis, prognosis, treatment

TOTAL HYSTERECTOMY WITH DIAGNOSIS: CA COLLI UTERI IN SITU

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Introduction. Cervical carcinoma in situ (CIS) is a precancerous lesion of the cervix as a precursor to microinvasive and invasive cervical carcinoma. Surgical management includes diagnostic and/or therapeutic conization, followed by reassessment of treatment and, if indicated, total hysterectomy.

Objective. To present the indications for performing total hysterectomy in CIS and to answer whether it is possible to avoid subsequent intervention after conization.

Material and methods. A documentary, retrospective study of 401 patients who underwent conization as an operative intervention was conducted from December 2021 to April 2024 at the St. Marina University Hospital – Pleven. The group of patients in which a diagnosis of CIS was made and a subsequent total hysterectomy was performed was selected.

Results. CIS was demonstrated in 82 of 401 women (20.4%). On 46 of them (56.1%), only conization was performed, and on 36 of them (43.9%) underwent a subsequent total hysterectomy. Persistence of the diagnosis was confirmed in 20.0% of patients who underwent hysterectomy, and in 80%, the preceding conization was a radical therapeutic procedure.

Conclusion. In women of reproductive age, it is necessary to perform a full range of diagnostic measures to prove or reject the diagnosis of CIS. Organ-preserving operative interventions such as conization and, if necessary, re-conization, should not be omitted as an option in the planned treatment of the patient.

Keywords: Ca colli uteri in situ, conization, hysterectomy

ECTOPIC PREGNANCIES WITH RARE LOCALIZATION

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About 95% of ectopic pregnancies are localized in the Fallopian tubes. Interstitial pregnancy is a type of ectopic pregnancy that is extremely rare. We present the diagnostic approach and therapeutic management of two cases of rare ectopic pregnancy - interstitial pregnancy and pregnancy in a uterus with congenital abnormality - uterus arcuatus. In the first case, the vaginal ultrasonography found a fetal sac located interstitially high in the right uterine horn. A pelvic MRI confirmed the diagnosis. After discussion and informed consent signed by the patient at St. Marina University Hospital – Pleven, Bulgaria, laparotomy a modo Pfannenstiel, resectio cornualis dextra, extirpatio graviditas interstitialis dextra, salpingectomy dextra, sutura uteri, lavage and drainage, and abrasio probatoria were performed. The second case is a patient with an arcuate uterus and intracavitary implantation of the amniotic sac into the left uterine horn. In the eighth gestational week, ultrasonographically, we diagnosed missed abortion. We performed an operative hysteroscopy to remove the conceptus. In cases of rare localized ectopic pregnancy, early diagnosis and individual approach is crucial for successful treatment.

Keywords: ectopic pregnancy, interstitial ectopic pregnancy, rare localization, uterus arcuatus

THE ROLE OF ALBUMIN-TO-FIBRINOGEN AND FIBRINOGEN-TO-PREALBUMIN RATIOS IN THE DEVELOPMENT OF OVARIAN CARCINOMA

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Introduction. Ovarian carcinoma is one of the most lethal malignancies diseases in women. Many authors pay attention to ratios fibrinogen to prealbumin (FPR) and albumin to fibrinogen (AFR) and demonstrate that low AFR values and high FPR values correlate with an increased risk of mortality and recurrence from carcinoma and may be promising prognostic markers

for malignant diseases.

Objective. The objective of our study was to determine the AFR and FPR ratios in women with

proven ovarian carcinoma, to assess to what extent these may be factors, predicting the development and prognosis of ovarian carcinoma.

Materials and methods. We determined the concentrations of albumin, prealbumin and fibrinogen in 60 women with histologically proven ovarian carcinoma and we calculated the AFR and FPR ratios.

Results. We demonstrated statistical significance between these ratios and the stage of ovarian carcinoma. We found that the AFR decreased and the FPR increased at progression of tumor development and spread.

Conclusion. Serum albumin, prealbumin and fibrinogen are present in medical records of most carcinoma patients, and their measurements are inexpensive and accessible. AFR and FPR are two economical and effective biomarkers for monitoring the progression of solid malignancies. That's why using them as prognostic markers in ovarian carcinoma has great potential.

Keywords. ovarian carcinoma, prealbumin, albumin, fibrinogen, ratios, prediction

INDICATIONS FOR PERFORMING RE-CONIZATION AND RE-LLETZ

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Introduction. The histological verification of precancerous and cancerous conditions of the cervix is what is considered the “gold standard”. One of the methods for obtaining tissue material is loop excision (LLETZ) and conization of the cervix. The two procedures can be both diagnostic and therapeutic. Global standards define the necessity of a re-manipulation, if adequate indications are present, in order to reduce the number of unnecessary radical interventions.

Objective: To present the criteria for re-manipulations /LLETZ and conization/ and their frequency.

Materials and methods. During the 2019 - 2023 period, a documentary retrospective study was conducted among 300 women who underwent LLETZ or conization of the cervix at St. Marina University Hospital - Pleven. Of these, 60 women had re-manipulations, but only 30 of them met the inclusion criteria.

Results: The conducted study found that in 66.7% (20 patients), re-conization was performed, and in 33.3% (10 patients) - re-LLETZ. In all these 30 cases, the procedures were repeated in the span of 1 to 5 months, and the histological results were as follows: residual tissue in 40.0% (12 patients) to its absence in 60.0% (18 patients).

Conclusion: Organ-preserving treatment in women with precancerous changes of the cervix or early stages of the disease is based on modern concepts in oncology. Carrying out a re-manipulation when indications are present guarantees a greater clarification of the pathology and the need for subsequent treatment.

Keywords: LLETZ, Re-LLETZ, cervical conization, cervical re-conization

ENDOMETRIAL CANCER – CLASSIFICATIONS, STAGING SYSTEM AND DIAGNOSTIC ROLE OF MRI

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Introduction. Endometrial cancer (EC) ranks among the most prevalent gynecological malignancies globally, and its incidence is expected to rise. It has been classified into two subtypes mainly on the basis of histological characteristics and grade. The histological tumor types are endometrioid and non-endometrioid. Grade 1 and 2 are considered low grade, and grade 3 carcinomas are high-grade. They are also divided into non-aggressive types (low-grade endometrioid carcinoma) and aggressive types (high-grade endometrioid carcinoma and non-endometrioid carcinomas). The FIGO staging system is used, which was revised through the years, and the last one was published in 2009. Magnetic resonance imaging (MRI) is valuable for assessment of deep myometrial invasion, cervical stromal involvement and lymph node spread of the disease, which are main features in the staging system.

Aim. To examine the different classifications of endometrial cancer through the years and the role of MRI in the diagnostic process.

Materials and methods. PUBMED archive was searched for the last 5 years. The reference lists of included studies and review articles were also searched.

Results and conclusion. The treatment of EC has become more complex during the past decades mainly because of the changes in histological classification that affect surgical management, adjuvant therapies, and prognosis. The application of MRI has gained interest over the years for its good local-regional visualization and soft tissue resolution, and for assessment of high-risk features of EC, such as deep myometrial infiltration, cervical stromal invasion and lymph node metastasis, which are included in the staging system. Further study and exploration on MRT technique and how it corresponds to the classifications and staging system is needed.

Keywords: classifications, endometrial carcinoma, MRI, staging

A RARE CASE OF HEREDITARY CARDIAC ARRHYTHMIA AND PREGNANCY

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Abstract: Brugada syndrome is a genetic life-threatening heart disorder characterized by disruption of the heart's normal rhythm, increased risk of ventricular tachyarrhythmia and sudden cardiac death. It is an autosomal dominant disease due to a mutation of the *SNC5A* gene, which leads to an altered structure of ion channels and impaired flow of sodium ions in cardiomyocytes. Pregnancy, febrility and physical effort can provoke arrhythmia among asymptomatic patients. We describe a clinical case of hyperemesis gravidarum in a pregnant woman with Brugada syndrome and an implanted automatic cardioverter defibrillator (ICD), requiring strict monitoring of the pregnancy by a multidisciplinary team.

Keywords: pregnancy, arrhythmia, Brugada, sudden cardiac death



Jubilee Scientific Conference with International Participation

Varia

Content

- 169 CULINARY ITEMS IN CLINICAL PATHOLOGY
Vesela Ivanova, Tihomir Dikov
- 170 ROMAN GODS RELATED TO MEDICINE
Veronika Kelbecheva
- 171 OUTPATIENT PSYCHIATRIC CARE IN BULGARIA AND
A FORECAST OF THE LABOUR MARKET EXIT OF
PSYCHIATRISTS
Vladimir Nakov, Kaloyan Stoychev, Dafinka Stoilova,
Eleonora Mineva-Dimitrova
- 172 PROFILING OF TERMINOLOGICAL CONTENT IN “LATIN
LANGUAGE AND MEDICAL TERMINOLOGY” FOR
BACHELOR’S SPECIALTIES IN MEDICAL UNIVERSITIES AND
COLLEGES
Mira Velkova
- 173 ANIMAL METAPHORS IN MEDICAL TERMINOLOGY
Radostina Yancheva
- 174 BIOFEEDBACK THERAPY - CONTEMPORARY TRENDS AND
PERSPECTIVES
Gabriela Panayotova, Antoniya Hachmeriyan, Zlatislav Stoyanov
- 175 ASPECTS OF TEACHING LATIN FOR MEDICINE THROUGH
ENGLISH. TERM FORMATION PATTERNS
Pepa Lungarova
- 176 THE MADNESS OF HERACLES
Boryana Chomakovska
- 177 CLINICAL TERMS, MOTIVATED BY NAMES OF HISTORICAL
FIGURES
Nadezhda Amudzhieva

- 178 SPECIFICITIES AND DIFFICULTIES IN THE ACQUISITION OF MEDICAL TERMINOLOGY IN LATIN BY BULGARIAN MEDICAL STUDENTS
Yavora Oprova, Dimitar Mirchev
- 179 CONCEPTS OF SEXUAL INTERCOURSE AND REPRODUCTIVE HEALTH PRESENTED IN CONSTANTINE THE AFRICAN'S DE COITU
Snezhana Antonova-Tsvyatkova
- 180 MONOMORPHIC EPITHELIOTROPIC INTESTINAL T-CELL LYMPHOMA PRESENTING AS ABSCESS
Snezhana Spasova, Ina Kobakova
- 181 A CASE OF COLON ADENOCARCINOMA WITH UNCOMMON MORPHOLOGICAL CHARACTERISTICS
Snezhana Spasova, Ina Kobakova
- 182 THE ROLE OF SERUM AMYLOID A IN THE DEVELOPMENT OF ATHEROSCLEROSIS IN PATIENTS WITH CARDIOVASCULAR DISEASE
Ademira Borisova, Armine Grigoryan, Ivelina Himcheva, Gergana Neikova, Anelia Dimitrova
- 183 EFFECTS OF NOVEL NOCICEPTIN ANALOGUES ON THE ADRENERGIC AND OPIOIDERGIC SYSTEMS AFTER CHRONIC IMMOBILIZATION STRESS
Ivelina Himcheva, Ademira Borisova, Armine Grigorian, Galya Stavreva, Aneliya Dimitrova
- 184 INVOLVEMENT OF THE OPIOID AND ENDOCANNABINOID SYSTEMS IN THE ANALGESIC EFFECTS OF NOVEL NOCICEPTIN ANALOGUES AFTER CHRONIC IMMOBILIZATION STRESS
Ivelina Himcheva, Tatyana Simeonova, Emiliya Naydenova, Galya Stavreva
- 185 INNOVATIVE MODEL FOR FIRST AID TRAININGS AT THE WORKPLACE IN BULGARIA
Slavi Pachalov, Evgeni Grigorov
- 168

CULINARY ITEMS IN CLINICAL PATHOLOGY

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Lardaceous or icing sugar spleen “seasoned” with nutmeg liver: these are terms that a third-year medical student should be able to explain. Eponymization or resemblance of pathological phenomena to household items and food is widely represented in pathology. It serves as a mnemonic and a key to diagnosis in many of the clinical cases. The presentation explains more than 50 “culinary” eponyms used in science literature and daily clinical practice, demonstrating their meaning and the benefits from them.

Keywords: clinical pathology, culinary eponyms

ROMAN GODS RELATED TO MEDICINE

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Roman medicine was developed in parallel with Greek medicine, and they have been in deep interaction through the centuries. From a historical point of view, the Greek and Roman cultures are connected in geographical and intellectual aspects. The ideas of the Mediterranean region easily reached the Italic peninsula. The scientific achievements of the Greeks were recognised similarly in Roman culture. The medical sphere was not an exception. Medicine in the Roman world has an independent history after it was adopted in the local context. Roman medics and followers of the art of medicine built a significant corpus of knowledge, symbols, and medical practice. The personifications of Roman virtues and intensive powers related to medical art took part in the Roman pantheon, where the persons of gods were responsible for different sides of medical science. Deities had a protective and instrumental role in professional medical knowledge. This text aims to clarify this level of cultural context for medical deities and participation in human health and experience. The names of medical gods, as well as their functions and occupations, are parts of the present research. **Keywords:** Roman gods, medical terminology, Latin, names

OUTPATIENT PSYCHIATRIC CARE IN BULGARIA AND A FORECAST OF THE LABOUR MARKET EXIT OF PSYCHIATRISTS

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Introduction. Demographic processes are an important determinant of the development of the workforce and the human factor in the economy. Prevention, access, and digitisation are key factors in reducing psychiatric morbidity.

Objective. To present the current situation of psychiatrists in Bulgaria working under contract with the National Health Insurance Fund (NHIF) and to forecast the loss of specialists from the labour market until 2037.

Material and methods. Data from the BMA, NSI, Eurostat, NHIF registry were used. Statistical methods were used to predict the future of psychiatrists. MS Excel IBM SPSS Statistics v. 26 were used for calculations and tabular and graphical presentation.

Results. The average age of psychiatrists is 60 years, and in four districts of Bulgaria, it is over 63 years.

Conclusion. The situation of psychiatry in Bulgaria is dramatic and requires many changes to avoid a catastrophe in the coming years. Urgent measures are needed to overcome the huge deficit of psychiatrists and other types of psychiatric staff in Bulgaria.

Keywords: forecast, labour market, psychiatrists

PROFILING OF TERMINOLOGICAL CONTENT IN “LATIN LANGUAGE AND MEDICAL TERMINOLOGY” FOR BACHELOR’S SPECIALTIES IN MEDICAL UNIVERSITIES AND COLLEGES

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Latin language and medical terminology is a discipline studied in almost all bachelor’s specialities in medical universities and colleges. The training aims to achieve terminological competence, but its drawback is that it lacks profiling of the teaching terminological material regarding the specific characteristics of each speciality.

The present work aims to create a theoretical basis for specifying the terminological content of the discipline for each speciality according to the professional and special features. In this regard, the individual disciplines included in the curricula of the different specialities, their programs, and teaching aids are studied to outline their terminological needs. The inclusion of the textbooks used in the teaching provides an opportunity to establish the definitions in the teaching of Latin for medical purposes.

The results of the study are of high practical value. They provide guidelines for the optimal selection and organisation of medical terminology teaching in the different bachelor’s specialities and serve as a basis for the creation of specialised dictionary systems and teaching aids.

Profiling the terminological material is a prerequisite for optimising the education in “Latin Language and Medical Terminology” and for continuously increasing the benefits of it both in further education and in the professional realisation of the students.

Keywords: Bachelor’s programs, dictionary system, Latin language, medical terminology, terminological minimum

ANIMAL METAPHORS IN MEDICAL TERMINOLOGY

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There is an abundance of eponyms in medical terminology – naming diseases and anatomical structures after scientists, geographic locations and mythological characters was a long tradition. A specific group of eponyms is named after animals and animal parts. The present research is an attempt to divide the application of such names in anatomical and pathological language and to track down their usage in ancient sources. The focus is on terms of Latin and Greek origin and exploring the originals in order to answer questions such as how many of these terms were used in Antiquity, whether their meaning was the same as it is in the present day, and if not, what stands behind their names. Terms of English medical slang, and names of parasite infestations are not included.

Keywords: animal metaphors, names of animals in medicine

BIOFEEDBACK THERAPY: CONTEMPORARY TRENDS AND PERSPECTIVES

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Introduction. Biofeedback therapy is a non-invasive method leveraging real-time monitoring of physiological processes. It has gained traction in managing various psychological and pathophysiological conditions. Recent advancements in technology and an increased understanding of biofeedback mechanisms have expanded its applications, improving patient outcomes.

Aim. This study aims to review contemporary trends in biofeedback therapy, highlighting its effectiveness and future perspectives.

Materials and Methods. A comprehensive literature review was conducted using PubMed, Scopus, and Google Scholar. Studies from the last decade focusing on different types of biofeedback and their clinical applications were included.

Results. The review identified a significant increase in the use of biofeedback for treating anxiety, depression, and various eating disorders. Technological advances in sensor and mobile application development have improved the availability and accuracy of monitoring devices and analysis. Clinical trials demonstrated improvements in symptoms and quality of life for patients undergoing biofeedback therapy.

Conclusion. Biofeedback therapy shows promising trends in the management of various conditions. Future research should focus on standardising protocols, expanding large-scale studies, and integrating biofeedback into routine clinical practice to fully harness its therapeutic potential.

Keywords: anxiety, biofeedback, depression, eating disorders

ASPECTS OF TEACHING LATIN FOR MEDICINE THROUGH ENGLISH. TERM FORMATION PATTERNS

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Teaching Latin for Medicine to medical students in English includes the characteristics and use of anatomical-histological, clinical and pharmaceutical terminology as a basis for the disciplines covered throughout their studies. We present patterns in these terminology systems. This paper aims to consider 1) the morphological, syntactic and lexical differences between analytical and synthetic languages in the context of teaching Latin medical terms in an English-speaking classroom; 2) focus on the lexical aspect and application of term-formation patterns in anatomical and clinical vocabulary in translating from Latin to English and from English to Latin. The most common mistakes in current oral and written control based on the seminar materials according to the discipline syllabus are analysed. The comparative method used to present the specificity of anatomical and clinical subsystems in medical Latin suggests how term formation models in the systems can improve teaching efficacy.

Results. Semanticisation of the lexical minimums in all thematic units is achieved by comparing Latin and English lexemes, the root and affixal combining forms and the corresponding equivalents in the two types of translation according to the linguistic norms of Latin and English.

Keywords: anatomical-histological terminology, clinical terminology, Latin for medicine, term-formation patterns, training through English

THE MADNESS OF HERACLES

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At the heart of tragedy plots is the descent of some elevated character from happiness to unhappiness, and not infrequently, a misguided action or misjudgment plays a role in this. In this unexpected turn, the character may also act as if possessed by madness. Moreover, most tragic fables are mythological, and it is characteristic of myths to present unexpected endings in which possession by madness may also intervene.

Euripides' tragedy "Heracles" or "The Madness of Heracles" is an extremely important example of a state of madness – it describes the divinely induced madness of the hero Heracles. The goddesses Iris and Lyssa – of controversy and of madness – send him a "Bacchic mind". The madness transforms him; he no longer looks like himself. He behaves strangely and laughs like a madman. Even those around him recognise his madness, though at first, they think it is a joke, but the situation seems not only funny but also scary. Under the influence of his delusion, he reaches out to his family and commits a crime, killing not only his wife but also his children, thinking them to be those of Eurystheus.

The madness here is externally induced. It comes from the gods and is part of those circumstances over which man has no control. However, it also represents the character's inner suffering.

Keywords: bacchic mind, Heracles, madness

PATHOLOGICAL TERMS, MOTIVATED BY NAMES OF HISTORICAL FIGURES

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Clinical terminology abounds with terminological denominations in which characteristics of the concepts' content are introduced in inventive and whimsical ways. They are of great interest to both specialist terminologists and all users of clinical terms - medical staff, patients, and medical students.

The present opus focuses on a group of pathological terms that have arisen on the grounds of analogies with historical figures. We call them term allusions because, in them, medical phenomena are revealed through allusions, pointing to life stories, behavioural peculiarities, or aspects of the reputations of actual people. This group of terms is studied as a terminological, cultural and social occurrence in order to reveal the different aspects of their pragmatics - meanings, functions, imagery, field of use, and historical background.

The terms are excerpted from dictionaries of medical terminology, textbooks covering clinical disciplines and medical writings. They are considered in the context of contemporary cognitive and social approaches through the application of broad-spectrum analysis.

The result of the study shows that pathological terms, motivated by the names of historical figures, are, in fact, eponymous constructions in which allusion is used as a means to conceptualise the terms.

The term allusions is distinguished by vivid imagery combined with entertaining elements. Their endurance is determined by their informativeness, three-dimensional imagery and economy, as well as the practicality of their construction.

Keywords: allusions, historical figures, pathological terms, terminological denominations

SPECIFICITIES AND DIFFICULTIES IN THE ACQUISITION OF MEDICAL TERMINOLOGY IN LATIN BY BULGARIAN MEDICAL STUDENTS

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This paper examines the specificities and difficulties in the acquisition of medical terminology by medical students studying in Bulgarian. The teaching of Latin grammar combined with teaching of medical terms from the fields of anatomy, cytology, pharmacology and specialised medical disciplines is a challenge for teachers.

They have to lay the foundations of the language with its grammatical peculiarities, as well as be able to explain the terms with their precise meanings in the relevant scientific field.

The study elucidates the difficulties that students encounter in learning the grammar and vocabulary of Latin, providing guidance for the lecturer on how to approach teaching so that students can learn the basics of medical terminology and work with it in their future practice.

The text makes use of material from students' written tests, assignments completed during the exercises, and assignments for independent work.

The result of these observations assists in finding a flexible approach on the part of the lecturer, developing materials with appropriate learning content according to the student's level of preparation.

The acquisition of medical terminology in Latin is an important prerequisite for the student's training in specialised disciplines and their future practice.

Keywords: Latin language, medical terminology, specificities

CONCEPTS OF SEXUAL INTERCOURSE AND REPRODUCTIVE HEALTH PRESENTED IN CONSTANTINE THE AFRICAN'S DE COITU

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The study is based on a textual analysis of the treatise *De coitu* by Constantine the African (c. 1020-1087). The controversy over whether this is his original work or a translation of a work by the Arabic physician Ibn Al-Jazzar is debated. The more important parallels with other authors touching on the subject are indicated. A brief overview of the lexemes and terms used to name parts of the male and female reproductive system and/or related to conception and fetal development is included. The main goals of the research are the presentation of the medieval concepts of sexuality, conception and reproduction, as well as generating interest in the study of medieval Latin-language medical treatises.

Keywords: andrology, Constantine the African, medieval medicine, medieval Latin treatises, sexology

MONOMORPHIC EPITHELIOTROPIC INTESTINAL T-CELL LYMPHOMA PRESENTING AS ABSCESS

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Introduction. The gastrointestinal tract is the most common localisation of extranodal lymphoma, more often of non-Hodgkin’s lymphomas. Monomorphic epitheliotropic intestinal T-cell lymphomas (MEITL) are rare and have a relatively aggressive course. The most common location described is the small intestine.

Aim. Presentation of a rare case of MEITL involving the cecum.

Materials and methods. We present a case of a 65-year-old patient with acute pain in the ileocecal region. The imaging studies show a thickened wall of the colon up to 12 mm involving the cecum and partially the ascending colon. Colonoscopy and biopsy presented with features of colitis. Due to the suspicion of a malignant process, the patient was referred for PET/CT, but after a sharp deterioration with evidence of intestinal obstruction, an operation was performed. The intraoperative finding was an abscess cavity with perforation and involvement of the terminal ileum, cecum, ascending colon, peritoneum and retroperitoneum. Histologically, abscessing was observed in the intestinal wall, with extensive infiltration of atypical lymphoid blast cells.

Results. A broad panel of immunohistochemical studies of the tumour cells was performed, resulting in the diagnosis of monomorphic epitheliotropic intestinal T-cell lymphoma (MEITL) in the colon.

Conclusion. MEITL rarely arises in the colon. Early diagnosis is challenging because clinical manifestations are nonspecific.

Keywords: abscess, cecum, monomorphic epitheliotropic intestinal T-cell lymphoma

A CASE OF COLON ADENOCARCINOMA WITH UNCOMMON MORPHOLOGICAL CHARACTERISTICS

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Introduction. Colorectal cancer is the fourth most commonly diagnosed malignant neoplasm and third in terms of mortality among all tumour diseases worldwide. The most common histological finding is adenocarcinoma with varying degrees of progression and grade, the latter in rare cases creating a morphological challenge due to the wide differential diagnosis.

Aim. To present a rare case of poorly differentiated colon adenocarcinoma with an unusual morphological and immunohistochemical profile.

Materials and methods. We present a case of a 61-year-old patient with rectal carcinoma resection /2009/ and subsequent multiple endoscopic polypectomies. In April 2024, a right hemicolectomy was performed due to suspicion of a new malignant process. There were found multiple serrated adenomas, but also a small lesion with unusual morphology, described as polypoid colon mucosa, where from a focus with crypts with stellate lumens, there is a transition to infiltrative mostly nest-like structures with absent mucin secretion and poorly visible basement membrane; cryptitis and crypt abscesses along with abundant lymphoplasmacytic infiltrate with neutrophilic and eosinophilic admixture; background of diffuse melanosis.

Results: A broad panel of immunohistochemical studies were performed, concluding that the diagnosis is moderately to poorly differentiated colon adenocarcinoma.

Conclusion: Given the high frequency of colon adenocarcinoma, the low degree of differentiation and unusual results of immunohistochemical examination can lead to difficulty in the diagnostic process.

Keywords: adenocarcinoma, colon, immunohistochemical examination, poorly differentiated

THE ROLE OF SERUM AMYLOID A IN THE DEVELOPMENT OF ATHEROSCLEROSIS IN PATIENTS WITH CARDIOVASCULAR DISEASE

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Introduction. Atherosclerosis is a major cause of the development of cardiovascular diseases (CVD). It is a systemic, chronic, progressive-inflammatory and degenerative disease affecting the inner layer of large and medium-sized arteries. One of the main reasons for the development of atherosclerosis is a disturbance in cholesterol metabolism, and the criteria for its diagnosis are the monitoring of LDL and HDL levels. Serum amyloid A (SAA) is an acute-phase apolipoprotein bound in plasma to HDL. It is characterised by early expression and short half-life. It is synthesised in the liver as a result of various inflammatory agents.

Objective. To summarise data from journal publications regarding changes in serum SAA, LDL and HDL concentrations in patients with CVD.

Materials and methods. Follow-up of lipid profile and change in serum SAA concentration in patients with CVD.

Results. The literature review indicates that SAA inhibits the anti-atherogenic, anti-oxidant and anti-inflammatory properties of HDL and thereby induces the development of atherosclerosis, turning it into a pro-inflammatory marker inducing atherogenesis. With the use of statins, the functionality of HDL is restored.

Conclusion. High levels of SAA, despite high HDL and satisfactory LDL values, will signal HDL dysfunction, which may lead to the risk of a cardiovascular event.

Keywords: atherosclerosis, Serum amyloid A, cardiovascular diseases

EFFECTS OF NOVEL NOCICEPTIN ANALOGUES ON THE ADRENERGIC AND OPIOIDERGIC SYSTEMS AFTER CHRONIC IMMOBILISATION STRESS

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Introduction. Stress provokes stress-induced analgesia (SIA), which depends on opioid and non-opioid components. The non-opioid one comprises the adrenergic system participating in the descending antinociceptive system. Naloxone reverses the opioid form of SIA, whereas non-opioid analgesia is insensitive to this opioid receptor antagonist. Nociceptin (N/OFQ) and analogues are neuropeptides and neuromodulators that can inhibit the expression of some forms of SIA. The α 2-adrenoreceptor agonist clonidine (Cl_o) also has an antinociceptive effect and could potentiate the analgesic action of opioids.

The present study aimed to investigate the effects of novel analogues of nociceptin N/OFQ(1-13)NH₂ after chronic immobilisation stress (CIS) and the involvement of the adrenergic and opioidergic systems in these effects.

Materials and methods. The experiments were carried out on 54 male Wistar rats divided into 9 groups and treated with nociceptin analogues, Naloxone and clonidine. Analgesic activity was examined using a nociceptive test called paw pressure (PP).

Results. Our results showed that co-administration of the nociceptin analogues with clonidine increased the pain threshold after CIS compared to the control group. Naloxone pretreatment reduced the analgesic effect of clonidine and nociceptin analogues.

In conclusion, the adrenergic and opioidergic systems are involved in the analgesic effects of nociceptin analogues after CIS.

Keywords: nociceptin analogues, chronic immobilisation stress, clonidine, naloxone

INVOLVEMENT OF THE OPIOID AND ENDOCANNABINOID SYSTEMS IN THE ANALGESIC EFFECTS OF NOVEL NOCICEPTIN ANALOGUES AFTER CHRONIC IMMOBILISATION STRESS

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Introduction. Stress influences neuroendocrine, autonomic, and immune functioning. Opioid peptides are released during stress, leading to antinociceptive effects. This phenomenon is referred to as stress-induced analgesia (SIA). The endocannabinoid system (ECS) has a well-established role in the modulation of pain perception and behavioural responses after stress. Nociceptin and analogues are neuropeptides and neuromodulators that have been found to play a role in pain perception.

This study aimed to investigate the analgesic effects of novel nociceptin N/OFQ(1-13)NH₂ analogues on nociception after chronic immobilisation stress (CIS) and the involvement of the opioid and endocannabinoid system in these effects.

Materials and methods. The experiments were carried out on male Wistar rats. Analgesic effects were examined using a paw-pressure (PP) test. All drugs were dissolved in saline and were injected intraperitoneally (i.p.). Statistical analysis was performed using one-way ANOVA.

Results. Our results showed that nociceptin and analogues decreased pain threshold after CIS, which is most pronounced for [Orn⁹, Orn¹³]N/OFQ(1-13)NH₂. Co-administration of the peptides with CB₁ antagonist (AM251) as well as of the peptides with Naloxone significantly decreased the pain threshold compared to a group that underwent chronic stress only.

Conclusions. Our experiments confirmed the participation of the opioid and endocannabinoid systems in the analgesic effects of nociceptin analogues after CIS.

Keywords: AM251, immobilisation stress, naloxone, nociceptin analogues, pain

INNOVATIVE MODEL FOR FIRST AID TRAINING AT THE WORKPLACE IN BULGARIA

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Introduction. Most training organisations offer first-aid training according to the Basic Life Support (BLS) and Advanced Life Support (ALS) standards. The developed model consists of three modules – basic, upgrading and specialised knowledge and skills.

Objective. To create a model of first aid training through which workers need to identify risks better, have a preventive role and acquire knowledge and skills to provide effective first aid.

Materials and methods. Materials of leading world organisations conducting first aid training are summarised and analysed. Through the method of comparative analysis, the developed innovative model is structured and presented.

Results. The presented model creates prerequisites for better identification of specific risks at work, which contributes to the prevention of occupational injuries. A secondary but significant effect is the acquisition of general and specific knowledge and skills for first aid, depending on the typical incidents and the injuries caused by them.

Conclusion. The innovative model is in line with the established world standards for first aid training at the workplace but allows the acquisition of more specific knowledge and skills. It complements occupational safety and health activities and has a preventive effect.

Keywords: accidents at work, first aid, innovative model, prevention, training



Jubilee Scientific Conference with International Participation

Pharmacy

Content

- 191 RESEARCH AND ANALYSIS OF THE REGULATION AND NEED OF HARMONISATION OF THE DRUG REPURPOSING PROCESS
Antonio Ivanov, Violeta Getova-Kolarova, Veselina Ruseva, Ilko Getov
- 192 COMPARATIVE ANALYSIS OF TRAINING AND SPECIALIZATION IN CLINICAL PHARMACY BETWEEN EU COUNTRIES AND GREAT BRITAIN
Savina Elitova, Ilko Getov
- 193 USING ARTIFICIAL INTELLIGENCE FOR ANALYSIS OF PUBLIC DATA ON ADVERSE DRUG REACTIONS – INITIAL TEST PHASE
Veselina Ruseva, Violeta Getova-Kolarova, Ilko Getov
- 194 DESIGN AND EVALUATION OF IBUPROFEN SELF-EMULSIFYING DRUG DELIVERY FOR ENHANCED SOLUBILITY AND STABILITY
Viktorio Mihaylov, Mihaela Tosheva, Victor Petrov, Stefka Titeva, Radostina Raycheva, Simona Tsankovska
- 195 RARE DISEASES IN THE HEALTHCARE SYSTEM
Galya Tsvetanova-Kraeva, Albena Cholakidou, Mariana Velikova
- 196 NEW REQUIREMENTS FOR CONDUCTING CLINICAL TRIALS ACROSS EU
Liliya Bogdanova
- 197 NOVEL STYRYL HEMICYANINE DYES AS POTENTIAL FLUOROGENIC DNA MARKERS
Teodora Aleksandrova, Diana Cheshmedzhieva, Aleksey Vasilev
- 198 PHARMACIST-PATIENT COMMUNICATION IN AN OUTPATIENT AND HOSPITAL SETTINGS - PROBLEMS AND CHALLENGES
Simona Belcheva, Hristina Lebanova, Svetoslav Stoev

- 199 ESSENTIAL OIL COMPOSITION OF SATUREJA KITAIBELII
WIERZB. EX HEUFF. FROM THE CENTRAL DANUBIAN PLAIN,
BULGARIA
Genadi Gavrilov, Milena Nikolova, Anna Gavrilova
- 200 DIETARY SUPPLEMENTS - QUALITY CONTROL AND
REGULATORY REQUIREMENTS
Dessislava Ilieva-Tonova
- 201 SUSTAINABILITY OF MEDICINES USE
Svetoslav Stoev, Simona Belcheva, Nadia Veleva, Hristina Lebanova
- 202 REDISPENSING OF MEDICINES: AN AVANT-GARDE TOOL
FOR RATIONALIZING MEDICINES USE
Svetoslav Stoev, Simona Belcheva, Nadia Veleva, Hristina Lebanova
- 203 MEDICINES SHORTAGES IN EUROPE: SCOPE, PREVALENCE
AND LOCAL SPECIFICITIES
Steliqna Kostadinova, Svetoslav Stoev, Nadia Veleva,
Hristina Lebanova
- 204 PHARMACOGNOSTIC CHARACTERIZATION OF LEAVES OF
FICUS CARICA L.
Andrey Andreev, Dora Trifonova, Marionita Vlahova,
Raina Kuzmanova, Maya Yotova
- 205 ELECTRONIC PRESCRIBING OF MEDICINES: CURRENT
PRACTICES AND FUTURE CHALLENGES
Renel Habil, Svetoslav Stoev, Nadia Veleva, Hristina Lebanova
- 206 ASYMMETRIC MONOMETHINE CYANINE DYES WITH
HYDROPHOBIC FUNCTIONALITIES FOR FLUORESCENT
INTERCALATOR DISPLACEMENT ASSAY
Diana Cheshmedzhieva, Nadezhda Bozova, Miroslav Rangelov,
Nadezhda Todorova, Aleksey Vasilev, Sonia Ilieva
- 207 DIGITAL MARKETING IN THE PHARMACY NETWORK IN
BULGARIA
Tatyana Krumova, N. Dimova, Stefan Balkanski
- 188

- 208 TRACKING TRENDS OF THE DEVELOPMENT OF ONLINE TRADE IN MEDICINAL PRODUCTS IN BULGARIA
Magdalena Pesheva, Anna Todorova, Galina Petrova
- 209 SURVEY ON KNOWLEDGE, ATTITUDES AND EXPERIENCE WITH DIGITAL HEALTHCARE, TELEMEDICINE/ TELEPHARMACY AMONG DOCTORS AND HEALTHCARE PROFESSIONALS IN BULGARIA
Nadia Veleva
- 210 POTENTIALLY HARMFUL EXCIPIENTS IN ORAL LIQUID FORMS IN PEDIATRIC PATIENTS IN BULGARIA
Yoana Dobрева, Svetoslav Stoev, Nadia Veleva, Hristina Lebanova
- 211 NEW TRENDS IN PHARMACY EDUCATION, 2024
Nadia Veleva, Svetoslav Stoev, Hristina Lebanova
- 212 NEW INTERPROFESSIONAL COURSE IN E-HEALTHCARE AND TELEMEDICINE/ TELEPHARMACY AT THE MEDICAL UNIVERSITY – PLEVEN, 2024
Nadia Veleva, Ana Ivanova, Svetoslav Stoev
- 213 SURVEY ON KNOWLEDGE, ATTITUDES AND EXPERIENCE WITH DIGITAL HEALTHCARE, TELEMEDICINE/ TELEPHARMACY AMONG STUDENTS AT THE MEDICAL UNIVERSITY – PLEVEN, BULGARIA
Nadia Veleva, Svetoslav Stoev, Hristina Lebanova
- 214 OVERVIEW OF THE QUALITY ASPECTS AND REGULATORY FRAME OF THE NON-INTERVENTIONAL STUDIES
Emil Kostov, Hristina Lebanova, Evgeni Grigorov
- 215 DOSE ADJUSTMENT OF MEDICATIONS ACCORDING TO ASSESSMENT OF RENAL FUNCTION (EGFR/CRCL) IN HOSPITALISED HEART FAILURE PATIENTS - A STUDY TO OPTIMISE RATIONAL USE OF MEDICATIONS
Svetoslav Stoev, Simona Belcheva, Konstantin Ivanov, Elitsa Lalkova, Nadia Veleva, Hristina Lebanova

- 216 IN VITRO ACTIVITY OF NEWLY SYNTHESIZED BENZO[A] QUINOLIZIDINE DERIVATIVES AS POTENTIAL DPP-IV INHIBITORS
Alexander Pashev, Teodora Alexandrova, Lidiya Trifonova, Milena Atanasova, Borislav Dimitrov, Galya Stavreva, Georgi Altankov
- 217 HISTORY, CURRENT ACTIVITY AND CHALLENGES FOR THE DEVELOPMENT OF THE TEACHING HERBARIUM AT THE FACULTY OF PHARMACY, MEDICAL UNIVERSITY – PLEVEN
Anna Gavrilova, Genadi Gavrilov
- 218 BENEFICIAL EFFECTS OF MN(III)TETRAKIS (4-BENZOIC ACID) PORPHYRIN ON MARKERS FOR PNEUMOTOXICITY IN RAT RONCHOALVEOLAR LAVAGE FLUID AFTER INTRATRACHEAL AMIODARONE ADMINISTRATION
Plamena Panayotova, Boris Dinkov, Venka Tsankova, Evgenia Tsoleva, Nikolinka Koleva, Galya Stavreva
- 219 NOVEL BENZO[A]QUINOLIZIDINE ANALOGUES AS POTENTIAL DPP-IV INHIBITORS
Aleksandar Pashev, Teodora Aleksandrova, Kalina Ilieva, Lidia Petrova, Milena Atanasova, Galya Stavreva, George Altankov
- 220 ECONOMIC BURDEN OF HPV-RELATED CANCERS IN BULGARIA
Hristina Lebanova, Elina Petrova, Svetoslav Stoev
- 221 EFFECT OF EUK-134 ON SOME MARKERS OF INFLAMMATION AND CELL PROLIFERATION IN RAT LUNG AFTER TOTAL BODY GAMMA IRRADIATION
Violeta Dancheva, Galya Stavreva, Plamen Krastev, Lyudmil Terziev
- 222 REGULATORY REQUIREMENTS FOR STORAGE AND USE OF POISONOUS MEDICINAL PLANTS AND PLANT PARTS IN BULGARIAN HERBAL PHARMACIES
Galina Dyakova, Nadia Veleva, Anna Gavrilova, Gennady Gavrilov

RESEARCH AND ANALYSIS OF THE REGULATION AND NEED OF HARMONISATION OF THE DRUG REPURPOSING PROCESS

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Introduction. Drug repositioning is successful mechanism for discovering new therapeutic uses for authorized medicinal products. The regulatory framework is based on the processes for granting marketing authorization and various initiatives from national competent authorities.

Aim. The study aims to clarify the regulatory framework of repositioning and the need for improvement and harmonization among the different drug regulators.

Material and Methods. Systematic and chronological analysis has been carried out with main focus on the regulatory framework drug repositioning process. Current and preceding major legislation at EU level were analyzed as well as guidelines and documents of international and national working groups/centers.

Results. The analysis shows the absence of the term “drug repositioning” in the legislation, as well as a greater absolute number of repositioning options for EMA vs FDA which were analyzed in details. The main focus in the EU is improvement of pharmaceutical company-academia-nonprofit interactions, whereas in USA - creating effective generation of molecules with potential for repositioning.

Conclusion. The study shows the clear need of inclusion and detailed description of the term in legislation. Other options for regulating the process include involving organisations other than the MAH in the process and providing new and/or updating existing regulatory incentives and support.

Keywords: drug repurposing process, regulation

COMPARATIVE ANALYSIS OF TRAINING AND SPECIALIZATION IN CLINICAL PHARMACY BETWEEN EU COUNTRIES AND GREAT BRITAIN

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Introduction. In recent years, there has been a dynamic shift in the pharmaceutical profession towards more clinical focus. A leading factor is clinical pharmacy (CP) education and practice, with significant differences observed between countries.

Aim. To study and evaluate for comprehensiveness and comparability the programs for additional training and postgraduate specialization in CP in Bulgaria, the EU and Great Britain.

Material and Methods. We examined data from official sources, checked them for relevance through the feedback method in each EU member state up to 2023.

Results. countries with postgraduate qualifications. There is a separate course/discipline/specialization in 17 countries, and in the rest the CP training is integrated into the basic course of education. Postgraduate specialization exists in 14 countries, but in only 8 is separated from Hospital Pharmacy. The duration of postgraduate studies varies between one and 3.6 years (average 3.1). The theory/practice ratio is in favor of practice, in Bulgaria – vice versa. The specialization ends with a state exam in 5 countries (60%). A content analysis of the curricula/programs was also carried out.

Conclusion. CF training varies widely and caters to differences in specialty practice. Bulgaria ranks among the countries where training is clearly defined, targeted, and connected to the possibility of practicehe results showed that MnTBAP reduced early AM-induced lung inflammatory injury.

Keywords: Clinical pharmacy; CP education, EU/UK, specialization

USING ARTIFICIAL INTELLIGENCE FOR ANALYSIS OF PUBLIC DATA ON ADVERSE DRUG REACTIONS – INITIAL TEST PHASE

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Introduction. C With the advancement of technologies, particularly in the field of artificial intelligence (AI), the possibilities for ensuring high-quality pharmacovigilance have significantly increased. This is a regulatory obligation and is critically important for patient health and the effectiveness of the healthcare system. AI enables the automation of processes for the early identification of adverse drug reactions (ADRs) and the analysis of large volumes of unstructured data from various sources.

Aim. The study aims to analyze data and trends on adverse drug reactions based on information published in the public domain using AI.

Material and Methods. An analysis was conducted on Natural Language Processing algorithms and complex systemic medical solutions, followed by the introduction of a set of ADR reports into the Amazon Comprehend Medical web interface.

Results. The analysis demonstrates the significant capabilities of AI in identifying potential risks associated with the occurrence of ADRs. It facilitates the detection of risks and the implementation of preventive measures by medical professionals and regulatory authorities to minimize potential threats to patient health.

Conclusion. The study highlights the importance of integrating AI to optimize pharmacovigilance processes, providing a more efficient way to analyze and predict available information on ADRs.

Keywords: Artificial intelligence, adverse drug reaction, pharmacovigilance

DESIGN AND EVALUATION OF IBUPROFEN SELF-EMULSIFYING DRUG DELIVERY FOR ENHANCED SOLUBILITY AND STABILITY

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Introduction. Self-emulsifying drug-delivery system (SEDDS) is an isotropic mixture of oil, surfactant, with or without cosurfactant, that is used to improve the oral absorption and stability of poorly soluble drugs such as ibuprofen.

Aim. A self-emulsifying drug-delivery system (SEDDS), has been explored to improve solubility and dissolution profile of Ibuprofen.

Material and Methods. Pseudo-ternary phase diagrams were used to identify the self-emulsifying regions with maximum drug loading and optimal concentrations of oil (sun-flower, medium chain triglyceride oil and a mixture of the two), surfactant (Polysorbate 80) and cosurfactant (propylene glycol). The formulations were evaluated for thermodynamic stability, dispersibility, refractive index, viscosity, cloud point, DSC and TEM. The prepared emulsions were characterized for in vitro behaviour.

Results. DSC studies showed that the drug is in a solubilised form in the self-emulsifying formulations. TEM studies of diluted liquid SEDDS confirmed the uniform shape and size of the globules. Results showed that all the batches passed the visual isotropicity test, recorded emulsification time of less than a minute and promoted fast drug release.

Conclusion. In conclusion, all the evaluations showed that the SEDDS improved the aqueous solubility of Ibuprofen and its anti-inflammatory activity.

Keywords: Ibuprofen, SEDDS, DSC, pseudo-ternary phase diagram

RARE DISEASES IN THE HEALTHCARE SYSTEM

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Introduction. Rare diseases are defined as pathological conditions with a low frequency of occurrence. They are characterized by a wide variety of symptoms and disorders. About 7,000 are currently known. They are characterized by genetic origin, chromosomal abnormalities, and can also be inherited. Based on current scientific research, the consideration of this topic is based on a brief overview of drugs for the treatment of rare diseases against the background of the entire population of 459 million EU citizens and, in particular, on the territory of Republic of Bulgaria.

Aim. To monitor the prevention, diagnosis and treatment of patients with rare diseases on the territory of Republic of Bulgaria.

Material and Methods. I applied the method for a systematic review of literature and legislation related to the analysed problem summarizing the results and conclusions from publications and monographs. The information was collected from various databases including EURORDIS for a survey of 8 diseases conducted in 17 EU countries.

Results. According to EU data, over half a million people in Bulgaria, most of them children, suffer from rare diseases. Many of them lack treatment.

Conclusion. According to data from the Information Center for Rare Diseases and Orphan Drugs, in Bulgaria, out of 60 drugs with the status of orphan drugs, only 18 are included in the Positive Drug List and only 11 of them are reimbursed.

Keywords: rare diseases, healthcare, orphan drugs.

NEW REQUIREMENTS FOR CONDUCTING CLINICAL TRIALS ACROSS EU

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The use of medical devices is a key point in the role of the healthcare provider. The medical devices are an important growing aspect of healthcare delivery and are being improved to meet established and emerging patient needs. On May 26, 2021, Regulation EC 2017/745 of the European Parliament and of the Council of April 5, 2017 on Medical Devices (Medical Device Regulation / MDR) was fully implemented, which amends the current Directive 2001/83/EC on Medical Devices. The introduction of this regulation leads to significant changes in the regulatory environment for medical devices and introduces new requirements for the conduct of clinical trials. In Vitro Diagnostic Regulation replaced the current Directive 98/79/EC on in vitro diagnostic medical devices as of May 26, 2022, and again introduced significant changes to the sector. The regulation aims to ensure a high level of protection of public health, patients and consumers and the smooth functioning of the internal market, taking into account the large number of small and medium-sized enterprises (SMEs) operating in this sector. The new regulatory requirements are expected to lead to a greater number of clinical trials conducted with medical devices.

Keywords: regulation, medical devices, clinical trials

NOVEL STYRYL HEMICYANINE DYES AS POTENTIAL FLUOROGENIC DNA MARKERS

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Photoinduced electron transfer (PET) probes are rapidly developing and may find a potential application as cell imaging agents in cancer therapy, whose fluorescence can be simultaneously activated by cancer specific parameters. The photophysical behavior of newly synthesized styryl hemicyanine dyes in free state and towards deoxyribonucleic acid is investigated in our lab by spectroscopic and theoretical methods. The change in the emission spectra upon titration with DNA and HCl as well as the titration of the dye-DNA complexes with hydrochloric acid are monitored. In the presence of DNA, the dyes exhibit fluorescence quenching. A considerable increase in the fluorescence intensity of the dye-DNA complexes is observed upon titration with hydrochloric acid which could be considered as evidence for the occurrence of intramolecular photoinduced electron transfer effect. The nature of electronic transitions and their manifestation in the electronic spectra are revealed by DFT (density functional theory) and TD-DFT calculations. Molecular docking is performed in order to gain insight into the possible interaction modes of dye-DNA complexes.

Keywords: hemicyanine dyes, DFT, DNA markers

PHARMACIST-PATIENT COMMUNICATION IN AN OUTPATIENT AND HOSPITAL SETTINGS - PROBLEMS AND CHALLENGES

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Introduction. With the ever-increasing need for first-line patient care, pharmacists around the world are tasked with sifting through patient information to ensure positive treatment outcomes.

Aim. The aim of this study is to better understand the challenges of taking a patient's medication history and to identify the right approach for efficient pharmacist-patient interaction.

Material and Methods. We surveyed 500 patients (250 outpatients and 250 inpatients) and 50 pharmacists and analysed the data collected.

Results. The current study found that the main challenges in the pharmacist-patient communication process include communication barriers, cultural misunderstandings, lack of education, incomplete patient information and, above all, time constraints. Effectively addressing these issues requires a complex approach. Improving communication skills through training, learning how to analyse patient records using electronic health records, and better understanding the goal of therapy are the three main cornerstones identified.

Conclusion. Patients are struggling to keep up with the introduction of new technologies into their medical care, and doctors are failing to communicate changes to their patients. Pharmacists would fulfil their role as defenders of patient outcomes through effective and personalised communication

Keywords: Pharmacist-patient interaction, Patient drug history, Communication tools

ESSENTIAL OIL COMPOSITION OF SATUREJA KITAIBELII WIERZB. EX HEUFF. FROM THE CENTRAL DANUBIAN PLAIN, BULGARIA

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Introduction. In the recent years, the essential oil composition of the Balkan endemic species *Satureja kitaibelii* Wierzb. ex Heuff. has attracted considerable scientific interest in regard with its well-distinguishable antimicrobial properties. Although the essential oil composition of the species has been the subject of a few previous studies in Bulgaria, collecting fresh data from little known populations is useful for clarifying the regional distribution of the species' chemo-types.

Aim. The aim of this study is to reveal the essential oil composition of *S. kitaibelii* from two localities in the vicinity of Pleven, central Danube plain, Bulgaria.

Material and Methods. Aerial parts of *S. kitaibelii* plants, collected in full bloom in 2021 and 2022 respectively, were air-dried and subjected to GC/MS analysis.

Results. The main essential oil components in the studied samples were limonene, p-cymene, α -pinene, carvacrol, and geraniol, which aligned with the results for some Serbian populations. The difference in the content of geraniol and carvacrol between the two studied populations implies influence by the microclimatic conditions in the specific habitats.

Conclusions. The studied populations may be a potential source of valuable essential oils. The analysis of microclimate impact on the essential oil composition is closely related to the problem of standardization of biologically active substances sourced from wild plant resources.

Keywords: essential oil, GC/MS, *Satureja kitaibelii*, central Danubian plain.

DIETARY SUPPLEMENTS - QUALITY CONTROL AND REGULATORY REQUIREMENTS

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Introduction. Dietary supplements are widespread, freely advertised and readily available products used by a significant number of people for dietary supplementation and prevention, and by some even for treatment. With this in mind, the question naturally arises, what quality are these products actually?

Aims. To analyze the regulatory requirements for dietary supplements, as well as to analyze the need for quality control of these products.

Methods. A literature review and documentary analysis was performed regarding the regulatory requirements for dietary supplements. Based on the collected information, the need for conducting quality control was analyzed.

Results. The conducted analysis shows the existence of different regulatory requirements in the European Union member states for dietary supplements, and in many countries, they are distributed only after submitting a notification to the responsible regulatory authority. In most cases, a product dossier, declared composition and validated analytical methods are not required or available. However, during analyzes carried out by the Official Control Laboratories of the European Union member states, a number of worrying results were found, including the presence of prohibited, undeclared medicinal substances in the analyzed dietary supplements.

Conclusion. In view of the wide use and easy availability of dietary supplements, their quality control should be carried out, both in terms of their composition and to prove the absence of prohibited and undeclared substances.

Keywords: Dietary supplements, quality control, regulatory requirements, analysis, prohibited and undeclared substances.

SUSTAINABILITY OF MEDICINES USE

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The sustainability of medicines use encompasses the efficient and ethical management of pharmaceutical resources to ensure long-term public health benefits while minimizing environmental impact. A comprehensive literature review was conducted, utilizing PubMed, Scopus, and Web of Science databases. The review focused on peer-reviewed articles published in the last decade discussing various aspects of pharmaceutical sustainability, including environmental impacts, economic considerations, and public health outcomes. Several critical issues affecting the sustainability of pharmaceutical use were identified:

- Environmental Impact: Pharmaceuticals and their metabolites often enter water systems, leading to ecological disruptions and potential human health risks.
- Economic Considerations: The high cost of sustainable pharmaceutical practices poses a challenge for healthcare systems, particularly in low-income countries.
- Public Health Outcomes: Ensuring access to essential medicines while managing waste and reducing environmental contamination is a complex balance that requires integrated strategies.

Several strategies have been proposed to address these challenges: Improved waste management systems to reduce pharmaceutical contamination in the environment; development of greener pharmaceuticals with lower environmental impact, promotion of rational medicines use preventing over-prescription and misuse, regulations to support sustainable pharmaceutical practices.

The sustainability of medicine use is a multifaceted issue requiring coordinated efforts across environmental, economic, and health domains.

Keywords: sustainability, medicines use, environment.

REDISPENSING OF MEDICINES: AN AVANT-GARDE TOOL FOR RATIONALIZING MEDICINES USE

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Redispensing of medicines refers to the redistribution of unused, unopened, and safe medications to patients in need. This practice is a novel approach to enhance the rational use of medicines, reduce pharmaceutical waste, and improve access to essential medications.

A thorough literature review was conducted using PubMed, Scopus, and Web of Science databases to examine the economic benefits, regulatory considerations, and patient outcomes associated with redispensing practices.

Redispensing can significantly reduce healthcare costs by minimizing pharmaceutical waste and reducing the financial burden on patients and healthcare systems. Redispensing also contributes to environmental sustainability by reducing the unused medicines discarded. Improved access to medications through redistribution programs can enhance patient adherence to treatment regimens and overall health outcomes. Ensuring the safety and efficacy of redispensed medications requires stringent regulatory frameworks and quality control measures like the establishment of robust regulatory standards to ensure the safety and quality of redispensed medicines; the development of efficient logistics and tracking systems to manage the redistribution process and awareness among patients and healthcare providers regarding the redistribution process.

While challenges remain, particularly in the areas of regulation and implementation, the potential advantages of medication redispensing are worth considering for health systems seeking medicine use optimization.

Keywords: redispensing, sustainability, rational medicine use.

MEDICINES SHORTAGES IN EUROPE: SCOPE, PREVALENCE AND LOCAL SPECIFICITIES

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Medicines shortages are a growing concern across Europe, posing significant challenges to healthcare delivery and patient care. Understanding the scope and causes of medicine shortages is crucial for developing effective mitigation strategies.

This study aims to analyze the current state of medicines shortages in Europe, analyzing data from the European Medicines Agency (EMA) and the Bulgarian Drug Agency (BDA). Data submitted by EU member states' regulatory authorities were analyzed to identify trends, causes, and the impact of medicines shortages in Europe.

Medicines shortages have been increasing over the past decade, with notable spikes during times of crisis, such as the COVID-19 pandemic. The primary causes of shortages include manufacturing issues, supply chain disruptions, regulatory challenges, and economic factors such as pricing and reimbursement policies. Shortages lead to increased workload for pharmacists, who must find alternative therapies, manage patient expectations, and ensure the continuity of care. This often results in increased healthcare costs and jeopardizes patient safety and treatment efficacy. The extent and impact of shortages vary across Europe, influenced by the local regulatory environments, healthcare infrastructure, and market dynamics.

Addressing Medicines shortages in Europe requires a multi-faceted approach, including improved regulatory coordination, enhanced supply chain resilience, and proactive communication strategies.

Keywords: medicine shortages, supply chain management, care continuity.

PHARMACOGNOSTIC CHARACTERIZATION OF LEAVES OF FICUS CARICA L

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Introduction. The leaves of *Ficus carica* L. are used in Bulgarian traditional medicine as an antidiabetic, antioxidant, anti-inflammatory remedy. Due to the lack of sufficient scientific evidence, the plant substance is not included in the European Pharmacopoeia.

Aim. The aim of the present study is to conduct a pharmacognostic characterization of fig leaves and determine the total phenolic content and radical-scavenging activity of extracts obtained from them.

Materials and methods. *Ficus carica* L. leaves were collected from Pleven region for the purpose of the intended analyses. Macroscopic and microscopic images of fig leaves were taken. A hydroalcoholic extract was obtained from the leaves and fractionated using solvents of increasing polarity. Total phenols as well as antiradical activity were determined.

Results. The morphological characteristics of fig leaves were described. Microscopic identification involves the characterization of major anatomical features that are important for the identification of the plant substance in powder. Observations included trichomes, calcium oxalate drusen, cystoliths, etc. The butanol extract exhibited higher phenolic compound content and greater radical-scavenging activity.

Conclusion. The obtained results provide a basis for further research on the extracts' activities related to oxidative stress-related conditions.

Keywords: Fig leaf, microscopic images, total phenolic compounds, radicalscavenging activity.

ELECTRONIC PRESCRIBING OF MEDICINES: CURRENT PRACTICES AND FUTURE CHALLENGES

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The advent of digital health technologies is transforming healthcare in Europe, with electronic prescribing (EP) of medicines becoming a key component of this change.

The introduction of EP systems has gained significant momentum in the EU, particularly in countries such as Sweden, Estonia, Finland, Denmark, Norway, Ireland, the United Kingdom, Germany, and the Netherlands. A systematic literature review found that e-prescribing has the potential to optimise patient safety by minimising prescribing errors, improving access to healthcare services, and reducing the administrative burden in the sector. Patients benefit from the convenience of electronic prescriptions, including electronic transmission to pharmacies, without the need for physical hand delivery and paper-based interinstitutional communication.

In addition, EP systems have the potential to optimise medication adherence rates and integrate medication use information into electronic health records. The result is improved health outcomes and reduced healthcare costs.

Looking ahead, the opportunities for EPs in Europe are promising. Harmonisation of standards for EPs can facilitate cross-border healthcare and ensure the security of patient data.

In conclusion, the introduction of e-prescribing streamlines the prescribing process, improves patient safety and has the potential to revolutionise medicine management.

Keywords: electronic prescribing, EU, e-prescription.

ASYMMETRIC MONOMETHINE CYANINE DYES WITH HYDROPHOBIC FUNCTIONALITIES FOR FLUORESCENT INTERCALATOR DISPLACEMENT ASSAY

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A series of new asymmetric monomethinecyanine dyes have been synthesized and purified using a new green procedure. The photophysical properties of the newly synthesized dyes were investigated by a combined application of spectroscopic and theoretical approaches. The structural features of the dyes and their ability to form dimers were characterized by quantum chemical calculations and were compared with the aggregachromism observed in the UV/Vis spectra. The applicability of the dyes as fluorogenic nucleic acid probes, their binding affinity and mode of interaction with NAs were evaluated by fluorescence titration, CD spectroscopy, molecular docking and the fluorescence intercalation displacement method (FID assay). The establishment of the interaction mechanism of fluorescent dyes with nucleic acids extends the possibilities for the design and synthesis of structures with specific properties – with selectivity to certain bases in the structure of DNA and RNA or to certain cellular organelles; permeability through cell membranes.

Keywords: asymmetric monomethine cyanine dyes; RNA/DNA; fluorescence titration; biomolecular probes; DFT.

DIGITAL MARKETING IN THE PHARMACY NETWORK IN BULGARIA

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Introduction. Emerging trends in pharmacy chain digital marketing include personalized marketing, social media engagement, and mobile apps. Consumers have a positive attitude towards digital marketing in the pharmaceutical industry, preferring convenience, personalized experiences and reliable information. Effective use of digital marketing strategies can significantly improve the overall performance of the pharmaceutical sector. Online pharmacy employees have different attitudes toward digital marketing strategies, influenced by factors such as age, experience, and job title.

Aim. This research aims to provide valuable insight into the effectiveness of digital marketing in the pharmacy chain and how it influences consumer behavior and perceptions.

Material and Methods. The main tasks of the research are: conducting a situational analysis of the current digital marketing strategies in the pharmacy network, including an assessment of the different digital channels used for marketing purposes; researching trends and developments in digital marketing specific to the pharmaceutical industry, such as online advertising, social media marketing, email campaigns; designing and implementing surveys or interviews to gather data on consumer attitudes towards digital marketing initiatives used by the pharmacy chain; analyzing the collected data to assess the impact of digital marketing on consumer perceptions, preferences and behavior in relation to the pharmacy chain. This research will use a mixed methods approach combining both secondary data analysis and primary data collection.

Results. Primary data will be collected through attitude surveys and interviews. Surveys will target consumers to understand their attitudes towards digital marketing in the pharmaceutical industry. Interviews will also be conducted with online pharmacy employees to explore their perspectives on digital marketing strategies.

Conclusion. Based on the results of the study, proposals will be made to increase the effectiveness of digital marketing strategies in the pharmacy network in Bulgaria.

Keywords: digital marketing, digital marketing strategies, pharmacy network

TRACKING TRENDS OF THE DEVELOPMENT OF ONLINE TRADE IN MEDICINAL PRODUCTS IN BULGARIA

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Introduction. In recent years, online trading has become more and more widespread worldwide. Community pharmacies and drugstores have the right to trade over the Internet with medicinal products without a doctor's prescription, after registration with the BDA (Bulgarian Drug Agency). Through online retailers, patients have access to all products except prescription drugs.

Aim. Tracking the distribution of online trade of medicinal products in Bulgaria and the availability of additional health information on their website.

Material and Methods. Documentary method – the registers of BDA, Regional Health Inspectorates (RHI) and the websites of online traders were analyzed. The results are summarized and presented tabularly and graphically (Excel).

Results. The distribution of online trades by region in Bulgaria is uneven. Only 3% of community pharmacies and drugstores have an e-commerce registration, and eight of the territorial areas do not have a single site. Additional health information on the websites is found in 53% of them, in 31% of cases there is an added source of the information and only in 14% the author of the publication.

Conclusion. There is a tendency to increase the number of online traders of medicinal products in Bulgaria. Due to lack of sources and/or author of additional health information on the websites, the credibility of the published texts cannot be confirmed.

Keywords: community pharmacy, development, health information, medicinal product, online trading, website

SURVEY ON KNOWLEDGE, ATTITUDES AND EXPERIENCE WITH DIGITAL HEALTHCARE, TELEMEDICINE/ TELEPHARMACY AMONG DOCTORS AND HEALTHCARE PROFESSIONALS IN BULGARIA

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Introduction. E-healthcare is well established practice in the developed countries. Still Bulgarian health system falls behind in terms of utilization of digital healthcare instruments due to problems with electronic environment, digital skills and wrong attitude.

Aim. To explore knowledge, attitudes and experience with digital healthcare, telemedicine/telepharmacy in doctors and healthcare professionals in Bulgaria as well as their willingness to improve digital competence.

Material and Methods. A cross-sectional survey was conducted among 50 medical doctors and healthcare professionals in Nov 2023-Apr 2024. A self-administered questionnaire with 40 questions was distributed online. The questions were divided into four main categories: knowledge and attitudes toward digital healthcare; experience with digital healthcare instruments and willingness to improve digital skills.

Results. A total of 50 medical doctors and healthcare professionals completed the survey (response rate 33%). 97,5% of the respondents are familiar with telemedicine and telepharmacy, yet 91,5% declared that further digital healthcare skills training is needed. Only 23,4% used any mobile health application, 28,3% used specialized healthcare websites and 78,3% used hospital information system. 87,2% had positive attitude for using e-healthcare in their daily practice. According to the respondents main hindrances for Bulgarian healthcare digitalization are software and hardware problems (76,6%) and lack of digital skills of health workforce (74,5%). Digital literacy could be improved preferably through internal workplace trainings (73,9%) and external specialized courses (67,4%).

Conclusion. Capacity building is crucial for utilizing all the positive effects of digitalization. Doctors and healthcare professionals should improve their digital health skills and actively participate in the digital transformation of Bulgarian healthcare aiming better health outcomes.

Keywords: attitudes, Bulgaria, digital healthcare, doctors, experience, healthcare professionals, knowledge

POTENTIALLY HARMFUL EXCIPIENTS IN ORAL LIQUID FORMS IN PEDIATRIC PATIENTS IN BULGARIA

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Introduction. Excipients, while generally considered inert, can have adverse effects, especially in vulnerable populations such as pediatric patients.

Aim. This study aims to review the toxicity data and recommended daily limits for excipients present in pediatric oral dosage forms in Bulgaria.

Material and Methods. The qualitative and quantitative composition of the most commonly used pediatric oral dosage forms were examined. Toxicity data and recommended daily limits for the pediatric population were assessed for compliance with European Medicines Agency (EMA) guidelines.

Results. The review identified several excipients with potential toxicity concerns, including benzyl alcohol, propylene glycol, and artificial sweeteners such as aspartame and saccharin. The data revealed that some oral liquid medications for pediatric use in Bulgaria contain excipients in quantities approaching or exceeding the recommended daily limits. Notable findings include cases where the cumulative exposure from multiple medications poses a risk of surpassing safety thresholds.

Conclusion. This study underscores the need for stricter regulation and enhanced monitoring of excipient levels in pediatric medications. Healthcare providers should be cognizant of potential risks and consider excipient content when prescribing oral liquid forms to pediatric patients. Further research and updated guidelines are essential to ensure the safety of these vulnerable patients.

Keywords: excipients, liquid dosage forms, pediatric

NEW TRENDS IN PHARMACY EDUCATION, 2024

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Introduction. Pharmacy education is changing in response to the dynamic healthcare environment. Rapid invasion of digital technologies such as artificial intelligence (AI) and virtual reality (VR) is fact. Patient-centered care and interprofessional collaboration gain increased importance. Medical University – Pleven (MU-Pleven) should know and implement novelties in order to keep its competitive advantages and prepare well- trained pharmacists for future practice.

Aim. To present new trends in pharmacy education as outlined by European Association of Faculties of Pharmacy (EAFP) and International Pharmaceutical Federation (FIP) and identify opportunities for their implementation at the MU – Pleven.

Material and Methods. We performed desk review of the recent publications and reports related to novelties in pharmacy education while comparing them to the MU-Pleven teaching experience and capacity. Secondary data from EAFP, FIP and WHO available by June 2024 were analyzed.

Results. New trends in pharmacy education are outlined in three major areas: digitalization, patient-centered care models and interprofessional collaboration. There is a focus shift from pharmacy science skills to pharmacy practice skills building. Critical thinking, communication skills and real-world scenarios reasoning are essential for training.

Conclusion. Digitalization is easily integrated in pharmacy education at the MU – Pleven given the experience and equipment availability. Patient-centered care models and interprofessional collaboration are more challenging fields that need continuous efforts and dedicated staff.

Keywords: digitalization, interprofessional, patient-centered, pharmacy education

NEW INTERPROFESSIONAL COURSE IN E-HEALTHCARE AND TELEMEDICINE/ TELEPHARMACY AT THE MEDICAL UNIVERSITY – PLEVEN, 2024

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Abstract

Introduction. E-healthcare is a new educational field worldwide. In Bulgaria there is lack of digital healthcare skills training both in medical and pharmacy students. Since the adoption of the National Strategy for e-Healthcare and Digitization of the Health System 2030 in 2024 there is an increasing demand for relevant training.

Aim. To present the concept and rationale for introduction of new interprofessional course in e-healthcare and telemedicine/telepharmacy at the Medical University-Pleven.

Material and Methods. Survey on the demand for e-healthcare course in 247 MU-Pleven students was conducted in Nov 2023 - April 2024. Opportunities for interprofessional digital healthcare skills training in terms of graduate studies were identified. Main topics of interest were outlined and a new training program was developed.

Results. More than half of the students (51,2%) think that there should be additional training for digital health technologies and 78,3% declare willingness to enroll in e-healthcare training. Preferred forms of training are elective (43,1%) and mandatory (35,4%) courses. Almost half of the respondents think that it should be provided at the workplace (45,5%). Main topics of the new program include – basics of e-healthcare, telemedicine/telepharmacy, EHR, mobile health applications, e-prescriptions, etc.

Conclusion. Digital literacy of all healthcare professionals is a mandatory condition for the digital transformation of Bulgarian health care. The new interprofessional course in e-healthcare and telemedicine/telepharmacy at the MU-Pleven could answer the unmet need for digital skills training for medical and pharmacy students.

Keywords: e-healthcare, interprofessional course, telemedicine, telepharmacy

SURVEY ON KNOWLEDGE, ATTITUDES AND EXPERIENCE WITH DIGITAL HEALTHCARE, TELEMEDICINE/ TELEPHARMACY AMONG STUDENTS AT THE MEDICAL UNIVERSITY – PLEVEN, BULGARIA

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Introduction. Digitalization of healthcare is inevitable process worldwide. Still Bulgarian health system falls behind in terms of utilization of digital healthcare instruments mainly because of lack of specialized infrastructure, digital skills and wrong attitude.

Aim. To explore knowledge, attitudes and experience with digital healthcare, telemedicine/telepharmacy in students at the Medical University – Pleven (MU-Pleven), Bulgaria as well as their willingness to improve digital competence.

Material and Methods. A cross-sectional survey was conducted in 247 students at the MU-Pleven in Nov 2023-Apr 2024. A self-administered questionnaire with 40 questions was distributed online. The questions were divided into four main categories: knowledge and attitudes toward digital healthcare; experience with digital healthcare instruments and willingness to improve digital skills.

Results. A total of 247 students completed the survey with an overall response rate of 30%. Most of the respondents knew the correct definitions of telemedicine and telepharmacy (96%) yet 51,2% declared that further digital healthcare skills training is needed. Only 22,4% used any mobile health application and 28,9% used specialized websites for medicine and healthcare. 82,8% had positive attitude for using e-healthcare in their future practice. 76,5% of the respondents believed that the main factor hindering wider healthcare digitalization is the lack of digital skills of health workforce. Students suggested elective courses (43,1%) and workplace training (45,5%) as the most preferred measures to improve digital literacy.

Conclusion. Capacity building is crucial for utilizing all the positive effects of digitalization. MU-Pleven should provide relevant digital health skills training and equip its graduates with positive attitude towards e-healthcare.

Keywords: Bulgaria, attitudes, digital healthcare, experience, knowledge, medical university students

OVERVIEW OF THE QUALITY ASPECTS AND REGULATORY FRAME OF THE NON-INTERVENTIONAL STUDIES

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Introduction. Unmet medical needs require the development of new medicines and health technologies. Non-interventional studies (NIS) are one of the most effective ways of obtaining real-world additional information regarding drug efficacy, effectiveness, and safety.

Aim. These studies are conducted with approved medicines within the scope of their standard use, aiming to collect additional drug safety information from patients and healthcare professionals.

Material and Methods. A good understanding of NIS requires a clear distinction between them and clinical trials.

Results. European regulatory documents in the field of clinical trials do not apply to non-interventional studies due to the lower risk of their conduct, but country-specific regulation is used instead.

Conclusion. The national legal framework governing public relations related to clinical trials and non-interventional studies is diverse and includes many regulations, which is a prerequisite for inconsistency in its application.

Keywords: clinical trial, medicinal product, non-interventional study, post marketing

DOSE ADJUSTMENT OF MEDICATIONS ACCORDING TO ASSESSMENT OF RENAL FUNCTION (EGFR/CRCL) IN HOSPITALISED HEART FAILURE PATIENTS - A STUDY TO OPTIMISE RATIONAL USE OF MEDICATIONS

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Introduction. The present study is designed as a retrospective cohort study based on electronic extraction of data from electronic health records containing information on the treatment of hospitalised patients from hospitals in Bulgaria for the period 2019-2023.

Aim. To identify irrational prescribing (IP), defined as incorrect dose/frequency or contraindicated medication according to the patient's renal function. It will also identify potentially nephrotoxic drugs and drugs with high sodium content.

Material and Methods. Digitised records from 67 hospitals from all administrative regions in Bulgaria, generated by automated electronic medical record review software, were analysed. Data on pharmacotherapeutic treatment of patients admitted for inpatient treatment between June 2019 and December 2023 were collected. All patients diagnosed with heart failure (ICD I50.0, I50.1, I50.9) and eGFR = or.

Results. AM administration resulted in significantly increased lung weight coefficient, protein content, total cell count, polymorphonuclear cells, alveolar macrophages, and activity of LDH, AcPh, and AlPh. The treatment with MnTBAP attenuated the markers of pulmonary inflammation and damage of the alveolar-capillary barrier compared to the AM group.

Conclusion. The results showed that MnTBAP reduced early AM-induced lung inflammatory injury.

Keywords: dose adjustment, rational drug use

IN VITRO ACTIVITY OF NEWLY SYNTHESIZED BENZO[A] QUINOLIZIDINE DERIVATIVES AS POTENTIAL DPP-IV INHIBITORS

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Introduction. Dipeptidyl peptidase IV (DPP-IV) is a specific serine protease enzyme whose inhibition has been widely used for type 2 diabetes mellitus treatment. Recent studies have outlined the benzo[a]quinolizidine ring as an important heterocyclic framework in the structure of potential DPP-IV inhibitors.

Aim. The effect of Mn(III)tetrakis (4-benzoic acid) porphyrin (MnTBAP), on amiodarone-induced pneumotoxicity in rats was studied.

Material and Methods. A one-step approach toward the benzo[a]quinolizidine system and its heterocyclic analogs based on the reaction between enolizable anhydrides and 3,4-dihydroisoquinolines was developed. Molecular docking of previously synthesized compounds was used to optimize the structure, and a series of benzo[a]quinolizidine derivatives were successfully synthesized. A fluorescence-based method for screening DPP-IV inhibitors was applied to assess the synthesized compounds' inhibitory activity. The cytotoxic activity on human mesenchymal stem cells (ADSCs) was evaluated.

Results. Two of the studied compounds with the code names A280620 and A191021 were found to possess inhibitory activity in the micromolar range: with IC₅₀ 19.4 μM and IC₅₀ 2.16 μM, respectively. More than 95% viability of ADSCs was reported with both substances at 6, 24, and 48 h.

Conclusion. The molecular docking approach allowed to optimize successfully the structure of the benzo[a]quinolizidine inhibitors. Future studies of A280620 and A191021 regarding their selectivity for DPP8 and DPP9 and their in vivo activity are needed.

Keywords: cell viability, DPP-IV inhibitors, IC₅₀

HISTORY, CURRENT ACTIVITY AND CHALLENGES FOR THE DEVELOPMENT OF THE TEACHING HERBARIUM AT THE FACULTY OF PHARMACY, MEDICAL UNIVERSITY - PLEVEN

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Introduction. The Teaching Herbarium at the Faculty of Pharmacy, Medical University – Pleven supports the university’s and faculty’s visions of innovation and sustainable development, refocusing the conventional medicinal plants education to the contemporary problems of medicinal plant conservation, sustainable plant resources utilization and safety of herbal substances for human health.

Aim.

Material and Methods. The main current activities of the Teaching Herbarium with potential to expand include accessioning and curating plant specimens, providing scientific expertise and creating educational resources for Pharmacy students.

Results. The Teaching Herbarium was established in 2018 with just 15 herbarium boxes. Today, thanks to the dedication and efforts of the responsible staff as well as the help of our students, the number of specimens has grown to 6500. From 2024 the herbarium is listed in GRSciColl (Global Registry of Scientific Collections) and has its own strategic plan for development.

Conclusion. During its short period of existence, the Teaching Herbarium has become an indispensable resource for pharmaceutical botany education and a significant asset for the competitiveness of the youngest Faculty of Pharmacy in the country.

Keywords: herbarium collection, higher education, pharmaceutical botany

BENEFICIAL EFFECTS OF MN(III)TETRAKIS (4-BENZOIC ACID) PORPHYRIN ON MARKERS FOR PNEUMOTOXICITY IN RAT BRONCHOALVEOLAR LAVAGE FLUID AFTER INTRATRACHEAL AMIODARONE ADMINISTRATION

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Introduction. Catalytic antioxidants metalloporphyrins have a protective role in inflammatory conditions, inhibiting inflammatory gene expression in response to reduced generation of reactive oxygen species such as superoxide, peroxide, peroxyxynitrite, and lipid peroxy radicals.

Aim. The effect of Mn(III)tetrakis (4-benzoic acid) porphyrin (MnTBAP), on amiodarone-induced pneumotoxicity in rats was studied.

Material and Methods. The experiment was carried out on 72 male Wistar rats, divided into four groups: (1) – control; (2) – treated intratracheally (i.t.) with amiodarone (AM); (3) – treated with AM and MnTBAP; (4) – treated with MnTBAP. AM was installed i.t. on days 0 and 2 (6.25 mg/kg; 3.125 mg/ml water solution). MnTBAP was injected i.p. at a dose of 10 mg/kg from day 0 to day 4. The activity of lactate dehydrogenase (LDH), acid phosphatase (AcPh), alkaline phosphatase (AlPh), total protein content, and cytological assays of bronchoalveolar lavage fluid (BALF) were performed.

Results. AM administration resulted in significantly increased lung weight coefficient, protein content, total cell count, polymorphonuclear cells, alveolar macrophages, and activity of LDH, AcPh, and AlPh. The treatment with MnTBAP attenuated the markers of pulmonary inflammation and damage of the alveolar-capillary barrier compared to the AM group.

Conclusion. The results showed that MnTBAP reduced early AM-induced lung inflammatory injury.

Keywords: amiodarone, bronchoalveolar lavage fluid, Mn (III) tetrakis (4-benzoic acid) porphyrin, pneumotoxicity

NOVEL BENZO[A]QUINOLIZIDINE ANALOGUES AS POTENTIAL DPP-IV INHIBITORS

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Introduction. Dipeptidyl peptidase IV (DPP-IV) is a highly specific serine protease enzyme whose inhibition has been widely explored for the potential to treat type 2 diabetes mellitus. Recent studies have outlined the benzo[a]quinolizidine ring system as an important heterocyclic framework in the structure of potential DPP-IV inhibitors. Previous in our group were focused on the development of a one-step approach toward the benzo[a]quinolizidine system and its heterocyclic analogs based on the reaction between enolizable anhydrides and 3,4-dihydroisoquinolines.

Aim. The effect of Mn(III)tetrakis (4-benzoic acid) porphyrin (MnTBAP), on amiodarone-induced pneumotoxicity in rats was studied.

Material and Methods. The experiment was carried out on 72 male Wistar rats, divided into four groups: (1) – control; (2) – treated intratracheally (i.t.) with amiodarone (AM); (3) – treated with AM and MnTBAP; (4) – treated with MnTBAP. AM was installed i.t. on days 0 and 2 (6.25 mg/kg; 3.125 mg/ml water solution). MnTBAP was injected i.p. at a dose of 10 mg/kg from day 0 to day 4. The activity of lactate dehydrogenase (LDH), acid phosphatase (AcPh), alkaline phosphatase (AlPh), total protein content, and cytological assays of bronchoalveolar lavage fluid (BALF) were performed.

Results. The binding mode of the previously synthesized compounds at the active site of the human DPP-IV was further explored using molecular docking. The obtained results were used to guide the structure optimization process. Based on this a series of benzo[a]quinolizidine derivatives with varying molecular complexity were successfully synthesized. The inhibitory activity of the synthesized compounds against DPP-IV was measured using Sitagliptin as a positive control. Two of the compounds were found to possess inhibitory activity in the micromolar range. The cytotoxic activity on human mesenchymal stem cells was evaluated, with all compounds showing no cytotoxic activity at micromolar concentrations.

Conclusion. the molecular docking allowed us to successfully optimize the structure of the

benzo[a]quinolizidine inhibitors and to outline the necessary modifications to increase their potency as DPP-IV inhibitors. This synthetic methodology could provide a route to previously unexplored heterocycles with potential biological properties.

Keywords: benzo[a]quinolizidine, DPP-4, type 2 diabetes

ECONOMIC BURDEN OF HPV-RELATED CANCERS IN BULGARIA

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Introduction. Human papillomavirus (HPV) plays a pivotal role in the etiology of various cancers, including cervical, vulvar, vaginal, anal, penile, and head and neck (H&N) cancers. The economic burden associated with these HPV-related cancers is substantial, encompassing direct medical costs and indirect costs.

Aim. To identify direct healthcare costs of HPV-related cancers in Bulgaria and to calculate indirect costs and years of life lost associated with these cancers.

Material and Methods. This was a retrospective, cost of illness study conducted from the payer perspective. Patients with a confirmed diagnosis of vulvar (C51), vaginal (C52), cervical (C53), anal (C21), penile (C60), and H&N cancers - hypopharynx, larynx, nasopharynx, oral cavity, oropharynx (C01 – C06; C09-C13; C32) were included. Data on drug use and administration costs as well as healthcare costs were collected from the National Health Insurance Fund from January 2018 through December 2020. Years of life lost were calculated based on the country and gender-specific life expectancy. The human capital approach was used to calculate indirect costs due to productivity loss.

Results. The total treatment costs for all HPV-related cancer patients in Bulgaria were 30 792 511 BGN (2018), 34 029 271 BGN (2019), and 35 438 206 BGN (2020). 30% of all costs are due to cervical cancer. The costs associated with drug acquisition and administration contributed most to the result (40-45%) followed by radiotherapy costs (30-36%). Diagnostic and follow-up costs represented only 10% of total expenditures. An estimated 53 371 years of life were lost due to HPV-related cancers for the period 2018-2020. Total productivity losses were estimated at 42 424 454 BGN.

Conclusion. The economic burden of HPV-related cancers in Bulgaria is substantial and primarily driven by medicines and radiotherapy costs. A focus on prevention, early diagnosis, and higher vaccination coverage rates could contribute to lower costs.

Keywords: cancer, economic burden, HPV

EFFECT OF EUK-134 ON SOME MARKERS OF INFLAMMATION AND CELL PROLIFERATION IN RAT LUNG AFTER TOTAL BODY GAMMA IRRADIATION

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Introduction. Salen-manganese complexes are low molecular weight catalytic SOD/catalase mimetics, reducing the amount of superoxide and hydrogen peroxide. They exert protective effects in a number of in vivo models, including radiation damage.

Aim. To investigate the effect of salen-manganese porphyrin EUK-134 on some markers of inflammation and cell proliferation in rat lung tissue subjected to external whole-body gamma ionizing radiation.

Material and Methods. The experiment was carried out on 72 male white Wistar rats, divided into three groups: 1st group - control; 2nd group – irradiated with 6 Gy of ionizing radiation; 3rd group - irradiated with 6 Gy of ionizing radiation and injected with EUK-134. The amounts of the cytokines IL-6 and CINC-1 in plasma were investigated. Histological examination for morphological tissue changes and immunohistochemical examination with anti-Ki-67 (MIB1) antibody for cell proliferation were performed.

Results. Plasma levels of IL-6 and CINC-1 were increased significantly in the irradiated group, and significantly decreased in the combined group compared to the irradiated group. Morphological changes in histological preparations showed marked damage in the lung parenchyma on the third and seventh days in the group of irradiated animals and much less pronounced pathological changes in the group treated with EUK-134. Immunohistochemical examination was then performed with the proliferative activity marker Ki-67. A reduced proliferative index was found in the irradiated group, and in the combined group, the proliferative activity was close to that of the control group.

Discussion: The protective effect of EUK-134 was expressed in reducing the inflammatory process and mitigating lung damage.

Conclusion. The study showed that salen EUK-134 exhibits an antioxidant effect and affects the oxidative stress provoked by ionizing radiation.

Keywords: EUK-134, inflammation, ionizing radiation

REGULATORY REQUIREMENTS FOR STORAGE AND USE OF POISONOUS MEDICINAL PLANTS AND PLANT PARTS IN BULGARIAN HERBAL PHARMACIES

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Introduction.

Aim. The purpose of this study was to establish the extent to which the current regulatory requirements for storage and use of poisonous medicinal plants and plant parts in Bulgarian herbal pharmacies guarantee their quality and safety, as well as public health protection.

Material and Methods. Literature review and analysis of the current legislation regarding poisonous medicinal plants (PMPs) and plant parts in Bulgaria was carried out along with an online market survey of 20 randomly selected items from the list of PMPs under Ordinance No. 5 for the facilities and activities in the herb preparation stations and/or herb warehouses.

Results. PMPs classification is provided only in Appendix No. 5 to Ordinance No. 5. Medicinal plants for treatment and prevention of diseases in humans are object to regulation by the Medicinal Products in Human Medicine Act. Certain conventional medicines that can lead to serious side effects require special storage in Bulgarian pharmacies and are listed in Appendix No. 9 to Ordinance No. 28 on the structure, order and organization of the work in pharmacies and the nomenclature of medicinal products. They are dispensed on physician's prescription only. Appendix No. 9 does not include PMPs having similar main ingredients and therapeutic effects to the conventional drugs listed. PMPs are marketed not only in herbal pharmacies. All 20 PMPs selected are easily accessed and bought online with no restrictions.

Conclusion. Current PMPs regulations in Bulgaria pose direct and indirect risks to human health and should be revised and updated.

Keywords: Bulgaria, poisonous medicinal plants, regulations, safety, special storage

Jubilee Scientific Conference with International Participation

JUBILEE SCIENTIFIC SESSION TRADITIONS AND INNOVATIONS IN PUBLIC HEALTH, DEDICATED TO 20TH ANNIVERSARY OF THE FACULTY OF PUBLIC HEALTH

Content

SOCIAL MEDICINE AND HEALTH PROMOTION

- 239 STUDY OF THE AWARENESS OF PERIODONTAL AND SYSTEMIC HEALTH AMONG STUDENTS FROM THE FACULTY OF PUBLIC HEALTH OF THE MEDICAL UNIVERSITY – SOFIA
Dragomira Nikolova, Dimitar Dimitrov, Velichka Doseva, Raina Malinova, Galina Chaneva
- 240 DISTRESS THERMOMETER - THE NECESSARY TOOL IN THE COURSE OF DIAGNOSIS IN PATIENTS WITH BREAST CANCER
Ivelina. Ivanova, Silvia Tsvetkova, Behidzhe Sadarzanska-Terzieva
- 241 DIFFERENCES IN SELF-RATED HEALTH ACCORDING TO THE SOCIO-ECONOMIC CHARACTERISTICS OF INTERNATIONAL AND BULGARIAN STUDENTS FROM MEDICAL UNIVERSITY – SOFIA
Joana Simeonova, Angelika Velkova, Lidia Georgieva, Peshka Pesheva, Kristina Popova, Nikolai Hristov, Elia Georgieva, Maria Pravchanska
- 242 ROLE OF ACCULTURATION IN SELF-RATED HEALTH OF INTERNATIONAL MEDICAL STUDENTS FROM MEDICAL UNIVERSITY – SOFIA
Joana Simeonova, Angelika Velkova, Lidia Georgieva, Peshka Pesheva, Kristina Popova, Nikolai Hristov, Elia Georgieva, Maria Pravchanska
- 243 FACTORS INFLUENCING THE QUALITY OF CARE FOR PEOPLE WITH DISABILITIES IN HOME ENVIRONMENT
Kalina Kancheva
- 244 COMPARISON OF PREDICTIVE VALIDITY BETWEEN THE SCORE (ESC 2019) AND SCORE NFA SYSTEMS – COHORT STUDY IN BULGARIA
Plamen Latev, Rositsa Dimova, Romyana Stoyanova

- 245 CAREER GUIDANCE OF HEALTH PROFESSIONALS - A PREREQUISITE FOR PERSONAL AND PROFESSIONAL DEVELOPMENT
Stela Georgieva
- 246 HEALTH - ESSENCE AND LEVELS OF AGGREGATION OF THE CONCEPT
Stela Georgieva, Luydmila Filipova, Sabrina Andrianova, Beatris Asenova
- 247 SIGNIFICANCE OF RECOMMENDATIONS FOR CORRECT BLOOD PRESSURE MEASUREMENT AND INTERPRETATION OF RESULTS IN PRIMARY HEALTH CARE
Dimitar Dimitrov, Dima Tsanova, Mariela Kamburova
- 248 A FRIENDLY ACCESS, TESTING AND VOLUNTARY COUNSELING TO HIV FOR ROMA YOUTH IN BULGARIA (2020–2022)
Borislava Ivanova, Radoslava Georgieva, Eleonora Mineva-Dimitrova, Radosveta T. Stamenkova, Mariela Kamburova
- 249 HEALTHY LIFESTYLE MINDSETS IN PEOPLE WITH METABOLIC SYNDROME
Zdravka Radionova, Vanya A. Birdanova
- 250 DEPARTMENT OF SOCIAL MEDICINE IN THE 50-YEAR HISTORY OF MU-PLEVEN: TRADITIONS AND PERSPECTIVES
Mariela Kamburova, Stella Georgieva, Dima Tsanova, Penka Stefanova, Zdravka Radionova, Eleonora Mineva-Dimitrova, Ana Ivanova, Borislava Ivanova, Radoslava Tihomirova, Tsvetan Sivkov, Dimitar Dimitrov, Nadia Veleva, Petkana Hristova
- 251 ASSESSMENT OF THE IMPACT OF THE COVID-19 PANDEMIC ON THE SPREAD OF SEASONAL INFLUENZA AND ACUTE RESPIRATORY DISEASES IN BULGARIA
Mihaela Kirilova, Eliyana Ivanova

- 252 FACTORS AFFECTING CAREER DEVELOPMENT IN THE CONTEMPORARY CONTEXT OF THE BULGARIAN MIDWIFE PROFESSION
Penka Gospodinova, Boryana Parshkevova, Galya Chamova, Svetlana Dimitrova
- 253 ADDITIONAL MODIFYING RISK FACTORS FOR RECATEGORYING PATIENTS BY SCORE (NFA)
Plamen Latev, Romyana Stoyanova, Rositsa Dimova
- 254 PERCEPTIONS AND ATTITUDE OF AMASSING READINESS FOR PROVIDING FIRST AID
Stamen Pishev, Vanya Slavova, Ekaterina Birnikova
- 255 THE CONCEPT OF HEALTH NEEDS AND CHALLENGES TO HEALTH SYSTEMS
Hristina Bozhinova, Lora Georgieva, Petar Atanasov, Raina Gardeva, Diyan Gospodinov, Boryana Parashkevova

EPIDEMIOLOGY OF INFECTIOUS DISEASES AND PARASITES

- 256 A MULTIDISCIPLINARY APPROACH TO VACCINE PROPHYLAXIS
Andrey Galev
- 257 INCIDENCE OF INFECTIOUS DISEASES IN BULGARIA OVER A 50-YEAR PERIOD
Galya Gancheva, Milena Karcheva
- 258 MODERN ASPECTS AND UNSOLVED PROBLEMS OF THE HIV CARE CONTINUUM
Ivaylo Pakov
- 259 MANDATORY VACCINATIONS IN BULGARIA - CHANGES IN THE IMMUNIZATION SCHEDULE
Kalina Terzieva, Milena Karcheva, Tanya Ivanova, Tsvetomira Ivanova, Ivaylo Pakov, Galya Gancheva, Ivanka Ivanova

- 260 PREVALENCE OF ALLERGIC RHINITIS IN CHILDREN WITH
ASTHMA – A PROSPECTIVE STUDY
Vanya Nedkova-Milanova
- 261 VACCINATION STATUS OF HOSPITAL HEALTHCARE
WORKERS FOR HEPATITIS B PREVENTION
Irina Toneva, Ralitsa Stoyanova
- 262 SURVEY AMONG GENERAL PRACTICING PHYSICIANS
REGARDING THE IMMUNIZATIONS WITH TETANUS
CONTAINING VACCINES OF THE POPULATION IN PLEVEN
REGION
Daniela Dimitrova, Miglena Kolarova, Eliana Ivanova
- 263 KNOWLEDGE, ATTITUDES AND BARRIERS TO CHILD
IMMUNIZATIONS AMONG REFUGEE MOTHERS FROM
UKRAINE
Milena Karcheva, Vanya Nedkova-Milanova, Mihaela Nacheva,
Mariyana Stoynovska
- 264 BLOOD DONATION AND THE RISK FOR TRANSMISSION OF
HEPATITIS B VIRUS AND HEPATITIS C VIRUS
Nely Doseva, Veselin Slivov
- 265 PREVALENCE OF EPSTEIN-BARR VIRUS ANTIBODIES IN
REPRODUCTIVE AGE WOMEN - A PROSPECTIVE STUDY
Tanya Petkova, Svetlana Pachkova
- 266 PREDICTORS OF HELICOBACTER PYLORI INFECTION IN
CHILDREN
Vanya Nedkova-Milanova, Zornitsa Gorcheva, Ivaylo Pakov,
Pavlinka Laleva, Milena Karcheva

ENVIRONMENT AND PUBLIC HEALTH

- 267 POTENTIAL RISKS FOR METABOLIC DISORDERS FROM
POLLUTANTS IN ATMOSPHERIC AIR AND FOODS
Vanya Birdanova, Ivelina Drambozova, Tsvetelina Vitkova, Ludmil B.
Ivanov

- 268 CARDIOVASCULAR DISEASES AND NOISE POLLUTION IN BULGARIA
Emilia Bankova, Dima Tsanova, Tsvetelina Vitkova, Suzana Gafurova
- 269 SURVEY OF FOREIGN CITIZENS TEMPORARILY RESIDING IN PLEVEN, PROVING LOW AWARENESS AND LACK OF DESIRE TO ACT IN CRISIS SITUATIONS
Rositsa Petrova, Violeta Dancheva, Anton Petrov
- 270 EUROPEAN METHODS USED IN THE LABORATORIES OF THE OFFICIAL FOOD CONTROL IN BULGARIA
Tsvetelina Vitkova, Mariyana Stoynovska, Suzana Gafurova, Vania Nedkova-Milanova
- 271 SATISFACTION WITH THE TRAINING OF PUBLIC HEALTH INSPECTORS FOR SUCCESSFUL SOCIAL AND PROFESSIONAL REALIZATION
Daniel Monov, Plamena Mladenova
- 272 POTENTIAL RISKS FOR COMPUTER VISION SYNDROME AMONG VIDEO DISPLAY USERS
Evelina Marinova
- 273 CONSUMPTION OF DIFFERENT TYPES OF MEAT AND ITS IMPACT ON BODY MASS INDEX (BMI)
Petya Hristova, Vanya Slavova, Ekaterina Birnikova, Magdalena Platikanova
- 274 APPLICATION IN MEDICINE AND COSMETICS OF ANIMAL BY-PRODUCTS FROM EGG PROCESSING
Plamen Saraliev, Cvetelina Vitkova
- 275 COMPLEX TREATMENT OF OCCUPATIONAL COMPRESSION NEUROPATHIES
Irena Stoilova, Maya Krastanova, Radostina Madzharova, Trayana Ivanova - Obreshkova

- 276 CURRENT HEALTH PROBLEMS IN FURNITURE WORKERS
Irena Stoilova, Penka Kostadinova, Vanya Birdanova
- 277 RECIPE COMPOSITION OF GLUTEN-FREE MUFFINS
CONTAINING WASTE PRODUCTS FROM THE FOOD
INDUSTRY
Galia Gentscheva, Ivo Finkov, Zhivka Goranova, Iordanka Alexieva
Iliana Milkova-Tomova, Dragomira Buhalova

MANAGEMENT OF HEALTH CARE

- 278 MEDICAL SIMULATION AS A NEW EDUCATIONAL METHOD
Iwona Gładysz
- 279 SPECIALIZATION "MANAGEMENT OF HEALTH CARE" AT
MU - PLEVEN - PAST, PRESENT, FUTURE
Makreta Draganova, Mariela Kamburova, Milena Saleva
- 280 HEALTHCARE PROFESSIONALS – THE KEY TO BETTER
PUBLIC HEALTH
Milka Vasileva
- 281 ENHANCING PATIENT SAFETY. ASEPTIC NON -TOUCH
TECHNIQUE (ANTT)
Lidiya Encheva
- 282 THE TRAINING OF STUDENTS FROM THE SPECIALTY
"NURSE" IN RENAL - REPLACEMENT THERAPY - NEED AND
PERSPECTIVE
Galia Georgieva, Tatyana Slavkova
- 283 ANALYSIS OF THE QUALITY OF EDUCATION OF THE
DOCTORS WHO SPECIALIZE IN THE MEDICAL FACULTY OF
TRAKIA UNIVERSITY-STARA ZAGORA
Jovka Yaneva, Svilena Damyanova, Gospodinka Prakova
- 284 CHECKLIST FOR ASSESSING THE NEEDS FOR FORMING
SKILLS FOR INDEPENDENT LIVING OF PERSONS WITH
SOCIAL PROBLEMS
Iskra Petkova

- 285 THE TIME - ONE OF THE SCARCE RESOURCES FOR
HEALTHCARE PROFESSIONALS
Makreta Draganova, Milena Saleva, Antonia Stateva
- 286 WORKING CONDITIONS IN DENTISTS
Mariya Tomova-Ivanova, Gospodinka Prakova
- 287 CURRENT ASPECTS OF HEALTH CARE RESEARCH
Milena Saleva
- 288 ROLE OF THE ELECTIVE COURSE "FUNDAMENTALS OF
RESEARCH IN HEALTH CARE"
Milena Saleva, Makreta Draganova
- 289 NURSING ASSESSMENT OF SIDE EFFECTS OF
CONVENTIONAL THERAPY IN CANCER PATIENTS
Polya Gergova, Stela Georgieva, Eleonora Mineva – Dimitrova
- 290 THE PRESTIGE OF THE MEDICAL ASSISTANT PROFESSION –
A RESPONSE TO MODERN HEALTH CHALLENGES
Ralitsa Pankova-Eredanska
- 291 USER-ORIENTED MANAGEMENT TOOLS IN OBSTETRIC
STRUCTURES
Svetlana Radeva
- 292 THE ROLE OF NURSES IN PATIENT EDUCATION ON
THE PREVENTION AND EARLY DETECTION OF SKIN
MALIGNANCY
Tatyana Slavkova, Galia Georgieva
- 293 THE RELATIONSHIP BETWEEN THE COMMUNICATION
SKILLS OF HEALTH INSPECTORS AND CONFLICTS IN
OFFICIAL CONTROLS
Yana Tosheva, Tsvetelina Tarpomanova

- 294 ANALYSIS OF THE POSITION "CHIEF NURSE" IN THE CLINIC OF ORTHOPEDICS AND TRAUMATOLOGY AT THE UNIVERSITY HOSPITAL "DR. GEORGI STRANSKI" – PLEVEN
Violeta Yolova, Milena Saleva, Makreta Draganova
- 295 NOSOCOMIAL INFECTIONS IN HIGH RISK CLINICS
Ivayla Petkova, Natalia Bancheva, Yana Glogovska
- 296 CHOICE OF PROFESSION AND FUTURE REALIZATION AMONG STUDENTS IN THE SPECIALTY "NURSING"
Petya Trendafilova, Nadka Vasileva, Dimitrinka Blagoeva, Ivanka Stambolova
- 297 WORK ABILITY AMONG HOSPITAL NURSES
Ralitsa Stoyanova, Irina Cekova, Evelina Marinova, Irina Dimitrova, Katya Vangelova
- 298 STRESS AND FATIGUE IN NURSES
Ralitsa Stoyanova, Irina Cekova, Katya Vangelova

HEALTH ECONOMICS

- 299 CURRENT APPROACHES IN THE MANAGEMENT OF HEALTHCARE SERVICES AT MULTI-PROFILE HOSPITAL FOR ACTIVE TREATMENT 'DR. IVAN SELIMINSKI – SLIVEN' AD
Vasilav Petrov, Rozalina Spasova, Krasimira Taneva
- 300 TO REIMBURSE OR NOT TO REIMBURSE: APPLYING ECONOMIC EVALUATION FOR DECISION-MAKING IN PERSONALISED MEDICINE
Rositsa Koleva-Kolarova
- 301 ASSESSMENT OF THE FINANCIAL CONDITION OF MUNICIPAL MULTI-PROFILE HOSPITALS FOR ACTIVE TREATMENT WITH HIGHEST REVENUE
Lyubomira Koeva-Dimitrova, Mincho Minev

302 A STUDY OF THE FINANCIAL LOSSES OF PUBLIC HOSPITALS FROM UNINSURED PATIENTS
Irina Dekova, Ana Ivanova

303 IMPACT OF THE COVID-19 PANDEMIC ON THE HEALTH SERVICES UTILIZATION IN BULGARIA – MAGNITUDE AND DURATION OF DISRUPTIONS IN MEDICAL AND DENTAL CARE
Maria D. Rohova, Stefka M. Koeva

INFORMATION TECHNOLOGIES AND ELECTRONIC HEALTHCARE

304 EUROPEAN REFERENCE NETWORKS AS AN EXAMPLE OF GOOD PRACTICE IN PROVIDING TIMELY HEALTH CARE IN THE FIELD OF RARE DISEASES
Marina Yordanova, Todorka Kostadinova

305 SURVEY OF MEDICAL STUDENTS' INTEREST IN DIGITAL FORMS OF LEARNING AND ASSESSMENT
Asen Seizov

306 SWOT ANALYSIS OF THE ELECTRONIC-BASED DISTANCE LEARNING SYSTEM OF MU-PLEVEN
Asen Seizov

307 AUGMENTED REALITY AND OPTICAL MARK RECOGNITION IN TEST ASSESSMENT
Kiril Statev, Asen Seizov, Antonia Stateva

308 ATTITUDES TOWARDS THE APPLICATION OF VIRTUAL REALITY IN NURSING EDUCATION
Kristina Kilova

309 OPPORTUNITIES FOR THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN PUBLIC HEALTH
Mariela Kamburova, Eleonora Mineva-Dimitrova, Ana Ivanova, Borislava Ivanova, Radoslava Georgieva, Dimitar Dimitrov, Zornitsa Yordanova

- 310 SUPPORTING AND IMPROVING HEALTH CARE EDUCATION THROUGH INNOVATIVE TELEMEDICINE TECHNOLOGIES
Polina Mihova, Margarita Stankova
- 311 ARTIFICIAL INTELLIGENCE IN HEALTHCARE AND THE PUBLIC HEALTH BENEFITS
Ana Ivanova
- 312 WORK WITH DISPLAYS - USE OF DIGITAL DEVICES AT WORK
Verislav Stanchev, Evelina Marinova, Slavi Pachalov
- 313 ARTIFICIAL INTELLIGENCE IN PUBLIC HEALTH - PROS AND CONS
Zdravka Radionova, Remon Hanna, Gabriel Georgiev

PRIMARY HEALTH CARE

- 314 HEALTH CARE IN HEMODIALYSIS UNITS - COMPLIANCE WITH PATIENT NEEDS
Vanya Vasileva, Stela Georgieva, Eleonora Mineva–Dimitrova
- 315 APPROACHES TO PERSONAL-TARGETED CARE FOR PEOPLE WITH DEMENTIA
Veronika Spasova, Marieta Gunovska
- 316 IMPORTANCE OF PATIENT EDUCATION IN COLOSTOMY CARE
Anastasia Evtimova, Boyana Veleva, Izabela Georgieva
- 317 SIGNIFICANCE OF SKINFOLD THICKNESS MEASUREMENT IN CARDIOLOGY
Krasimira Zlatkova, Yuliyana Zlatkov
- 318 PROBLEMS OF INTERACTION BETWEEN GENERAL PRACTITIONERS AND DOCTORS IN EMERGENCY MEDICAL CENTERS ACCORDING TO GENERAL PRACTITIONERS
Miroslava Hristova, Tsvetelina Valentinova

- 319 GENERAL PRACTITIONERS ON THE MANAGEMENT OF THE SPECTRUM OF SEXUALLY TRANSMITTED INFECTIONS – A QUALITATIVE STUDY
Rayna Gardeva, J. K. Marinova, Galya Chamova
- 320 HUMAN RESOURCE MANAGEMENT IN GENERAL PRACTICE – SURVEY
Teodora Dimcheva
- 321 SCREENING AND DIAGNOSIS OF THYROID PATHOLOGY IN PRIMARY MEDICAL PRACTICE (PMC) IN BULGARIA
Anabela Glavanova, Tsvetelina Valentinova, Branimir Raduilov, Ivan Polyakov, Evgeni Mekov

ETHICS AND PUBLIC HEALTH

- 322 OBSTETRIC VIOLENCE AS A THREAT TO PUBLIC HEALTH AND HUMAN RIGHTS IN CONTEMPORARY SOCIETY
Aleksandra K. Traykova
- 323 PUBLIC REACTIONS IN RESPONSE TO AGGRESSION AGAINST HEALTHCARE WORKERS
Antoniya Stateva, Milena Saleva, Kiril Statev
- 324 NUTRITION AND EATING AS A PUBLIC HEALTH ETHICS ISSUE
Atanas Anov

MENTAL HEALTH

- 325 FIRST BULGARIAN MILITARY ANTARCTIC EXPEDITION AND THE EFFECTS OF LACTOBACILLUS BULGARICUS DWT1 AS A PSYCHOBOTIC UNDER EXTREME STRESS
Rositsa M. Nedeva, Nadezhda Sl. Vladimirova, Boyan K. Mednikarov, Petko D. Ginev, Maria N. Peneva, Georgy N. Alexandrov, Evgenia I. Barzashka
- 326 THE CHALLENGE OF EMERGENCY PSYCHIATRY
Aleksandar Todorov, Vesela Tzankova, Kamen Kostov, Emiliya Dimitrova-Ilieva, Petranka Chumpalova-Tumbeva

- 327 PSYCHOSOCIAL RISK FACTORS IN HEALTHCARE WORKERS DURING A RECURRING WAVE OF THE COVID-19 PANDEMIC
Darko Simonov, Gergana Sandeva, Pavlina Parusheva, Desislava Baltadzhieva, Kosara Koprалеva, Pavlina Gidikova
- 328 SEASONALITY OF SUICIDE IN BULGARIA FOR THE YEARS 1929-1945 AND 2009-2023
Vladimir Nakov, Kaloyan Stoychev, Dafinka Stoilova, Eleonora Mineva-Dimitrova, Emiliya Dimitrova
- 329 IMPAIRMENT OF COGNITIVE FUNCTIONS IN SCHIZOPHRENIA
Ivanka Veleva, Petranka Chumpalova - Tumbleva, Kaloyan R. Stoychev, Aleksandar Todorov, Emilia Dimitrova, Stanislav Kapinchev, Gizem Yanchev
- 330 CHILDREN`S MENTAL HEALTH – FAMILY CARE AND RESPONSIBILITY
Kamelia Bogdanova, Ivanka Stambolova, Dimitrina Milikina
- 331 THE LONG-TERM MOTIVATION OF INDIVIDUAL BEHAVIOR IN HEALTH CARE WORKERS
Silvia Tsvetkova, Daniela Petrova
- 332 MANIFESTATIONS OF DEPRESSION AND ANXIETY DURING THE COVID-19 PANDEMIC
Ekaterina Birnikova, Magdalena Platikanova, Petya Hristova, Stamen Pichev, Vanya Slavova
- 333 ON THE BENEFIT OF A BEHAVIORAL ALGORITHM IN GENERAL MEDICAL PRACTICE FOR PATIENTS WITH A DEPRESSIVE EPISODE
Elka Tumbleva, Tsvetelina Valentinova
- 334 SLEEP AND FATIGUE IN MIDWIVES IN RELATION OF NIGHT SHIFT WORK AND LONG WORKING HOURS
Irina Cekova, Ralitsa Stoyanova, Evelina Marinova, Katya Vangelova

KINESITHERAPY, REHABILITATION AND SPORTS

- 335 STUDY OF THE APPLICATION OF MIXED LEARNING IN PHYSICAL EDUCATION AND SPORTS IN HIGHER SCHOOLS - TOOLS, TRENDS, OPPORTUNITIES
Iskra Ilieva
- 336 STUDY OF MUSCULOSKELETAL DYSFUNCTIONS AND PRINCIPLES FOR PHYSIOTHERAPY IN PROFESSIONAL MUSICIANS
Darina Kavlakova, Evgeniya Dimitrova
- 337 CERVICAL IDIOPATHIC SCOLIOSIS IN ADOLESCENCE: A PHYSIOTHERAPY PROGRAM
Radostina Madzharova, Emil Simeonov
- 338 REHABILITATION APPROACH IN PATIENTS AFTER ELBOW ARTHROPLASTY
Rostislav Kostov, Tanya Megova, Lyubomira Toteva
- 339 APPLICATION OF VIRTUAL REALITY AS A TREATMENT METHOD FOR OBSTETRIC TRAUMA OF THE BRACHIAL PLEXUS
Lyubomira Toteva, Evgenia Dimitrova
- 340 ALTERNATIVE REHABILITATION PROGRAMME FOR PATIENTS WITH RAYNAUD'S DISEASE (MORBUS RAYNOUD)
Tanya Megova, Emine Lyotinova
- 341 PHYSIOTHERAPY FOR ENDOMETRIOSIS OF RECTUS ABDOMINIS MUSCLE IN THE EARLY POSTOPERATIVE PERIOD (CASE REPORT)
Nezabravka Gencheva
- 342 FUNCTIONAL RECOVERY OF PATIENTS WITH ENDOPROSTHETIC HIP JOINT
Danelina Vacheva, Atanas Drumev, Simeon Gigov, Emil Vasilev

- 343 "SHOTOKAN KARATE - DO" AT MEDICAL UNIVERSITY -
PLEVEN - A COMFORTABLE ENVIRONMENT FOR SOCIAL
INTERACTION AND MENTAL RELAXATION FOR STUDENTS
Milena Kirnirkolova

VARIA

- 344 ROMAN GODS RELATED TO MEDICINE
Veronika Kelbecheva
- 345 THE ADVERTISING TEXT FOR MEDICINAL PRODUCTS IN
THE MODERN INFORMATION ENVIRONMENT
Nadezhda Nikolova
- 346 FACTORS AFFECTING WORK-LIFE BALANCE
Rosen Tumbev
- 347 THE PATH OF BLOOD
Vasilina Vasileva

STUDENTS SESSION

- 348 THE IMPORTANCE OF VITAMIN D FOR PREVENTION AND
IMPROVEMENT OF PUBLIC HEALTH
Vanya Ivanova, Yoana Parvanova, Milena Saleva
- 349 A CASE REPORT OF THE MODERN CONVERSION DISORDER
Vesela S. Tsankova, Emilia M. Dimitrova-Ilieva, Petranka G.
Chumpalova-Tumbeva
- 350 THE NURSERY – A STABLE BUILDING UNIT IN THE BASICS
OF PUBLIC HEALTH
Desislava Kalenska
- 351 MINIMALLY INVASIVE METHOD FOR THE TREATMENT OF
INTERNAL HEMORRHOIDS - NURSING CARE
Silvia Lishkovska, Stoilka Chabrakova, Izabela Geotgieva, Boyana
Veleva

- 352 PREJUDICE FROM THE PERSPECTIVE OF BIOETHICS
Marta Lalova
- 353 THE "ERASMUS+" PROGRAM AS A MOBILITY
OPPORTUNITY FOR STUDENTS FROM "MANAGEMENT OF
HEALTH CARE" SPECIALTY
Silvia Lishkovska, Izbela Georgieva, Betül Ortaç, Makreta Draganova
- 354 THE ROLE OF THE PHARMACIST ASSISTANT IN THE
HOLISTIC APPROACH TO PATIENTS WITH DIABETES
MELLITUS
Yusgul Lomchalieva, Milena Saleva
- 355 PUBLIC RISK ASSESSMENT AGAINST THE BACKGROUND
OF MANDATORY IMMUNIZATIONS IN BULGARIA AND
UKRAINE
Natalia Ilieva, Plamen Bakardzhiev, Kalina Terzieva
- 356 SPECIALTY "MANAGEMENT OF HEALTH CARE" -
OPPORTUNITY FOR DEVELOPMENT FOR ASSISTANT
PHARMACISTS
Nadka Hristova, Makreta Draganova, Milena Saleva

WORKSHOPS

- 357 HUMAN RESOURCE MANAGEMENT - A CHALLENGE FOR
HEALTH CARE MANAGERS (WORKSHOP)
Makreta Draganova, Milena Saleva, Antonia Stateva
- 358 THE CLIMATE FRESK: CAUSES, CONSEQUENCES AND
POSSIBLE SOLUTIONS TO THE GLOBAL CLIMATE CRISIS
Mariela Kamburova, Stela Georgieva, Dima Tsanova

SOCIAL MEDICINE AND HEALTH PROMOTION

STUDY OF THE AWARENESS OF PERIODONTAL AND SYSTEMIC HEALTH AMONG STUDENTS FROM THE FACULTY OF PUBLIC HEALTH OF THE MEDICAL UNIVERSITY – SOFIA

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Introduction. Periodontal problems are thought to be the 6th most common disease worldwide - with an overall prevalence of 11.2% and affecting around 538 million people. As one of the most common chronic diseases, periodontitis shares common social determinants and risk factors with other systemic diseases.

Aim. The aim of the present study is to investigate the awareness of the students of the Faculty of Public Health of the MU - Sofia regarding periodontal diseases, the knowledge of the most common risk factors and preventive ways to reduce the risk of their occurrence.

Materials and Methods. The study was conducted among 80 students in the first year of the “nursing” specialty. The results are processed statistically and displayed graphically. A standardized questionnaire was used, including 42 questions, divided into three parts - demographic data, awareness of risk factors and anamnestic data on the presence of periodontitis.

Results. Students show good knowledge of the basic characteristics of periodontitis, confirming that microorganisms are a major etiological factor, that periodontitis can lead to tooth loss, or that calculus removal is useful as a preventive measure for oral health. The respondents are hesitant, however, regarding the role of gender and age as risk factors, as well as the role of genetic predisposition for their appearance. The relationship between periodontitis and pregnancy complications, such as premature birth of low-birth-weight babies, and the relationship between periodontitis-diabetes or periodontitis-cardiovascular disease are also unknown.

Conclusion. Our results unbiasedly assess deficits in first-year nursing students' awareness of periodontitis and periodontal disease in general. The data will help to gain knowledge about the nature of this common dental disease and its associated risk factors.

Acknowledgements: This study is part of the project № D-151/29.05.2024 of SMN (Board of Medical Sciences), Medical University – Sofia.

Keywords: dental health, periodontitis, awareness

DISTRESS THERMOMETER - THE NECESSARY TOOL IN THE COURSE OF DIAGNOSIS IN PATIENTS WITH BREAST CANCER

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Introduction. The identification of breast cancer has raised a number of health, social, epidemiological and psychological issues. The distress thermometer has been one of the required documents when taking over any clinical case, according to world oncology standards.

Objective. The results of the distress thermometer use to be analyzed, and, on this basis, the need for its application in oncology practice to be justified.

Materials and Methods. The results of 170 women with diagnosed breast cancer were presented. Distress thermometer and inventories were used to identify current problems and needs. SPSS package was utilized.

Results. A total of 93 (55%) of the patients registered distress above the average level: 59 (35%) stated having difficulties in caring for children; problems with deciding on treatment – 53 (31%); 61 (36%) reported nervousness, 50 (29%) sadness and 44 (26%) anxiety. 76 (45%) patients experienced fatigue, and 60 (35%) – problems with appearance. A correlation was found between practical, family and emotional problems ($r=.50$, $p=.000$), as well as between emotional and physical problems ($r=.47$, $p=.000$).

Conclusion. Despite the fact that in recent years, we have witnessed indisputable successes in the treatment of breast cancer, there have remained unanswered questions, such as early identification of the secondary complications associated with the disease and the secondary effects – mostly mental and neurological.

Keywords: breast cancer, taking down a status, distress thermometer

DIFFERENCES IN SELF-RATED HEALTH ACCORDING TO THE SOCIO-ECONOMIC CHARACTERISTICS OF INTERNATIONAL AND BULGARIAN STUDENTS FROM MEDICAL UNIVERSITY – SOFIA

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Introduction. Health inequalities among university students are associated with the different socio-economic backgrounds of their parents. It is disputable whether these differences predetermine health inequalities or if the effect is mediated by health behaviour and the psychosocial and material resources of individuals.

Aim. To determine differences in self-rated health (SRH) in international and Bulgarian students according to their socio-economic characteristics.

Material and Methods. An online survey was conducted in 2024 among international (n=326) and Bulgarian (n=578) students from Medical University – Sofia. SRH was assessed using the WHO scale (5=very good health; 1=very poor health). Independent variables: parental education and social status, covariates (material resources, social support, stress, psychological well-being, and a number of factors of health behaviour). Descriptive statistics and logistic regression analysis were performed.

Results. Good SRH was found in 186 (54.6%) of the foreign and 298 (51.6%) of the Bulgarian students. Prognostic markers of poor SRH among Bulgarian students were: lower educational status of mother $\text{Exp}(B)=9.373$, lower social support $\text{Exp}(B)=1.720$, higher stress levels $\text{Exp}(B)=1.155$, and obesity $\text{Exp}(B)=13.597$. Among international students, the level of stress ($\text{Exp}(B)=1.125$) was the only prognostic marker for SRH. Conclusions: Results of the study contribute to a better understanding of complex mechanisms in SRH shaping.

Keywords: self-rated health, socio-economic characteristics, health behaviour, stress, prognostic markers

ROLE OF ACCULTURATION IN SELF-RATED HEALTH OF INTERNATIONAL MEDICAL STUDENTS FROM MEDICAL UNIVERSITY – SOFIA

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Introduction: During the last few decades, there has been an upward trend in the number of international medical students in Bulgaria. Studying abroad is associated with many different challenges. Acculturation influences health through stress, health behaviour, and social support.

Aim. To study the role of acculturation on self-rated health (SRH) in international medical students from Medical University – Sofia.

Material and Methods. A cross-sectional study was carried-out in 2024 among 326 international medical students. They completed an online questionnaire about sociodemographic characteristics, acculturation and SRH. The Stephenson Multigroup Acculturation Scale (SMAS) was used to assess the influence of culture in the host country (DSI, 17 items) and in the home country (ESI, 15 items). SRH was assessed by choosing one of the five categories of the WHO scale. Data were analyzed through the descriptive statistics and logistic regression.

Results. Over 70% of international medical students assessed their health as very good and good. Individuals with higher SRH had significantly lower mean ESI values ($F=2.714$; $p=0.045$). The effect of acculturation disappeared in the one-factor logistic regression model ($p=0.197$) and emerged, adding the stress as a mediator ($\text{Exp}(B)=1.063$, $p=0.001$).

Conclusions: Acculturation has an effect on the SRH of international medical students through the stress levels.

Keywords: acculturation, self-rated health, international medical students, stress, sociodemographic characteristics

FACTORS INFLUENCING THE QUALITY OF CARE FOR PEOPLE WITH DISABILITIES IN HOME ENVIRONMENT

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Introduction. Caring for a person with a disability in their home can be very difficult and becomes a challenge for the caregiver. People who are cared for at home usually have illnesses that cannot be cured or are not expected to recover from treatment. As the disease progresses, these people are faced with rapid deterioration of health, limitation of functional capacity, and need for constant care.

Objective. The aim of the study was to find out which factors, according to carers of people with disabilities, influence the quality.

Materials and methods. Literature review on the topic and Questionnaire survey

Results. The analysis showed that the barriers that the caregivers recognized were transport, lack of functionality in the persons' homes, insufficient material resources, inconvenient or remote home facilities, legislative restrictions, and inadequate preliminary preparation for a specific case.

Conclusion. Environmental factors, by definition, affect large groups. By recognizing these barriers, caregivers can initiate/design appropriate environments for their users. Home care for a person with a permanent disability can be for quite a long period, and the correction and adaptation of the identified factors will improve the quality of care.

Keywords: people with disabilities, home care for disabled people, environmental factors

COMPARISON OF PREDICTIVE VALIDITY BETWEEN THE SCORE (ESC 2019) AND SCORE NFA SYSTEMS – COHORT STUDY IN BULGARIA

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Aim. The aim of the present study was to compare the prognostic validity of the SCORE (ECS 2019) and SCORE National Framework Agreement (NFA).

Materials and methods. The study is prospective, cohort (longitudinal) with collected retrospective data for risk assessment of CVD occurrence in health-insured individuals. A total of 1598 patients were included in the first methodology, and 2458 patients were included in the second methodology. To compare the two systems, we used indicators of sensitivity, specificity, and positive and negative predictive value. ROC curve was also applied - to evaluate the predictive ability of the studied methods.

Results. The positive predictive value (PPV) of SCORE (ESC 2019) was higher (79.41%) than the PPV of the SCORE NRA (63.16%). The calculated plot for the SCORE NFA curve is 0.662, 95% CI= 0.527÷ 0.796, in P=0.015, while the calculated plot for the SCORE ESC (2019) curve is 0.722, 95% CI= 0.642÷ 0.802, in P=0.000. The calculated global absolute risk according to SCORE (NRD) is 2.740, and according to SCORE (ESC 2019) 4.304.

Conclusion. Although both methodologies have satisfactorily high PPV values, the SCORE ESC (2019) method has a higher predictive value compared to the SCORE NFA system.

Keywords: SCORE, cardiovascular diseases, predictive value

CAREER GUIDANCE OF HEALTH PROFESSIONALS - A PREREQUISITE FOR PERSONAL AND PROFESSIONAL DEVELOPMENT

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Introduction. Career counselling is a service aimed at starting, changing or advancing in the professional field. It develops skills for thinking, self-analysis, collaboration, formulating and achieving goals, making informed decisions, and adapting to the professional environment. For those working in the field of health care, it is essential to consider the diversity and specificity of work, the high responsibility, and the need for continuous maintenance and improvement of professional qualifications.

The purpose of the present work is to present the various aspects of career counselling and its importance for successful professional development.

Material and methods. Comparative and content analysis of literary sources on the problem. **Results.** Career counselling is needed at school age in order to choose a university, educational qualification and specialty. The next stages and directions of its application are the selection of continuing education programs, setting and achievement of professional goals, endurance and consistency, ability to learn, adaptation to dynamic conditions of the labour market in the era of globalization, preparation and appropriate presentation of a professional portfolio and other. The development of such skills is becoming more and more important and is a prerequisite for developing intellectual potential and extending the period of working capacity.

Conclusion. Career counselling and guidance are essential in the selection and successful implementation in the professional sphere.

Keywords: career counselling, professional goal setting, lifelong learning, workability

HEALTH - ESSENCE AND LEVELS OF AGGREGATION OF THE CONCEPT

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Introduction. The concept of “health” is characterized by multi-layered, multi-factorial conditioning and the need for a complex methodology for its study.

The purpose of the present work is to analyze the different levels of studying health, their interconnection and conditioning, and the dynamics of scientific and political interest in this issue.

Material and methods. Comparative and content analysis of literary sources on the subject. **Results.** There are different levels of studying health. Historically, there has been a dynamic in the interest in human health from the individual to the group and community level, with an awareness of the importance of social factors for its formation. Typical for modern society, the process of international health collaboration and globalization intensifies the interest in international and global health, defining global health problems and priorities for action to overcome them. A new conceptual framework questions the interaction between humans and their surrounding living and non-living natural environments, leading to the emergence and growing interest in the concepts of holistic health and planetary health, representing solution-oriented transdisciplinary fields and a social movement focused on analyzing and addressing the impact of human activity on all life on Earth.

Conclusion. The study and care of human health are increasingly aimed at applying a holistic and interdisciplinarity approach to achieve optimal actions and outcomes.

Keywords: public health, global health, one health, planetary health, holistic approach

SIGNIFICANCE OF RECOMMENDATIONS FOR CORRECT BLOOD PRESSURE MEASUREMENT AND INTERPRETATION OF THE RESULTS IN PRIMARY HEALTH CARE

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Background

Arterial hypertension is the most common chronic disease encountered by every general practitioner. It is widespread among every sex and every age and is the most common comorbidity.

Objective. This report aims to justify the importance of recommendations for the correct measurement of blood pressure and the interpretation of measurement results in primary health care.

Material and methods. An overview of the problem is given, and documents addressing recommendations for the correct measurement of blood pressure and interpretation of measurement results are analyzed.

Results and interpretation. Hypertension meets all the criteria for a socially significant disease, and its complications are associated with varying degrees of organ damage, disability and increased mortality. Modern recommendations for correct blood pressure measurement and preparation of the patient before the measurement are key elements for the proper behaviour in the diagnosis of hypertension. These recommendations should be part of general practitioners' knowledge, and their application during consultations should be mandatory. Family doctors familiarize their patients with their disease and the possible risks and complications that would occur in the future. They should teach the individual how to measure their blood pressure at home properly.

Conclusion. Correct measurement of blood pressure and interpretation of measurement results in primary care poses a number of challenges for physicians and patients, and in overcoming these challenges lies the key to success in controlling the problem and improving the bio-psycho-social status of affected individuals.

Keywords: hypertension, current measurement recommendations

FRIENDLY ACCESS, TESTING AND VOLUNTARY COUNSELING TO HIV FOR ROMA YOUTH IN BULGARIA (2020–2022)

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Introduction. The BAFP, supported by ViiV Healthcare through Charity Aid Foundation UK, puts a special focus on marginalized and socially deprived groups among Roma people with growing vulnerability towards HIV/AIDS and other sexually transmitted infections (STIs).

Aim of the study. To implement friendly access and Voluntary Counselling and Testing (VCT) to HIV and other STIs for Roma youth in Bulgaria.

Methods. For the period 2020 – 2022, people from 5 communities with predominantly Roma populations (Pleven, Stara Zagora, Plovdiv, Russe and Sofia) were targeted. The main target group were young Roma men (ages 12-25), and Roma girls and parents were not excluded. The data were collected with the support of members of the National Network of Health mediators. The data processing was performed by SPSS v.24.

Results. For the period in the region of Pleven, 1356 participants (from Roma neighbourhoods and the two biggest prisons) were reached, and four positive HIV tests were found (incidence 3 per 1000). The patients were referred to the local Health Inspectorate for confirmation testing and further treatment.

Conclusion. Illiteracy, poor health services coverage, and lack of health insurance and health prevention programs among Roma neighbourhoods determine the increasing number of cases of people affected by HIV and other STIs.

Keywords: Roma youth, health prevention programs, HIV/AIDS, sexually transmitted infections

HEALTHY LIFESTYLE MINDSETS IN PEOPLE WITH METABOLIC SYNDROME

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Introduction. Reducing behavioural risk factors - smoking, unhealthy diet, low physical activity, alcohol abuse, etc., can reduce mortality and morbidity from chronic non-communicable diseases, including metabolic syndrome.

Objective. To investigate lifestyle-related behavioural risk factors in individuals with metabolic syndrome.

Material and methods. One hundred twenty-seven individuals (57% men) with metabolic syndrome aged 56.9 ± 8.8 years from general practices in the Pleven region were selected. An individual, structured interview for the study of behavioural risk factors and a documentary method were used. Data were processed with the statistical package IBM SPSS v. 25.

Results. More than half of the respondents (57 %) do not smoke, and 33 % have never smoked. A diet based on recommendations for a healthy diet would be followed by 52% of the examined persons, and 47% - a diet based on personal genetic information. The relative share of respondents without physical activity is 68%, with only 2% evaluating it as a risk factor for metabolic syndrome. Physicians are the main source of health information, as men trust nurses to a higher degree ($p=0.026$).

Conclusion. Lack of physical activity is the leading behavioural risk factor in individuals with metabolic syndrome.

Keywords: metabolic syndrome, behavioural risk factors

DEPARTMENT OF SOCIAL MEDICINE IN THE 50-YEAR HISTORY OF MU-PLEVEN: TRADITIONS AND PERSPECTIVES

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Introduction. Historically, the Department inherited the traditions of the Department of Social Hygiene, which was established in 1976. Assoc. Prof. Dr. Veselin Borisov was elected the first head of the Department in 1980.

Material and methods. A historical method was applied.

Results. In 1990, it was renamed “Social Medicine”, in 2002 - “Social Medicine and Health Management”, and in 2004 - Social and Preventive Medicine, Medical Statistics, Pedagogy and Psychology”. In the period 2014 - 2022, the Department was divided into sectors.

Since the academic year 1996/97, the Department has been entrusted with the organization of training in a new speciality for the country - Health Care”.

The Department was the basis for the establishment of the Faculty of Public Health in 2004.

The Department was re-established in 2022 by a decision of the Academic Council of MU-Pleven. For two years, the Department attracted four assistant professors and one associate professor. The Department enrolled seven PhD students, two of whom obtained a doctoral degree, and trained eight postgraduate students, three of whom were certified as specialists.

Conclusion. The Department of Social Medicine is a basic, leading and structurally defining department in all medical universities in the country with clear perspectives for development.

Keywords: social medicine; public health; health management

ASSESSMENT OF THE IMPACT OF THE COVID-19 PANDEMIC ON THE SPREAD OF SEASONAL INFLUENZA AND ACUTE RESPIRATORY DISEASES IN BULGARIA

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Medical University - Varna Prof. Dr. Paraskev Stoyanov

Introduction. The COVID-19 pandemic, which emerged at the end of 2019, posed numerous challenges to healthcare systems worldwide. In the effort to control the coronavirus infection, strict restrictive measures were introduced, which influenced the spread of seasonal influenza and acute respiratory diseases (ARD).

Objective. To assess the impact of the COVID-19 pandemic on the spread of seasonal influenza and ARD in Bulgaria during the period from 2017 to 2022.

Materials and Methods. Data from the annual reports of the National Center for Infectious and Parasitic Diseases and the ECDC for the period 2018-2022 were used. Epidemiological, mathematical-statistical, and graphical methods were employed in processing the information. Results: In the pre-pandemic period of 2017-2019, influenza and ARD in Bulgaria reached epidemic levels with an average weekly incidence rate of 231.42 per 10,000 population, showing autumn-winter seasonality with a peak in January, predominantly affecting the age groups 0-4 and 5-14 years. During the COVID-19 pandemic (2020-2022), there was an absence of seasonal epidemic spread of influenza and ARD, which re-emerged in the post-pandemic period with high incidence intensity, especially among children.

Conclusion. Continuous monitoring, adaptive public health strategies, and achieving high vaccination coverage are essential for managing and limiting the spread of influenza and acute respiratory infections.

Keywords: Influenza, ARD, COVID-19, Bulgaria

FACTORS AFFECTING CAREER DEVELOPMENT IN THE CONTEMPORARY CONTEXT OF THE BULGARIAN MIDWIFE PROFESSION

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Introduction. The profession of midwives is extremely important for health care in Bulgaria, but their careers are often full of challenges and limitations. A number of determinants have a significant impact on their career development. Analyzing these factors is key to assisting midwives in their professional fulfilment and increasing their job satisfaction.

Aim. To investigate the factors influencing the career development of midwives.

Methods. semi-structured ‘face-to-face’ interview

Results. The determinants that have the most significant influence on career development can be categorized as personal, professional, social and institutional. After a survey conducted among 130 practising midwives, it was found that despite the dissatisfaction with the low pay, the respondents are motivated to work. They love their work. They express the opinion that the continuous updating of knowledge is necessary for effective professional practice. However, the fact that staff training is not encouraged on an institutional level is also highlighted.

Conclusion. The career development of midwives is a complex process dependent on multiple factors. Discovering these factors is crucial for creating strategies to support midwives in their professional growth and job satisfaction. Investments in postgraduate training, improvement of the working environment, and support from institutions are important steps to increase the professional satisfaction of midwives and improve health services in Bulgaria.

Keywords: midwife, career development, factors, satisfaction

ADDITIONAL MODIFYING RISK FACTORS FOR RECATEGORIZING PATIENTS BY SCORE (NFA)

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The prognostic validity of the SCORE (NFA) system is at a satisfactory level.

Aim. The aim was to investigate the presence of additional modifying risk factors (AMRFs) for the recategorization of patients into cardiovascular risk groups by SCORE (NFA) to improve its prognostic validity.

Materials and methods. The study is prospective, cohort (longitudinal) with collected retrospective data. A total of 1598 patients were included. We investigated the presence of AMRFs for recategorizing patients into cardiovascular risk groups, Decision Tree analysis was applied.

Results. The results established the presence of AMRFs that can improve the prognostic validity of the methodology. The risk can be classified as “average” by the SCORE (NFA) method with the following groups of patients: With fasting glucose ≤ 6.110 , DAP ≤ 81.0 , LDL cholesterol ≤ 1.43 , without intake of medicines for AH in the past and present and weight ≤ 60.5 kg. (96.7%); fasting glucose ≤ 6.110 , Diastolic AP ≤ 81.0 , LDL cholesterol ≤ 1.43 , without intake of medicines for AH in the past and present and weight > 60.5 kg. (82.7%). The risk can be classified as “high” in patients with fasting glucose > 6.110 (71.7%).

Conclusion. The inclusion of AMRF in the classification of patients according to the SCORE (NFA) significantly improves its prognostic validity.

Keywords: SCORE, cardiovascular diseases, predictive validity, factors

PERCEPTIONS AND ATTITUDE OF AMASSING READINESS FOR PROVIDING FIRST AID

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Introduction. We often witness situations that require quick and adequate intervention to provide first aid. Only timely and effective reactions can save lives and prevent the worsening of the victim's condition.

Aim. The aim of this study was to examine attitudes towards improving the readiness of the population to provide first aid.

Materials and Methods. A sociological survey was conducted using a direct group questionnaire among citizens in the Municipality of Burgas. A standard questionnaire was used to assess respondents' attitudes towards enhancing their readiness to provide first aid. **Results.** The data analysis shows that the majority of respondents have a positive attitude towards increasing their knowledge and skills for providing first aid. Over 80% of the respondents are willing to help a stranger in need.

Conclusion. Self-help and mutual aid are the most common forms of first aid provided by the population in the first hour after a disaster. Improving knowledge and skills for providing first aid enhances overall safety in the community by increasing confidence and readiness to respond. Theoretical and practical training of the population in first aid contributes to creating a safer public environment where each individual contributes to the common good and resilience.

Keywords: first aid, disaster, population training, disaster response readiness

THE CONCEPT OF HEALTH NEEDS AND CHALLENGES TO HEALTH SYSTEMS

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Aim is to analyze the socio-anthropological phenomena of poverty, aging and disability in the context of the concept of health needs and in the direction of a challenge to society and public health.

Material and methods: Literature review of the studied issues

Results and discussion: Everyone has the right to health and to a standard of living adequate to maintain health and security in the event of illness, incapacity, old age and other conditions beyond his control. In this sense, at the population level, poverty, aging and disability are accepted as the main factors that worsen the picture of health needs and are a challenge for any health system.

Conclusions: Health covers a very wide range of aspects, making health needs dependent on social care, finance, education. The multifactorial conditioning of health makes health needs dependent on various factors, to a large extent social, but at the time of a health disorder, health institutions remain the most important. It is important to understand that the patient wants health, not health care. It uses health care as a tool to achieve desired health. The development of health services from the first line of the health system, combined with social support, are a necessary condition for good health of the entire population, and especially of vulnerable groups.

Keywords: poverty, elderly aging, disability, health needs

EPIDEMIOLOGY OF INFECTIOUS DISEASES AND PARASITES

A MULTIDISCIPLINARY APPROACH TO VACCINE PROPHYLAXIS

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Vaccine prophylaxis is a long-established trend in preventive medicine, which, at the modern stage, contributes significantly to minimizing the risk of occurrence and limiting the spread of many infectious diseases. In this regard, the correct epidemiological worldview requires continuous adaptation of the immunization approach when carrying out such an activity among the population. The goal of a multidisciplinary approach to vaccination is to make an informed decision about vaccination that is safe and effective, i.e. the vaccine should be administered at a time when the necessary antibody titer would have been built up. In routine practice, new vaccines are constantly being introduced, and available prophylaxis schemes are being optimized. Despite the advances in immunoprophylaxis, some fundamentals have remained unchanged for decades and more. These are the values (levels) of collective immunity for individual infections. Vaccines are not given only in childhood but are for life, with particular importance for the age after 60 years. Infectious diseases complicate underlying somatic diseases, such as diabetes, COPD, heart failure, rheumatic diseases and others. The problem with immunosenescence comes to the fore, which requires that vaccination schemes be adapted for adult patients. Vaccination of children and adults favours the health status of both age groups.

Keywords: Multidisciplinary approach, vaccine prophylaxis, immunosenescence

INCIDENCE OF INFECTIOUS DISEASES IN BULGARIA OVER 50 YEARS

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Introduction. The incidence of infectious diseases is a direct reflection of the realities in all spheres of state public life. Objective: to study the infectious morbidity in the country against the background of fundamental changes in the general socio-economic plan and specific changes in the health sector.

Material and methods. A retrospective study of the infectious morbidity in Bulgaria over a 50-year period (1974-2023) was made. The following sources of information were used: official population statistics from the National Statistical Institute, official statistics from the National Center for Public Health and Analysis (NCPHA), and analyses of infectious morbidity at the National Center for Infectious and Parasitic Diseases (NCCPD).

Results. There have been drastic changes in the morbidity of specific infectious diseases related to changes in the immunization strategy, the entry into force of the health reform at the beginning of the 21st century and the admission of Bulgaria to the European Union. The impact of the COVID-19 pandemic on the actual reporting of infectious (and not only) morbidity is also evident.

Conclusion. Tracking the dynamics of infectious morbidity in the country is a sensitive indicator of public health.

Keywords: infectious diseases incidence, Immunization calendar, Bulgaria

MODERN ASPECTS AND UNSOLVED PROBLEMS OF THE HIV CARE CONTINUUM

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Introduction. Improved diagnostics and antiretroviral therapy (ART) transformed HIV into a controlled chronic condition. This success outlines new problems driven by overlapping ageing factors and increasing multimorbidity.

The study **aimed** to identify reliable differences in socio-behavioural characteristics and resulting clinical outcomes among PLWH compared with uninfected controls.

Materials and methods. A comparative study of clinical-epidemiological indicators was made among 57 HIV-positive persons (target group) and 28 HIV-negative persons (control group) aged ≥ 18 years.

Results. The median age of the HIV-positive persons was 42 years (25÷70 years) of the control group – 47 years (30÷67 years) (p

Keywords: HIV; late presenting patients (LP); sexually transmitted infections (STDs); comorbidity

MANDATORY VACCINATIONS IN BULGARIA - CHANGES IN THE IMMUNIZATION SCHEDULE

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After the start of mass immunization against smallpox in 1903, a number of vaccines were gradually introduced as mandatory in Bulgaria. Until now, periodic changes in the type of biological products used, the application schemes, and the subject age groups have led to a number of changes in the country's immunization schedule.

Objective. Tracking changes over the years in the number and type of bioproducts used, as well as the age groups subject to vaccination.

Materials and methods. A retrospective study was conducted on changes in immunizations and reimmunizations, vaccines, and persons subject to vaccination, which are mandatory for the Republic of Bulgaria.

Results. In Bulgaria, mass immunoprophylaxis began against variola, with the end result being the eradication of the infection worldwide. Eleven diseases are currently subject to epidemiological control with vaccines. Changes in the specifics of individual bioproducts – content of vaccine strains, production technology, and immunological and epidemiological effectiveness require periodic changes in immunization schemes and the age groups to be covered. The changes are consistent with global, regional and national programs for the prevention and control of infectious diseases.

Conclusion. The immunization schedule of the Republic of Bulgaria is a dynamically changing scheme consistent with normative regulations and the specific epidemic situation.

Keywords: mandatory vaccines, changes, Bulgaria

PREVALENCE OF ALLERGIC RHINITIS IN CHILDREN WITH ASTHMA – A PROSPECTIVE STUDY

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Allergic rhinitis is a problem for public health because it causes sleep disorders, inhibits growth, and increases the socio-economic burden by lowering the quality of life of the family.

The **aim** of this study was to assess the prevalence of allergic rhinitis in children with asthma and the impact of the disease and its treatment on asthma control.

Material and methods. We conducted a prospective study among 43 children aged 3-15 years with manifestations of atopy and allergy, examined in a pediatric outpatient practice. Their parents filled in a questionnaire about their children's complaints.

Results. The mean age of onset of asthma was 2.7 ± 2.54 years, and that of rhinitis was 2.9 ± 2.75 years, mostly in boys. Persistent nasal symptoms were present in 67% of children with asthma. Nasal symptoms in children with asthma started as early as the first year. Factors increasing the risk of asthma were atopy, family history of asthma, respiratory infection in the first two years of life, and exposure to tobacco smoke.

Conclusion. Allergic rhinitis occurs early in most children with asthma. Recognition and treatment of allergic rhinitis with nasal corticosteroids may improve asthma control in children.

Keywords: allergic rhinitis, bronchial asthma, children

VACCINATION STATUS OF HOSPITAL HEALTHCARE WORKERS FOR HEPATITIS B PREVENTION

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Introduction. Exposure to blood-borne pathogens remains a risk for healthcare workers. The global prevalence of sharps injuries in the periods 2000-2010 and 2010-2018 by WHO was without significant differences. In 2010, the EU adopted Directive 2010/32 on a framework agreement for the prevention of injuries and the reduction of blood-borne infections among healthcare workers. The directive was transposed into national legislation with Ordinance No. 3 of the Ministry of Health /2013, approving a medical standard for the prevention and control of nosocomial infections. Hepatitis B vaccine is recommended for healthcare workers in all EU countries (Directive 2010/32).

Aim. Evaluation of hepatitis B vaccine coverage of healthcare workers.

Material and methods. Study contingent: 2744 healthcare workers from 19 hospitals in Sofia, average age 48.08 ± 11.9 years, average work experience 24.8 ± 12.6 years. A cross-sectional study was conducted using an adapted standardized questionnaire for self-assessment of blood exposure.

Results. 41.6% of healthcare workers are not vaccinated. Only 25.2% have received three doses of vaccine with proof of immunity. Significant differences in the vaccination status of workers between hospitals and positions were the most unfavourable characteristics for emergency care professionals. **Conclusion.** Pre-exposure prophylaxis for the examined hospital health workers in relation to the risk of exposure to HBV is unsatisfactory. It does not correspond to the requirements of the regulatory documents.

Keywords: hepatitis B, sharps injury, healthcare workers, hepatitis B vaccine

SURVEY AMONG GENERAL PRACTICING PHYSICIANS REGARDING THE IMMUNIZATIONS WITH TETANUS-CONTAINING VACCINES OF THE POPULATION IN PLEVEN REGION

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Introduction. Tetanus is a serious infection with a severe course and high mortality, in which natural immunity cannot be built up after an illness. It can be prevented by vaccination. **Aim.** To study the opinion and the possibilities of general practitioners (GPs) carrying out immunization with tetanus-containing vaccines in the implementation of the country's Immunization Calendar.

Materials and methods. Anonymous survey among 109 GPs in Pleven district. Mathematical-statistical and variation analyses.

Results. The main unimmunized contingent is accumulated by the ever-increasing number of health-uninsured persons migrating and residing abroad with unclear immunization status. Refusal of vaccinations was reported by 40% of the interviewed GPs. The main reasons were the non-appearance of subjects after invitation (46%), fear of adverse reactions after vaccination (23%), fear of allergy (13%) and 9% reported that patients did not consider tetanus vaccination necessary. GPs are not effectively using media and social networks to invite and immunize their patients.

Conclusion. Targeted actions by state institutions and GPs are needed to convince those hesitant to immunize, search for and immunize the subject contingent, and take sanctions in case of non-fulfilment of the immunization calendar by patients and GPs.

Keywords: tetanus, immunoprophylaxis, Pleven region

KNOWLEDGE, ATTITUDES AND BARRIERS TO CHILD IMMUNIZATIONS AMONG REFUGEE MOTHERS FROM UKRAINE

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Introduction. At the end of 2023, in Bulgaria, about 50,000 Ukrainians have temporary protection status, which gives them the right to access healthcare. The large number of children arriving poses the question of carrying out immunizations according to the National Immunization Schedule of Bulgaria.

The **aim** of the study was to determine knowledge, attitudes and barriers to immunization of children among refugee mothers from Ukraine.

Materials and methods. A cross-sectional study was conducted. An interview was used, and a questionnaire was developed for this purpose.

Results. One hundred and five women were surveyed. Each participant in the study lives in Bulgaria with her children, who are 162 in total.

Of them, the children aged 4-7 years were 57 (35.18%) and 8-18 years - 53 (32.71%). Women expressed the greatest confidence in receiving information about vaccines from doctors - 89 (84.76%), they were worried about side effects - 46 (43.81%). The most common reason for refusing to immunize their child was doubt about the benefit of the vaccine - 26 (24.76%). The prevailing opinion is that state institutions make the right decisions about the immunization of children.

Conclusion. The decision to immunize involves emotional, cultural, social and political aspects.

Keywords: vaccines, children, refugees, Ukraine

BLOOD DONATION AND THE RISK FOR TRANSMISSION OF HEPATITIS B VIRUS AND HEPATITIS C VIRUS

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Viral hepatitis is a heavy burden for public health worldwide. It is the second infectious cause of death worldwide, with 1.3 million deaths per year. Of these, 83% are caused by the hepatitis B virus (HBV) and 17% by the hepatitis C virus (HCV). Viral hepatitis caused by HBV and HCV is an acute or chronic inflammatory disease of the human liver. Nearly 80% of people with either hepatitis B or C virus remain undiagnosed and untreated. Blood donation appears to be a favourable opportunity to reveal these diseases in society.

In Bulgaria, blood donation is carried out in 29 transfusion services, and all blood units are screened for HBV and HCV. In 2023, a total of 173,177 blood donations were made. Through the application of serological methods and nucleic acid amplification testing (NAT), 602 (0.35%) cases positive for hepatitis B and 174 (0.10%) cases positive for hepatitis C were found.

With the testing of the donated blood, hidden forms of infection with the hepatitis B and C viruses are detected, and these blood donors are referred to specialists for treatment.

Blood donation is a voluntary act of charity and human solidarity. Diagnosing the hidden forms of viral hepatitis is a step towards their elimination.

Keywords: blood donation, viral hepatitis, hepatitis B virus (HBV), hepatitis C virus (HCV)

PREVALENCE OF EPSTEIN-BARR VIRUS ANTIBODIES IN REPRODUCTIVE AGE WOMEN - A PROSPECTIVE STUDY

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Introduction. At the current stage, studies on the involvement of Epstein-Barr virus (EBV) in neonatal pathology are rare. Establishing seroprevalence among women of reproductive age has important epidemiological significance for determining the risk of infection during pregnancy and intrauterine infection of the fetus.

Aim. To determine the seroepidemiological status of EBV in women of reproductive age.

Material and methods. For this purpose, a prospective seroepidemiological study was conducted, in which 96 healthy women aged 18-49 years were examined in the period December 2023 - January 2024. The presence of specific antibodies was determined with Anti-EBV VCA IgM, Anti-EBV VCA IgG and Anti-EBV EBNA-1 IgG kits (ORGENTEC Diagnostika GmbH, Germany) based on the ELISA method.

Results and discussion. The average age of the examined women was 34.41 ± 5.44 years.

Dominating were women with higher education (76.04%) living in urban areas (91.67%). The results of the study of EBV seroepidemiological markers show that 98.96% of reproductive-age women are seropositive. We did not find a statistically significant association between the presence of antibodies to EBV and socio-demographic indicators.

Conclusion. Although the interpretation of serological status results indicates a low risk of primary infection, active monitoring of high-risk groups of pregnant women is recommended due to the possibility of reactivation of latent EBV infection.

Keywords: seroepidemiological study, Epstein-Barr virus (EBV), reproductive age

PREDICTORS OF HELICOBACTER PYLORI INFECTION IN CHILDREN

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Introduction. *H. pylori* infection is associated with a number of health problems in children and adults. Numerous factors determine the development of the infection and its outcome.

The **aim** of the study was to determine predictors of *H. pylori* infection in children with gastrointestinal complaints.

Materials and methods. A prospective epidemiological study was conducted. Children aged 2 to 18 who visited the pediatric outpatient clinic were studied. A sociological method (interview) was used, and a questionnaire was developed for this purpose. Two tests were performed on the faeces: a qualitative test for *H. pylori* antigen (analyzed by an immunological chromatographic method) and a quantitative ELISA kit for faecal *H. pylori* antigen.

Results. Seventy-eight children were examined over one year. The average age of the studied population was 10 ± 4.235 years, mostly boys – 49 (63%). Forty-seven were referred for serological testing for *H. pylori*. Of these, 19 (40.43%) were positive. Risk factors for the occurrence of infection are defined as male gender, mainly children in cities aged ten and over, presence of infection in the family, lack of treatment, and unhealthy diet.

Conclusion. Active behaviour on the part of doctors is needed for early diagnosis, treatment and follow-up of children with *H. pylori*, as well as educational campaigns among parents.

Keywords: *H. pylori*, children, risk factors

ENVIRONMENT AND PUBLIC HEALTH

POTENTIAL RISKS FOR METABOLIC DISORDERS FROM POLLUTANTS IN ATMOSPHERIC AIR AND FOODS

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Introduction: Contemporary public health challenges are driven by environmental pollution, climate change and loss of biodiversity. Chronic exposure to pollutants is a risk factor for metabolic disorders. Metabolic disorders are among the leading causes of morbidity and mortality.

Objective: to investigate the potential risks for metabolic disorders from atmospheric and dietary pollutants.

Material and Methods: A systematic review and meta-analysis was conducted in the library databases - PubMed, Scopus and Embase. The search was conducted from January 2024 to May 2024 using specific keywords.

Results: The modern national and European legislation, as well as the monitoring of atmospheric air and chemical food hazards, were analyzed. Potential mechanisms of metabolic disorders have been systematized from a significant number of experimental studies in animal models and in humans exposed to pollutants.

Conclusion: The scientific evidence for the involvement of environmental pollutants in the mechanisms of metabolic disorders increasingly requires expanding the knowledge of medical professionals in the field of environmental epidemiology and health.

Keywords: metabolic disorders, environment, risks

CARDIOVASCULAR DISEASES AND NOISE POLLUTION IN BULGARIA

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Introduction. Socially significant diseases are leading causes of death and are important for population health and socio-economic development. In the first place are cardiovascular diseases. Environmental factors such as noise affect them. The WHO ranks transport noise as the second most harmful environmental factor to health.

Aim. The aim of our study was to determine the relationship between noise levels and cardiovascular diseases in Bulgaria.

Materials and methods. An analysis was made of all administrative units in Bulgaria using public data from various institutions. MS Excel 2019 and SPSS v.26 were used, and Pearson’s correlation coefficient was applied.

Results. The analysis shows that 9% of the country’s population is exposed to storm pollution. The lowest noise levels increase, and there is no load in the high range. There are differences in social groups. People living below the average equivalent income are exposed to more noise pollution. The study found a moderate association between cardiovascular mortality and noise exposure.

Conclusions. The analysis shows that the indicators tracked remain high. Emphasis should be placed on measures to reduce the noise burden of the population and reduce the number of citizens exposed to it.

Keywords: noise, cardiovascular diseases, public health

SURVEY OF FOREIGN CITIZENS TEMPORARILY RESIDING IN PLEVEN, PROVING LOW AWARENESS AND LACK OF DESIRE TO ACT IN CRISIS SITUATIONS

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Introduction. According to official data from the International Disaster Epidemiology Database (EM-DAT), in 2021, the number of catastrophic events worldwide was 432, exceeding the average annual level of 347 for the period 2001-2020. Pleven is strategically exposed to a number of climate-related disasters. In this context, a survey was conducted with the participation of 240 temporary resident citizens from 31 countries.

The goal is to assess the real readiness for adequate actions in crises.

Methods. A sociological method was used to study awareness and readiness for protection. The survey questions were developed by researchers participating in a Medical University – Pleven project. The data were processed with the statistical package STATGRAPHICS Plus.

Results. More than half of the participants had experienced a disaster - 55% and 15% were aware of the crisis in Pleven. Failure to recognize early warning sirens - 80%. Without evacuation stations and home property insurance, 88% and 80% of them were unaware of collective remedies.

Discussion. The results obtained from the survey are alarmingly low and actually endanger the lives of foreign citizens in potentially occurring crises.

Conclusion. Crises of natural and anthropogenic origin fail to occur. All this requires that every member of society, regardless of gender and age, be well-informed and adequately prepared for action.

Keywords: natural disaster, public health, medical insurance.

EUROPEAN METHODS USED IN THE LABORATORIES OF THE OFFICIAL FOOD CONTROL IN BULGARIA

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Introduction. Food legislation is a dynamic and evolving process. European regulations are mandatory for all EU member states. They are transposed into national legislation through regulations, methodological guidelines, decisions, orders, etc.

Objective. To analyze the knowledge of the legislation, as a mandatory condition for the experts exercising control over the production and supply of food.

Materials and methods. In official laboratories, validated methods are used: ISO, EN-ISO. Bulgarian State Standard methods are also applied when there is no ISO method for a given criterion or in other specific cases.

Results. Food safety control in Bulgaria builds on the European one with the mandatory Technological documentation. Companies develop standards in the form of TDs, which reduce food hazards to an acceptable level. Official control has an objective basis for assessing food safety, taking into account national specificities. Food testing laboratories are accredited according to the ISO 17025 standard. In Bulgaria, these functions are performed by the Bulgarian Accreditation Agency. The Central Laboratory for Chemical Testing and Control analyzes the external European borders.

Conclusion. As an external border, Bulgaria establishes rules for carrying out official food control, administrative assistance, and cooperation with EFSA EC control, as well as building an information management system.

Keywords: food control, food legislation, methods

SATISFACTION WITH THE TRAINING OF PUBLIC HEALTH INSPECTORS FOR SUCCESSFUL SOCIAL AND PROFESSIONAL REALIZATION

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Introduction. A key moment for the quality system is the processes related to the study of satisfaction with the provided educational services.

Aim and tasks. We studied the satisfaction of public health inspectors with teaching methods, relevance, accessibility, attendance, practice, and development opportunities for 2016-2022/23.

Materials and methods. Questionnaire - with the required professional competencies of those working in the field of education, skills for teamwork, moral and ethical qualities and feedback between teachers and students. Individual, anonymous surveys with 15 closed and 5 open questions, with evaluation and opportunity for suggestions, were used.

Results. Satisfaction with the training of public health inspectors covers 2,799 students and graduates and reflects the quality of the educational process for 2016-2022. Obtaining useful information is leading - 76%, followed by easier assimilation of the material - 57.6%. Interesting discussions between teachers and students range from 32% to 36%, and respect for the teacher - from 37.5% for 2017/2018 to 8% for 2019/2020. Obtaining practical skills has a relative share of 48% for 2018/2019 and up to 80% for 2021/2022.

Conclusions. The inclusion of students in practical activities stimulates their creative activity. Employment is “Very Good” - 25.6% for 2017/2018 up to 35% for 2021/2022. Satisfaction with training and available educational resources reaches 68%. The participation of students in joint scientific developments and projects is a stimulus for increased motivation and upgrading of knowledge.

Keywords: quality, public health inspector, education, training, satisfaction

POTENTIAL RISKS FOR COMPUTER VISION SYNDROME AMONG VIDEO DISPLAY USERS

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Introduction. Technological development and digitalization have led to changes not only in everyday life but also in occupational activities. As the use of video display terminals has become an essential part of life, many people are experiencing symptoms related to their usage. Computer vision syndrome (CVS) is a complex of ocular, visual, and extraocular problems related to video display usage.

Objective. To study the prevalence of computer vision syndrome among video display users.

Materials and Methods. The study group included 346 people who spend 8 hours daily in front of a computer screen. All the attendants have filled in the verified and approved Computer Vision Syndrome Questionnaire (CVS-Q).

Results. The average age of the participants was 37.5 years, 38.2% male, 61.9% female. The analysis of CVS-Q revealed that 43% of the attendants had CVS. The prevalence of CVS among men was 37.1% and among women - 46.8%.

Conclusion. Prolonged use of video displays leads to computer vision syndrome. Since CVS is becoming a major public health concern, it requires increasing attention and taking measures to minimize its symptoms.

Keywords: computer vision syndrome, prevalence, questionnaire

CONSUMPTION OF DIFFERENT TYPES OF MEAT AND ITS IMPACT ON BODY MASS INDEX (BMI)

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Introduction. The consumption of meat products significantly influences the body mass index (BMI) and weight, with different types of meat in Bulgaria having varying effects.

Objective. To investigate the impact of the frequency of consumption of chicken, pork, beef, and lamb meat on BMI and weight.

Materials and Methods. Individuals aged 18-65 with varying frequencies of meat consumption were studied. Data were collected through surveys, including height, weight, BMI, and meat consumption frequency. Participants' BMI was calculated and analyzed using SPSS Statistics to explore the relationship between the consumption of different types of meat and BMI.

Results. Frequent consumption of chicken is associated with lower BMI, with 41% of daily consumers having normal weight. Infrequent meat consumers have lower BMIs and no cases of being overweight. Pork is associated with higher BMI and overweight, while beef and lamb have a favourable effect with moderate consumption.

Conclusions. Moderate and varied consumption of meat products is associated with a healthier BMI. Excessive consumption of pork increases the risk of overweight, while moderate consumption of beef and lamb can be beneficial. Balance and variety in meat consumption are key to maintaining a healthy BMI and reducing the risk of being overweight.

Keywords: meat, body mass index, healthy eating

APPLICATION IN MEDICINE AND COSMETICS OF ANIMAL BY-PRODUCTS FROM EGG PROCESSING

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Introduction. Eggs and egg products are an important part of the human diet and are daily present on the table. During the processing and production of the various types of egg products, significant amounts of animal by-products (ABPs) are generated.

Purpose. To evaluate and analyze the existing literature sources on the application of ABPs in medicine and cosmetics from the production of egg products.

Materials and methods. An in-depth review of databases with accessible literary sources and the current legislation in the field of ABPs was carried out.

Results. During the processing of eggs and production of egg products, significant amounts of ABPs are formed, which are in two groups: solid (eggshells and eggshell membranes) and liquid (technical egg white). They are a rich source of biologically active substances and are of interest to medicine. Egg white proteins and hydrolysates have antibacterial, anticoagulant and antioxidant properties. They also have ACE inhibitory activity. The eggshell membrane contains collagen, keratin, glycosaminoglycan, and hyaluronic acid.

Conclusion. The presence of these valuable properties and constituents of eggshell membranes and egg whites, after appropriate processing, are potentially applicable in medicine and cosmetics.

Keywords: eggs, animal by-products, egg membranes, medicine, cosmetics

COMPLEX TREATMENT OF OCCUPATIONAL COMPRESSION NEUROPATHIES

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Introduction. Compression neuropathies are peripheral nerve injuries caused by compression or stretching of the nerve in a fibrous or bone-fibrous canal or by fibrous tissue. They are characterized by pain, sensory disturbances and functional disturbances due to compression. They represent occupational diseases caused by local vibration, static tension and dynamic physical efforts.

The **aim** of the study is to improve the diagnosis, treatment and prevention of occupational compression neuropathies.

Material and methods. We studied 92 cases of compression neuropathies among workers in enterprises in Northern Bulgaria. The persons were hospitalized in the Department of Occupational Diseases and Clinic of Physiotherapy and Rehabilitation in Dr G. Stranski University |Hospital - Pleven during the period 2019 - 2023. Clinical, laboratory, functional, imaging and statistical research methods were used. Treatment with medication and physical factors was carried out.

Results and discussion. In 94% of patients, an improvement in clinical manifestations, work capacity, and performance in activities of daily living were found.

Conclusions. Complex medical and physical treatment is an effective approach in cases of occupational compression neuropathies.

Keywords: occupational diseases, compression neuropathies

CURRENT HEALTH PROBLEMS IN FURNITURE WORKERS

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Introduction. The technological process in the production of furniture consists of numerous operations that process semi-finished products obtained from woodworking enterprises. Production includes cutting the main materials, forming details from solid wood, forming furniture assembly units by glueing, making furniture boards with dense or cellular filling, making details from layered wood, veneering, applying protective-decorative coatings, assembling, upholstering of the furniture, etc. Leading harmful factors of production are the unfavourable production microclimate, the impact of noise, vibrations, dust, chemical hazards, ergonomic factors and production traumatism.

Purpose of the study. Early diagnosis and prevention of health impairments among workers in the furniture industry by clarifying the influence of harmful production factors and the available morbidity.

Material and methods. The object of the study is 180 persons employed in production. Statistical methods were used to analyze and evaluate the incidence of temporary incapacity and current morbidity.

Results. The studied workers were structured by gender, age, profession, and risk factors. The indicators of temporary incapacity for work and momentary sickness for a two-year period were examined.

Conclusions. Diseases of the peripheral nervous system, bone-muscle, respiratory, cardiovascular and digestive systems occupy a leading place in morbidity.

Keywords: furniture production, morbidity, prevention

RECIPE COMPOSITION OF GLUTEN-FREE MUFFINS CONTAINING WASTE PRODUCTS FROM THE FOOD INDUSTRY

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Introduction. The European Union annually produces over 2 billion tons of food waste and waste materials, and opportunities are being sought for their full utilization, for example, by improving technological operations, creating innovative compositions of ingredients, putting waste products into food, etc.

Objective. Development of a recipe composition for gluten-free muffins obtained by partial replacement of whole grain sorghum flour with waste from the food industry.

Materials and methods. Whole grain sorghum flour, walnut by-product after cold pressing of fats, puree of cactus fruit peel, eggs and sugar. Determination of the physical parameters and structural characteristics of the obtained dough. The colour characteristics of the crust and middle of the muffins. Sensory analysis was used to assess sensory properties such as shape, colour, smell, taste, residual aftertaste, and texture.

Results and conclusion. Two formulations were developed with 25 and 50% replacement of whole grain sorghum flour with the walnut waste product after cold pressing of fat and cactus fruit peel puree. The results show an improvement in taste and the softness of the middle, adding a typical and pleasant aftertaste, which would contribute to the good reception of the new muffins.

Acknowledgements. The authors express their gratitude for the support of Medical University – Pleven through Project №7/2023, “Recovery of waste from oil production.”

MEDICAL SIMULATION AS A NEW EDUCATIONAL METHOD

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Pope John Paul II University

Introduction. Within simulation fidelity, we can talk about simulator fidelity, site fidelity, and psychological fidelity. Low-fidelity simulation focuses on teaching students basic clinical skills. Intermediate fidelity simulation training of advanced algorithms and procedures. High level of responsibility of participants The highest level of competence of medical students is achieved through High Fidelity Simulation.

Aim. Medical simulation is a modern teaching method.

Material and Methods. The PUB-MED database was searched, limiting the scope of the search to recent years. The search criteria were the terms “medical simulation”, “nursing”, and „midwifery”.

On this basis, 52 selected works regarding the determination of “medical simulation”, “nursing”, and „midwifery” were qualified for the analysis.

Results. The studies analyzed confirmed that the simulation method is effective.

A random-effects meta-analysis of 56 studies showed that educational interventions are significantly associated with improved self-confidence in nursing and midwifery students. **Discussion.** Nurses, midwives, paramedics or doctors face clinically complex cases and develop teamwork skills and social, personal, managerial and professional competencies.

Conclusions. Scenarios conducted using the high-fidelity method were rated very highly by respondents, who considered them very useful in their future careers. Prebriefing and debriefing is an interesting way of conducting classes.

Keywords: nurses, midwives, paramedics, medical simulation, students

SPECIALIZATION IN MANAGEMENT OF HEALTH CARE AT MU – PLEVEN: PAST, PRESENT, FUTURE

Makreta Draganova, Mariela Kamburova, Milena Saleva

Medical University – Pleven

Introduction. Since 1996, healthcare professionals have been trained in the field of management in Bulgaria. The beginning of the training was set in Sofia, after which it gradually grew in Pleven, Varna, and Plovdiv. Currently, many graduates of the speciality, after the relevant post-graduate studies, occupy key positions in the health care system.

The purpose of this communication was to make a retrospective analysis of the education in health care management at the Medical University-Pleven and to outline the future directions for the development of the speciality.

Material and methods. A documentary method was used to make a comparative analysis of the development of the speciality in the Health Sciences of the Medical University - Pleven for 20 years (2004 - 2024).

Results and discussion. The Faculty of “Public Health” was established by a Decree of the Council of Ministers on June 2, 2004. MU-Pleven graduated a total of 2,022 healthcare professionals in various fields. Interest in the speciality has grown since the opening of a master’s program, and the trend has been maintained in recent years. One of the innovations attracting prospective students is the hybrid form of training realized in the last three years.

Keywords: health care management, health care professionals, training

HEALTHCARE PROFESSIONALS – THE KEY TO BETTER PUBLIC HEALTH

Milka Vasileva

Bulgarian association of healthcare professionals in nursing

The health challenges of the 21st century, with particular force, predetermine the extremely important role of health care not only in Bulgaria but also in a global aspect. Since 2000, the world has made enormous progress in combating several of the leading causes of death. Life expectancy has increased, but maternal and child mortality, mortality from HIV, malaria and other diseases worldwide have decreased. And all this - with the invaluable support of healthcare professionals from all over the world.

Aim. To analyse new directions for development and to make a serious commitment on the part of the government to achieve the levels recommended by the WHO and the implementation of the recommendations of the World Medical Assembly in the field of health care.

Material and methods. A content analysis of modern international and European normative documents related to the development of health care was made.

Conclusion. Achieving integrity between all interested parties - politicians, governing at the international, national and local level, professional, trade union and patient organizations, will contribute to medical professionals being part of the process of making political decisions and building and implementing national strategies and programs to improve health care.

Keywords: health care investment, ageing workforce, health care workforce shortage

ENHANCING PATIENT SAFETY. ASEPTIC NON-TOUCH TECHNIQUE (ANTT)

Lidiya Encheva

Spire Leeds Hospital

ANTT is defined by the National Institute of Health & Care Excellence (2012) as being a ``specific type of Aseptic Technique with a unique theory and practice framework``.

The Association for Safe Aseptic Practice provides support to Healthcare Practitioners, Healthcare organisations and patients in the education and clinical practice of ANTT, the world's most commonly used aseptic technique.

ANTT is a fast-developing global standard for safe aseptic non-touch techniques. How can you implement it in your organisation, and how does this technique benefit patients?

ANTT improves patient safety by supporting effective education, competency assessment and safe clinical practice

The framework is founded on a set of robust principles and practice rules that support healthcare workers to provide safe and versatile aseptic techniques to patients in clinical or care settings.

ANTT is designed for all clinical procedures - from major surgery to the care of indwelling medical devices. ANTT is an international set of principles aimed at:

Standardized practice

Support healthcare professionals in practising safely and effectively by reducing the risk of introducing infection during invasive procedures.

Asepsis-free of pathogenic microorganisms

Non-touch technique –component to achieve asepsis using key parts and key sites to avoid contamination

Keywords: aseptic technique, prevention, quality, cost saving,

THE TRAINING OF STUDENTS FROM THE SPECIALTY “NURSE” IN RENAL - REPLACEMENT THERAPY - NEEDS AND PERSPECTIVE

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With the increasing incidence of kidney disease and the need for hemodialysis treatment, the need for highly qualified specialists providing quality healthcare to these patients is becoming more pressing. The professional realization of nurses is directly related to the opportunities provided by the educational system. Nursing care for patients undergoing renal replacement therapy is specific and requires excellent theoretical knowledge and practical skills in the field of nephrology and dialysis treatment.

Aim. To investigate the need for additional knowledge and skills in the field of dialysis treatment among nursing students.

Materials and methods. For the purposes of the study, 109 students majoring in nursing training at the Vratsa Subsidiary of Medical University – Sofia in the period January - April 2024 through a self-developed direct anonymous survey.

Results. In basic education, the preparation of students regarding nursing care for patients undergoing dialysis treatment is insufficient. At the same time, it is made clear that a large number of students have an interest in nursing care for patients on renal replacement therapy and a desire for professional realization in dialysis structures.

Conclusion. Dialysis treatment is a complex and multi-component process that requires specialized knowledge and skills on the part of nurses. At the present moment, it is a fact that this discipline is not studied in higher schools.

Keywords: dialysis, training, nursing care

ANALYSIS OF THE QUALITY OF EDUCATION OF THE DOCTORS WHO SPECIALIZE IN THE MEDICAL FACULTY OF TRAKIA UNIVERSITY-STARA ZAGORA

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The quality training of specialists in the health care system is regulated in Ordinance No.1/2015 of the Ministry of Health. The training centres develop their own internal evaluation system, which includes a survey of the opinion of the doctors who specialize at least once a year.

The **aim** of this work was to explore the opinions of trainee doctors who specialize in the medical faculty regarding the quality of education.

Material and methods: A survey card was used, with 17 questions for the period 2022-23.

Results and discussion. The number of respondents for the study period was 90, of which 56% were women. The highest relative share is among the trainee doctors who specialize in cardiology (18%), followed by anesthesiology and intensive care (9%) in Prof. Dr. St. Kirkovich University Hospital - St. Zagora. The respondents gave an excellent and very good assessment of the material and technical condition and the volume of activities in the practical training bases. Theoretical training takes place mainly in the Medical Faculty. More than 84% of the respondents have no suggestions for training bases. The relative share of those who the work of the experts from the Medical Faculty postgraduate specialization department as excellent and very good was high (98%).

Conclusions. Studying the opinion of the doctors who specialize guarantees maintaining and increasing the quality of training.

Keywords: healthcare, trainee doctors

CHECKLIST FOR ASSESSING THE NEEDS FOR FORMING SKILLS FOR INDEPENDENT LIVING OF PERSONS WITH SOCIAL PROBLEMS

Iskra Petkova

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Introduction. The adaptation of people with social problems to the rapidly changing social reality can be extremely difficult because they need a strategy for protection, social security, and support in forming and building skills for independent living and successful personal and social development.

Aim. To determine the applicability of a checklist for assessing the needs for the development of skills for an independent life of persons with social problems.

Materials and methods: A survey was conducted among students and social workers using a standardized questionnaire that included four groups of questions.

Results. In the development of the checklist, the aim of the survey was rated “excellent” by 79.17% of students and 52.38% of social workers. In comparison, the established criteria and indicators received the same rate of 70.83% and 57.14%, respectively. Accepting the point of view of the person with social problems is rated by the respondents with the highest rating, respectively 87.50% and 71.73%. The practical applicability of the checklist in “developing a plan for personal development of the person with social problems” was rated “excellent” by 75.00% of students and 76.19% of social workers.

Conclusion. Using a checklist to assess the needs of a person with social problems would highlight the areas in which they are best prepared and those for which they lack preparation, knowledge, and life skills.

Keywords: activity, activity, assessment, partnership, practice

THE TIME - ONE OF THE SCARCE RESOURCES FOR HEALTHCARE PROFESSIONALS

Makreta Draganova, Milena Saleva, Antonia Stateva

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Introduction. In recent years, given the dynamics of public life and reforms in the field of health care, time as a resource has become one of the scarcest resources for health professionals. “Time Management” is an independent study discipline only for students studying in the “Healthcare Management” specialty at the master’s level after a bachelor’s in the same specialty. The time budget is a matter of self-management, which can be effective only after achieving a positive attitude towards the resource “time”.

The purpose of this communication is to analyze the time budgeting of healthcare professionals training in “Healthcare Management” for 24 hours and to analyze the implementation of a balanced use of time.

Material and methods. A form for determining the total duration of activities in hours/minutes within 24 hours is attached. A total of 48 students who are healthcare professionals, were included.

Results and Discussion. All study participants at the time of the study were employed in the provision of health care in various medical facilities, with more than half of the respondents in rank-and-file positions (58.33%). One-third of the surveyed persons (37.5%) work more than 8 hours a day, and 13 of them work from 9 am to 2 pm.

Keywords: health care professionals, time budget, time management.

WORKING CONDITIONS IN DENTISTS

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Trakia University – Stara Zagora

According to NSI data for 2022, there are 7602 dentists in Bulgaria, most of them situated in Sofia city (25%), followed by Plovdiv (15%), Varna (9%), Burgas (4%) and Stara Zagora (4%). They work full-time in single or group practices with modern dental equipment.

Materials and methods. Analysis of available literature sources was done over a 10-year period using keywords.

Results and discussion. Physical working conditions correspond to hygiene requirements for safe and healthy working conditions. Exposition to chemical substances, stress and biological agents in blood, saliva, tears, etc. is also of great importance. Leading adverse effects have ergonomic factors in the workplace (static pressure, repetitive, monotonous movements), which determine the risk for musculoskeletal and peripheral nerve damage.

Conclusions. Studying working conditions and their adverse effects on dentists is essential for specific medical care and prevention for this job.

Keywords: working conditions, dentistry

CURRENT ASPECTS OF HEALTH CARE RESEARCH

Milena Saleva

Medical University – Pleven

One of the dimensions of health care, according to WHO, is to be effective, which means that the provision of health services should be supported by evidence about improved health outcomes. This approach to implementing state-of-the-art, quality care is known as evidence-based practice.

The purpose of the announcement was to analyze the possibilities for the development of competences for research activity in the field of health care in our country in accordance with international recommendations and our national legislation.

Material and methods. A content analysis of international and national normative documents was made regarding the requirements for nurses and midwives to conduct scientific research activities.

Results. The analysis of documents from the WHO, the European Regional Office, and other European organizations on the subject shows a convergence around the future directions for the promotion and development of scientific research in health care. In Bulgaria, a good regulatory framework has been established for the research activities of nurses and midwives. The opportunities emerging in our country cover actions such as activating the participation of students in studies with the professors, identifying the necessary competencies, updating the curricula with new disciplines, organizing additional courses, and developing guidelines and manuals for scientific studies.

Keywords: research, nurses, midwives, health care

ROLE OF THE ELECTIVE COURSE “FUNDAMENTALS OF RESEARCH IN HEALTH CARE”

Milena Saleva, Makreta Draganova

Medical University – Pleven

The state of scientific research in the field of health care in Bulgaria is determined by various factors - insufficient theoretical and practical training regarding scientific research work, demotivation among health care professionals, etc.

The purpose of the message is to analyze the holding of an elective course with students in the “Management of Health Care” specialty at the Faculty of Public Health of the Medical University of Pleven. In July 2021, 26 part-time students were included in the circle.

The course was organized in an electronic environment in 15 online meetings, during which presentations, various examples, and tasks for individual classroom and extracurricular work were discussed. Despite the difficulties of a professional and personal nature, an average of 10 people attended each meeting.

Results. A third of the participants remained in a passive audio connection. Not all students were able to cope with the set tasks, such as formulating a research question, searching for literature in databases, and analyzing and synthesising information. Scientific research among healthcare professionals is one of the new areas of professional competence in our country. In global practice, evidence-based care is a mandatory component of a nurse’s core competencies.

Keywords: research, health care professionals, education

NURSING ASSESSMENT OF SIDE EFFECTS OF CONVENTIONAL THERAPY IN CANCER PATIENTS

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Medical University – Pleven

Introduction. Side effects of treatment in cancer patients are a significant problem. They are a care-sensitive indicator, so nurses play a key role in their successful management.

Objective. To identify patient problems and define the nurse's role in their assessment and management.

Material and methods. Nursing assessments and diagnoses were made for patients in medical facilities of different types and settlements in Central Northern Bulgaria. A semi-structured interview was conducted among 97 patients during and after treatment surgery, chemotherapy, and radiotherapy. Data were processed with Microsoft Office Excel 2016 and SPSS v.26.

Results. The most frequently reported symptoms were lack of energy and easy fatigue 70 (72.1%). The proportion of patients with pain was high (69.1%). In this regard, 64 (66%) of them had sleep problems. More than half experienced a change in weight 54 (55.7%), and the most common emotional reaction was fear of the course of the disease 43 (44.3%). Other concomitant problems were problems with the skin, hair, and nails 42 (43.2%) and changes in bowel habits 34 (35%). Not a small part of patients had a lack of appetite and eating problems 30 (40%), and more than half did not think they achieved a good quality of life.

Conclusion. The presence of complaints requires a precise assessment of the condition and the support of patients in adapting to the disease, once again confirming the need for a wide range of oncology nurse competencies.

Keywords: nursing assessment, side effects of conventional therapy, oncological patients

THE PRESTIGE OF THE MEDICAL ASSISTANT PROFESSION – A RESPONSE TO MODERN HEALTH CHALLENGES

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The dynamic changes in public life at the present moment also affect our healthcare system, which is a key area in protecting and improving the health status of the population. The need for new technologies and a new organization of medical care is growing due to the shortage of medical personnel. The profession of medical assistant has deep historical roots and is of key importance for quick and efficient access to Emergency Medical Assistance. It requires manipulative, organizational, and communication skills, as well as the ability to work independently and in a team, as well as planning and organizing. It is practised in dynamic and emotionally demanding conditions.

The purpose of the present study was to identify the main factors affecting the prestige of the profession.

Material and method. The study was conducted through an anonymous survey among 60 working physician assistants and medical paramedics in 10 structures of the Emergency Medical Service in Western and Northwestern Bulgaria. The results showed that health professionals and society perceive the profession of physician assistants as respectable and prestigious. The main factors that make the profession attractive to young personnel have been identified, as well as the challenges that can hinder the professional image.

Keywords: physician assistant, prestige, professional image, health challenges.

USER-ORIENTED MANAGEMENT TOOLS IN OBSTETRIC STRUCTURES

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There is a need to develop tools and platforms to build quality and satisfaction for providers and users of obstetric services.

The **aim** of the study was to examine consumer opinion on the quality and satisfaction of the offered obstetric services in hospital maternity structures, on the basis of which to define tools for management in a patient-oriented approach.

Material and methods. A survey was conducted among users of obstetric services who selected indicators that serve as tools of management using a user-oriented approach. The data is presented graphically.

Results. Satisfaction with the consumption of services affects both each individual and society, which determines the rating of a medical institution among them. This leads to the conclusion that the services offered must represent good practices and values. The management strategies for specific services can be adapted and customized to the needs of each user.

Conclusion. Managing a patient-centred approach is a process that requires a wide range of diverse resources, and this process involves many specialists from different fields. The tools are used to manage medical staff and support the processes of developing a diverse portfolio of obstetric services to build according to consumer demand.

Keywords: tools, management, obstetric structures, users, quality.

THE ROLE OF NURSES IN PATIENT EDUCATION ON THE PREVENTION AND EARLY DETECTION OF SKIN MALIGNANCY

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Oncological diseases are a leading health and social problem with high morbidity and relatively high mortality. They affect the active part of the population and entail high financial costs for diagnosis and treatment. As with all other organs, oncological neoplasms develop in the skin. The most successful way to fight them is prevention. In this way, the frequency can be reduced, and the efficacy of the treatment can be increased. The participation of nurses in prevention and training programs supports patients and their families in building healthy behaviour patterns and contributes to the formation of greater personal responsibility for health.

The study aimed to analyze the role of nurses in educating patients about the Goliad early detection of malignant neoplasms of the skin.

Material and methods. In the period January - December 2023, a survey was conducted of 60 nurses working in surgical and oncology clinics/wards in five multidisciplinary hospitals for active treatment (MBAL “Hristo Botev” - Vratsa, MBAL “Stamen Iliev” - Montana and MBAL “City Clinic St. George” - Montana, “MBAL Targovishte” and MBAL “St. Pantaleimon” Yambol,). Results processing, statistical analysis, and data storage were performed with IBM SPSS Statistics 19.0. The study was conducted by nurses and a successful intervention in encouraging patients to adhere to and persist in carrying out the prescribed treatment and achieve a better quality of life.

The **results** show that patients do not receive enough information about the disease, treatment and prevention of malignant neoplasms of the skin. It is important that they are trained to recognize potentially dangerous changes such as scars, injuries or neoplasms that may be associated with skin malignancies. Nurses’ participation in dermatology and oncology seminars, training, and conferences can provide them with up-to-date information and know-how from experts in the field.

Keywords: malignant neoplasms; nurses; health care; training

THE RELATIONSHIP BETWEEN THE COMMUNICATION SKILLS OF HEALTH INSPECTORS AND CONFLICTS IN OFFICIAL CONTROLS

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Introduction. Conflicts in public administration are often caused by communication problems, leading to workplace stress and inefficient work processes.

Aim. to establish the relationship between the communication skills of public health inspectors (PHI) and conflicts in official control.

Materials and Methods. The study was conducted in 2020- 2021 among 116 inspectors working in public health inspectorates in seven regional cities using a 22-question questionnaire. Descriptive statistical methods, hypothesis testing methods, correlation, and regression analysis were used. Data were processed using SPSS 13.0.

Results. The highest level of conflicts with business operators and staff was noted by respondents who had a high self-assessment of their communication skills (75%) ($\chi^2 = 28,265, p=0,003$). The main cause of conflicts was the incompetence of the staff in the facilities (52.9%) (Cramer's $V = 0.380, p$

Keywords: conflict, communication, public health inspector (PHI), control

ANALYSIS OF THE POSITION “CHIEF NURSE” IN THE CLINIC OF ORTHOPEDICS AND TRAUMATOLOGY AT THE UNIVERSITY HOSPITAL “DR. GEORGI STRANSKI” – PLEVEN

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Introduction. Today’s healthcare managers face a number of challenges, and their management style is critical to their success. Providing high-quality health care to patients is becoming more and more difficult in the context of an ageing population structure, a high relative share of socially significant diseases, and a deepening trend of a shortage of health care professionals.

Objective. To analyze the possibilities for optimizing the management of health care in the Clinic of Orthopedics and Traumatology at Dr Georgi Stranski University Hospital – Pleven through a SWOT analysis of the “Chief nurse” position.

Materials and methods: Personal experience as a chief nurse for one year was analyzed, and the strengths and weaknesses, opportunities, and threats of the position were presented using the SWOT analysis method.

Results and discussion. The high workload of the chief nurse and the distribution of duties among a large number of subordinates are prerequisites for conflicts, which require a directive approach. Effective human resource management is the basis of optimizing the organization of work, introducing innovations, and maintaining a good psychological climate with high commitment of the employees working in the clinic. Transformational leadership is a style that will support organizational success.

Keywords: chief nurse, health care, management, SWOT analysis

NOSOCOMIAL INFECTIONS IN HIGH-RISK CLINICS

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VBI is any clinically manifested infection or carriage of pathogenic microorganisms related to the hospital stay or outpatient care - examinations, research, consultations and others affecting patients and staff and meeting the criteria of the Medical Standard for the control of VBI, approved by Ordinance No. 3 of 08.05. 2013

The **aim** is, through a retrospective study of nosocomial infections over a three-year period in high-risk wards, to improve the registration of nosocomial infections and reduce their number to the optimal minimum. Materials and methods: Documentary method and statistical analysis.

Results and discussion. Resistant strains - MRSA, MRSE, MR, broad-spectrum β -lactamase producing - *Acinetobacter baumannii* ESBLs, *K. pneumoniae* ESBLs were analyzed. Resistant microorganisms are the result of selective (antibiotic) pressure, which leads to the selection and spread of carriers of the relevant genetic factors of resistance.

Conclusion. Discovered and recorded VBIs increase knowledge and experience, contribute to the effective fight against unwanted infections and enhance the image of any hospital. Conclusions were made about the hospital's antibiotic policy for the future period through the reported antibiotic treatment in the individual units of the patients treated according to the empirical formula.

Keywords: nosocomial infections, resistance, high-risk wards.

CHOICE OF PROFESSION AND FUTURE REALIZATION AMONG NURSING STUDENTS

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The formation of a system of sustainable moral beliefs about the principles, norms, and values of the nursing profession, as well as their generalization into lasting motives for adequate professional actions and behaviour, is the core of the entire process of choosing and practising this profession. Nursing is a quite difficult and highly humane profession, requiring complete dedication and continuous ongoing education for all who have chosen it.

The objective of this study was to investigate and characterize the motivation, attitudes, and expectations of first-year nursing students.

Tasks:

To study and analyze the motivational factors and attitudes of first-year nursing students.

To collect and analyze empirical information about the motivation for choosing and practising the profession.

To study and analyze the most desired and least desired areas for the future realization of nurses.

The results unequivocally showed that according to a total of 60% of the surveyed students, first of all, they would like to master the profession with which they will be able to help themselves, their family and other people, and secondly, the fact that they like the profession itself, which is the main motivating factor for choosing a profession.

Keywords: nurse, profession, realization, choice

WORK ABILITY AMONG HOSPITAL NURSES

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National Center of Public Health and Analyses

The work of hospital nurses is mentally and physically demanding, often including night shifts and long working hours.

The **aim** of the study was to assess the work ability of hospital nurses and its determinants.

A cross-sectional study was conducted in 19 large hospitals (>150 beds) in Sofia. Questionnaires were filled anonymously by 1427 nurses of age 50.1 ± 10.2 years from emergency/intensive care units, surgery and clinic wards, including information on demographic and work-related characteristics. Work ability was assessed with the work ability index (WAI).

The studied nurses had a high WAI of 39.1 ± 5.9 , the highest with the surgery nurses and decreasing with age in all groups. The self-rated good health and perception of good working conditions were positively related to WAI, while emotional and physical exhaustion was negatively related. The self-rated health, emotional exhaustion, work-related family problems, support from colleagues and length of service determined WAI and most WAI dimensions. Also, working hours per week and emotional dissonance from patients were related to the prognosis of nurses' work ability in the next two years, while the equal distribution of tasks, autonomy, career development and family reproach to mental resources.

In conclusion, our data show good work ability with the studied nurses, but measures for its maintaining and improvement are needed, pointed towards management of occupational stress and shift work.

Keywords: nurses, occupational health, work ability index, WAI determinants

STRESS AND FATIGUE IN NURSES

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National Center of Public Health and Analyses

Nurses provide constant, highly specialized and specific care for patients with acute and severe chronic conditions, a prerequisite for higher levels of stress.

A reliable bioindicator for an objective assessment of stress is the hormone cortisol.

The **aim** of the study was to follow salivary cortisol levels and self-rated stress, sleepiness and fatigue in intensive care unit (ICU) nurses and nurses working in clinical wards.

The study comprised 48 nurses, aged 49.7 ± 11.5 years, working in two hospitals in Sofia. 16 ICU nurses and 32 ward nurses were examined during day and night shifts. The salivary cortisol levels were determined by ELISA kits, and the subjective assessment of stress, sleepiness and fatigue was determined by questionnaire.

The cortisol maintained a typical diurnal rhythm but with significantly higher values in ICU nurses during day shifts compared to clinical ward nurses. There was high variation in the hormone levels in the morning hours during the night shift. The self-rated stress, sleepiness and fatigue increased as 12-hour shifts progressed, with no significant differences between groups and shifts.

Variations in cortisol levels, accumulation of fatigue and sleepiness, especially during the night shift, are indications of increased health risk among nurses in ICU and clinical wards.

Keywords: stress, fatigue, cortisol, intensive care unit, 12-hour shifts

HEALTH ECONOMICS

CURRENT APPROACHES IN THE MANAGEMENT OF HEALTHCARE SERVICES AT MULTI-PROFILE HOSPITAL FOR ACTIVE TREATMENT ‘DR. IVAN SELIMINSKI – SLIVEN’ AD

Vasislav Petrov, Rozalina Spasova, Krasimira Taneva

Dr Ivan Seliminski General Hospital - Sliven

Objective. To apply current management approaches and achieve better results in healthcare services with limited resources

Materials and Methods. Surveys and analysis of statistical data

Results. Development of management and leadership in the hospital and increasing satisfaction of healthcare professionals; Discussion:

The management approaches applied in the hospital are based on planning, implementation, control, and updating by the hospital management. This is carried out based on the assessment of the effectiveness of healthcare services, scientific and educational activities, and satisfaction surveys of patients and staff.

Conclusion. The current development of the hospital as a healthcare institution and a commercial company requires healthcare managers to possess very specific knowledge and skills. Constant monitoring of the “benefit/cost” ratio of each activity is necessary to achieve:

Increased trust of clients in healthcare professionals;

Assurance that the services provided are produced under controlled conditions;

Protection from accidental risks and undesirable consequences;

More successful management of human resources;

Clarity and transparency of processes, rights and responsibilities of each working in the healthcare facility;

Keywords: management, healthcare services, management, hospital

TO REIMBURSE OR NOT TO REIMBURSE: APPLYING ECONOMIC EVALUATION FOR DECISION-MAKING IN PERSONALISED MEDICINE

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Introduction. Economic evaluations are increasingly used by health technology assessment agencies to guide reimbursement decisions for personalised medicines.

Aim. The aim of this study is to present an economic evaluation and a budget impact analysis of a multivariant genetic test, ToxNav[©], followed by personalised dosing of chemotherapy for metastatic breast cancer (MBC) patients and discuss potential reimbursement in three countries – the United Kingdom (UK), the Netherlands and Hungary.

Material and methods. We performed a cost-utility analysis of ToxNav[©] to test for DPYD mutations followed by personalised 5FU/capecitabine dosing for MBC compared with no testing followed by standard dose (SoC) and estimated the budget impact using decision-analytic modelling. Results were presented as total costs and quality-adjusted life years (QALYs), incremental cost-effectiveness ratios (ICERs) and budget expenditure for 5 years.

Results and Conclusion. ToxNav[©] was cost-effective in all three countries. In the UK and the Netherlands, ToxNav[©] generated more QALYs and fewer costs to the health systems. In Hungary, ToxNav[©] produced more QALYs at a higher cost compared with SoC. ToxNav[©] offered budget savings in the UK and the Netherlands, while in Hungary, it resulted in additional expenditure. Based on these findings, ToxNav[©] can be recommended for reimbursement in all three countries.

ASSESSMENT OF THE FINANCIAL CONDITION OF MUNICIPAL GENERAL HOSPITALS WITH HIGHEST REVENUE

Lyubomira Koeva-Dimitrova, Mincho Minev

Medical University – Varna

Introduction. Assessing and improving financial conditions are crucial tasks for the management of any organization, including healthcare institutions. Financial stability is essential for the sustainable development of healthcare institutions. However, many municipal general hospitals (MGHs) with predominant municipal ownership face financial difficulties.

Objective. This study aims to evaluate the financial stability of MGHs with predominant municipal ownership that achieved the highest revenues in 2023.

Materials and Methods. The study included the top ten MGHs with the highest sales revenues in 2023. We examined the annual financial statements of these healthcare institutions for the past five years with available data (2018-2022). We analyzed key financial indicators for liquidity, profitability, and capital structure. We used a modified Altman model to assess the overall financial stability.

Results. We observed significant differences in the financial performance of the individual healthcare institutions during the studied reporting periods. The results show that high revenues do not guarantee positive economic outcomes.

Conclusion. The financial stability of municipal healthcare institutions depends on various factors. Further studies, such as factor analysis, correlation analysis, and other statistical analyses, are needed to understand their influence.

Keywords: financial condition, financial condition analysis, assessment, municipal hospitals, financial stability

A STUDY OF THE FINANCIAL LOSSES OF PUBLIC HOSPITALS FROM UNINSURED PATIENTS

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Introduction. The COVID-19 pandemic exposed the gaps in Bulgaria's healthcare system, in particular, the state hospitals which followed the example of Dr Georgi Stranski University Hospital-Pleven regarding the treatment of uninsured patients.

Aim. Our goal was, by comparing over 1000 patients treated in the wards of Georgi Stranski University Hospital for the period 2019 - 2023, to assess the difference in the losses of the medical facility during the three periods: before, during and after the Covid 19 pandemic.

Materials and methods. By evaluating a study of over 1,000 uninsured patients who were treated in all departments of the University Hospital, we deduced the estimated losses for the medical facility. During Covid 19, through targeted state policy, all hospitals on the territory of the Republic of Bulgaria were obliged to accept COVID-19 patients, and they were paid for from the state budget. During the remaining periods (2019 - early 2020 and 2022 - 2023), the costs for uninsured patients were covered by the budget of the medical facility.

Conclusion. Despite the fact that the payment of uninsured persons is assumed to be covered by social security payments, many of them remain uncovered and at the expense of the medical facility. The cumbersome procedure that takes a long period to examine the patient's financial status is not relevant to the rate at which the hospital incurs losses.

Keywords: uninsured patients, COVID-19, funding, public hospitals

IMPACT OF THE COVID-19 PANDEMIC ON THE HEALTH SERVICES UTILIZATION IN BULGARIA – MAGNITUDE AND DURATION OF DISRUPTIONS IN MEDICAL AND DENTAL CARE

Maria Rohova, Stefka Koeva

Medical University – Varna

Introduction. The COVID-19 pandemic has required various measures and adjustments in health service provision, resulting in restricted access to medical and dental care. The aim of this study was to assess the impact of the pandemic on health service utilisation in Bulgaria.

Material and Methods. The analysis focused on the relative change in the utilisation of health services covered by the National Health Insurance Fund, except for treating coronavirus infection. Data from the institution's annual reports were used to compare the pandemic period with the preceding three years.

Results. The most substantial drop in primary care was recorded in prophylactic check-ups and vaccinations. Follow-up examinations for chronic diseases and visits to particular specialists in outpatient care decreased significantly. Dental care was dramatically impacted by the pandemic, especially between 2020 and 2021. Although admissions should not have been affected by the restriction measures, some clinical pathways in hospital care demonstrated a similar pattern.

Conclusion. The identified disruptions in the prevention, screening, and chronic disease management caused serious consequences for health status. Swiftly restoring regular access to services was crucial to minimising the adverse effects of the pandemic.

Keywords: COVID-19 pandemic, health services, utilisation, Bulgaria

INFORMATION TECHNOLOGIES AND ELECTRONIC HEALTHCARE

EUROPEAN REFERENCE NETWORKS AS AN EXAMPLE OF GOOD PRACTICE IN PROVIDING TIMELY HEALTH CARE IN THE FIELD OF RARE DISEASES

Marina Yordanova, Todorka Kostadinova

Medical University – Varna

Introduction. In its efforts to deal with the challenges related to the spread of rare diseases on a European scale, the European Commission launched a program to build European reference networks. The basis of the project is the creation of an opportunity for innovative cross-border cooperation between established specialists at the European level and improving the health of patients by reducing the time to make an accurate diagnosis in rare diseases that require highly specialized treatment and concentration of knowledge.

Objective. To present the benefits of building the European reference networks to reduce the time to diagnose a rare disease and the results of a study conducted among patients on their effectiveness.

Materials and methods. A review and analysis of Bulgarian and foreign literature was made, and data from a survey of patients with rare diseases was used.

Results. The main group of respondents in the study (55%) said that the period for making a diagnosis at the Expert Center for Coagulopathies and Rare Anemias, which is part of the European Reference Networks, is from 0 to 6 months, over 19% - from 6 months up to one year. When the respondents at the Expert Center were asked where they received information about their rare disease, the largest number stated that it was their doctor - 35%.

Conclusion. European reference networks are inherently unique platforms where doctors can share unknown cases with international experts in order to make a timely diagnosis, choose a treatment plan and initiate appropriate healthcare.

Keywords: European reference networks, rare diseases, timeliness in healthcare, telemedicine, good practice

SURVEY OF MEDICAL STUDENTS' INTEREST IN DIGITAL FORMS OF LEARNING AND ASSESSMENT

Asen Seizov

Medical University – Pleven

Introduction. The study investigates the interest of Pleven University students from all majors in the use of digital forms of learning and assessment. The interest is mainly in the distance and hybrid form of learning in informatics and the advantages of electronic tests in this discipline. The way in which the use of these specific forms affects the quality of learning and the better absorption of the learning content by the learners is also investigated.

Objective. To study and analyze the opinions of the students of Medical University – Pleven regarding the use of digital resources in the educational process of distance learning.

Material and methods. A Google Forms survey was used for the study among over 300 students, the last course of study from all specialities at Medical University – Pleven for the academic year 2023/2024. The results are displayed graphically.

Results. More than 70% of respondents prefer to use digital resources in ED fully or to support the traditional form of education.

Conclusion. Based on the data, we believe that the interest shown in the digital forms of learning offered by postgraduate training programs is mostly due to the more accessible presentation of the information and the various self-control tests.

Keywords: Electronic forms of learning, distance learning, quality of learning

SWOT ANALYSIS OF THE ELECTRONIC-BASED DISTANCE LEARNING SYSTEM OF MEDICAL UNIVERSITY-PLEVEN

Asen Seizov

Medical University – Pleven

Introduction. Information and technology electronic forms of education have an important place in the process of modern education. Appropriately used e-learning forms will increase the effectiveness of teaching and knowledge acquisition. Still, for it to be greater, the weaknesses should be taken into account and corrected. The right strategic and operational decisions must be made for the development of the system.

The **aim** of the study was to analyze the distance learning system and propose measures to optimize the system.

Material and methods. A Google Forms survey was carried out among 134 students in their last year of studies in all specialities at Medical University – Pleven for the academic year 2023/2024. Based on the result, a SWOT analysis was made.

Results. A large proportion of subjects covered (76%) were satisfied with the SDO and rated it as excellent. Recommendations for optimization were offered by 38% of learners.

In **conclusion**, we believe that the results of the analysis of the student survey about the distance learning system are positive. Weaknesses are manageable and surmountable but require periodic analysis of consumer opinion.

Keywords: SWOT-analysis, risk assessment, distance learning

AUGMENTED REALITY AND OPTICAL MARK RECOGNITION IN TEST ASSESSMENT

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Introduction. Quick assessment of exam tests is a key point in reducing the overall exam time. Optical mark recognition (OMR) is the most commonly used technology for this, but it usually requires additional equipment – special OMR scanners or ordinary scanners and specialized software. Combining OMR with technologies for augmented reality (AR) is an innovative direction that further increases the efficiency of the process.

Aim. To develop and test a module for the TestManager system, combining OMR and AR.

Material and methods. TestManager is a system for automated test generation and assessment at MU-Pleven. It uses a client-server architecture and has a standard OMR client working with conventional scanners.

Results. TestManagerAR module was developed – an Android application using Google ARCore to identify images in space and augment them with digitally generated 3D objects. The standard answer sheets for the OMR module were modified to include an identification image (MU-Pleven logo). Using TestManagerAR in real exams showed good results – a decrease in test assessment time and increased comfort for the examiners.

Conclusion. Combining AR and OMR shows promising results in automated test assessment. It is a prerequisite for a future acceleration of the process, given the fact that glasses and lenses using AR are gaining popularity.

Keywords: augmented reality, optical mark recognition, computer-aided assessment

ATTITUDES TOWARDS THE APPLICATION OF VIRTUAL REALITY IN NURSING EDUCATION

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Introduction. Innovations in simulation technology have made available high-fidelity simulators that have supported a paradigm shift in health education. Virtual simulation is a relatively new pedagogy in the context of nursing education that improves student learning outcomes.

The aim of this study was to examine the attitudes of nursing students towards the application of virtual reality in their education.

Material and methods. The study design is cross-sectional. It is based on an anonymous online survey conducted among 127 students majoring in nursing. **Results:** The majority of students claimed to know what the term virtual reality entails (66.9%; n=85). They believed that simulation-based learning would increase their knowledge (53.5%; n=68), be useful in their clinical practice (60.6%; n=77) and build key skills (54.3%; n=69). Most of them would participate in training courses on the application of virtual reality in nursing practice (62.6%; n=79).

Conclusion. Innovations in health simulation technology will lead to the increasing adoption of virtual reality in education. Virtual reality has the potential to transform the education of future nurses. The students majoring in nursing believe that the introduction of virtual simulation into their training and practice improved their knowledge and clinical skills.

Keywords: virtual reality, nursing, education, simulation

OPPORTUNITIES FOR THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN PUBLIC HEALTH

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Medical University – Pleven

Background. Artificial intelligence (AI) has been described as the “fourth industrial revolution” with transformative and global implications, including in public health.

Methods. Electronic databases were searched for peer-reviewed literature published before May 2024 using the concepts of public health, health services, and AI and their related terms. Thematic analysis was performed.

The aim of the study was to explore the opportunity of using AI in the field of public health and analyze the possibility of increasing the population’s health as a result.

Results. Upon reviewing 12,722 articles, 213 met the predetermined inclusion criteria. The literature was primarily focused on AI in primary health care, particularly in health care and precision medicine, but was largely silent on AI in public and population health.

Conclusions. The issues surrounding AI in the field of public health are both vast and complex. While AI holds the potential to improve health and health systems, our analysis suggests that its introduction should be approached with cautious optimism. The scarcity of literature on AI in public health points to a critical need for further research into the implications of AI in public health to ensure that its development and implementation are appropriate for everyone, everywhere.

Keywords: artificial intelligence; public health; healthcare

SUPPORTING AND IMPROVING HEALTHCARE EDUCATION THROUGH INNOVATIVE TELEMEDICINE TECHNOLOGIES

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Advances in digital technologies have fundamentally transformed traditional medicine and healthcare on a global scale, which has led to the increasingly invasive application of telemedicine and the provision of virtual remote care as a highly effective model.

In addition, telemedicine technologies can significantly improve and streamline health care and medical education. They provide an opportunity to increase its quality, providing virtual access to a new format of knowledge and skills and including innovative teaching methods. Students have the opportunity to participate in interactive simulations that occur in real time, receive instruction from a remote location, and participate in hands-on activities that are applicable in the real world. On the other hand, digital technologies can also be seen as a departure from the traditional nursing role, which prioritizes establishing and maintaining therapeutic relationships and compassionate care with patients and families.

Telemedicine approaches and solutions can improve nursing education and practice by enabling effective care coordination and information exchange between healthcare professionals. Therefore, this can lead to improved quality of patient care and more effective preparedness of nurses to cope with the upcoming digital transformation of modern healthcare.

Keywords: education, health care, telemedicine, nursing

ARTIFICIAL INTELLIGENCE IN HEALTHCARE AND THE PUBLIC HEALTH BENEFITS

Ana Ivanova

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Introduction. Medicine and technology have grown and improved at a rapid pace in the past few years. Collaboration between them creates prerequisites for better diagnosis, treatment, and follow-up of patients, as well as benefits for public health.

Aim. Through a literature review and analysis of high-tech diagnostics and treatment, to assess the benefits for healing.

Materials and methods. By comparing the use of artificial intelligence for early diagnosis of oncological diseases and treatments using telemedicine and artificial intelligence to highlight the main benefits for the patient and financial results, as well as the contribution of AI to public health.

Conclusion. Although artificial intelligence is at the dawn of medical diagnosis and treatment, the pace at which it is developing is an indicator of its effectiveness. Regardless of the high financial cost, timely diagnosis, shortened hospital stays, and rapid recovery of patients are indicators of its high efficiency on the principle that a healthy patient creates economic value in all spheres of society from a financial perspective.

Keywords: AI, telemedicine, healthcare

WORK WITH DISPLAYS: USE OF DIGITAL DEVICES AT WORK

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Introduction. The digital transformation of the economy is associated with the widespread use of desktop computers and other digital devices (portable computers, tablets and smartphones) at the workplace.

Material and methods. An anonymous and voluntary survey of working conditions and musculoskeletal and visual complaints among video display workers was conducted. The study covered 448 persons aged 33.5 ± 7.7 years.

Results. Independent use of desktop computers was reported by 4.3% of the workers, while the use of other digital devices (laptops, tablets and smartphones) was widespread. Work from home was performed by 81% of the surveyed workers. The data showed a comparable frequency of insufficient working space at the workplace - 22.4% and at home - 20%. Only 55.6% of workers reported taking regular breaks at work, with the trend being a further decrease when working at home.

Discussion. The results show sufficient space to work, but complying with ergonomic requirements for a workplace at home is also associated with other difficulties. The study draws attention to the need to increase the knowledge and habits of workers related to the conditions and optimal work and rest regimes.

Keywords: display, portable computer, smartphone, workplace, ergonomics

ARTIFICIAL INTELLIGENCE IN PUBLIC HEALTH - PROS AND CONS

Zdravka Radionova, Remon Hanna, Gabriel Georgiev

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Introduction. Publications on the application of artificial intelligence (AI) in public health have surged in recent years. The earliest publications appeared in the sixties of the last century, with one publication per year, irregularly. Currently, tens of thousands of publications appear in PubMed alone, and over the past five years, they have accounted for over 90% of the total number over the last 10-year period and for 55% of all ever published. Objective: To investigate the benefits and risks of the application of artificial intelligence in public health.

Material and methods. A literature review in PubMed bibliographic database was conducted.

Results. The benefits of using AI in public health include improving diagnosis and treatment by identifying diseases based on images, identifying and classifying objects and new data, or predicting future data to create different models; disease tracking and control with early warning of epidemics; more efficient management of hospital resources, automation of administrative tasks, etc.

Conclusion. The real and proven benefits of implementing AI, which improves the efficiency of healthcare professionals' workflow, should not be ignored as they should support decision-making without compromising patient safety, individual rights, and the quality of healthcare.

Keywords: artificial intelligence, public health, benefits, risks

PRIMARY HEALTH CARE

HEALTH CARE IN HEMODIALYSIS UNITS - COMPLIANCE WITH PATIENT NEEDS

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Introduction. The social significance of chronic renal failure is increasing. More than 90% of the affected persons undergo hemodialysis, which in absolute value equals approximately 9.7 million people worldwide and about 3800 people in Bulgaria. The purpose of the present study is to investigate the opinion of hemodialysis treatment patients regarding the quality of health care.

Material and methods. Data were collected by conducting a semi-structured interview with 84 patients in the dialysis wards of Dr Georgi Stranski University Hospital – Pleven, General Hospitals in Lovech, Sevlievo, Silistra, Cherven Bryag, and private dialysis centres. Statistical processing was performed with the SPSS v.25 program with applied descriptive statistics and graphical analysis.

Results. The study found a high degree of patient satisfaction with the health care provided. Over 98% felt they had established a therapeutic relationship with healthcare professionals based on good communication, empathy, trust and confidentiality. About two-thirds (65.5%) stated that they needed additional information, especially regarding nutrition (39.3%) and medication intake (46.4%), in order to maintain independence in everyday life.

Conclusion. The demands of dialysis patients regarding the quality of health care have largely been met. In order to achieve autonomy, it is necessary to improve nutrition education and medication intake.

Keywords: health care, hemodialysis, chronic renal failure

APPROACHES TO PERSON-TARGETED CARE FOR PEOPLE WITH DEMENTIA

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Introduction. The problems of people with dementia are becoming a priority for the policies of the European Union due to the increasing share of the ageing population in Europe. Personal-targeted care takes into account the person's values and preferences. Once these are expressed, they become the guide for all care approaches that the persons with dementia will receive, supporting their realistic health and life goals.

Objective. To analyse approaches to person-targeted care when attending to people with dementia.

Materials and methods. A documentary method was used.

Results. The Social Services Act necessarily regulates the application of an individual approach when performing professional activities, which places the supported persons at the centre of work. Person-centred care is a system of individualised, quality care that promotes the application of a range of values and approaches to the care of people with dementia. In this type of care, the person has relative autonomy to make decisions about their daily life, relying on a support network of people who empower them to make decisions.

Conclusion. The overall idea of person-centred care requires overcoming and rejecting the fatalistic assumption that older people with dementia cannot participate in society. It is necessary to start thinking about productive approaches to support this participation.

Keywords: dementia, person-targeted care, approaches

IMPORTANCE OF PATIENT EDUCATION IN COLOSTOMY CARE

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Colon cancer is one of the most common oncological diseases. Colon cancer treatment sometimes involves surgery to remove a colostomy. Awareness and training are essential for adaptation to a new way of life, for achieving high compliance with treatment and a good quality of life. Education is part of the multifaceted role of nurses and an essential element in the holistic approach to the patient.

The purpose of the announcement is to raise awareness among colostomy patients through education.

Material and methods. For the last five years, 209 patients were trained. Nurse education included demonstrations and instructions, printed and video materials, online resources, dietary guidelines brochures and advice.

Results. As a result of proper training, independence in colostomy care was gained, awareness was improved, as was preparation for daily challenges. The number of patients who could not manage a colostomy on their own was less than 1%. Patients with skin infections due to poor care were 19.1% of all patients. Of them, 9.57% were rehospitalized.

Conclusion. Effective training by medical professionals improves the quality of life and independence of colostomy patients, helps them to adapt to the new lifestyle, and helps to lower complication rates and rehospitalizations.

Keywords: colostomy, training, adaptation, independence

SIGNIFICANCE OF SKINFOLD THICKNESS MEASUREMENT IN CARDIOLOGY

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Introduction. Diseases of the cardiovascular system have been on the rise in recent years. Scientists share the relationship between the accumulation of adipose tissue in various areas of the human body and the occurrence of cardiac disease - hypertension, ischemic heart disease, sudden death, cardiometabolic syndrome, etc.

Purpose. The purpose of the report was to present and explain the significance of measuring skinfold thickness in individual parts of the body in patients who have suffered cardiac disease, as well as as a predictor of their development.

Materials and methods. We measured the skin folds using a calliper in the abdominal, subscapular and supriliac regions, as well as in the area of the m. triceps brachii and m. biceps brachii.

Results. The average values of the measured skin folds in different areas in patients who suffered cardiac intervention were as follows: 29.55 ± 7.94 (abdominal area), 20.75 ± 3.98 (supriliac area), 19.86 ± 3.32 (subscapular area), 11.26 ± 5.77 (m. triceps brachii), 7.8

± 5.7 (m. biceps brachii). **Discussion.** The higher values of skin folds measured in some of the subjects studied explain the trend for the growth of cardiac diseases among the younger population.

Conclusion. The detection of increased values of the thickness of skin folds in any of the mentioned areas would help to take adequate measures to counteract the development of cardiac disease.

Keywords: caliper, skin folds, cardiac disease

PROBLEMS OF INTERACTION BETWEEN GENERAL PRACTITIONERS AND DOCTORS IN EMERGENCY MEDICAL CENTERS, ACCORDING TO GENERAL PRACTITIONERS

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Medical University – Pleven

Introduction. In Bulgaria and in a number of other European countries, certain problems are reported with access to urgent and emergency medical care, especially in the hours outside the working hours of general practitioners (GPs).

The aim of the present study was to identify the problems in providing emergency and urgent medical care, which have arisen as a result of insufficient interaction between GPs and doctors of emergency medical centers (EMS).

Materials and methods. An empirical sociological study of the interaction between the GPs and the EMS was conducted with 88 GPs randomly selected in the Pleven and Lovech districts. An individual survey card was used to study the opinion of the respondents regarding their interaction with the EMS in the provision of emergency and urgent medical care. The results were processed statistically using the SPSS software products.

Results. There was a lack of information exchange between the EMS and GPs about the health status of patients, according to 8% of the respondents, and insufficiently effective interaction between them and the EMS when providing emergency and urgent medical care. According to 20.5% of GPs, the normative requirements for conduct in emergencies are not always followed.

Conclusion. Reasoned complex organizational solutions are necessary for improving the collaboration between primary and emergency medical care units.

Keywords: general practitioners, emergency care

GENERAL PRACTITIONERS ON THE MANAGEMENT OF THE SPECTRUM OF SEXUALLY TRANSMITTED INFECTIONS: A QUALITATIVE STUDY

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Introduction. The management of sexually transmitted infections (STIs) implies an integrated model in which primary care (PHC), with the general practitioner (GP) as the main figure, is fundamental.

Purpose. The purpose of our study was to discuss the management of STIs and the role of the GP in Bulgarian reality.

Material and methods. Documentary and sociological methods were applied. A qualitative study was conducted, consisting of in-depth interviews with 22 GPs, with the only inclusion criterion being long-term practice in PMC.

Results. Two-thirds of the interviewees believe that the current management model of STIs does not ensure equal access and good quality of healthcare. Barriers to GPs regarding the management of the STI spectrum can be divided into three groups: normative, personal, and social.

Discussion. The lack of funding for promotional-preventive activities, normatively scheduled in the activity of GPs, was highlighted as a barrier to their implementation, as well as the difficult communication and coordination with the individual elements of the health system regarding this assistance. The difficulty of access for persons without health insurance was also discussed, as well as the deepening personnel crisis - a decreasing number of GPs with an ageing age structure as a threat to the entire health and social system.

Conclusion. The review of scientific literature, important strategic documents, and the results of the study can be useful for health policy decisions aimed at better management of STIs.

Keywords: sexually transmitted infections, management, general practitioner, empirical sociological study

HUMAN RESOURCE MANAGEMENT IN GENERAL PRACTICE: A SURVEY

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Background. Government policies are changing the structure and administration of GP practices to improve primary care services. Significant research attention is needed in staffing, including recruitment, retention, management, and motivation of practice managers.

Aim. The study aimed to explore who is routinely involved in making workforce appointments in general practice, determine the formalisation and specialisation of the human resource management function, and outline the features of practice management.

Method. A study was carried out on 250 general practices in the Plovdiv region to gather information about their operations. It included the number of general practitioner partners, staffing approaches, and practice manager backgrounds and training. Practices were classified by size: small (single-handed or run by two partners), medium (three or four partners), and large (five or more partners).

Results. We received feedback from 177 practices, with a 70.82% response rate. As practices grew, staffing management became more formal. Larger practices had additional management tiers. Most practice managers were recruited internally, but larger practices tended to hire externally, and 75% of practice managers had formal staff management training.

Conclusion. The study showed that practice size is crucial in determining staffing structure and management. Expanding primary care functions must address communication and coordination issues resulting from the change.

Keywords: human resource management, general practice management, GP, healthcare system, health system management

SCREENING AND DIAGNOSIS OF THYROID PATHOLOGY IN PRIMARY MEDICAL PRACTICE (PMC) IN BULGARIA

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Medical University – Pleven

Introduction. Thyroid pathology affects 5-10% of the world population. The **aim** of this study was to analyse the prevalence and benefits of thyroid ultrasonography in primary care practice and the opportunities for ultrasonographic screening of thyroid pathology. Most of the pathology does not always show characteristic symptoms. This leads to a delay in diagnosis and treatment and, in some cases - a lack of diagnosis.

Materials and methods. The research was conducted between 2016 and 2021. An unselected population is enrolled. Demographic information (age and sex) was collected. The descriptions of the ultrasounds were standardized on the basis of the following parameters: deviations in shape, size, position of the TH, deviations from the normal echogenicity of the parenchyma (hyper, hypo, heteroechogenic parenchyma), and presence of detectable formations.

Results. The number of participants in this research was 3 178: 60% women and 40% men. The average age of the participants was 40.1 ± 11.3 years and did not differ significantly between men and women. Deviation from normal ultrasound was observed in 36.2%, with a frequency increasing with age and prevailing in women.

Conclusion. Ultrasound could be effectively applied for the screening and diagnosis of thyroid pathology in PMC in Bulgaria.

Keywords: thyroid gland, primary medical care, ultrasound

OBSTETRIC VIOLENCE AS A THREAT TO PUBLIC HEALTH AND HUMAN RIGHTS IN CONTEMPORARY SOCIETY

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Introduction. The term “obstetric violence” describes instances in which women in labour experience abuse at the hands of medical professionals. The most frequently encountered type of obstetric violence is verbal abuse (e.g. insults, humiliating remarks, yelling), closely followed by physical abuse (e.g. slaps, pushing, and subjecting the woman to unnecessary or unwanted medical procedures). Still, there are numerous other unacceptable practices, such as coercion, neglect, or financial extortion, where the patient is implicitly or explicitly made aware that if she does not provide an informal “under the table” payment, both she and her baby will receive suboptimal care.

Goal. This paper aimed to expose obstetric violence as a serious challenge and hindrance to both public health and human rights.

Materials and methods used. Moral-philosophical analysis was conducted using recent sociological data and reports.

Results and conclusion. Analysis of the selected relevant literature revealed that obstetric violence is a common form of abuse which not only stems from already existing social problems like institutional failures and a pervasive culture of misogyny but also reinforces and further exacerbates those same problems. It also leads to mistrust in medical authority, thereby worsening health outcomes, especially among women.

Keywords: philosophy of medicine, ethics of public health, obstetric violence, human rights, women’s rights

PUBLIC REACTIONS IN RESPONSE TO AGGRESSION AGAINST HEALTHCARE WORKERS

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Introduction. Acts of aggression against healthcare workers cause frequent public discussions and debates in order to search for effective actions and measures to prevent this problem and protect individuals.

The purpose of the report is to summarize the public reactions and measures taken against the acts of aggression towards healthcare workers published in official media.

Material and methods. The review covered published reports of public reactions to cases of aggression against healthcare workers in 5 official sites over a 10-year period.

Results. During the period, there was a tendency for an increase in the number of public reactions to cases of violence, which significantly decreased during the pandemic. Public reactions are available mainly from professional organizations, as well as from the Ministry of Health. Among the measures taken to overcome the problem were the increase in the severity of the punishments for aggressive persons and the option for doctors to refuse to provide medical care in certain circumstances.

Conclusion. Actions to address the problem should involve the participation of various institutions and organizations in healthcare. It is necessary to develop more effective measures for the prevention of violence against health workers and to form a public culture of respect.

Keywords: violence, healthcare workers, news, reactions

NUTRITION AND EATING AS A PUBLIC HEALTH ETHICS ISSUE

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Nutrition is a fundamental human function that remains a significant issue in the 21st century. This problem reveals numerous dimensions: social, economic, political, logistical, and cultural. The **aim** of this report is to present the issues of nutrition and eating as part of the scope of Public Health Ethics.

Methodology. Philosophical reflection and literature review.

Discussion. Eating is an ethical action that initiates a chain reaction extending beyond the individual to the food industry and public health. The ethics of nutrition demonstrate a complex network of relationships among stakeholders in population nourishment. What is produced? How is it produced? Where is it sold, and at what prices? Accessibility of the product? Product quality? These issues originate from the autonomous choice of the individual regarding what to eat (home-produced or store-bought) as a form of personal responsibility for health, gradually evolving into responsibility for the health of others. A crucial aspect of this issue is the question, “Who has the right to provide information about food?”

Conclusion. Our individual choice towards home-produced food promotes discipline concerning personal health improvement. With more effort, this can extend to public health as well.

Keywords: ethics of nutrition, eating, public health ethics, autonomous choice, home production

MENTAL HEALTH

FIRST BULGARIAN MILITARY ANTARCTIC EXPEDITION AND THE EFFECTS OF LACTOBACILLUS BULGARICUS DWT1 AS A PSYCHBIOTIC UNDER EXTREME STRESS

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Introduction: The maritime profession is an extreme test of a crew’s mental health. The use of psychobiotics is one way to aid crew resilience. Psychobiotics are live bacteria that, by improving the gut microbiome, benefit the host’s mental health.

The **aim** of the study was to establish the effect of probiotic *Lactobacillus bulgaricus* DWT1 on the mental resilience of RV421 St. St. Cyril and Methodius crew during the first Bulgarian Military Antarctic Expedition.

Materials and methods: The study was conducted with the crew (25 individuals), divided into groups – taking and not taking probiotics. Research methods include measuring the level of anxiety and depression by Zung questionnaires and surveys to assess sleep quality. Data were processed by the statistical program SPSS19.

Results: Individuals taking probiotics showed no statistically significant differences in anxiety and depression levels before and after the voyage. They maintained sleep quality under the extreme conditions of the expedition. Individuals who were not taking probiotics had a significant increase in anxiety and depression, which correlatively worsened their sleep.

Conclusion: The probiotic used supported the crew’s mental resilience by maintaining the gut-brain axis, protecting against depression and anxiety, and improving sleep. The voyage of RV421 to Antarctica is a model for studying the effects of the psychobiotic *Lactobacillus bulgaricus* DWT1 on the mental health of people subjected to extreme stress.

Keywords: Antarctica, Naval Academy, RV 421, Varna, Drake, *Lactobacillus bulgaricus* DWT1, probiotic, depression, stress

THE CHALLENGE OF EMERGENCY PSYCHIATRY

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Medical University – Pleven

Introduction. The emergency psychiatric case includes an acute disorder of the behaviour, thoughts or mood of the patient. If not treated, it can lead to impairment of the individual and others around them. Therefore, the definition of emergency in psychiatry differs from other emergency cases in that it considers the danger of impairment to society.

Aims. To research the opinion of the workers in emergency structures in regard to their training in handling the challenge of an emergency psychiatric patient.

Materials and methods. We surveyed 20 individuals working in the emergency medicine centre - Pleven through a questionnaire and researched their training in handling emergency psychiatric cases.

Results. The participants in our research were 23 to 67 years old. Over 90% of them unmistakably recognized emergency psychiatric cases – agitation and aggression, suicide, delirium, but a small part of them included extreme anxiety as one of them. A large part of the participants' answers showed they were uncertain about what medications to use for emergency psychiatric cases. Over 80% readily proposed hospitalization for some cases.

Conclusion. Further and systematic training of the workers in emergency medicine is required for accurate, quick and definite handling of emergency psychiatry cases.

Keywords: emergency psychiatry, behaviour, hospitalization

PSYCHOSOCIAL RISK FACTORS IN HEALTHCARE WORKERS DURING A RECURRING WAVE OF THE COVID-19 PANDEMIC

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Introduction: The Covid-19 pandemic has changed healthcare workers.

Aim: To assess psychosocial risks in the workplace during the pandemic.

Materials and methods. A cross-sectional survey was conducted in October 2022, during a wave of COVID-19, among 665 healthcare workers in hospital, outpatient, and emergency care settings in 9 cities in southern Bulgaria. The survey included 29 questions on psychosocial risks at work and 21 questions on self-rated manifestations of depression, anxiety and stress (DASS 21).

Results: Among the organisational psychosocial factors, the most problematic were changes in the workplace, work tasks and work organisation without seeking the opinion of employees, lack of adequate additional training in an epidemic situation and uncertainty in the anti-epidemic measures applied. 70% of the respondents answered that they did not have enough experience with the treatment of infectious patients, and over 40% felt anxious about the health of patients, their own health and that of their relatives. Logistic regression showed that these factors significantly increased the risk of anxiety. Regarding relationships, the most problematic factors were the inability to participate in work team decision-making and the lack of recognition and reward for a job well done. The latter significantly increases the risk of depressive symptoms. The risk of stress symptoms increased due to excessive workload and anxiety about patients' lives.

Conclusion: The results indicated the need for adequate training and psychological support for healthcare workers during a pandemic.

Keywords: psychosocial risks, health care workers, pandemic

SEASONALITY OF SUICIDE IN BULGARIA FOR THE YEARS 1929-1945 AND 2009-2023

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Introduction. Seasonal variations in suicide have been the subject of scientific research since the late 19th century. Morselli was the first to identify this seasonal component of suicide. He attributed it to the direct influence of climatic variables, especially temperature, on the brain circuits. To date, there has been a huge volume of publications on the subject, making it almost impossible to cite properly. In this country, there is little research on the seasonality of suicide. The first comprehensive study of suicide in Bulgaria was carried out by Iliya Yanulov – a sociologist, who concluded that there was an increase in the number of suicides in spring and summer, which he attributed to higher temperatures and more intense social life.

Objective. Representation of the seasonality of suicidal acts over long periods in Bulgaria.

Material and methods. Data were used for the two periods 1929-1945 and 2009-2023, using equivalent statistical methods for comparison.

Results. There is an increase in the number of suicide attempts in the spring and summer months, with the lowest number being recorded in December.

Conclusion. There is a need for further research on the phenomenon of seasonality in Bulgaria to support the development of effective prevention strategies.

Keywords: suicides, seasonal variation, seasonal indices

IMPAIRMENT OF COGNITIVE FUNCTIONS IN SCHIZOPHRENIA

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Introduction. Cognitive deficit is a major and persistent feature of schizophrenia and significantly determines social functioning.

Objective. To identify the specific characteristics of cognitive dysfunctions in paranoid schizophrenia based on a neuropsychological battery.

Materials and Methods. We examined 108 patients (66 men and 42 women) diagnosed with paranoid schizophrenia (PS), treated in the First Psychiatric Clinic of Dr. Georgi Stranski University Hospital - Pleven during the period 2019-2020 after obtaining signed informed consent. The average age of the patients was 38.9 ± 10.0 years, with the onset of the disease at 24 years, a duration of 12.8 ± 8.2 years, and average symptom severity of 71.8 ± 5.1 on the PANSS (Positive and Negative Syndrome Scale). Cognitive functions were assessed using a neurocognitive battery. Data processing was performed using IBM SPSS v.24.

Results. Verbal memory showed moderate impairments in fixation (63.93%) but mild impairments in reproduction (73.77%) and retention (77.2%). Object visual memory was more affected than spatial memory ($t = -6.61$ $p = 0.001$) as measured by the BVRT (Benton Visual Retention Test), with more errors in the left visual field ($z = -3.144$; $p = 0.0002$). PS patients showed lower semantic (28.59) and literal fluency (18.05); a slowdown in psychomotor speed measured by the Trail Making Test (TMT)-A (47.87 sec) and TMT-B (110.4 sec with an average of 4 errors) and impaired focused attention (33.92 ± 11.34) measured by the DSST (Digit Symbol Substitution Test).

Discussion. PS patients showed specific impairments in all studied cognitive domains.

Conclusion. Cognitive impairments are a core feature of schizophrenia.

Keywords: schizophrenia, neurocognition, impairment, memory.

CHILDREN'S MENTAL HEALTH – FAMILY CARE AND RESPONSIBILITY

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Introduction. Mental health is a major component of an individual's health status. It requires targeted and serious care from the earliest childhood. This period is crucial for the development of numerous mental processes and functions, as the psyche of the child is particularly vulnerable and easily wounded.

The goal set by the authors was to study the challenges and the factors related to children's mental health, emphasizing the role of the family in its development and maintenance. **Materials and Methods.** An anonymous sociological survey was prepared, translated and conducted among 200 randomly selected respondents, parents of children aged 2 to 7 attending daycare centres in Sofia.

Results and Discussion. The majority of parents realize the importance of their active participation in the emotional lives of their children and apply listening and support approaches. It is necessary to improve parents' awareness of avoiding negative events and applying adequate educational methods to maintain a good psycho-emotional condition for the child. Despite the efforts of parents, health professionals and educators, children continue to face multiple challenges that negatively affect their mental health.

Conclusion. To a significant extent, the mental state of children is a product of the conditions of the environment in which we live and the way of life, with the greatest influence being exerted by the family environment and upbringing. A good psychological climate in the family provides the child with peace of mind, builds positive thinking, self-confidence, trust in parents and a positive emotional tone.

Keywords: mental health, children, health care, family

THE LONG-TERM MOTIVATION OF INDIVIDUAL BEHAVIOUR IN HEALTHCARE WORKERS

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Introduction. The need-motivational block in people today is targeted too often, even among medical professionals. Still, long-term motivation is a field that, by studying it, allows for the explanation of some observed psychosocial phenomena. Relatively few studies in our country are devoted to the topic, and even fewer are focused on the object.

Target. To examine the long-term motivation of individual behaviour in healthcare workers

Methods and materials. The study was conducted in the period 2016-2024 among a total of 592 medical personnel from 10 hospitals in Bulgaria. A methodology validated for Bulgarian conditions was used. An SPSS program was used for data processing.

Results. A total of 297 (50%) individuals were found to have medium and 277 (46%) - high long-term motivation. Significant correlations were reported between the interesting changes to the present moment with the formulation of clear attractive goals ($r=.62, p=.000$), with the changes in individual development ($r=.64, p=.000$) and with the conviction that the future is interesting and exciting when it seems rich in promise ($r=.56, p=.000$).

Conclusion. Generalized long-term goal expectations act as a buffer between current work motivation and future success expectations. Pushing motivational attitudes to a future moment is seen as a compensatory mechanism for “staying here and now” in the current work goals.

Keywords: long-term motivation, individual behaviour, health workers

MANIFESTATIONS OF DEPRESSION AND ANXIETY DURING THE COVID-19 PANDEMIC

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Introduction. In addition to the serious physical health consequences, the COVID-19 pandemic led to a variety of adverse psychosocial effects. A growing body of scientific research has highlighted its detrimental impact on the mental health of millions worldwide. **Objective.** To explore both the subjective experiences and objective signs of depression and anxiety among the population during the COVID-19 pandemic.

Materials and methods. A sociological survey was conducted with students at the Medical Faculty of Trakia University in Stara Zagora. A standardized questionnaire was employed to gather data on sociodemographic characteristics and the presence of depression and anxiety symptoms. Additionally, a documentary review of literature on the pandemic's negative effects on mental health was conducted. Data were processed using the statistical software SPSS 22 for Windows.

Results. Depression and anxiety were among the most prevalent mental health issues during the pandemic. Key contributing factors included fear of infection and death, loss of loved ones, social isolation, risk of losing income, and misinformation about the virus.

Conclusion. The COVID-19 pandemic has significantly impacted the mental health of entire populations. A comprehensive understanding of the direct and indirect effects on affected groups is essential for developing effective prevention strategies for future pandemics.

Keywords: pandemic, COVID-19, mental health, depression, anxiety, psychosocial aspects

ON THE BENEFIT OF A BEHAVIORAL ALGORITHM IN GENERAL MEDICAL PRACTICE FOR PATIENTS WITH A DEPRESSIVE EPISODE

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Introduction. Depression is a disease characterized by high frequency and social significance. WHO places depression in the first place among diseases causing disability and loss of working capacity. Diagnosing it is a complex, difficult, and responsible process that must begin with the conditions of the General Medical Practice (GMP).

The **aim** of the present study was to identify ways in which the process of recognition and management of depressive disorders in Primary Health Care (PHC) can be optimized.

Materials and methods. Empirical sociological research was conducted through individual surveys among 300 general practitioners (GPs) from 8 regions of the country. The results were processed statistically with SPSS software products.

Results. In the course of the survey, it turned out that 99.3% of GPs did not use validated questionnaires to recognize depression. Regarding the reasons for this, 53.7% of GPs cited as the leading reason for the additional time for conducting them, and 7% expressed the opinion that the tests are difficult to perform. Lack of access to tests or ignorance of their existence are reasons for a very low frequency - between 2 and 3%.

Conclusion. A behavioural algorithm suitable for GMP conditions was developed, and it can be used by GPs in the process of recognizing and managing depressive disorders.

Keywords: primary health care, depressive episode

SLEEP DISORDERS AND FATIGUE IN MIDWIVES IN RELATION TO NIGHT SHIFT WORK AND LONG WORKING HOURS

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National Center of Public Health and Analyses

Introduction. Midwives often work night shifts and long working hours, which can contribute to sleep impairment and fatigue.

The **aim** of the study was to follow the effects of night work and long working hours on sleep and fatigue in hospital midwives.

Methods. A cross-sectional anonymous survey comprising 176 midwives of age 48.9 ± 13.1 years, including information on working hours and shift system, was carried out. The sleep quality was studied with the Karolinska Sleepiness Scale (KSS), and the sleep quality index (SQI) was calculated. Fatigue was assessed using a nine-question instrument and analyzed with SPSS.

Results. 73.9% of the midwives worked rotating shifts, mainly 12-hour shifts, and 75.9% had a history of night work. The quality of sleep was impaired with working >3 night shifts per month (SQI: $F=2.922$; $p=.036$) but was restored after quitting night shift work (SQI $F=7.181$; $p=.001$). The sleep was impaired in midwives working >61 hours per week. Fatigue levels increased with night work and long working hours and significantly correlated with overtime ($r^2=.19$; $p=.014$).

Conclusion. Sleep impairment and fatigue increases were found with an increase in the number of night shifts and working hours on a weekly basis, which raises health concerns for midwives.

Keywords: midwives, night shift work, long working hours, sleep, fatigue

KINESITHERAPY, REHABILITATION AND SPORTS

STUDY OF THE APPLICATION OF MIXED LEARNING IN PHYSICAL EDUCATION AND SPORTS IN HIGHER SCHOOLS - TOOLS, TRENDS, OPPORTUNITIES

Iskra Ilieva

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Blended learning finds wide application in the field of higher education worldwide. In the discipline of Physical Education and Sports, it is appropriate to keep the traditional forms of training and to combine them with digital forms, means and tools. In relation to their realization in teaching, they can be successfully used mostly in lecture courses, seminar exercises, self-study, coursework development and home fitness tracking to build lifelong learning habits.

The practical exercises are necessary to preserve the traditional form face-to-face due to the specificity of the teaching methodology in physical education and sports, the construction of knowledge, and correct motor skills and habits.

Keywords: blended learning, physical education, sports, digital tools, artificial intelligence

STUDY OF MUSCULOSKELETAL DYSFUNCTIONS AND PRINCIPLES FOR PHYSIOTHERAPY IN PROFESSIONAL MUSICIANS

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National Sports Academy "Vassil Levski"

Introduction. Work-related musculoskeletal disorders in musicians and their treatment are little studied in our country.

Purpose. The **aim** of the conducted survey was to establish musculoskeletal dysfunctions in professional musicians and, on the basis of literature and pathokinesiological analysis, to describe principles for their prevention and physiotherapy.

Material and methods. We did a questionnaire survey on work-related musculoskeletal disorders in 61 professional musicians. We analyzed the literature on the application of physiotherapy.

Results. The analysis of the data showed that most complaints of pain, stiffness and overwork in the spine and upper limbs were in pianists and guitarists. Based on pathokinesiological analysis and data from the literature, we described principles for physiotherapy in them. **Discussion** The work of professional musicians requires repetitive precise movements in a prolonged nonergonomic posture and creates prerequisites for musculoskeletal disorders. There are no studies on their prevalence and treatment. Worldwide, special attention is paid to the problem under consideration within "Musicians' Physiotherapy" (Lee et al. 2013).

Conclusion. Work-related musculoskeletal disorders in musicians should be prevented and require a specialized kinesitherapeutic approach.

Keywords: physiotherapy, musculoskeletal dysfunctions, musicians

CERVICAL IDIOPATHIC SCOLIOSIS IN ADOLESCENCE: A PHYSIOTHERAPY PROGRAM

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Introduction. Idiopathic scoliosis has different localizations in the compartments of the spine - cervical, thoracic, and lumbar. Most commonly, it involves a combination of two or three curvatures. Cervical scoliosis is mostly a secondary curvature, and it turns out to be the leading one as symptomatology.

The **aim** of the follow-up was to assess the effect of a physiotherapy program performed in adolescents with idiopathic scoliosis with cervical deviation. Effects on pain, cervical mobility and correction of shoulder asymmetry were monitored.

Materials and methods. Four children with idiopathic scoliosis with cervical deviation were followed. They had two spinal curvatures. The physiotherapy program included paraffin applications, TENS, ultrasound therapy and Schroth therapy. The following parameters were assessed: pain scores, cervical range of motion, and shoulder asymmetry. The physiotherapy program lasted 14 days, and patients performed the Schroth exercises at home for 3 months.

Results. All patients had a reduction in pain, an increase in cervical range of motion and a reduction in shoulder asymmetry. No side effects from the physiotherapy treatments were reported.

Conclusion. There was a short-term improvement in the objective parameters of the treated patients. The physiotherapy programme used was effective, well tolerated and easily applied in children. The results of the third month showed good compliance with the recommendations for performing the Schroth exercises.

Keywords: adolescent idiopathic scoliosis, Schroth therapy, physiotherapy, neck pain

REHABILITATION APPROACH IN PATIENTS AFTER ELBOW ARTHROPLASTY

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Introduction. Total elbow replacement surgery is characterized by many features which should be studied and analyzed in detail. This requires the adaptation and improvement of the rehabilitation approach in response to the progressive trends in the surgical field.

Purpose of the scientific report. The purpose of this study is to explore the anatomic-functional features of the elbow complex and clinical health behaviour, including total arthroplasty of the joint partners in many pathological factors, not subject to another type of treatment and comprehensive rehabilitation in the postoperative period.

Rehabilitation approach. The goal of rehabilitation after total elbow replacement surgery is to achieve a full and painless range of motion in the elbow complex, good muscle control, and reduced risk of late postoperative complications. This target is acquirable only under strict principles of individual treatment approach based on knowledge of the specifics of the intervention and precise functional diagnostics to identify the extent and nature of existing dysfunctions.

Conclusion. Total elbow arthroplasty is a topical issue from both a scientific and a practical perspective. The construction of an individual rehabilitation approach, tailored to the specifics of the surgical intervention, as well as the indications and contraindications for the application of individual remedies, is a mandatory prerequisite for a quick and effective functional recovery.

Keywords: total elbow arthroplasty, rehabilitation, functional restoration

APPLICATION OF VIRTUAL REALITY AS A TREATMENT METHOD FOR OBSTETRIC TRAUMA OF THE BRACHIAL PLEXUS

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Introduction. Birth trauma occurs when the brachial plexus is damaged during childbirth. It leads to disturbances in the movements and skin sensibility of the upper limb. The incidence of trauma is 2-6% of all newborns and is the most common birth injury (50-60%).

Objective. Analysis and comparison of the effect of virtual reality application compared to other methods for rehabilitation in obstetric trauma of the brachial plexus.

Material and methodology: On the basis of a literature review, different methods of rehabilitation for children with birth trauma of the brachial plexus were examined and compared.

Results. The studies we reviewed showed that virtual reality-based mirror therapy produced a statistically significant improvement in the performance of bimanual activities related to grasping ability and improved quality of life. Compared to conventional therapy, it gives a significant difference in favour of the one with added virtual reality.

Conclusion. The effect of the application of virtual reality is confirmed in the studies that were conducted. Since it is a relatively new methodology, it is necessary to apply it to a larger sample of the population. However, the scientific literature supports the use of VR technologies for rehabilitation as it provides several advantages, such as increasing patient motivation, providing direct feedback, and focusing the patient's attention during therapy.

Keywords: birth trauma, brachial plexus, virtual reality.

ALTERNATIVE REHABILITATION PROGRAMME FOR PATIENTS WITH RAYNAUD'S DISEASE (MORBUS RAYNAUD)

Tanya Megova, Emine Lyotinova

Medical University – Pleven

Introduction. Raynaud's disease is a functional disorder of the autonomic innervation of the small arteries and arterioles, most likely in the upper limb, and it occurs especially in younger women.

Aim: to present an alternative rehabilitation programme for patients with Raynaud's disease.

Physical techniques and methods used. The alternative rehabilitation programme is used when the patient is in a period of remission. The programme includes the aim, purpose, and tools for rehabilitation.

Results. The rehabilitation programme reduces pain and helps patients improve their daily activities and maintain the volume of movements in the upper limb joints.

Discussion. We apply relaxation exercises (to reduce the pressure and pain), isometric exercises, finger and wrist exercises for patients and doing housework.

Conclusion. This alternative programme is based on the general principles of physiotherapy. Physical exercises are the main tool to prevent any complications and to improve the quality of life of patients with Raynaud's disease.

Keywords: Raynaud's disease, rehabilitation, physiotherapy, physical exercise

PHYSIOTHERAPY FOR ENDOMETRIOSIS OF RECTUS ABDOMINIS MUSCLE IN THE EARLY POSTOPERATIVE PERIOD (CASE REPORT)

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Introduction. Endometriosis is a common gynaecological disease. Sometimes, endometrial tissue can be found on the abdominal wall, and the cells can attach to a surgical incision, such as a cesarean section. In such cases, abdominal surgery is planned for its removal.

The **aim** of the study was to follow the effect of early postoperative physiotherapy on recovery in a 34-year-old female patient with endometriosis of the rectus abdominis muscle as a result of a C-section scar.

Research methods. On the first and 5th postoperative day, we applied a Quality of Recovery-40 (QoR- 15) questionnaire, Cumulated Ambulation Score (CAS), Hospital Anxiety and Depression Scale (HADS) and a 6 min walk-test (6MWT). Physiotherapy is applied to improve respiratory function, alleviate the unpleasant sensations of the gastrointestinal tract, reduce pain, and restore mobility.

Results. The results showed a good quality of recovery related to the patient's independence in standing, sitting and walking. The patient is in good functional status, reduced postoperative pain, good performance on the 6-minute walk test, and has no anxiety and depression.

Conclusion. The physiotherapy program in a patient with endometriosis of the rectus abdominis muscle prevented early postoperative complications. Administration of early physiotherapy is an important part of postoperative patient care and promotes optimal recovery.

Keywords: endometriosis, physiotherapy, abdominal surgery, rectus abdominis muscle

FUNCTIONAL RECOVERY OF PATIENTS WITH ENDOPROSTHETIC HIP JOINT

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Background. Hip arthroplasty is a highly effective intervention in patients with advanced coxarthrosis and after femoral neck fracture, leading to a reduction in pain and stabilization of gait and preventing disability. Rehabilitation of endoprosthetic patients is a mandatory part of their treatment and functional recovery.

The **aim** of the present study was to report the functional recovery of patients with an endoprosthetic hip joint.

Methods. The study included 63 patients aged 60 to 75 years who sought physiotherapy and rehabilitation treatment at Dr G. Stranski University Hospital - Pleven after hip arthroplasty. A 10-point „Visual-Analog Pain Scale” and tests for functional assessment – „Self-care” and „Quality of life” in a five-point scale with initial and final results were conducted. The significance of results for inferences and conclusions was determined.

Conclusion: Rehabilitation of endoprosthetic patients is a mandatory part of their treatment and functional recovery.

Keywords: locomotion, quality of life, artificial joint, lower limb

SHOTOKAN KARATE-DO AT MEDICAL UNIVERSITY - PLEVEN - A COMFORTABLE ENVIRONMENT FOR SOCIAL INTERACTION AND MENTAL RELAXATION FOR STUDENTS

Milena Kirnirkolova

Medical University – Pleven

Introduction. Sport is an important social phenomenon. Its role in everyday life is to balance emotionality, create an environment for social contacts and improve the health of athletes. Shotokan karate-do has been studied at Medical University Pleven since 2018.

Objective. To analyze the opinion of Bulgarian and international medical students who participated in the training in “Shotokan karate - to” and self-defence courses regarding the importance of the acquired skills for the period of 2018-2024.

Methods. A survey was made among the students. A comparative analysis of the results from the two groups was made.

Result. All participants in the study were satisfied with their participation in training in the Shotokan karate-do technique. More than half (65%) believe that this training improves their social communication skills and leads to mental relief. One-third of the surveyed persons - 37.5% would continue to engage in sports even after completing their education. As significant effects of the training, the students indicate an improvement in vitality, emotional needs and social contacts.

Conclusion. Sports events that complement activity among young people are one of the driving factors for improving the environment of communication between sports students, as well as their health and well-being.

Keywords: sports, communication, students, satisfaction, self-defense

ROMAN GODS RELATED TO MEDICINE

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Roman medicine was developed in parallel with Greek medicine, and they have been in deep interaction through the centuries. From a historical point of view, the Greek and Roman cultures are connected in geographical and intellectual aspects. The ideas of the Mediterranean region easily reached the Italic peninsula. The scientific achievements of the Greeks were recognised similarly in Roman culture. The medical sphere was not an exception. Medicine in the Roman world has an independent history after it was adopted in the local context. Roman medics and followers of the art of medicine built a significant corpus of knowledge, symbols, and medical practice. The personifications of Roman virtues and intensive powers related to medical art took part in the Roman pantheon, where the persons of gods were responsible for different sides of medical science. Deities had a protective and instrumental role in professional medical knowledge. This text aims to clarify this level of cultural context for medical deities and participation in human health and experience. The names of medical gods, as well as their functions and occupations, are parts of the present research.

Keywords: Roman gods, medical terminology, Latin, names

THE ADVERTISING TEXT OF MEDICINAL PRODUCTS IN THE MODERN INFORMATION ENVIRONMENT

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Pharmaceutical companies employ a variety of modern information approaches to attract customers and contribute to the formation of a health consumer culture. Advertising text is one of the main and most effective ways to attract consumer attention.

This study aims to analyse the advertising text of medicines by focusing on its linguistic features.

This study examines the print advertisements of medicinal products (brochures, magazines, newspapers), websites, audio and video presentations on television, etc., grouped according to their target audience. The research methods used are: descriptive method, semantic and linguocultural analysis of the material, comparative method, frequency-statistical characteristics, etc.

Advertising text influences not only the formation of human needs but also the linguistic space. The link between the informational and pragmatic aspects of drug advertising contributes to the perceived integrity of the advertising text and enhances its impact on the consumer.

The analysis of the employment of the model to describe and systematise the lexical, morphological and linguocultural features of advertising text shows that national-cultural factors have a significant impact on their content. The linguistic features of advertising texts supported by visual effects play a key role in influencing people.

The study reports the results by identifying the national-specific and universal linguistic features of the advertising text of medicinal products.

Keywords: advertising text, medicinal products, health culture, linguoculturology.

FACTORS AFFECTING WORK-LIFE BALANCE

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Introduction. In our daily lives, every worker faces the challenge of balancing the demands of work with other aspects of his life.

Aim. To determine the factors that influence work-life balance.

Materials and methods: This literary review of available literature sources examines the regulation of working hours in the European Union member states and the balance between professional and personal life for men and women.

Results. The challenges of achieving a good work-life balance vary across individuals and circumstances and are related to changing demands in and outside the workplace.

Discussion. Each stage of our lives has different priorities. Children will require more time at certain stages than others, and caring for parents or elderly relatives tends to occur later in life.

Conclusion. Maintaining work-life balance is a responsibility, both at an organizational level and personal level. According to the recommendations of the European Union, various changes in the legislation are coming in Bulgaria, mainly concerning socio-economic issues.

Keywords: professional and personal life, flexible working hours

THE PATH OF BLOOD

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For decades, one of the vital steps in the treatment of many people is blood transfusion since blood is irreplaceable and has no analogue. This fact is well known but perhaps not sufficiently realized by society.

The aim of this report is the promotion of blood donation as there is a crisis at a national level, and the reality proves that every drop of blood counts when human lives are to be saved.

To achieve the goal mentioned above, data on the blood donation activity in the last ten years, as well as factual data and interviews, were used, i.e., methods of empirical scientific research.

As a result of deduction, it is established that the crisis, as mentioned earlier, is a frequently discussed problem but far more large-scale and grave than presented. The motivation of donors is not sufficiently stimulated, and the quality of life of those in need of blood transfusions is unnecessarily lowered. If specific words could be used to describe the crisis, they would be: “We need blood! Help!”

From Donor to Recipient, from Blood Collection through Processing, through research, through Quality Control, to the patient’s bedside, to improving the quality of life. Drop by drop - this is the Path of Blood.

Keywords: blood donation, blood donation promotion, blood transfusion, public health, transfusion haematology

STUDENTS SESSION

THE IMPORTANCE OF VITAMIN D FOR THE PREVENTION AND IMPROVEMENT OF PUBLIC HEALTH

Vanya Ivanova, Yoana Parvanova, Milena Saleva

Medical University – Pleven

Introduction. Vitamin D deficiency diseases are a global public health problem. Recent international studies have demonstrated the relationship between vitamin D levels and various socially significant diseases such as diabetes and cancer. Vitamin deficiency is among the factors that contribute to the development of osteopenia, osteoporosis, and fractures in adults. It is associated with an increased risk of common cancers, autoimmune diseases, hypertension and infectious diseases.

Objective. We investigated the relationship between vitamin D levels in adults and the factors of sex, age and seasonality by comparative analysis of laboratory results.

Material and methods. Vitamin D values were analyzed from laboratory results of adults tested in the Clinical Laboratory at Heart and Brain Medical Center - Pleven for one year.

Results and discussion. Seasonal dependence of vitamin D levels was observed. Increased attention to low values, promotion of regular preventive examinations and prevention is needed. International recommendations are for a global health intervention that includes vitamin D supplementation in certain risk groups and systematic dietary fortification to avoid severe vitamin D deficiency and associated health risks. Raising awareness of the importance of vitamin D in the community is a key factor in protecting public health.

Keywords: vitamin D, seasonal dependence, deficiency, public health

A CASE REPORT OF THE MODERN CONVERSION DISORDER

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Medical University – Pleven

Introduction. Conversion disorders are a more common occurrence in our contemporaneity and pose a serious diagnostic challenge. Considering their mainly atypical presentation and the growing co-morbidity of the population, in addition to their fast-paced and stressful everyday lives, they are often overlooked.

Aims. To present one interesting in a differential-diagnostic sense but still a demonstrative case of the modern presentation of conversion disorders.

Materials and Methods. The used materials and methods were medical documentation, which the patient herself provided, dating back to the end of 2022 and indicating the duration and development of the clinical presentation for more than two years; a few interviews, a psychological examination of the personality, cognition and intellect.

Results. The patient was admitted to the General Psychiatry ward at First Psychiatric Clinic in Dr Georgi Stranski University Hospital- Pleven for diagnostic and therapeutic clarification. During her stay, the patient presented clinical symptoms, which made us consider a differential diagnostic direction regarding the presentation of epileptiform symptoms with negative EEG examinations and Maige's syndrome.

Conclusion. The atypical presentation of conversion disorders, in addition to different somatic manifestations, can be a real diagnostic and therapeutic challenge to specialists in various areas of medicine.

Keywords: conversion disorder, Maige's syndrome, facial paralysis

NURSING – A STABLE BUILDING UNIT IN THE BASICS OF PUBLIC HEALTH

Desislava Kalenska

Mir Nursery , Pleven

The infrastructure of nurseries in Bulgaria, in which medical and other specialists take care, protection and strengthening of health, education and training of children up to 3 years of age, is a challenge for a number of European countries. In accordance with the regulatory framework, the provision of health services in nurseries is a multifaceted activity that guarantees the proper physical and mental development of children according with the WHO strategies.

Aim. By popularizing good practices, to maintain the leading role of medical specialists in the nursery with long-standing, proven traditions in the field of health care for early child development.

Material and methods. The specific features of daily activities such as regime, morning filter, organized activities, health-preventive projects and habit formation performed by the medical specialists in a nursery are presented.

Discussion. The core competencies acquired in a medical university cover the necessary knowledge and skills needed to provide comprehensive, highly qualified health care which can be continuously enriched, structured and financed. In line with the WHO strategies for better health, the enormous contribution that nursery health care professionals have to the prevention and promotion of health among families and children should be taken into account.

Keywords: nurseries, nurses, midwives, good practices

A MINIMALLY INVASIVE METHOD FOR THE TREATMENT OF INTERNAL HEMORRHOIDS - NURSING CARE

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Boyana Veleva**

Medical University – Pleven

Hemorrhoidal disease is associated with increased pressure and dilation of the hemorrhoidal vascular plexuses, affecting people of active age. Treatment is conservative or operative. The minimally invasive transanal hemorrhoidal dearterialization (THD) method is increasingly used to treat internal haemorrhoids.

Objective. To present the minimally invasive method of treating haemorrhoids THD and the role of health care professionals.

Material and methods. A nursing care protocol designed based on our experience in applying an innovative method for the treatment of internal haemorrhoids and the participation of health care professionals are presented.

Results and discussion. THD is an effective minimally invasive method because of the higher safety for the patient and fewer postoperative complications. Out of a total of 7 patients with internal haemorrhoids treated for one year, 6 underwent THD. A Nursing Care Protocol was prepared. Specific and general care was provided. Postoperative anaesthesia was required in only one patient.

Conclusion. Patients treated with THD experience mild discomfort. The recovery period is short. Healthcare professionals are part of the multidisciplinary team and take part in every treatment stage. The goals set for nurses are getting higher and higher in realising the common mission of access to modern technologies and the maximum benefit for the patient.

Keywords: health care, THD, innovative method, haemorrhoids

PREJUDICE FROM THE PERSPECTIVE OF BIOETHICS

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As a theoretical review of the relationship between prejudice, medicine, and bioethics, this report examines the importance of unintentional and intentional bias in healthcare professionals-patient interactions and how these forms of bias can create ethical problems and other complications in the work of medical staff.

The aim of the report was to draw attention to the importance of a seemingly insignificant and theoretical problem that, in fact, affects the entire field of health care and bioethical decision-making by examining the importance of issues related to unintentional and intentional biases in the fields mentioned above and their impact.

Material and methods. A literature review and philosophical reflection were used.

Results and discussion. The presence of prejudice of any type proves to be an obstacle for health professionals to master their profession following the various codes of professional ethics. Therefore, overcoming prejudice and consciously avoiding biased thinking becomes a priority.

In conclusion, a possible solution is an individual approach to patients tailored to their cultural, social or medical needs and conditions. Such an approach would increase the ability of health professionals to gain the trust of their patients better and to be able to give adequate assessments more easily in critical situations.

Keywords: bioethics, implicit biases, overcoming prejudice, prejudice, prejudice in medicine

THE ERASMUS+ PROGRAM AS A MOBILITY OPPORTUNITY FOR STUDENTS TRAINING IN THE MANAGEMENT OF HEALTHCARE

Silvia Lishkovska, Izbela Georgieva, Betül Ortaç, Makreta Draganova

Medical University – Pleven

Introduction. The Erasmus+ program provides a variety of exchange opportunities for students and trainees to study in different European countries. Bachelors in health care can participate in mobility within the speciality within one year of graduation. Newly graduated nurses begin work, and some continue training in healthcare management at the same time. Combining work, study and personal commitments hinders the use of exchange opportunities abroad.

The **aim** was to present a realized Erasmus+ mobility experience of a student majoring in healthcare management at Medical Park Bahçelievler Hospital in Turkey.

Material and methods. The personal experience of a nurse who participated in the “Erasmus+” program in clinical practice for two months in a chosen speciality is presented.

Results and discussion. The clinical practice took place in a medical oncology department. The process of indoctrination for induction and adaptation of both trainees and new recruits was implemented in practice. Nursing documentation included standardized forms for assessing the condition of patients, planned activities, and reporting individual health care. Informational materials prepared by the staff were developed for the patients. Relatives of the patients actively participated in the treatment process and were given special attention and care.

Keywords: Erasmus+, students, nurses, healthcare management

THE ROLE OF A PHARMACIST ASSISTANT IN THE HOLISTIC APPROACH TO PATIENTS WITH DIABETES MELLITUS

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The International Diabetes Federation reports that the relative share of diabetes mellitus is 8.3% and will exceed 10% by 2035. A number of unrecognized cases, delays in treatment and development of complications are characteristic. The responsibility for control of the disease is entirely in the hands of the patients, and the role of general practitioners is limited to prescribing drugs and responding to already-developed complications. The **aim** of the study was to analyze the role of pharmacist assistants in the holistic approach for patients with diabetes for better control in the community.

Material and methods. A direct individual survey was conducted in an electronic environment with people with diabetes regarding the role of assistant pharmacists in the control of the disease.

Results and discussion. Respondents knew the symptoms associated with deviations from normal values, but few of them used different approaches to control the condition. The results were negative regarding the foods the respondents indicated as related to diabetes control. The active participation of patients is necessary for the disease control. A pharmacist assistant's role in communicating with patients during their pharmacy visits and a benevolent attitude would predispose patients to share difficulties in managing the condition.

Keywords: diabetes mellitus, pharmaceutical care, control, holistic approach

PUBLIC RISK ASSESSMENT AGAINST THE BACKGROUND OF MANDATORY IMMUNIZATIONS IN BULGARIA AND UKRAINE

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Medical University – Pleven

Introduction. About 50,000 Ukrainian citizens, mostly women and children, reside in Bulgaria with the status of temporary protection. All of them are provided with medical services, including immunizations.

Objective. to compare the National immunization calendars of the Republic of Bulgaria and the Republic of Ukraine.

Materials and methods. A documentary method was applied, and official databases from both countries were used.

Results. Mandatory immunizations in the Republic of Bulgaria are similar to the immunizations that are applied in the Republic of Ukraine. However, there are several key differences. In Bulgaria, vaccines are administered against 11 acute infectious diseases of importance for personal and public health. These are tuberculosis, diphtheria, tetanus, whooping cough, poliomyelitis, hepatitis type B, Haemophilus influenzae type B, pneumococci, measles, mumps and rubella. In Ukraine, immunization against pneumococci is not administered, live and killed polio vaccine is administered, and fewer doses of pertussis vaccine are administered; tetanus, diphtheria, Haemophilus influenzae.

Conclusion. Refugees from Ukraine do not pose a high risk of spreading vaccine-preventable diseases due to the similarity in the immunization schedules of the two calendars. Differences can be compensated by preparing an individual immunization plan for each person to reduce public risk.

Keywords: refugees, Ukraine, immunizations

SPECIALTY IN MANAGEMENT OF HEALTH CARE -AN OPPORTUNITY FOR CAREER DEVELOPMENT FOR ASSISTANT PHARMACISTS

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Medical University – Pleven

Introduction. Training in the speciality of management of health care in the bachelor's degree was introduced in the Faculty of Public Health at the Medical University of Pleven in 2004. Training for assistant pharmacists was started at the Medical College in 2009. For the period 2017-2024, there were only four assistant pharmacists who graduated in management of health care.

The aim of the present study was to analyze the awareness among working assistant pharmacists regarding the development opportunities provided by the bachelor program in the management of health care.

Material and methods. A Google Forms survey was conducted among working pharmacist assistants. An e-brochure was made, providing up-to-date information and broadening the knowledge about the opportunities for professional development.

Results and Discussion. Most of the respondents knew that they could continue their education in a bachelor's program. Less than half were aware of the opportunities the program provides. The answers are inconclusive about their idea of a career other than a pharmacist assistant in a pharmacy.

Conclusion. The provision of an e-brochure for the speciality of management of health care among assistant pharmacists will increase their awareness of opportunities for individual personal development, future realization in an academic environment and the role of future managers.

Keywords: assistant pharmacist, management of health care, professional development

WORKSHOPS

HUMAN RESOURCE MANAGEMENT - A CHALLENGE FOR HEALTH CARE MANAGERS (WORKSHOP)

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Medical University – Pleven

Management of human resources in modern health care is one of the big challenges facing the managers of medical institutions in recent years, not only in our country but also worldwide. The motto of the International Council of Nurses (ICN) for May 12, 2024, International Nurses Day, was “OUR NURSES, OUR FUTURE - The economic power of care”.

The purpose of this workshop is to analyze the reasons for staff turnover according to current healthcare professionals.

A content analysis of the coursework of 31 masters who graduated in the Health Care Management speciality, developed during a pre-graduate internship in the academic years 2021/2022 and 2022/2023, was made. Healthcare managers will present real human resources management problems. The good practices will be shared through.

Toxic relationships among organizational members are a major factor that forces healthcare professionals to change their workplace, according to 81.0%. Secondly, the surveyed persons indicated the financial remuneration (63.0%). “Lack of interest on the part of direct managers” is one of the leading reasons for looking for another implementation. The deepening shortage of healthcare professionals necessitates permanent inquiry by leaders at all levels into the causes of attrition in any organization.

Keywords: human resource management, organizational relationships, healthcare

THE CLIMATE FRESK: CAUSES, CONSEQUENCES AND POSSIBLE SOLUTIONS TO THE GLOBAL CLIMATE CRISIS

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Medical University - Pleven

Introduction

Climate change is a global process. The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body that assesses the science related to climate change. Globally, air pollution is the leading environmental risk factor for public health and is associated with significant health, economic and social costs.

Aim

The aim of the workshop is to provide MU-Pleven students with an insight into the scientific basis of the global climate change process and its effects through the application of the “Climate Fresk” workshop.

Material and methods

The workshop is entirely based on the IPCC scientific reports, group work and collective intelligence. The „Climate Fresk“ consists of several stages: arranging 5 groups of illustrated maps, sharing emotions related to the facts learned; a short presentation of scientific facts, and discussing solutions. Students will be divided into 3-4 groups of 6-8 participants from different specialties. Each group will work under the guidance of a facilitator from the “Our Planet, Our Climate” campaign. Within 3 hours, students will learn the essentials about climate change.

Results

The method offers a scientific and accessible way for students to learn and understand how individual actions lead to processes and consequences in the environment. Their participation will improve their group work skills and collective intelligence. Through a two-way exchange of ideas and knowledge, they will piece together all the cause-and-effect relationships regarding climate change.

Conclusion

The high effectiveness of „Climate Fresk“ results in the transfer of a vast amount of knowledge, motivating participants to take action to limit the negative impact on climate change.

Keywords: public health, climate change, „Climate Fresk“

Jubilee Scientific Conference with International Participation

VIII NATIONAL STUDENT SESSION ON HEALTH CARE



Content

- 364 DETERMINING THE LEVEL OF ANXIETY AMONG PEOPLE CARING FOR SEVERELY ILL FAMILY MEMBERS LONG-TERM
Gergana Markova, Evgenia Dimitrova, Miglena Ilieva, Rumyana Dinolova, Tsvetina Petkova
- 365 DEVELOPMENT OF HEALTH CARE FOR PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE – A HISTORICAL REVIEW
Tsvetina Petkova, Evgenia Dimitrova
- 366 CARING FOR A FAMILY MEMBER WITH DEMENTIA – CHALLENGES AND CHOICES
Gergana Markova, Aneliya Chifligarska, Megan Pavlova, Tanya Badeva
- 367 PAST AND PRESENT ON THE SCOPE AND CARE OF PEOPLE WITH DISABILITIES IN BULGARIA THROUGH THE EYES OF NURSING STUDENTS
Silvia Tsvetkova, Stela Dyulgerova, Radoslava Georgieva, Tereza Pavlova, Saliha Dzhemalova
- 368 PERIODONTITIS AS SOCIALLY SIGNIFICANT DISEASE INFLUENCED BY STRESS AND SMOKING
Dimitar Dimitrov, Velitchka Dosseva-Panova, Plamen Georgiev, Antoaneta Mlachkova
- 369 FOLLOW-UP OF A CLINICAL CASE FROM THE AUTISTIC SPECTRUM
Silvia Tsvetkova, Stela Dyulgerova, Radoslava Georgieva
- 370 INNOVATIVE APPROACHES AND OPPORTUNITIES FOR EFFECTIVE DIABETES MANAGEMENT
Milena Nankova, Diana Grozdeva
- 371 PALLIATIVE CARE IN CHILDHOOD. CLINICAL CASE OF A PATIENT WITH OCCIPITAL ENCEPHALOCELE
Fanya Kyuchun
- 360

- 372 EXPANDING PATIENT SUPPORT OPPORTUNITIES BY INTRODUCING PET THERAPY INTO ONCOLOGY AND PALLIATIVE CARE
Stanislava Atanasova, Mariana Nikolova, Milena Nankova
- 373 IMPORTANCE OF A HEALTHY LIFESTYLE BEFORE PREGNANCY - OPINION OF FIRST-YEAR NURSING AND MIDWIFERY STUDENTS
Antonia Vitanova, Petya Dilova, Evgenia Dimitrova, Tsvetina Petkova
- 374 PREVENTION OF CERVICAL CANCER – STUDENT AWARENESS
Betina Shibileva, Aleksandrina Vladova, Tonka Popova
- 375 SATISFACTION WITH THE TRAINING IN “PATRONAGE MIDWIFERY CARE”
Petya Dilova
- 376 TEMPERING – KEY IN FIGHTING ACUTE RESPIRATORY INFECTIONS IN CHILDHOOD
Christina Ivanova, Evgenia Dimitrova, Tsvetina Petkova
- 377 PREDISPOSING FACTORS IN THE POPULATION FOR THE DEVELOPMENT OF INSULIN RESISTANCE
Myuge Zekerieva, Katya Eguruze
- 378 AWARENESS OF DISADVANTAGED CHILDREN AND ADOLESCENTS ABOUT HIV
Darina Koleva, Velislava Kanchovska, Alexandra Alexandrova
- 379 FAMILY PLANNING STRATEGIES DURING TRAINING
Didem Myumyun, Selina Arsenieva, Sinem Ahmedova
- 380 CLINICAL CASE OF A PATIENT WITH SEVERE PREECLAMPSIA
Dafinka Toleva, Natashka Andreeva, Tonka Popova

- 381 ELECTIVE ABORTION – RISKS AND COMPLICATIONS.
THE ROLE OF THE MIDWIFE IN FAMILY PLANNING (CASE
STUDY)
Aleksandrina Vladova, Betina Shibileva, Natashka Andreeva, Tonka
Popova
- 382 A MODERN VIEW OF THE MIDWIFE’S ROLE IN COLPOSCOPY
AS PART OF SECONDARY PREVENTION
Gabriela Kraycheva, Elitsa Petkova, Nadezhda Hinkova
- 383 CEPHALOCELE: DIAGNOSIS AND MANAGEMENT
Valeria Ivanova
- 384 PREFERRED METHOD OF CHILDBIRTH AMONG PREGNANT
WOMEN
Figen Hasanova, Tesdjan Said, Gyurseren Ismedova
- 385 BRAIN ANEURYSM MANAGEMENT AND NURSING CARE–A
CLINICAL CASE REPORT
Petra Petrova, Anelia Simeonova, Kremena Georgieva
- 386 SPECIAL NURSING CARE OF PATIENT WITH CEREBRAL
INFARCTION CAUSED BY THROMBOSIS OF CEREBRAL
ARTERIES - A CLINICAL CASE REPORT
Natalia P. Tsvetanova, Anelia Simeonova, Meglena Balaburova,
Natalia N. Tsvetanova
- 387 NURSING CARE FOR A PATIENT WITH PLEURAL EFFUSION
Ralica Dimitrova, Polyana Gergova, Margarita Angelova
- 388 APPLICATION OF NURSING PROCESS IN PATIENT WITH
FOURNIER’S GANGRENE CARE
Evgenya Taneva, Polyana Gergova, Margarita Angelova,
Meglena Balaburova
- 389 LAPAROSCOPIC CHOLECYSTECTOMY - NURSE
PREPARATION AND PARTICIPATION
Veronika Efremova, Dimitrina Milikina

- 390 NURSING CARE PLANNING FOR CHRONICALLY ILL PATIENTS USING RATING SCALES
Meglana Balaburova, Anelia Simeonova, Zhenya Simeonova, Petya Valeva, Izabela Stoyanova, Emily Peneva
- 391 SPECIAL NURSING CARE FOR THE PATIENT WITH BLADDER CARCINOMA - ASSESSMENT AND DOCUMENTATION OF NURSING CARE
Simona Bogdanova, Meglena Balaburova, Anelia Simeonova, Polyana Gergova, Victoria Nikolova, Nezabravka Al – Shargabi, Isabella Stoyanova
- 392 SPECIAL NURSING CARE FOR THE PATIENT WITH URINARY RETENTION - ASSESSMENT AND DOCUMENTATION
Victoria Nikolova, Meglena Balaburova, Anelia Simeonova, Simona Bogdanova, Nezabravka Al-Shargabi, Ivona Stefanova
- 393 A COMPARATIVE ANALYSIS BETWEEN SCORES OF NURSING CARE PLANNING RATING SCALES
Anelia Simeonova, Meglena Balaburova, Zhenya Simeonova, Zhenya Kostadinova

DETERMINING THE LEVEL OF ANXIETY AMONG PEOPLE CARING FOR SEVERELY ILL FAMILY MEMBERS LONG-TERM

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Introduction. According to statistics, 8% of the population of Bulgaria are people with permanent disabilities. Caring for disabled people puts carers in a difficult situation in terms of their social contacts and personal needs. The purpose of the study was to determine the level of anxiety in persons caring for seriously ill members of their family for a long time.

Material and Methods. Sociological methods: questionnaire method - an anonymous survey conducted with 28 long-term caregivers of family members; HADS self-assessment questionnaire for determining intense anxiety and depressive states; statistical methods to process the obtained data - MS Office Excel, SPSS Statistics Version 21.

Results. The survey was conducted in the period March 2-4, 2024, in Pleven. A very large part of the respondents had been taking care of their loved ones for more than 2 years (22; 78.6%), and 4 (14.3%) had to leave their jobs. It was found that 6 of the respondents had a low level of anxiety, 5 – a medium level, and 3 were identified with a high level of anxiety. In the rest of the respondents - 14 (50%) anxiety levels were normal -

Conclusion. In conclusion, it can be said that half of the participants in the study had signs of anxiety, and measures should be taken to improve their condition.

Keywords: anxiety level, caregivers, seriously ill

DEVELOPMENT OF HEALTH CARE FOR PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A HISTORICAL REVIEW

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Introduction. Chronic obstructive pulmonary disease (COPD) has been known to mankind for more than 200 years. It is a major global public health problem and can seriously affect patients' quality of life. According to the WHO, approximately 210 million people worldwide have COPD. If the trend of increasing prevalence continues, the disease will become the third leading cause of death in the world by 2030.

Objective. To retrospectively analyse the development of treatment methods and associated care in patients with COPD.

Materials and methods. Documentary method - a review and analysis of literary sources on the problem was made.

Results and Discussion. William Briscoe was the first person to use the term COPD in a discussion at the 9th Aspen Emphysema Conference in 1965. In 1846, John Hutchinson invented the spirometer, which proved to be the key to the diagnosis of COPD. The instrument Hutchinson invented measured only the vital capacity. In 1947, Tifeno and Pinelli added the concept of temporal vital capacity as a measure of airflow. Modern treatment and diagnosis of COPD include time-proven physical and diagnostic methods.

Conclusion. Methods of treatment and health care for patients with COPD have undergone revolutionary development to date and continue to improve.

Keywords: health care, COPD, historical review

CARING FOR A FAMILY MEMBER WITH DEMENTIA: CHALLENGES AND CHOICES

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Introduction. Dementia is a common and debilitating syndrome.

Approximately 50 million people worldwide live with dementia. According to a World Health Organization report, most dementia patients are cared for by their relatives, who are forced to cope on their own.

Aim. We aimed to identify the challenges and choices faced by the relatives of patients with dementia syndrome through the examination of a clinical case.

Material and Methods. The documentary method and face-to-face interviews were used.

Results. The case involves a 69-year-old woman diagnosed with limited brain atrophy, which has reduced her higher cortical functions. An interview with her daughter revealed that when her mother was diagnosed, no one from the medical team explained the nature of the disease or its prognosis. No guidelines were provided regarding the care needed for her mother, considering the possible manifestations of dementia symptoms. The young woman was forced to manage on her own.

Conclusion. The lack of professional information regarding the manifestations of dementia syndrome hinders adequate preparation and readiness of relatives to provide care. Along with the absence of professional support at home, the problem forces them to make decisions that prevent them from feeling calm or satisfied.

Keywords: dementia syndrome, clinical case, caring, family member with dementia

PAST AND PRESENT OF THE SCOPE OF CARE FOR PEOPLE WITH DISABILITIES IN BULGARIA THROUGH THE EYES OF NURSING STUDENTS

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Introduction. Public attitudes to people with disabilities have historically been influenced by folk psychology, expressing beliefs and prejudices leading to explanations of the onset of disability.

Aim. To analyse the opinion of nursing students at Medical University Pleven regarding the past and present scope of care for people with disabilities in Bulgaria.

Materials and Methods. A survey was carried out amongst 165 nursing students at Medical University Pleven. The survey took place in two phases: 2013-2016; 2023-2024. The method used was a sociological survey, using a questionnaire and adhering to the principles of voluntariness and anonymity.

Results. According to 59 (36%) students, people with disabilities received care from medical specialists only in specialised institutions in the past. There is a change in the attitude of society, registered with higher conviction among students for the second period of the survey – 64 (70%). Regarding the beliefs and prejudices in the past, 75 (45%) of the students indicated that disability is hereditary by nature, 60 (36%) - that parents hide the problem, and 57 (35%) stated that there is a fateful predetermination for the birth of a child with a disability in the family.

Conclusion. The results were used to broaden the theoretical knowledge of future nurses when interacting with such patients.

Keywords: persons with disabilities, students, awareness

PERIODONTITIS: A SOCIALLY SIGNIFICANT DISEASE INFLUENCED BY STRESS AND SMOKING

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Introduction. Psycho-emotional stress and smoking are considered potential risk factors leading to the progression of socially significant oral diseases such as periodontitis.

Aim. To investigate the levels of perceived stress and number of cigarettes smoked per day in patients with periodontitis.

Materials and methods. A self-reported stress assessment scale (PSS-10) survey was conducted among 104 patients with periodontitis.

Results. The patients in this study were divided into two groups according to the severity of periodontitis – mild and moderate periodontitis - stage I/II (n = 46) and severe periodontitis - stage III/IV (n = 58). The average value of perceived stress among the study participants is 16.38, with women's stress levels being higher than men's – 18.13 vs 14.61. Patients with severe periodontitis demonstrate statistically significant higher values of stress - 17.48, compared to those with mild/moderate periodontitis – 15.00 (p<0.05). Regarding smoking, 47.62 % of patients with severe periodontitis were found to smoke more than 10 cigarettes per day, compared to 27.59 % in the mild/moderate periodontitis group. The proportion of non-smokers was higher in mild/moderate periodontitis cases – 51.72 %, while in severe periodontitis cases, the percentage was 42.86 %.

Conclusion. Elucidating the influence of stress on the appearance and severity of periodontitis as two socially significant and widespread conditions would have a significant social effect in terms of public dental health.

Keywords: periodontitis, stress, smoking, public dental health

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FOLLOW-UP OF A CLINICAL CASE FROM THE AUTISTIC SPECTRUM

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Introduction. Early detection of autism spectrum disorders is hampered not only by the late identification of the disorder in our country but also by a number of medical, social and educational factors. Due to the complexity and heterogeneous nature of the cases, there is still no unified management by specialists in the different areas of competence.

Aim. To present the follow-up of a clinical case in a boy with autistic disorder.

Materials and methods. A child diagnosed with a generalised developmental disorder was followed up from 2017 to 2024. We used a documentary method, observation, analysis, anamnestic data, and diagnostic questionnaires.

Results. During the observation period, the child received the necessary specialised help and care, as was evident from the documents provided. The initial picture, illustrating a severe form of autistic disorder under the influence of systematic and complex interventions, marked a positive change in some aspects of the development. The focus of the specialists was on stimulating the potential and providing premises for acquiring habits of everyday life.

Conclusion

The follow-up of the case proved the practical validity of the principles for early diagnosis, complexity, consistency and systematicity, even in cases of Kaner syndrome. Unfortunately, upon identification, serious problems arose in efforts to provide the necessary conditions for continuous assisted care and therapy.

Keywords: autistic disorder, early diagnosis, specialised help and care

INNOVATIVE APPROACHES AND OPPORTUNITIES FOR EFFECTIVE DIABETES MANAGEMENT

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Introduction. Applications with artificial intelligence for effective diabetes management play a crucial role in optimising disease control and providing innovative tools and resources for users. These technologies analyse opportunities for maintaining a healthier lifestyle and assist patients in their health challenges.

Aim. To present retrospective data from patients with diabetes using compliance applications and to analyse the most frequently used applications with artificial intelligence.

Materials and Methods. Analysis of available medical literature, artificial intelligence applications and interviews with patients with diabetes.

Results and Conclusion. The analysed applications with artificial intelligence for diabetes management possess a diverse set of features that support patients in effectively managing their condition. For better disease control, patients prefer intuitive interfaces for data logging, personalised education and recommendations for a healthy lifestyle.

Keywords: diabetes, artificial intelligence

PALLIATIVE CARE IN CHILDHOOD: A CLINICAL CASE OF A PATIENT WITH OCCIPITAL ENCEPHALOCELE

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Introduction. Palliative care is aimed at providing optimal physical and psychological well-being to patients. They provide care for the impact of pain, not the ability to move, breathing difficulties and other physical and mental difficulties that can appear in the final stages of diseases. Along with this, palliative care also requires a lot of emotional support, both for patients and their families.

This care has the effect of reducing the impact of stress, anxiety and bereavement emotions. **Aim** of the study: To present the palliative care of patients with occipital encephalocele in SBAGAL Varna and DMSG Varna for February 2024 - March 2024.

Result and discussion: An important role and function of the medical facility is the provision of palliative care by competent, trained specialists and timely informing parents about the treatment, care and outcome of their child's illness.

Conclusion: Palliative care provides the physical and mental care of patients. An important part of the treatment is creating a suitable environment for the sick and the opportunity to live their full days while fighting their illness. In addition, palliative care supports families by working to help them adapt to the new reality.

Keywords: palliative care, occipital encephalocele, behaviour.

EXPANDING PATIENT SUPPORT OPPORTUNITIES BY INTRODUCING PET THERAPY INTO ONCOLOGY AND PALLIATIVE CARE

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Introduction. The therapeutic potential of animals was first recognised in the late 1800s when Florence Nightingale made seminal discoveries regarding animal-assisted therapy. In the early 1930s, Sigmund Freud began using his dog during his psychotherapy sessions. In the 1960s, child psychotherapist Boris Levinson discovered by chance that an upset, nonverbal 9-year-old boy began to talk when Levinson’s dog sat with them during psychotherapy sessions.

Objective. To analyse the possibility of introducing animal therapy in clinical oncology and palliative care.

Material and methods. Literature review and SWOT analysis of opportunities to introduce animal therapy in clinical oncology and palliative care.

Results and conclusion. The integration of zootherapy in clinical oncology and palliative care can significantly contribute to increasing the life quality of patients by providing them with additional support and comfort during the difficult moments of their treatment. Despite all the positives, it is important to keep in mind that animal therapy must be performed under the supervision of specially trained personnel to ensure the safety and well-being of patients.

Keywords: animal therapy, oncology, SWOT analysis

THE IMPORTANCE OF A HEALTHY LIFESTYLE BEFORE PREGNANCY: - OPINION OF FIRST-YEAR NURSING AND MIDWIFERY STUDENTS

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Abstract. The data of the State of Health in the EU for Bulgaria present a very high prevalence of health risk factors: smoking, unhealthy diet, alcohol use and low physical activity. Often, a healthy life begins only when the pregnancy is established and applies primarily to the woman.

The aim of the study was to determine the level of knowledge of first-year students regarding the importance of a healthy lifestyle before pregnancy.

Material and methods. Originally developed self-administered questionnaires were applied to first-year students in nursing and midwifery (N 78) at the Medical University – Pleven in the period March - April 2024, and 33 students responded to the survey. Data analysis was performed through Microsoft Office Excel 2010 and SPSS v. 21.

Results. All respondents expressed the opinion that a healthy diet is very important, with 17 (51.5%) eating only home-cooked food, but 14 (43%) of respondents were smokers. A large proportion of students - 26 (79%) knew that a healthy lifestyle before pregnancy is important for both women and men.

Conclusion. Students' knowledge is insufficient, which, in our opinion, indicates a need to increase their understanding of the problem under consideration, starting from early childhood.

Keywords: lifestyle, pregnancy, students

PREVENTION OF CERVICAL CANCER – STUDENT AWARENESS

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Introduction. High rates of morbidity and mortality from cervical cancer make the disease socially significant. Low levels of health education and motivation are associated with preventive activity, leading to late diagnoses and treatment.

The aim of the study was to determine the awareness of cervical cancer prevention of a group of students from MU-Pleven.

Materials and methods. Between April and May 2024, a sociological survey was conducted using a direct group questionnaire among 116 3rd- and 4th-year students in midwifery and nursing from MU-Pleven participated, out of whom 74 (63.8%) responded.

We processed the obtained data using MS Office Excel 2019.

Results. The survey showed high levels of awareness (88.5%) in relation to cervical cancer screening and prevention. Half of the respondents (50%) indicated that they were sufficiently informed about the HPV vaccine. More than 90% of the participants considered it necessary to popularise the methods related to the prevention of cervical cancer.

Conclusion. The WHO's global strategy for combating breast cancer encourages the improvement of the culture of health and education among the female population. High levels of cervical cancer awareness among students provide a fertile ground for their adequate participation in preventive activities.

Keywords: Cervical cancer, students, awareness, prevention

SATISFACTION WITH THE TRAINING IN PATRONAGE MIDWIFERY CARE

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Abstract. The philosophy of midwifery ensures duration and continuity of care. Antenatal care includes health assessment, promotion of health and well-being, and detection of complications. Postnatal activities are intended for the health assessment of mother and infant, health education, support for breastfeeding, detection of complications, and provision of family planning services. Home visits are recommended to improve antenatal care utilisation and perinatal health outcomes. The discipline “Patronage midwifery care” is optional for student midwives.

The **aim** of the study was to measure the satisfaction with the training in patronage midwifery care.

Material and methods. In the period June 2023 - May 2024, an individual anonymous online survey was conducted with an originally developed questionnaire. The study included 23 students studying the elective discipline.

Results. The preliminary expectations of 22 (95.7%) of the respondents were satisfied; 21 (91.3%) considered that they had increased their confidence to practice the profession. Patronage visits are beneficial for the mother and her family, according to 23 (100%) of respondents. Those already working in the speciality (47.8%) indicated that the acquired knowledge is necessary for their practice.

Conclusion. Reported satisfaction proves the necessity of the discipline. This training increases the quality of education in maternity care.

Keywords: expectation, home visit, midwife.

FIGHTING ACUTE RESPIRATORY INFECTIONS IN CHILDHOOD

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Introduction. The period of early childhood is characterised by intensive physical and neuropsychological development, weakness and easy susceptibility to various diseases. The frequent illness of children in kindergarten from acute respiratory infections is a serious problem for parents, staff and the children themselves.

The aim of the project is to reduce the absenteeism of children due to acute respiratory diseases by 10% for nine by conducting a health-educational program on the problems of improving physical fitness with the parents of 20 children attending kindergarten.

Material and methods.

Documentary method – the children’s medical documentation was studied;
Observation – clear observation of children’s behaviour regarding the development of hygiene habits;

Interview – a semi-structured interview with the parents of the children participating in the project;

Structured interviews with the nurses

Statistical methods: Survey data will be processed using Microsoft Excel 2013.

Results. The project will be implemented in “Radost” Kindergarten in Lovech from October 2024 to May 2024. 2025. To date, step 1 of the project is being carried out - informing the children’s parents, obtaining informed consent from them for their participation in the project, primary research of the medical documentation, etc.

Conclusion. The effectiveness of the project will be evaluated on the basis of a comparative analysis of the medical documentation, taking into account the absences from ENT of the children in the nursery before and after the implementation of the program for nine months

Keywords: tempering, early childhood, respiratory diseases

PREDISPOSING FACTORS IN THE POPULATION FOR THE DEVELOPMENT OF INSULIN RESISTANCE

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Introduction. Insulin resistance is a complex metabolic disorder with a polyetiological nature, which leads to a reduced effect of the hormone insulin on various tissues, causing permanent hyperglycemia. The causes of insulin resistance can be genetic or acquired. The most common acquired factors causing insulin resistance are obesity, a sedentary and stressful lifestyle, and ageing, all of which are interrelated.

Aim. To investigate the predisposing factors among the population for the development of insulin resistance.

Materials and methods. An electronic anonymous survey was conducted among 87 respondents of different ages, predominantly women, with secondary and secondary-special education. The survey was conducted in May-June 2024 using Google Forms. A documentary and statistical method was used to process the information.

Findings. The obtained results indicate that 39.1% of the respondents are overweight, 24.1% are obese, 23% shared that they overeat daily, and 39% overeat several times a week. A total of 44% share that they have low physical activity, and 53% of the respondents have a family history of type II diabetes. A large percentage (78%) of respondents reported having stress in their daily lives.

Conclusion. In a large part of the respondents, genetic and acquired factors predispose to the development of insulin resistance. A large part of the respondents have an incorrect diet and a sedentary lifestyle.

Keywords: insulin resistance, obesity, stress, nutrition, diabetes

AWARENESS OF DISADVANTAGED CHILDREN AND ADOLESCENTS ABOUT HIV

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Abstract. Human immunodeficiency virus (HIV) is a virus that attacks the immune system and weakens the body’s ability to fight infection and disease. Counselling this HIV-infected person can develop a serious infection that a healthy person would normally be able to fight off. People infected with HIV who develop disease as a result of the disease caused by the virus are said to have acquired immune deficiency syndrome (AIDS). AIDS is the final stage of HIV infection when the body has difficulty fighting a life-threatening infection without treatment. There is no known cure for HIV infection, but there are antiretroviral (ARV) treatments that fight HIV infection by preventing the virus from spreading in the body. Antiretroviral treatments help most people with the virus live long and healthy lives. For more than three decades, the world has lived with the global challenge of dealing with the pandemic caused by HIV. In 2022, of the estimated 39.0 million people living with HIV worldwide, two and a half million were under the age of 19. A large part of them are children in risk groups, disadvantaged and those deprived of parental care.

Keywords: Keywords: HIV/AIDS, children, adolescents, prevention

FAMILY PLANNING STRATEGIES DURING THE COURSE OF TRAINING

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Abstract. Family planning is one of the great health achievements of the 20th century. Family planning services are defined as educational, complex medical or social activities that enable young people of childbearing age to make informed decisions about the number of children they wish to have and to control the intervals between them. The concept of “family planning” also defines the prevention of sexually transmitted diseases, protection against unwanted pregnancy, sexual education, infertility guidelines, advice on in vitro procedures, methods and methods of contraception, etc. This means that the scope of his activity is not only aimed at people of childbearing age but also adolescents in the adolescent period. Modern society imposes a number of stereotypes among young people, one of which is education. With the start of their higher education, young people also enter a fertile age that is suitable for creating a family and children. Combining personal life plans with studies is a challenge: to complete their education successfully, students have to build their family planning strategy correctly.

Keywords: strategies, family planning, education

CLINICAL CASE OF A PATIENT WITH SEVERE PREECLAMPSIA

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Introduction. Preeclampsia is one of the most common complications during pregnancy, affecting 2-4% of pregnant women. It is a leading cause of preterm births and maternal and perinatal mortality globally, including in Bulgaria.

Case Description. This case involved a 23-year-old patient with her first pregnancy at 37 weeks gestation. She was registered on time, regularly monitored, and followed up in the antenatal care clinic. She was hospitalised in the Obstetrics Clinic after experiencing two episodes of loss of consciousness, preceded by headache and tremor. Her blood pressure was measured at 160/100 mmHg. Her condition worsened, leading to an eclamptic seizure. An emergency delivery was performed, and the decision was made to transfer her to the Intensive Care Unit for intensive care and monitoring. After stabilising her condition, the patient was discharged.

Conclusions. Screening for preeclampsia is an extremely important method for assessing high-risk pregnancies. The focus of the International Federation of Gynecology and Obstetrics (FIGO) regarding preeclampsia includes the benefits of the first prenatal visit in the first trimester of pregnancy, universal screening for the assessment of risk factors, and preventive measures. The independent activities of the midwife related to the observation and monitoring of normal pregnancy are crucial for the timely prevention and management of complications.

Keywords: preeclampsia, screening, midwife, prevention.

ELECTIVE ABORTION – RISKS AND COMPLICATIONS. THE ROLE OF THE MIDWIFE IN FAMILY PLANNING (A CASE STUDY)

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Introduction. In Bulgaria, elective termination of pregnancy is regulated by Regulation No. 2 from 01.02.1990 (amended on 31.10.2000), which grants the right of choice to every woman. The frequency of abortions in Bulgaria is significantly higher compared to industrialised countries, reaching about 400 per 1000 births, whereas in developed countries, it does not exceed 100-150 per 1000 births. Elective abortion carries numerous risks and complications for women related to their reproductive function.

Case Description. This case involves a 38-year-old woman with 11 pregnancies, 7 resulting in births, and 3 in elective abortions. The patient was admitted to terminate her current pregnancy by choice. During the procedure, complications arose that necessitated emergency surgical intervention by a multidisciplinary team. Given her condition, she was transferred to the Department of Anesthesiology and Intensive Care. After recovery, the patient was discharged but with lasting consequences related to multiparity and complications from the elective abortions.

Conclusions. The role of the midwife in primary healthcare is of utmost importance to prevent the consequences of elective abortion. Improving access to contraception and preventing unwanted pregnancies through family planning is one of the primary competencies of midwives in outpatient medical care.

Keywords: elective abortion, complications, midwife, family planning

A MODERN VIEW ON MIDWIVES' ROLE IN COLPOSCOPY AS PART OF SECONDARY PREVENTION

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Introduction. In Bulgaria, there is no secondary prevention program for cervical cancer, which requires screening to be opportunistic. By applying the non-invasive diagnostic method - colposcopy, the time for diagnosis and treatment of precancerous and cancerous changes of the cervix is significantly reduced.

Objective. To present the modern role of midwives in performing a colposcopic examination.

Material and methods. A review of the available scientific literature related to the introduction of modern technologies in colposcopy and related new opportunities in the activity of the midwife for secondary prevention of precancerous and cancerous diseases of the cervix was carried out.

Results. In November 2022, Duke University's Center for Global Women's Health Technologies published the main goals of their project, including the Pocket Colposcope. The authors develop new levels of screening without increasing the cost of its implementation. Midwives have a major role in the execution of the project. They group the patients according to their cytological and/or DNA screening results, perform the video colposcopic examination and refer them for subsequent diagnostic clarification and/or treatment by a physician.

Conclusion. The modern view on the midwives' role in cervical cancer screening programs increases the possibility of early diagnosis and shortens access to specialised medical care, especially with limited financial and human resources.

Keywords: colposcopy, cervical cancer, midwife

CEPHALOCELE: DIAGNOSIS AND MANAGEMENT

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Introduction. Neural tube defects (NTDs) are severe congenital defects of the central nervous system which occur during embryonic development. NTDs include spina bifida, anencephaly, encephalocele, and anencephaly. Cephalocele is a general term that refers to the outward herniation of CNS contents through a defect in the cranium.

Purpose. For the first time, an attempt has been made to systematise existing information to reveal the etiology, classification, pathogenesis and diagnostics of cases with established cephalocele.

Materials and methods. A review of the existing scientific databases was made, and 57 sources were surveyed.

Results and discussion. The foreign experience has been studied and analysed based on the presented clinical cases. Recommendations are made for an exemplary protocol for management in the detection of the defect during intrauterine development.

Conclusion. Foetal and maternal monitoring during early pregnancy plays a leading role in the timely diagnosis of the defect and the subsequent management.

Keywords: neural tube defects (NTDs), encephalocele, diagnostics, management

PREFERRED METHOD OF CHILDBIRTH AMONG PREGNANT WOMEN

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Abstract. Childbirth is a critical moment in every woman’s life and represents a significant medical and social phenomenon. The choice of a delivery method – whether natural birth or cesarean section – is a pivotal decision that impacts the health of both the mother and the newborn. Over the past decades, there has been a significant increase in the global rate of cesarean sections, sparking debates within the medical community regarding its necessity and safety.

Objective. To investigate the opinions of pregnant women regarding their choice of delivery method at Shumen Regional Hospital.

Materials and Methods. The study was conducted using an anonymous questionnaire we developed, consisting of 16 questions. It included 20 pregnant women at Shumen Regional Hospital. The study took place in the Department of Pathological Pregnancy in May 2024. A sociological method was employed through direct, anonymous individual questionnaires.

Results and Discussion.

Preferences for the mode of delivery in pregnant women are related to a choice - it is associated with a significant medical risk for the mother and the fetus and must be reasoned and justified. However, a lack of awareness and health knowledge does not imply a correct choice. It is alarming that half of the respondents claimed that they were not aware of the risks of operative delivery (50%), 1/3 stated that they were well informed by the obstetrician-gynaecologist they visited. The share of pregnant women who consulted relatives and friends was 15%, and the Internet 5%.

Keywords: pregnant women, childbirth, operative delivery, vaginal delivery

BRAIN ANEURYSM MANAGEMENT AND NURSING CARE–A CLINICAL CASE REPORT

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Introduction. A cerebral aneurysm is a balloon-like dilation of a cerebral vessel that sometimes ruptures, causing a stroke or fatal outcome. Aneurysmal subarachnoid haemorrhage accounts for 1-7% of strokes and affects about 6-12 per 100,000 people per year, most commonly between the ages of 40 and 60. As a result of the rupture, a subarachnoid haemorrhage of varying severity occurs.

Objective. Acquaintance with the essence of the disease, the need for quality care and relevant behaviour in brain aneurysms, guaranteeing a favourable outcome.

Materials and methods. Documentary method: we studied the available literature on the problem and the medical documentation of a patient with a brain aneurysm.

Results. It concerns a 45-year-old man with a diagnosis of cerebral aneurysm, who was admitted for the first time as an emergency at 5:00 a.m. to the neurology clinic of the University Hospital In Pleven on 20.10.2021. The cause was acute dizziness, headache, vomiting, and impaired balance. On taking the history, a stressogenic element was found. On 25.10.2021, he was discharged with improvement and recommendations for compliance with a hygienic and dietary regime.

Conclusion. Nursing care theoretical and practical training regarding first aid in brain aneurysms is important and can save human lives. Of utmost importance are the nurse’s communication skills with the patient and relatives regarding a healthy lifestyle.

Keywords: brain aneurysm, nursing care, healthy lifestyle

SPECIAL NURSING CARE OF A PATIENT WITH CEREBRAL INFARCTION CAUSED BY THROMBOSIS OF CEREBRAL ARTERIES: A CLINICAL CASE REPORT

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Introduction. In a cerebral infarction caused by thrombosis of cerebral arteries, a blood clot forms, blocking the flow of blood to a part of the brain and leading to necrosis in a certain area.

Objective. To study the essence of the disease, the need for timely, adequate care and treatment, as well as training relatives for care at home

Materials and methods. The documentary method was applied to study available literature and medical documentation of a patient with cerebral infarction who was admitted to the neurology department at the St. Pantaleimon Hospital in Pleven.

Results. An 82-year-old woman was hospitalised on April 1, 2024, due to a headache in the parietal and occipital region of the head. The pain worsened when lying down, as well as tinnitus, nausea and speech disturbances. She was diagnosed with a cerebral infarction. A nursing care plan was developed. On 25.04.24 she was discharged with improvement. Recommendations for a hygienic and dietary regime were given. A brochure was produced, aiming to acquaint the population with the disease and adequate care.

Conclusion. Stroke is a serious health problem of social importance, causing permanent disabilities and, often, with a fatal outcome. Therefore, the role of the nurse and her care and education of relatives are extremely important.

Keywords: cerebral infarction caused by thrombosis of cerebral arteries, nursing care, nurse

NURSING CARE FOR A PATIENT WITH PLEURAL EFFUSION

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Introduction. Pleural effusions develop as a result of local and general pathological processes. Irresponsibility towards personal health, low health culture, unhealthy lifestyle and harmful habits lead to health, social and personal consequences.

Objective. To develop a nursing care plan for a patient with pleural effusion.

Material. Observation of a patient with bilateral pleural effusion, treated in the Department of Thoracic Surgery of Dr G. Stranski University Hospital, Pleven, was carried out.

Methods:

- Documentary method: Available medical literature on the subject and the patient's medical documentation was studied,
- Unstructured interview with the patient,
- Observing the patient during his stay at the hospital.

Results. A case of a 63-year-old man in severe general condition, hospitalised in the Department of Thoracic Surgery with shortness of breath and difficulty breathing, with evidence of bilateral pleural effusion and an opinion for operative treatment, was reviewed. The hospitalisation was preceded by a stay in a Clinic of endocrinology due to evidence of ketoacidosis in undiagnosed Diabetes Mellitus type II, initiated by a Covid infection. Operative treatment was performed, a smooth postoperative period ensued, and the patient was discharged in an improved general condition.

Conclusion. As members of the multidisciplinary teams, nurses actively participated in the patient's treatment and recovery program. Caring for the patients, high professionalism and a responsible attitude to the assigned tasks contributed to his speedy recovery.

Keywords: pleural effusion, COVID infection, diabetes mellitus, nursing care

APPLICATION OF NURSING CARE PROCESS IN A PATIENT WITH FOURNIER'S GANGRENE

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Introduction. Fournier's gangrene is a progressive and life-threatening condition. It is an acute necrotic infection of the scrotum, penis, or perineum.

Objective The study aims to implement a nursing process and share experience in the care of a patient with necrotising fasciitis of the genitals.

Material and methods. Observation and care of a patient with Fournier's gangrene, treated at Dr G. Stranski University Hospital, Pleven from 10.12.2023 until 17. 01. 2024 was conducted. Data were collected through a documentary method, semi-structured interviews and patient observation. After a nursing assessment and analysis of the obtained data, nursing diagnoses were made, a care plan was drawn up and implemented, and the results were evaluated.

Results. A 56-year-old man with a medical diagnosis of Fournier's Gangrene was admitted to the surgical ward from the emergency department with complaints of general fatigue, temperature 38.0-39.0 C, severe pain and swelling in the genital and perianal area, a change in the colour of the skin in the affected area to dark purple, with an unpleasant smell of the tissues. When scratching the affected area, the patient reports a popping sound. Past and accompanying diseases included diabetes mellitus, with evidence of past urological infection, alcohol abuse, and initial stage of cirrhosis. The patient was discharged with improvement as a result of the adequate treatment and care provided.

Conclusion. The application of the nursing process in critically ill patients alleviates their condition and optimises treatment and favorable outcomes.

Keywords: Fournier's gangrene, nursing process, surgical nursing care

LAPAROSCOPIC CHOLECYSTECTOMY - NURSE PREPARATION AND PARTICIPATION

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Introduction. Minimally invasive surgery is the performance of full-fledged surgical manipulations and operations through minimal access in a closed physiological environment. Laparoscopic surgery unites all mini-invasive operations that are performed in the abdominal cavity. Laparoscopic cholecystectomy is a minimally invasive way to remove the gallbladder without making a large incision in the abdominal wall.

The purpose of the poster is to present the participation and preparation of the nurse in laparoscopic cholecystectomy.

Material and method. Analysis of documentary sources for the period April - May 2024, documentary method.

Results and discussion. Good preparation and active participation of the nurse in laparoscopic cholecystectomy is an important part of the team’s work for the successful operation.

Conclusion. The nurse should know the necessary materials and supplies and the preparation for performing a laparoscopic cholecystectomy.

Keywords: laparoscopic cholecystectomy, nurse, preparation and participation

NURSING CARE PLANNING FOR CHRONICALLY ILL PATIENTS USING RATING SCALES

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Introduction. Health care is the foundation of the quality and length of life for all people. The importance of the care provided by nurses is indisputable for the healing process, especially for patients with socially significant diseases. Individual care planning for these patients by means of rating scales would contribute to an objective assessment of the patient's condition.

Objective. To analyse the success of 3rd-year nursing students in planning care for patients with chronic diseases, using scales to assess needs.

Material and methods. For this purpose, care was planned for 15 patients hospitalised with socially significant diseases in Dr G. Stranski University Hospital. The patient group's age was above 65 years. An individual patient assessment form was used with the attached three original scales to collect objective and subjective data and a sample plan for individual nursing care.

Results. After processing the obtained results, 4 (27%) of the patients required maximal assistance with feeding and hygiene care according to the functional independence scale. Three of the patients required minimal assistance with tasks and the remaining eight required supervision.

Conclusion. Based on the rating scales as an aid, all seven students successfully identified the patients' needs, the goal and the plan of action.

Keywords: scales, care planning, student

SPECIAL NURSING CARE FOR THE PATIENT WITH BLADDER CARCINOMA - ASSESSMENT AND DOCUMENTATION OF NURSING CARE

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Introduction. The importance of care provided by nurses is indisputable for the healing process, especially for patients with malignant neoplasms of the bladder. Worldwide, approximately 275,000 cases of bladder cancer are diagnosed each year, requiring specialised and intensive nursing care.

Objective. To analyse the ability of the students majoring in “nursing” - 6th semester to analyse and synthesise information about the care needs of a seriously ill patient through rating scales.

Material and methods. A documentary method, including individual patient assessment, forms with three scales for collecting objective and subjective data and a sample plan for individual nursing care was used. A 73-year-old patient in serious general condition, hospitalised in the Urology clinic of Dr G. Stranski University Hospital - Pleven in the period 05/06/2024 - 05/21/2024 was observed.

Results. After assessment by the students, the patient was identified as being at high risk for falls, very high risk for pressure ulcers, and required comprehensive assistance for functional independence. After care planning and treatment implementation, the patient was discharged with improvement.

Conclusion. The assessment and care plan were successfully completed and received an excellent rating from the attending physician and senior nurse.

Keywords: patient, care planning, a student

SPECIAL NURSING CARE FOR A PATIENT WITH URINARY RETENTION - ASSESSMENT AND DOCUMENTATION

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Introduction. Special nursing care for critically ill patients with urological diseases, such as urinary retention, is extremely important to achieve the best quality of life for these people. Documentation is an important step in ensuring the accuracy and continuity of nursing interventions.

Objective. To accurately assess the care needs of a patient with urinary retention and comorbidities and to propose nursing interventions appropriate to his needs.

Material and methods. A documentary method including a form for individual assessment of the patient with attached three scales for assessing degrees of dependence on care and a sample plan for individual nursing care was used.

We observed a 73-year-old patient in serious general condition, treated in the Urology Clinic of Dr G. Stranski University Hospital - Pleven in the period 12.05.2024 - 20.05.2024.

Results. After the assessment made by the students, the patient was found at a very high risk of decubitus (17 points) and a high risk of falling (22 points). Based on the assessment, the students identified the patient's needs and defined the problem, the goal and the action plan.

Conclusion. The assessment and care plan were successfully done, documented, and analysed, and the senior nurse and attending physician rated them excellent.

Keywords: patient, care planning, student

A COMPARATIVE ANALYSIS BETWEEN SCORES OF NURSING CARE PLANNING RATING SCALES

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Introduction. Planning of individual patient care by means of rating scales in world practice has proven its importance and contribution. In the analysis of care needs, the causal relationship between all the scales included in the planning is extremely important.

Objective. To demonstrate the relationship between assessment scales in nursing practice and the planning of nursing interventions.

Material and methods. For this purpose, care was planned for 15 patients hospitalised with socially significant diseases in Dr G. Stranski University Hospital - Pleven. The age group of the patients was over 65. Three original rating scales were used.

Results. After analysing the results, all three scales were analogous to V. Henderson's needs and within the nursing competencies. Regarding motor activity, 4 (27%) of the patients needed maximum assistance – they could perform approximately 25% of the tasks on the Functional Independence Scale. The same patients were defined as at high risk of falling according to the Johns Hopkins Fall Risk Assessment Tool, and there is a risk of skin integrity violation according to the D. Waterlow scale).

Conclusion. From the comparative analysis, there is a relationship in the evaluation of care needs according to the provided scales in all four seriously ill patients.

Keywords: toolkit, care assessment, patient

Jubilee Scientific Conference with
International Participation

**XXII NATIONAL SCIENTIFIC
SESSION FOR STUDENTS
AND TEACHERS OF MEDICAL
COLLEGE**

Content

MEDICAL-DIAGNOSTIC ACTIVITIES

- 400 CONTINUING EDUCATION – A FACTOR FOR IMPROVING PROFESSIONAL QUALIFICATION
Hreta Asparuhova, Danelina Vacheva, Teodora Miteva
- 401 THE ROLE OF X-RAY TECHNICIAN IN STEREOTACTIC VACUUM ASPIRATION BREAST BIOPSY
Silver Stefanova, Syuleyman Uzun, Chavdar Savchev, Silviya Gabarska, Yonita Pankovska
- 402 MICROBIOLOGICAL STUDY OF WOUND INFECTIONS IN HOSPITALIZED PATIENTS
Rumina Iordanova, Krasimira Lisaeva, Margarita Mollova, Tsvetelin Lisaev, Desislava Krusteva
- 403 COMPREHENSIVE CARE FOR PATIENTS WITH FETAL ICHTHYOSIS (HARLEQUIN FETUS)
Kristina Kirilova
- 404 GAMMA KNIFE – „GOLD STANDARD“ IN CRANIAL RADIOSURGERY
Lora Koleva, Nina Mihaylova
- 405 HELICAL TOMOTHERAPY
Metin Saliev, Nina Mihaylova
- 406 FREQUENCY OF INSULIN-DEPENDENT DIABETES IN CHILDHOOD
Valentina Kozova, Teodor Urukov, Eliana Aristotelova, Vasilena Vasileva
- 407 PHYSICAL PHANTOMS IN RADIOGRAPHER'S EDUCATION
Nina Mihaylova
- 408 SAFE USE OF COSMETIC PRODUCTS IN BULGARIA
Tsvetelina Ivanova, Elina Ivanova, Vania Bozhkova, Nadia Veleva

SOCIAL AND PHARMACEUTICAL ACTIVITIES

- 409 THE PROBLEM OF DOMESTIC VIOLENCE AS A SOCIAL PHENOMENON
Iskra Petkova
- 410 DOMESTIC VIOLENCE - CAUSES AND FORMS OF MANIFESTATION IN THE MODERN FAMILY
Iskra Petkova
- 411 THERE IS A NEED TO RETHINK THE STRATEGIC ASPECTS OF SOCIAL SECURITY IN R OF BULGARIA
Danail Vrachovski
- 412 IDENTIFIED RISKS IN EXERCISING THE PROFESSION OF PERSONAL ASSISTANT
Veronika Spasova
- 413 SOCIAL ASSISTANT - THE NEED TO IMPROVE PROFESSIONAL COMPETENCES
Veronika Spasova
- 414 NEED FOR AN ADAPTED ENVIRONMENT FOR PEOPLE WITH DISABILITIES IN HOME CARE
Kalina Kancheva
- 415 SOCIAL PROFILE OF PERSONS USING THE SPECIALISED SERVICE "ASSISTANT SUPPORT"
Marieta Gunovska
- 416 EMPOWERING ASPECTS OF TECHNOLOGY IN SOCIAL WORK EDUCATION
Maria Stoykova
- 417 INCLUSIVE EDUCATION THROUGH THE PRISM OF PARENTS
Marieta Gunovska, Albena Georgieva
- 418 USER SATISFACTION WITH THE SOCIAL SERVICE „ASSISTANT SUPPORT“
Marieta Gunovska, Lyubka Mateva

- 419 SOCIAL WORK TO PEOPLE WITH DISABILITIES IN THE
TRANSITION FROM A HEALTH FACILITY TO HOME CARE
Kalina Kancheva
- 420 NATURE AND ROLE OF STRATEGIC GOALS IN INTEGRATED
CARE
Petar Gornenski
- 421 WORKLOAD OF SOCIAL WORKERS IN RESIDENTIAL CARE
SERVICES
Maria Stoykova
- 422 THE NARRATIVE THERAPY IN SOCIAL WORK
Maria Stoykova
- 423 SCHUESSLER THERAPY AND HOMEOPATHY IN ALLERGIC
RHINITIS
Adelina Ibisheva, Nezabravka Nenkova
- 424 ATTITUDES TOWARDS VACCINATION AND VACCINES
Albena Cholakidu, Galya Kraeva, Krasimir Nikolov
- 425 PROBIOTICS – A PART OF MODERN MAN'S LIFE
Albena Cholakidu, Sinem Beylul
- 426 BIOCOSMETICS - FASHION OR LIFESTYLE
Albena Cholakidu
- 427 TRUST IN THE DOCTOR-PATIENT-PHARMACIST
RELATIONSHIP
Albena Cholakidu, Galya Tsvetanova-Kraeva
- 428 INTERACTION OF HERBS WITH DRUGS
Galya Tsvetanova-Kraeva, Mariana Velikova, Diana Vladimirova,
Iren Nikolova
- 429 RARE DISEASES IN THE HEALTHCARE SYSTEM
Galya Tsvetanova-Kraeva, Albena Cholakidou, Mariana Velikova

430 SELECTING OVER-THE-COUNTER PRODUCTS FOR SELF-TREATMENT OF COLDS AND INFLUENZA
Maria Shipkova, Nezabravka Nenkova

431 GOUT-HISTORICAL OVERVIEW AND MODERN TREATMENT
Vasilena Todorova, Nezabravka Nenkova

VARIA

432 THE PROBLEMS IN THE QUALITY OF LIFE IN PATIENTS WITH DISORDERED LOCOMOTION - A COMPARATIVE ANALYSIS
Danelina Vacheva, Iskra Petkova, Atanas Drumev, Radoslav Petrov

433 EFFECT ON LIFE SATISFACTION AND PSYCHOLOGICAL ADAPTATION OF LOW-INTENSITY EXTRACORPORAL SHOCKWAVE THERAPY TREATMENT FOR SEXUAL DYSFUNCTION AFTER ROBOT-ASSISTED RADICAL PROSTATECTOMY
Maria Koleva, Iskra Takeva

434 STUDENTS' ATTITUDES TOWARDS ERASMUS+ MOBILITIES
Alexandra Gencheva-Vassileva, Vessela Slavova

435 LITERARY TEXTS IN THE COMMUNICATIVE ORGANIZATION OF BULGARIAN LANGUAGE TRAINING FOR MEDICAL STUDENTS
Teodora Valova

436 THE DIALOGUE BETWEEN MEDICINE AND LITERATURE IN THE CONTEXT OF MEDICAL HUMANITIES
Teodora Valova

437 THE ROLE OF THE UNIVERSITY LECTURER IN THE FOREIGN LANGUAGE LEARNING
Boyka Petkova

438 THE SPECIAL EDUCATION IN AUSTRIA
Petya Marcheva-Yoshovska

- 439 THE SPECIAL EDUCATION OF THE NETHERLANDS
Petya Marcheva-Yoshovska
- 440 PLAY AS A MEANS OF THERAPEUTIC INFLUENCE IN
CHILDREN ON THE AUTISM SPECTRUM
Desislava Hristova
- 441 THERAPEUTIC METHODS FOR CHILDREN AND STUDENTS
WITH AUTISM SPECTRUM DISORDERS
Desislava Hristova
- 442 THE ROLE OF THE RESOURCE TEACHER IN THE
PRESCHOOL AND SCHOOL EDUCATION SYSTEM
Desislava Hristova

MEDICAL-DIAGNOSTIC ACTIVITIES

CONTINUING EDUCATION – A FACTOR FOR IMPROVING PROFESSIONAL QUALIFICATION

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Introduction. Continuing education issues are rooted in the Osnabrück Declaration from 30.11.2020, where ministers responsible for vocational education and training from EU Member States consider the need to formulate new policy actions to complement the Council Recommendation on professional education and training to achieve sustainable competitiveness, social justice, high professionalism, as well as for specialists to deepen their knowledge, acquire new skills and continue personal and professional development.

Aim. We aim to report the quality of ongoing training conducted on the topic of modern medical spa and wellness practices in cosmetics of specialists in the field of medical cosmetics.

Material and methods. A **questionnaire**, including 9 questions with a 5-point scale and 2 open-ended questions, was designed to carry out a feedback survey among 39 participants in postgraduate studies. The thematic course introduces learners to the medical and cosmetic application of spa and wellness therapies and rituals for the face and body in complex health care, leading to the achievement of aesthetic vision, active longevity, improved life quality and well-being of individuals through procedures that stimulate all the senses.

Results. The results obtained reflect the opinions of the respondents about the effectiveness, the quality of the lecturers, and the organization of the training conducted. Also, the trainers received valuable suggestions for improving the content of future training.

Conclusion. The general opinion of the students who graduated from Medical College - Pleven, working in the field of medical cosmetics and other specialists who showed interest in the thematic course is that participation in such continuing education is necessary and useful and increases their professional qualifications.

Keywords: medical cosmetics, postgraduate qualification, professional training

THE ROLE OF X-RAY TECHNICIAN IN STEREOTACTIC VACUUM ASPIRATION BREAST BIOPSY

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Introduction. Worldwide, breast cancer is a disease of medico-social importance. One out of every 8 Bulgarian women develops the disease. Stereotactic vacuum aspiration biopsy (SVAB) is an innovative method for the diagnosis of pre-cancers and cancers of the breast.

Aim. We aimed to present the essence of SVAB and highlight the role of radiology technicians who perform the procedure as members of multidisciplinary teams.

Materials and methods. The method of direct observation was used to present the advantages of SVAB over those applied so far.

Results. Early diagnosis is the most effective means of prevention. SVAB is an alternative non-surgical method for breast diagnosis. The only laboratory where SVAB is performed is located in the Oncosurgery Clinic in Dr Georgi Stranski University Hospital - Pleven. X-ray technicians hold an important and responsible position in making an accurate and timely diagnosis as part of the team performing the procedure.

Conclusion. SVAB is an innovative method and minimally invasive method for examining suspicious lesions in the breast. It determines the appropriate treatment and prognosis for patients. The role of X-ray laboratory technicians in performing the procedure determines the need to expand their competencies.

Keywords: breast cancer, stereotactic vacuum aspiration biopsy, X-ray technician

MICROBIOLOGICAL STUDY OF WOUND INFECTIONS IN HOSPITALIZED PATIENTS

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Introduction: Wound infections are a common medical problem. They occur with injuries to the skin and soft tissues. Despite advances in surgical treatment and antibiotic therapy, wound infections continue to pose a risk to patients.

Aim: To analyze the microbiological data of hospitalized patients with wound infections admitted to Avis Medica Medical Center, Pleven, for the period 2021-2023.

Materials and methods: A retrospective study was conducted on laboratory records in the Microbiological laboratory. Wound secretions, purulent exudates, and aspirates were collected from the patients. The samples were cultivated using appropriate culture media. The species identification of isolated bacteria was performed by conventional microbiological methods.

Results: For the studied period, a total of 694 patients with wound infections were registered – women 268 (41.2%) and men 381 (58.7%). The predominant age group for both women and men was 45-65 years, 32.1% and 47.9%, respectively. The distribution of the tested clinical materials was as follows – 427 wound secretions (66.0%), 214 purulent exudates from surgical site infections (33.0%), and 8 needle aspirates (1.0%). The most frequently isolated etiological agents were *S. aureus*, *E. coli* and other members of the family Enterobacteriaceae, *P. aeruginosa*, and *Enterococcus* spp. Other microorganisms, such as *A. baumannii*, *S. agalaciae*, and *C. albicans*, were rarely identified.

Conclusion: The management of wound infections is a serious problem and requires a multidisciplinary approach. Underestimating it can complicate the healing process and increase recovery time.

Keywords: etiological agents, microbiological data, wound infections

COMPREHENSIVE CARE FOR PATIENTS WITH FETAL ICHTHYOSIS (HARLEQUIN FETUS)

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Introduction. Fetal ichthyosis, also known as Harlequin ichthyosis, is a rare genetic skin disorder. In Bulgaria, the only documented case of a newborn girl with fetal ichthyosis was reported in 2017, highlighting the need for further research and publications on the topic.

Aim. The study aimed to present the pathophysiology of the disease and clarify comprehensive care for the patient.

Materials and methods. We selected scientific articles from the PubMed medical database in which clinical cases of the disease, its effects on the skin barrier, treatment methods, and patient care were reviewed.

Results. There are no publications on the topic available by Bulgarian authors. Between 2014-2024, 80 full-text scientific articles with the keyword “harlequin ichthyosis” were found. Data from 21 articles were reviewed, highlighting the mutation of the ABCA12 gene as the primary cause of the disease. Disruptions in keratinocytes and lipids lead to severe skin pathology, requiring complex care and intensive skin hydration.

Conclusion. Fetal ichthyosis is a serious genetic disorder that requires comprehensive care and monitoring. New therapies based on genetic mutations and the pathophysiology of the disease are being researched to improve the patient’s quality of life. More research and international cooperation are needed to develop effective treatment and care methods.

Keywords: fetal ichthyosis, Harlequin fetus, pathophysiology, skin care, treatment

GAMMA KNIFE: A GOLD STANDARD IN CRANIAL RADIOSURGERY

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Introduction. Gamma knife radiosurgery was first used clinically more than 50 years ago in Sweden. There are currently over 350 centres worldwide, and gamma knife radiation therapy has been established as the “Gold Standard” in brain radiosurgery.

Aim. We present the Gamma knife radiosurgery method and the key role of a radiation therapy technologist.

Materials and methods. A documentary method and observation were used. The advantages and limitations of the methods were systematized, and a working algorithm was prepared.

Results. Gamma knife is a non-invasive radiosurgery using gamma rays for oncological and non-oncological brain diseases. High single doses of precisely focused gamma radiation are used on small target volumes to achieve a “surgical” result. The dose to the body is so low that it allows radiosurgery, even for pregnant women. The irradiation is performed simultaneously with multiple small beams with a common isocenter for a maximally sharp dose gradient. The therapeutic result is usually achieved in a single session.

Radiation therapy technologists are specialists who have undergone specialized training to work with high-tech equipment and practical implementation of the method. They are responsible for the calmness, safety of patients and precise repeatability of each session.

Conclusion. Patients with oncological diseases need accessible and high-quality care provided by qualified medical professionals.

Key words: gamma knife, radiosurgery, x-ray technician

HELICAL TOMOTHERAPY

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Introduction. Helical tomotherapy is a hybrid external beam radiation therapy technology combining the abilities of a 6 MeV linear accelerator and a helical CT scan.

Aim. Presenting the method and the benefits of its use.

Materials and methods. National and international sources of technical specifications were researched.

Results. Tomotherapy is used mostly for the treatment of neoplasms with an irregular and/or complex shape and close to critical organs. Three-dimensional CT scan images are used to determine clinical target volume and radiation therapy dose. The LINAC beam follows the trajectory of the CT scan beam and can be manipulated so that it matches the target. It is fan-shaped and rotates around the patient. Thus, a homogenous dose distribution and minimizing healthy tissue exposure is provided.

Conclusion. Tomotherapy has a high success rate for the treatment of large-length fields, conducting stereotactic surgery, and treating inoperable tumours, among others.

Early and late side effects are significantly reduced, and sessions are more comfortable for patients. The risk of developing radiation-induced cancer is decreased as well.

Keywords: linear accelerator, outcome, radiotherapy, tomotherapy. volume

FREQUENCY OF INSULIN-DEPENDENT DIABETES IN CHILDHOOD

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Introduction. Diabetes is a disease that is reaching the proportions of a global epidemic. In Bulgaria, according to statistics, about 500,000 people suffer from this disease. Data from the National Center for Public Health and Analysis at the Ministry of Health shows a high frequency of registered cases of diabetes in children (2.1‰) for 2022.

Aim. To determine the frequency of insulin-dependent diabetes in childhood.

Materials and Methods. A retrospective study was conducted on newly registered children with type 1 diabetes based on the records of the Children's Diabetes Center at UMHAT "Dr. Georgi Stranski" - Pleven for the period 2019-2023.

Results. During the period 2019 - 2023, the number of newly registered children with insulin-dependent diabetes was 87. Of these, 37 (43%) were girls, and 50 (57%) were boys. Their age distribution was as follows: between 0-10 years - 50 (57%) and 11-17 years - 37 (43%). During the study period, only 17 children (19%) had an HbA1C result below 7%, while 66 (76%) had values above 7%. There is no data for 4 patients, and 34 of the children were diagnosed with diabetic ketoacidosis.

Conclusion. The role of the family in the care, prevention, and treatment of diabetes and the active involvement of the child in the treatment process are the keys to success.

Keywords: childhood, diabetes, frequency

PHYSICAL PHANTOMS IN RADIOGRAPHER'S EDUCATION

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Introduction. Clinical rotation is an essential part of the effective preparation of radiographers. Before working with actual patients, students need a safe opportunity to strengthen their theoretical knowledge and technical skills. One such opportunity is the use of physical phantoms.

Aim. Researching the benefit of using phantoms to optimize radiographers' practical learning.

Materials and methods. Documentary method, observation and personal experience of the author were used. Extensive research on 33 articles on the discussed topic spanning the past 10 years was done.

Results. During practical training, radiographers practice communication, instruction and positioning of the "patient" on each other. Since they cannot use radiation, obtaining an X-ray image remains practically unfinished. Anthropomorphic phantoms allow for repeated imaging and for students to see the outcome of their decision, find and correct their mistakes by themselves and figure out how to attain a diagnostic image with the lowest possible dose.

Conclusion. Phantom-based education cannot substitute the acquirement of skills that can only be acquired by "face-to-face" communication with patients, but it does enhance the quality of radiographers' education by helping them understand the correlation between patient positioning, exposure factors, received dose and image quality.

Keywords: education, physical phantom, radiographers, simulation

SAFE USE OF COSMETIC PRODUCTS IN BULGARIA

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Introduction. Nowadays, cosmetic product use is ubiquitous and widespread worldwide. Safety is a crucial feature of cosmetic product use that must be guaranteed to all consumers. The only way to achieve it is through strict regulation and control over use.

Aim. To analyze the current state of legal regulations in Bulgaria regarding safety in the use of cosmetic products.

Materials and methods. 1. Documentary analysis of the European regulations in force by 2024 on the safe use of cosmetic products in Bulgaria. 2. Retrospective analysis of the Rapid Exchange of Information System (RAPEX) database about cosmetic products. 3. Analysis of secondary data from studies published on the official websites of the regulatory bodies in our country.

Results. Bulgarian regulations fully comply with the EU requirements for the safe use of cosmetic products. The competent authorities in our country conduct regular safety surveys. They show that the biggest share of the analyzed products is occupied by cleaning products - 50.28%, followed by the analysis of the content of chemical substances and mixtures in the composition of the cosmetic products - 16.58%, sunscreen products - 0.54%, and 0.1% - microbiological analyses. Only 10 (2.90%) signals for cosmetic products from Bulgaria are registered in RAPEX for the period 2019-2021.

Conclusion. Manufacturers and national and European regulatory authorities share responsibility for ensuring the safety of cosmetic products. Compliance with the regulatory requirements regarding cosmetic products by all stakeholders is a guarantee that during their distribution and use in EU member states and beyond, the risk of adverse reactions and health risks will be minimized.

Keywords: Bulgaria, cosmetic products, normative regulation, safety

SOCIAL AND PHARMACEUTICAL ACTIVITIES

THE PROBLEM OF DOMESTIC VIOLENCE AS A SOCIAL PHENOMENON

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Introduction. The relevance of the topic of domestic violence and its consequences for the victims depends on modern reality, views on human rights, and the rights of children.

Aim. To study the basis of the multiple manifestations of domestic violence by identifying the factors that turn it into a social phenomenon.

Materials and methods. A standardized questionnaire with three main groups of questions was developed and later filled in by students and specialists in the field of social work.

Results. In the first group of questions, respondents define domestic violence as a socially significant problem because it “leads to problems in the social functioning of the family” (73.68%; 87.10%). In the second group of questions related to the factors determining the forms of domestic violence, for students, the most significant is “family upbringing and learned model of behaviour” (68.42%). Social workers, however, consider the “influence of the factors of the social environment” a “rather significant” factor (64.51%). In the third group of questions, the respondents strongly support “developing social programs for the acquiring of skills to combat domestic violence” as a preventive activity (78.95% and 80.64%).

Conclusion. Domestic violence is considered a dangerous social phenomenon, which can remain obscure and hidden from society for a long period while sometimes being unrecognized, even within the family itself.

Keywords: domestic violence, factors, forms, prevention, social problem

DOMESTIC VIOLENCE - CAUSES AND FORMS OF MANIFESTATION IN THE MODERN FAMILY

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Introduction. The topic of domestic violence in the modern family is widely discussed by Bulgarian society. It is constantly commented on by the media as well as governmental and non-governmental organizations.

Aim. The study aimed to differentiate the reasons for the manifestation of different forms of domestic violence in the modern Bulgarian family.

Material and methods. A standardized questionnaire with four groups of questions was developed and later filled in by students and specialists in the field of social work.

Results. At the “individual” level, “low self-esteem” (52.63%) and learned “pattern” of behaviour (54.84%) were determined as the chief causes of aggressive behaviour at home. At the level of “family,” the main reason is “disharmony in family relations” (42.11% and 51.61%), and at the level of the social environment “unemployment and poverty” (42.11% and 38.71%). Some of the most common forms of domestic violence are “insults”, “threats”, and “physical violence” (78.95%). Reasons for the victim to stay with the violent partner, regardless of the problems in family relations, are “the children” (52.63% and 58.06%), “the desire to preserve the family at all costs” (47.34%, 54.84%) and ‘fear of the romantic partner’ (73.68%). Aggressiveness (68.42%, 67.74%) was indicated as the most typical characteristic of the abuser.

Conclusion. This study investigates the reasons for the manifestation of aggressive behaviour in the home environment, presented and analyzed at the levels of “the individual”, “family”, and “society”.

Keywords: abuser, causes, family, forms, victim

THERE IS A NEED TO RETHINK THE STRATEGIC ASPECTS OF SOCIAL SECURITY IN BULGARIA

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Introduction. In recent years, the social security system in Bulgaria has been developing at a dynamic pace. Social incomes in the form of pensions, cash benefits, payments to people with disabilities and social assistance benefits have increased significantly.

Aim. The aim is to present the strategic aspects of social security in Bulgaria.

Results. As social spending increased, a number of problems arose related to the demographic foundations of the social security system, such as the transition from a system financed on a pay-as-you-go basis to one based on several pillars. Strategically, the system is under constant economic pressure as the universal pension funds enter the payout phase.

Materials and methods. Documentary method.

Conclusion. In view of all the external and internal factors affecting the social security system, it is necessary to update the strategy in some respects for its effective functioning by adopting new strategic objectives. They are related to the quality of social services, the growth of public confidence in the system, and the improvement of its information provision.

Keywords: cash benefits, pensions, social policies, social security financing, social security, strategies and factors

IDENTIFIED RISKS IN EXERCISING THE PROFESSION OF PERSONAL ASSISTANT

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Introduction. The Personal Assistance Act regulates that an assistant is an individual chosen by the personal assistance user to provide care in the home environment. No specific qualifications or previous experience are required for the job, just the motivation and attitude to care for severely disabled people. In this process, it is necessary to ensure the safety of both users and carers, with an understanding of the interaction between the two parties and tasks to manage risks in the process of the work.

Aim. Identifying the risks of the personal assistant profession.

Materials and methods. The survey method used was a semi-standardized questionnaire with 15 closed and one open question.

Results. Our survey of personal assistants regarding the risks in their work found that a significant proportion of respondents (79.12%) reported the risks of emotional exhaustion and physical strain (70.33%) when caring for a person with severe disabilities. More than half of the respondents (57.14%) attached importance to the risk of death of the user, which corresponds with the identified risk of deterioration of the health condition of the person with disability (40.66%).

Conclusion. The assessment of occupational risks is a prerequisite for their management in order to enhance the safety and security of both parties.

Keywords: personal assistant, profession, risks

THE NEED TO IMPROVE THE PROFESSIONAL COMPETENCIES SOCIAL ASSISTANTS

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Introduction. The profession of social assistant requires a set of qualities and competencies that the person needs to possess. The activities that a social assistant performs are multifaceted and require specialised theoretical training and practical skills in order to provide quality services to users.

Aim. Identifying the need to improve the professional competencies of social assistants.

Materials and methods. The survey method used was a questionnaire with 17 open and closed questions.

Results. A survey of social care assistants found that over half of respondents (51.79%) had received no training prior to starting work. Still, a significant proportion (87.50%) felt prepared to care for disabled and older people in a home environment, as 89.28% had previous experience. Regardless of their confidence, respondents reported the need for training to upgrade their knowledge and skills in various areas: social assistant competencies (76.79%), skills to communicate effectively with consumers (73.21%), observing hygiene standards and ensuring safety in the consumer's home, and crisis response skills with the consumer (67.86%). Two-thirds (66.07%) reported a need for training on the rights of social service users and professional ethics in the work of the social assistant.

Conclusion. The professional competence of social assistants ensures the provision of quality services to users.

Keywords: professional competencies, social assistant, training

NEED FOR AN ADAPTED ENVIRONMENT FOR PEOPLE WITH DISABILITIES IN HOME CARE

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Introduction. Many of the problems faced by disabled people and their carers can be attributed to adverse environments rather than personal reasons.

Aim. The study aimed to establish the need for an adapted environment that is more functional as an important element in the reform sought by persons with disabilities and their carers. Human competence interacts with the environment in a dynamic, reciprocal relationship. When functional limitations exist, support from the environment is of utmost importance.

Materials and methods. Literature review on the topic and questionnaire survey.

Results. The study among caregivers of people with disabilities in the home environment proves the claim that the physical environment should be built according to the needs. Objects must be organized and in place to support implementation. Accessibility is related to the efficiency of carers in carrying out their duties.

Conclusion. The physical and social environment includes factors external to the individual, including family, institutions, community, and policies. Environmental factors should, therefore, be considered to include the natural environment as influencing the person being cared for.

Keywords: adapted environment for people with disabilities, care at home, people with disabilities

SOCIAL PROFILE OF PERSONS USING ASSISTANT SUPPORT SPECIALISED SERVICE

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Introduction. During the period 2002-2022, the proportion of persons aged 65 and over increased in all EU Member States. In Bulgaria, by 2022, the share of these persons constitutes 23.5% of the country's population, and the forecasts are that this percentage will continue to grow. Population ageing has an impact on lifestyles and the need for social support.

Establishing the social profile of persons using a social service in a home environment is important for planning long-term care for the elderly and the elderly and persons with disabilities.

Aim. Study of the social profile of persons using a social service in a home environment.

Materials and methods. A sociological method was used. A semi-standardized questionnaire that contains 13 closed questions and one open question.

Results. In the analysis of the results, it was found that women predominated (83.75%), and persons in the age group 80-89 years accounted for 45% of the respondents. More than half of the respondents (55%) had secondary education, 76.25% were widowed, and 78.75% had an income of a minimum monthly pension. A significant part of the respondents lived in a city (62.5%) and had children (88.46%), with only 11.25% residing with them. Most respondents (85%) used the service because they were unable to self-serve and encountered difficulties in meeting their daily needs.

Conclusion. Elderly and older people and people with disabilities living alone with low incomes rely on the support of social services provided in a home environment for a dignified life.

Keywords: care, elderly and older people, people with disabilities, social profile

EMPOWERING ASPECTS OF TECHNOLOGY IN SOCIAL WORK EDUCATION

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Introduction. Social work aims to empower individuals, families, groups and communities. Social work education aims to acquire knowledge and skills that will enable future professionals to interact effectively with clients and provide help and support. Technologies have their place in the education system, and it is necessary to discover opportunities for their effective application.

Aim. To identify the possibilities of technology in social work education to increase its effectiveness in terms of empowering students and their skills to apply an empowering approach in their interactions with clients.

Materials and methods. A theoretical analysis of scientific literature on the subject is applied.

Results. Increasing the accessibility and the degree of individualization of training are defined as the main benefits of the effective application of technologies in the training process. A relationship was also identified between motivation and the level of effectiveness in terms of acquiring knowledge and practical skills for social work.

Conclusion. Technologies are increasing their role in the social work education process, and one of the main challenges is finding opportunities to adapt it to the individual needs and resources of students.

Keywords: education, empowerment, social work, technology

INCLUSIVE EDUCATION THROUGH THE PRISM OF PARENTS

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Introduction. In an inclusive education system, the framework changes by adapting to the individual needs of the student by applying attitudes, approaches, and strategies that include all learners in all activities, regardless of their support needs, and considering their individual level of training.

Aim. Survey of the opinion of parents of normal children and parents of children with special educational needs regarding inclusive education.

Materials and methods. A sociological method was used. Semi-standardized questionnaire with 14 closed questions and 1 open question.

Results. A greater share of respondents (60.87%) - parents of normal children (28.26%) and children with SEN/Special Educational Needs (32.61%) are informed about the nature of inclusive education. There are significant differences in the obtained results regarding inclusive education as a negative factor for lowering the achievement of students from parents of children with SEN (23.91%) and parents of normal children (34.79%), as well as the influence of the child with SEN to slow down the learning process: parents of children with SEN (28.26%), parents of normal children (34.79%). Almost all the recommendations were from parents of children with SEN and were aimed at specialists and educators, all emphasizing individual work and approach.

Conclusion. The comparison between the ratings of the two groups of respondents shows that parents of children with SEN have higher expectations of inclusive education in helping the development of children's ability to understand and accept differences.

Keywords: children, inclusive education, parents, special educational needs

USER SATISFACTION WITH THE ASSISTANT SUPPORT SOCIAL SERVICE

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Introduction. Creating conditions for a dignified and independent life for older adults and people with disabilities in a family or close-to-family environment is a priority of social policy. For many older adults in Bulgaria, the prospect of leaving their home, their loved ones, their surroundings and using residential care is hard to bear.

Aim. Survey of user satisfaction with the assistant support social service.

Materials and methods. A sociological method was applied, using a semi-standardized questionnaire with 12 closed questions and 1 open question.

Results. The survey conducted among users of the social service revealed that more than half of the respondents were completely satisfied (55.77%) and satisfied (48.08%) with the help of the assistant in conditions of illness and illness; completely satisfied (53.85%) and satisfied (46.15%) with the help for movement and walks; completely satisfied (51.92%) and satisfied (48.08%) when accompanied to see a doctor, admitted to hospital and buying food products and medicines; fully satisfied (50%) and satisfied (48.08%) with the services of the assistant in providing help in the household.

Conclusion. The level of user satisfaction with all activities is very high, which proves the quality and efficiency of the service provided. Most respondents did not give recommendations regarding the activities provided, or only noted that they were satisfied.

Keywords: care, disabled people, elderly and older adults, social assistant

SOCIAL WORK WITH PEOPLE WITH DISABILITIES IN THE TRANSITION FROM A HEALTH FACILITY TO HOME CARE

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Introduction. Many people with chronic illnesses and permanent disabilities after a hospital stay continue their recovery in a home environment for an extended period.

Aim. The main goal of the article is to clarify the need for specialists to work with people discharged from healthcare facilities with a diagnosis that requires a period of care at home. Prolonged treatment in a home environment creates a number of difficulties for both the person and the caregiver. Preparation in advance is a key element for the quality of care for health and social care users.

Materials and methods: a literature review on the problem and a questionnaire survey.

Results. In summary of the results of the conducted survey, it can be said that according to health professionals, patients do not know the health and social systems. Health professionals consider the need to work in a multidisciplinary team in which there is a social worker, although most of them are not fully familiar with their professional possibilities.

Conclusion. Health professionals are people with a high level of professional experience in healthcare. However, the quality of care for people with chronic diseases and people with permanent disabilities requires a trained professional who knows the healthcare system and also has competence in the possibilities of the social system, ergonomics in personal care at home and can give guidance according to the specific condition/disease.

Keywords: people with disabilities, healthcare establishment, social work

NATURE AND ROLE OF STRATEGIC GOALS IN INTEGRATED CARE

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Introduction. The WHO Global Strategy for People-Centred and Integrated Health Services represents a conceptual highlight in summarizing an intense theoretical debate of a number of studies in the practice of this care.

Aim. The purpose of the report is to present the essence and significance of the strategic directions in the development of integrated care.

Materials and methods. The report analyzes the essence and role of strategic directions for the development of integrated care on the basis of the conceptual framework outlined in the Global Strategy and on the evidence, summaries and recommendations presented in the literature regarding the need for a major change of the paradigm for the provision of health and social services.

Results. The analysis of the nature and role of strategic goals in the development of integrated care is an important conceptual emphasis in summarizing the results of both the theoretical debate on the topic and a number of studies in the practice of this care.

Conclusion. The development of integrated care is an important prerequisite for providing comprehensive, more accessible, more coordinated health and social care. At the same time, it is necessary to realize the complexity of the challenges related to the implementation of the considered strategic areas.

Keywords: engagement, integrated care, service coordination, strategic goals

WORKLOAD OF SOCIAL WORKERS IN RESIDENTIAL CARE SERVICES

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Introduction. In 2020, changes were introduced in the current legislation on the provision and use of social services. Concerning the care of disadvantaged people, changes have been introduced in Bulgaria, both in the use of residential care and in the organization and provision of services by workers.

Aim. The survey aims to study the workload of social workers in the part of documenting the activities performed, as well as the administrative duties assigned to them in the provision of residential care services.

Materials and methods. To achieve the objectives of the study, a quantitative method will be applied through the development of a questionnaire, which covers the work of social workers in administering and documenting the processes of service provision.

Results. The information obtained and analyzed will help in setting standards for workload. Against the background of the current new legislation in the field, it remains unclear how activities aimed at meeting quality standards are assigned and how they are implemented.

Conclusion. In regard to the quality standards governing the provision of social services, it is important for practice to study the current workload of social workers in terms of administrative work and documentation of work processes.

Keywords: social services, social workers, workload

THE NARRATIVE THERAPY IN SOCIAL WORK

Maria Stoykova

South-West University Neofit Rilski

Introduction. The narrative approach is increasingly used in various fields of social sciences and medicine. In social work, it is a means of interaction with the client, in which an equality is achieved between a social worker and a user.

Aim. The aim of the study is to identify the different areas of social work where the application of a narrative approach is associated with increased effectiveness and client outcomes.

Materials and methods. A theoretical analysis of literature on the subject is applied.

Results. The results present different applications of the narrative approach in social work practice that are aimed at increasing clients' skills to deal with their own problems. The skills and conditions for their application, as well as individual risks and barriers, have also been identified.

Conclusion. Elements of the narrative approach have been applied in social work and are aimed at empowering the client and changing their perspective on the problem. Certain abilities and orientation of the specialists are necessary for its more effective use in the individual stages of the helping interaction.

Keywords: social work, narrative therapy, interaction, empowerment

SCHUESSLER THERAPY AND HOMEOPATHY IN ALLERGIC RHINITIS

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Introduction. Allergic rhinitis occurs when pollen to which an individual is allergic is present in the air. Nowadays, more and more patients suffer from this condition and are looking for more gentle methods of treatment such as homeopathy and Schuessler salts, remedies obtained from natural ingredients of plant, animal and mineral origin by using special technology.

Aim. This report aims at determining the frequency of application of Schuessler salts and homeopathic preparations in the treatment and prevention of allergic rhinitis, as well as to establish the patient's awareness of their rational use. Survey and statistical methods were used for the purposes of the study.

Material and Methods. Survey and statistical methods were used.

Results. The results showed that the largest relative part of allergic rhinitis sufferers are mainly young people (46.2 %) who successfully relieve the symptoms of their condition by using homeopathic medicines and Schuessler therapy. Respondents are familiar with the claim that homeopathy and Schuessler salts have a sparing action and lack of toxicity, which determines their frequent use.

Conclusion. Allergic rhinitis could be treated symptomatically with homeopathy or Schuessler salts simultaneously with conventional medicine drugs. All specialists involved in the treatment process play an essential role in improving the condition of allergic rhinitis sufferers by implementing a variety of gentle methods and approaches.

Keywords: colds, flu, over-the-counter (OTC) medicine, self-medication

ATTITUDES TOWARDS VACCINATION AND VACCINES

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Introduction. The discovery of vaccines and their introduction into medical practice is an achievement of unprecedented and inestimable value to mankind and is considered the greatest success of medical science of all time.

Aim. The present study aims to find out people's attitudes about vaccination and vaccines.

Material and Methods. We used 1. The documentary method - a literature review of the problem; 2. The sociological method (involves the design of a questionnaire and conducting an anonymous survey with questions grouped and focused on the set goals and objectives; 3. The statistical method - the data were processed with MS Excel, and the results were presented in graphical images and tables.

Results. Most of the respondents were familiar with the action of vaccines and the immunization calendar. They believe that they are effective and safe and would get vaccinated. It is necessary to develop a professional, well-targeted communication strategy that counters misleading information about the effectiveness and safety of vaccines to reduce the levels of hesitancy.

Conclusion. Respondents believe that they are effective and safe and would get vaccinated.

Keywords: immunization schedule, revaccination, safety, side effects, vaccines

PROBIOTICS – A PART OF MODERN MAN’S LIFE

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Introduction. Until a few years ago, probiotics weren’t much talked about. They are now recommended for any antibiotic treatment for various ailments or diseases. We get them through the food we eat, our lifestyle and clinically proven nutritional supplements.

Aim. To find out whether people are familiar with the essence of probiotics, the types that are available in the pharmacy network, their action in the body and the way they are taken.

Material and Methods. Research methods: documentary, sociological and statistical, including:

- study of published materials from various sources
- development of a direct anonymous survey
- observations related to the research problem
- analysis of the results in percentages of the number of respondents
- graphic presentation of results, depicted in the form of diagrams and tables.

Results. Most of the respondents are familiar with the term “probiotic”. Some take probiotics only when treated with antibiotics (74.2%), for stomach irritations (16.1%), and for diarrhoea (9.7%). They are not aware of how many benefits they have in the human body.

Conclusion. An imbalance in the intestinal flora negatively affects all levels of the human organism. Quality probiotic supplements contribute to good health and quality of life.

Keywords: prebiotics, probiotics, supplements, symbiotics, yeast

BIOCOSMETICS - FASHION OR LIFESTYLE

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Introduction. Biocosmetics includes cosmetic preparations that do not contain chemical substances and polluting elements - pesticides, genetically modified, synthetic products and others. In addition to humans, these substances can also be harmful to the environment.

Aim: to study the opinions and attitudes towards the use of biocosmetics among the population.

Material and Methods. 1. Documentary method - literary review of the problem. 2. Sociological method - developing a questionnaire and conducting an anonymous survey; 2. Statistical method – to process data with MS Excel and place the results in graphic images.

Results. Most of the respondents knew what “bioproduct” means, respectively biocosmetics, but few distinguished the concepts of “organic”, “bio”, and “natural”. Most of the respondents have used natural products.

Conclusion. The demand for and use of quality bio-cosmetics is growing both globally and in Bulgaria. The popularity of these products is manifested by the growing global awareness of the harmful effects of chemicals and the desire to take better care of ourselves.

Keywords: biocosmetics, certified, natural, organic, synthetic

TRUST IN THE DOCTOR-PATIENT-PHARMACIST RELATIONSHIP

Albena Cholakidu, Galya Tsvetanova-Kraeva

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Introduction. Trust as an ethical category is an integral part of the relationship between patients and medical professionals and directly affects the healing process. Health outcomes are significantly correlated with trust in doctors and pharmacists.

Aim. To investigate and assess the level of trust patients have towards doctors and pharmacists.

Material and Methods. An anonymous survey was conducted among the population of Pleven and the district using a sociological method (an anonymous survey). Participants are randomly selected.

Results. Most of the respondents declared they trust in doctors and pharmacists, although many of them admit that they do not always follow the doctor's prescription. Not a small number of respondents seek second and third opinions. There is an almost absolute majority with confidence in pharmacists, although one-third of the respondents stated that they do not always find their prescribed medicinal products.

Conclusion. As a final result, the surveyed patients are almost unanimously satisfied and satisfied with the doctors and pharmacists.

Keywords: doctor, pharmacist, pharmacy, prescription, trust

INTERACTION OF HERBS WITH DRUGS

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Iren Nikolova**

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Introduction. Modern pharmacy as a science was born precisely through the study of medicinal plants. To this day, we still use medicinal herbs as tea and infusions. In recent years, there has been an increased interest in herbs, alternative medicine and phytotherapy.

Aim. The main objective of this study was to find out whether patients are aware of the interaction of medicinal plants with drugs.

Material and Methods. An anonymous questionnaire survey was conducted among pharmacy patients, applying a documentary method. A review of the literature was made.

Results. More and more people are turning to treatment with medicinal plants and herbal teas. According to the results of the research, 78% of the respondents use medicinal plants and herbal teas, 18% of them do not, and 4% use herbs sometimes; 58% of respondents use herbs and herbal teas during drug treatment, 24% of them - sometimes, and 18% do not use herbs together with drugs.

Conclusion. Medicinal plants are a great adjunct to drug therapy.

Keywords: herbs, drugs, pharmacist, interaction, patient

RARE DISEASES IN THE HEALTHCARE SYSTEM

Galya Tsvetanova-Kraeva, Albena Cholakidou, Mariana Velikova

Medical College, Medical University – Pleven

Introduction. Rare diseases are defined as pathological conditions with a low frequency of occurrence. They are characterized by a wide variety of symptoms and disorders. The examination of the present topic is based on a brief overview of citizens from the EU and, in particular, on the territory of the Republic of Bulgaria.

Aim. To monitor the prevention, diagnosis and treatment of patients with rare diseases on the territory of the Republic of Bulgaria.

Material and Methods. A systematic review of literature and legislation related to the analyzed problem summarizing the results and conclusions from publications and monographs was made. The information was collected from various databases, including EURORDIS, for a survey of 8 diseases conducted in 17 EU countries.

Results. According to EU data, over half a million people in Bulgaria, most of them children, suffer from rare diseases. Many of them lack treatment. According to data from the Information Center for Rare Diseases and Orphan Drugs, in Bulgaria, out of 60 drugs with the status of orphan drugs, only 18 are included in the Positive Drug List and only 11 of them are reimbursed.

Conclusion. The population will become familiar with the most important ways of primary prevention, which include the preparation and distribution of information materials for the population, as well as for people with rare diseases and their families.

Keywords: drugs, healthcare, orphan, rare diseases

SELECTING OVER-THE-COUNTER PRODUCTS FOR SELF-TREATMENT OF COLDS AND INFLUENZA

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Introduction. Across the globe, millions of individuals utilize non-prescription medications to self-manage the symptoms of colds and influenza.

Aim. The objective of the current research was to examine the populace's disposition and viewpoint on self-administration of medication in cases of cold and flu symptoms and to identify the most commonly utilized over-the-counter (OTC) remedies for various symptoms. Survey and statistical methods were employed to fulfil the objectives of the study.

Material and Methods. Survey and statistical methods were employed to fulfil the objectives of the study.

Results. The results indicate that the majority of patients (77.8 %) preferred self-medication to seeking medical attention to address cold and flu symptoms. The emerging of this trend is attributable to the potential for efficacious self-administration of over-the-counter products and enhanced accessibility to pharmaceutical knowledge.

Conclusion. Non-prescription medications are the initial option for the management of colds and influenza. The influence of the Internet and the easy accessibility of drug information are on the rise, leading to a simultaneous growth in pharmaceutical market sales.

Keywords: colds, flu, over-the-counter (OTC) medicine, self-medication

GOUT-HISTORICAL OVERVIEW AND MODERN TREATMENT

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Introduction. Since ancient times, gout has been known as the “disease of kings” because it mostly affected royalty who abused the consumption of meat. After the Second World War and until today, the number of patients with gout has constantly increased, which is associated with abundant nutrition and a sedentary lifestyle.

Aim. The main goal of the present study is to familiarize with the development of gout from ancient times to the present day, as well as to study the methods and ways of its modern treatment.

Material and Methods. Documentary, survey and statistical methods were used to achieve this goal.

Results. The results show that among the respondents, representatives of the male gender predominate, which coincides with the literature data and outlines a permanent trend in the manifestation of the disease from the past to the present day, which occurs mainly among men. A convincing share of the respondents (65%) Trust established and already proven anti-gout medicinal products, while the rest rely on more gentle methods such as herbs and herbal mixtures.

Conclusion. In the past, gout took lives and was a much greater scourge on the population because the cause of the disease was not understood. Specialists categorically state that the disease is not curable to this day, but with the appropriate therapy, it can be mastered and controlled.

Keywords: antigout preparations, diet therapy and treatment of gout, gout

THE PROBLEMS IN THE QUALITY OF LIFE IN PATIENTS WITH DISORDERED LOCOMOTION - A COMPARATIVE ANALYSIS

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Introduction. The main task of professionals in the field of medical rehabilitation is to ensure a good quality of life for patients during the entire recovery process after impaired locomotion.

Aim: To determine the problematic areas in the quality of life in patients with impaired locomotion.

Material and methods. An author's questionnaire was used, structured in five groups of questions. The assessment of difficulties was reflected in a three-level scale, expressed in percentages.

Results. A comparative analysis was made of the results of the survey of the two groups of subjects (71 patients; 53 specialists in the field of medical rehabilitation): “physical activity” - “walking outside the home” (77.36%; 77.46%) and “overcoming steps” (79.24%; 71.83%) in both groups; “carrying out daily activities” - “maintaining order and hygiene at home” (73.58%; 67.60%) in both groups; “restrictions in social activity” - visits to “cultural events” and “public institutions” (77.36%; 77.46%) for both groups; “use of transport” - for employees, the answers for the use of “public” and “car” transport were within 50%, and for patients they are within 73.58%; “emotional state of anxiety” - specialists determine to the highest degree “allocating more time to perform daily activities” (69.81%), and patients indicate - impossibility of “precision in performing the desired activities” (74.65%).

Conclusion. The analysed results give reason to formulate the problems in the quality of life of the patients with impaired locomotion related to the limited opportunities for performing physical activity, mental health and social skills.

Keywords: mental health, physical activity, social skills

EFFECT ON LIFE SATISFACTION AND PSYCHOLOGICAL ADAPTATION OF LOW-INTENSITY EXTRACORPORAL SHOCKWAVE THERAPY TREATMENT FOR SEXUAL DYSFUNCTION AFTER ROBOT-ASSISTED RADICAL PROSTATECTOMY

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Introduction. In recent years, advanced surgical techniques and approaches such as robot-assisted radical prostatectomy (RARP) have been used for established prostate cancer. However, sexual dysfunction (SD) is a common complication that significantly affects life satisfaction and psychological adjustment.

Aim. The study followed the effect of the application of low-intensity extracorporeal shock wave therapy (LIESWT) on life satisfaction and psychological adaptation in patients with (SD) after (RARP).

Materials and methods. 37 men with ED after RARP for prostate carcinoma were studied. 19 men were administered LIESWT once a week for a period of six weeks. No treatment was administered to 18 men. A modified quality of life questionnaire (SF-8 Health Survey) and International Index of Erectile Function (IIEF-5) were used to evaluate the effect of LIESWT.

Results. The patient groups were relatively homogeneous in terms of age and demographic characteristics. No cases of side effects from the administered LIESWT have been reported. Baseline levels of quality of life, life satisfaction, and psychological adjustment for both groups were similar, with no significant minimum or maximum differences. At the second follow-up, the LIESWT group had statistically significantly higher quality of life and sexual function scores compared to the control group.

Conclusion. LIESWT may be the treatment of choice in patients with SD after RARP. Therapy ensures their early recovery and has the potential to improve quality of life, expressed in increased self-confidence, life satisfaction and mental well-being.

Keywords: prostate cancer, psychological adaptation, quality of life, sexual dysfunction

STUDENTS' ATTITUDES TOWARDS ERASMUS+ MOBILITIES

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Introduction. In recent years, a decline in the number of student mobilities under the Erasmus+ Program has been noticed.

Aim. Therefore, our research aimed to examine the motives and attitudes of students in Health Care and Public Health professional fields (from the National Sports Academy "Vassil Levski" and the Medical University – Pleven) towards Erasmus+ student mobilities.

Material and methods. A total of 124 students from both universities participated in the research. We used a specially designed survey, and we made comparative and correlation analyses.

Results. The results showed that the students from both universities did not have sufficient information about the key actions and the administrative procedures of the Erasmus+ Program.

Conclusion. The acquisition and improvement of professional, linguistic, and intercultural knowledge, skills, and competencies were among the main student motives for undertaking educational mobility under the Erasmus + Program. The lack of sufficient linguistic understanding and competencies in a foreign language, financial resources, prior preparation and training, and lack of social and cultural skills and competencies were among the most prominent factors for the refusal of Erasmus+ student mobility. As a result, we could assume that the students who participated in the study were not sufficiently prepared and motivated to join in mobilities under the Erasmus+ program. This requires conducting specialised training in order to increase the student's interest and motivation for undertaking Erasmus+ activities.

Keywords: Erasmus+ Program, intercultural skills and competencies, language skills and competencies, mobility

LITERARY TEXTS IN THE COMMUNICATIVE ORGANISATION OF BULGARIAN LANGUAGE TRAINING FOR MEDICAL STUDENTS

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Introduction. The report presents the theoretical basis of the communicative approach in language teaching and emphasises the concept of „communicative competence“, which occupies a fundamental place in the documents and recommendations of the Council of Europe. The new descriptors in the updated model of communicative competence are regulated in the OEER Handbook (2018). The reading and interpretation of the literary texts are underlined, through which professional communication skills are built, refined and developed.

Aim. To characterise the role of literary texts through the work on which future doctors form skills for communicating with patients as representatives of different linguistic, cultural, ethnic and religious communities.

Materials and methods. In order to select information for this report, an evaluative-analytical review of representative scientific publications was conducted and the relevance and significance of the interdisciplinary method were underlined.

Results. The connections between the perception of literary texts and the interpretation and creation of medical texts are clarified and substantiated. The possibilities of the educational model, which combines educational content and pedagogical approaches from medicine and literature, to develop communicative skills in a Bulgarian-speaking environment have been determined.

Conclusion. Literary texts are described as additional materials through which the language and culture of the host country are introduced to the medical students and develop their competence for health care communication.

Keywords: Bulgarian language training, communicative approach, literary texts, medical students

THE DIALOGUE BETWEEN MEDICINE AND LITERATURE IN THE CONTEXT OF MEDICAL HUMANITIES

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Introduction. The article represents the medical humanities as interdisciplinary studies, including learning content from different disciplines – art, philosophy, history and literature, in medical education with the aim of forming professional skills for better understanding and doctor-patient interaction.

Aim. The study aims to perform a theoretical analysis of humanitarian knowledge and the literature as a humanitarian discipline with certain educational content, methods, resources and organisational forms, which, used in medical education, have the clear aim of developing communicative competencies for humane and empathetic interaction doctor-patient.

Materials and methods. A theoretical overview of various conceptions of the place of literary texts in medical education and their adequate application in Bulgarian language training of future doctors is being made available.

Results. The pedagogical functionality of the relationship between working with literary texts and understanding and empathising with the stories of the sick in everyday communication with them is derived. The interdisciplinary methodology is fully presented in a practical-applied aspect when integrating it into clinical practice in order to build trusted and humane-ethical doctor-patient relationships.

Conclusion. Literary texts realise mediation between the linguistic and cultural messages from the source languages and cultures of the medical students from other countries and the perception and creation of messages in the target language, whose representatives are the patients.

Keywords: human sciences, literary texts, medical education, patient care,

ROLE OF THE UNIVERSITY LECTURER IN THE FOREIGN LANGUAGE LEARNING

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Introduction. The teaching process cannot be practiced by everyone. To be practised by university lecturers, they must have passed a relevant competition and possess appropriate knowledge in the relevant field. They must also fulfil the function of a friend and informant, as well as a role model and expert in their field. Communication between the lecturer and the students is essential. Good communication facilitates the learning process and smoothens its running. All this is addressed in the present article, as well as in the literature on the subject that has been published.

Aim. The purpose of the article is to present the role of the lecturer and its qualities and explain how communication and learning in foreign language classes take place.

Material and methods. A literature review on the topic and definition of the concepts of the lecturer, communication and training.

Results. Classification of the terms, descriptions of these terms and their application in the practice.

Conclusion. Without them, the learning process and the lecturer-student communication would be impossible.

Keywords: communication, lecturer, role, training

THE SPECIAL EDUCATION IN AUSTRIA

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Introduction. One of the most majestic European countries located in Central Europe is Austria. Children and students with disabilities who are unable to study in primary or lower secondary schools are educated in specialised schools. The main goal is to prepare and integrate them into public life and to be independent and full-fledged citizens of the country.

Aim. This report aims to provide data in the field of special education and training of children and students with various disabilities in Austria. The main characteristic of special education in the country is presented.

Materials and methods. On the basis of the available and limited public data on the subject (documentary method), an attempt was made to briefly describe the structure and specifics of special education in Austria.

Results. In terms of scale, Austria ranks first in Europe in terms of the number of disabled people. Very good special legislation has been drawn up, which is fully funded by the state. According to the „Federal Law on the Disabled“ in force in the country, every child with a disability has the right to an individual training program. There are also many reliefs for affected families of children with disabilities and individuals who are adults.

Conclusions. Special technical equipment and school transport are free. In order to prevent and limit the large number of children with hereditary disabilities in the country, excellent medical and genetic consultations have been organised. They guarantee the anonymity of the persons included in them, and their composition includes specialists such as psychologists, lawyers, doctors, social pedagogues, and others.

Keywords: Austria, children and students with disabilities, main characteristic, special education

THE SPECIAL EDUCATION OF THE NETHERLANDS

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Introduction. The country has 12 provinces, and education has old traditions. Students with special educational needs should study together with their peers in a general education school. In practice, this means that regular schools implement full inclusion of children with disabilities and take full responsibility for them.

Aim. This report aims to provide data in the field of special education and training of children and students with different disabilities in the Netherlands. The main characteristic of special education in the country is presented.

Materials and methods. Based on the limited public data available on the subject (documentary method), an attempt was made to briefly describe the structure and specifics of special education in the Netherlands.

Results. It is important to note that the country rejects the medical model and adopts the socio-pedagogical model. Special education is supervised and administered by the Ministry of Education and Science. Special schools are funded by private organisations.

Conclusion. There are special kindergartens in the Netherlands, but only for children with somatic disorders. An outflow is observed from the special schools. Their programs approach those of the general education school.

Keywords: children and students with disabilities, main characteristic, Netherlands, special education

PLAY AS A MEANS OF THERAPEUTIC INFLUENCE IN CHILDREN ON THE AUTISM SPECTRUM

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Introduction. According to the available public data on the topic, the application of therapeutic play tools contributes to the educational and treatment programs offered to children on the autism spectrum in special education settings. The effective forms of support or intervention developed focus on alleviating psychological problems and distress and aiding the overall development of the child.

Aim. This paper aims to examine theoretical frameworks in the field of special education and training of children with autism spectrum disorder to discover the indispensable role of play in stimulating children's personality and socialisation.

Materials and methods. Based on documentary research data on the topic, the importance of the development of play skills in children and their role in children's socialisation, their emotional significance as a form of joint active experience, involving them with others, is brought to attention.

Results. Games play an indispensable role in the lives of autistic children. The functions of therapeutic play are developmental, relaxing and enjoyable. The characteristics of play as a mode of therapeutic influence for children on the autism spectrum are described. Guidance is given on how to make play accessible to them, how to develop their skills, and how to influence the child's personality in an inclusive environment beneficially.

Conclusions. Creative activities are particularly useful in engaging autistic children in experiences that underpin the development of communication skills in general, activate and develop a social connection with the world around them, and support psychological and emotional development.

Keywords: children on the autism spectrum, play, special education, therapeutic working models

THERAPEUTIC METHODS FOR CHILDREN AND STUDENTS WITH AUTISM SPECTRUM DISORDERS

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Introduction. The intervention has had very positive outcomes for children and students with autism spectrum disorders. A major goal in educational and therapeutic work is to improve the quality of life of the person with autism in order to maximise personal autonomy and beneficial social interaction.

Aim. This paper aims to provide scientific theoretical evidence in the field of special pedagogy, which seeks to shape communication skills in children and students with autism spectrum disorders using a variety of instructional and therapeutic strategies, techniques, and technologies.

Materials and methods. Based on the available documented public evidence on the topic, the importance of intervention in achieving progress in the development of communication, social and play skills in children and students on the autism spectrum is highlighted.

Results. Therapeutic work with children and students with autism spectrum disorders takes into account their individual needs, the resources of the family and the social environment, and the involvement of various specialists in the field of pedagogy and medicine.

Conclusions. One of the primary tasks that the specialist sets himself in the process of therapeutic work with a child on the autism spectrum is to build motivation and a sense of achievement. In their absence, behavioural and communication problems arise. Creating a sense of acceptance, support and attention, having resources that meet the needs of an autistic child, and a climate of safety and comfort build a properly appropriate and supportive environment for an autistic child.

Keywords: children and students on the autism spectrum, special pedagogy, therapeutic methods, therapy

THE ROLE OF THE RESOURCE TEACHER IN THE PRE-SCHOOL AND SCHOOL EDUCATION SYSTEM

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Introduction. Resource teachers have established themselves as essential and indispensable pedagogical specialists in the implementation of inclusive education in Bulgaria. It is they who have to determine, according to individual special educational needs, what strategies can be applied in the classroom and education in general.

Aim. This paper aimed to present scientific theoretical evidence that focuses on the provision of appropriate adapted environments as an essential component of inclusive education, which is related to differentiating learning content and providing responsive incentives to changing learning needs. Planning and organising a supportive environment is a joint responsibility between general education and resource teachers.

Materials and methods. On the basis of the available public data on the subject, an attempt was made to briefly describe the role of resource teachers in the system of pre-school and school education.

Results. Counselling is a core activity of the resource teacher, relating to specific methods of working with children and students with special educational needs in mastering the learning content and organising the space and the necessary procedures around the resource support activity.

Conclusions. A resource teacher is a pedagogical specialist with complex responsibilities; there are responsibilities not only in the education of children and pupils with special educational needs but also for team interaction with mainstream teachers, interaction with other children and pupils, tailoring and adapting the mainstream curriculum to individual needs and last but not least - interaction with all parents of the children.

Keywords: children with special educational needs, inclusive education, resource support, resource teacher

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